

## Immanuel Bereket

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**From:** Liza Jane Norman <lizajanenorman@gmail.com>  
**Sent:** Tuesday, March 26, 2024 10:38 AM  
**To:** Immanuel Bereket  
**Subject:** Gas station remodel

You don't often get email from lizajanenorman@gmail.com. [Learn why this is important](#)

Hello,

I love to go to Point Reyes Station.

The charm of the old village still remains.

I see there is a proposal to 'upgrade' the gas station, but from what I can see, the plans are to modernize the building so it looks like any other blank modern building without character.

Please reconsider. I understand the needs to upgrade buildings so they don't fall down, or so they are more useful for today's world, but please don't take away all the charm, it's what makes Point Reyes so special.

Thank you,

Liza Norman

Oakland, CA

## Immanuel Bereket

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**From:** Knots Watson <knots.watson@gmail.com>  
**Sent:** Tuesday, March 26, 2024 7:44 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Project Appeal

[You don't often get email from knots.watson@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Good morning.

As a longtime resident of Marin (since 2010), and a resident of West Marin since 2017, I'm writing to express my strong opposition to the current proposal for the Pt Reyes gas station project.

I am in agreement with the idea of more housing in the town, which is very much needed. The large market planned for the gas station, however, is in stark contrast to the spirit, feel and character of Pt Reyes and the surrounding areas. It brings to mind what has happened to the coastal towns of Florida, where I grew up and my mother still resides. I'm am saddened every visit to see towns that once had such individual character be steamrolled into submission of a bland corporate existence, to the point where one town is indistinguishable from the next.

What will happen when a chain behemoth, with its larger purchasing power, starts undercutting local treasures like the Palace Market and the local coffee stands? What's next, a Dollar General?

Please reconsider the decision to allow this plan to go forward, and consider that your position is to serve the local people of you district and not the corporate culture.

Sincerely,  
Greg Watson  
Bolinias, Ca

## Immanuel Bereket

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**From:** Mark Burton <mburton@audetlaw.com>  
**Sent:** Tuesday, March 26, 2024 7:43 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Project Appeal

[You don't often get email from mburton@audetlaw.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

As a resident of West Marin I write in support of the development of the gas station. Unfortunately, there are those in West Marin that simply object to any change whatsoever in West Marin. The proposed change seems to be very modest and there is simply no historic value to his building just because it is old. There are plenty of other old buildings in town that are rotting away and these groups should put their effort and money into preserving those. The Grandi building has been vacant since 1978!

Thank you for your consideration.

Mark Burton

## Immanuel Bereket

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**From:** jerry sontag <books@mtpress.com>  
**Sent:** Tuesday, March 26, 2024 7:13 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Project Appeal

[You don't often get email from books@mtpress.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

I am a resident of Inverness, and am in favor of housing at the gas station. As much care as possible should be given to the appearance of the building so that it blends in as much as possible with the character of the town. I don't have an opinion about the propane sales (since I don't have any expertise in the matter), but the overall idea of rebuilding on that site, with housing, is one of which I am in favor.

Jerry Sontag  
1 Balboa Avenue

## Immanuel Bereket

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**From:** Owen Gump <owenmgump@yahoo.com>  
**Sent:** Tuesday, March 26, 2024 12:23 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Remodel

You don't often get email from owenmgump@yahoo.com. [Learn why this is important](#)

Dear Mr. Berket,

I'm writing to propose a compromise regarding the Point Reyes Village Association's appeal to the planned remodel of the Point Reyes gas station scheduled for April 4th.

In my assessment, the Village Association is attempting to leverage the building's historic character to prevent the construction of much needed new housing, including one unit designated as affordable. Planning staff is undoubtedly familiar with the housing affordability crisis affecting working individuals and families, particularly in West Marin. In particular, West Marin needs multifamily and affordable housing which is exactly what this project would create. The art supply store and kayaking establishment are private businesses which can and should find other commercial properties to lease, nor should their business interests take precedent over housing.

The Village Association's main objection stems from enclosing a historic porch to construct a new convenience store, which violates their Local Coastal Plan as the store is more than 15% of the total floor area. As planning staff are aware, this Local Coastal Plan is not law, rather, it is a guideline for what the Village Association itself prefers. Regardless, a reasonable compromise would be to reduce the size of the store and retain the historic porch while still allowing for the construction of the planned apartments.

One aspect ignored by the historian's report is that the building's interior has already been extensively modified--in no way does the current interior resemble it's original use as a vegetable warehouse. Likewise, I do not see how re-renovating the building into apartments would be any different, indeed building these apartments is another form of adaptive re-use to which the building has already been subjected.

I cannot speak to the Village Association's concerns regarding the bulk propane tank or requested environmental reviews, but I trust that planning staff will evaluate them accordingly under state and county laws.

Please do not hesitate to contact me if you have any questions regarding any of the above, sincerely,

Owen Gump, Fairfax

## Immanuel Bereket

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**From:** Wendy Botwin <2dancingtree@gmail.com>  
**Sent:** Monday, March 25, 2024 11:14 PM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Project Appeal

You don't often get email from 2dancingtree@gmail.com. [Learn why this is important](#)

Hi,

I'm writing as a West Marin resident in Bolinas. This is our only gas station. I am in agreement with the Point Reyes Village Association

appeal: <https://static1.squarespace.com/static/65e1158577dff72e81c85691/t/66019740883de561ec278ecb/1711380289292/Basis%2Bof%2BAppeal%2B2-13-2024%2BSubmitted.pdf>

I am also a low income housing and renters' advocate. This plan does not address our housing crisis in a way that cares about preserving the historical and cultural character of downtown PRS. Please reconsider. I'm most especially against a larger mini mart on behalf of our environment and other longtime local businesses.

Thanks, Wendy Botwin

## Immanuel Bereket

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**From:** Constance Mery <conniemeryart@gmail.com>  
**Sent:** Monday, March 25, 2024 10:14 PM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station gas station remodel

[You don't often get email from conniemeryart@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Sir,

I live at 11450 Highway One, within sight of the gas station.  
I have lived in Point Reyes Station for 40 years.

The building's porch should be kept,  
and the future families living there should be protected from gas tank fumes as much as possible.

I completely support the PRVillage Association's objections to the remodel.

thank you,

Connie Mery

## Immanuel Bereket

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**From:** Dakota Whitney <dakotawhitney@gmail.com>  
**Sent:** Monday, March 25, 2024 8:52 PM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Remodel

You don't often get email from dakotawhitney@gmail.com. [Learn why this is important](#)

To whom it may concern:

I am a lifelong resident of the Point Reyes Station/Inverness area and my family has been in West Marin since the 1850's. I am writing to ask you to please reconsider your approval of the Point Reyes Station gas station plans.

The gas station building is historic in nature. It is the first building one sees when heading into town from the Northeast. When coming "home" to Point Reyes Station, one tops the hill at the West Marin School and looks down into town. It is a lovely view and even the gas station has a wonderful small-town feel. The covered porch, in particular, is a part of the Point Reyes Station's charm and history as an old-timey, coastal, agricultural town. All of the buildings in downtown Point Reyes Station are in keeping with this history as a town/station on the railroad and this visual consistency is integral to who we are as community. We love and cherish our geographic and historical heritage and need to retain this part of who we are.

Moreover, while housing units are proposed, I believe the current plans will actually eliminate housing for the one low-income family who resides there at present while adding market rate units which will certainly not be desired or occupied by current town residents. The only people who might consider (and be able to afford) such rentals are those who would be new to the area.



I urge you to grant the appeal of the Point Reyes Village Association by acknowledging and accepting the following:

- 1) The existing building alterations must comply with the 15% cap in the LCP, Section 20.32.160; thus resulting in a much smaller mini mart which would preserve the historic covered porch.
- 2) The building has local historic value and the open porch contributes to Point Reyes Station's coastal agricultural character and therefore should be preserved.
- 3) Environmental impacts on the new housing shall be mitigated by enforcing applicable State and Local Codes, and
- 4) The expanded bulk propane business should be eliminated to ensure that there are no new parking and environmental impacts.

Thank you for your consideration.

Sincerely,  
Dakota S. Whitney

March 25, 2024

Immanuel Bereket, Principal Planner  
Marin County Community Development Agency  
Via email: [immanuel.bereket@marincounty.gov](mailto:immanuel.bereket@marincounty.gov)

Sarah Jones, Director  
Marin County Community Development Agency  
Via email: [sarah.jones@marincounty.gov](mailto:sarah.jones@marincounty.gov)

Sindy Palencia, Administrative Assistant  
Marin County Community Development Agency  
Via email: [sindy.palencia@marincounty.gov](mailto:sindy.palencia@marincounty.gov)

RE: Point Reyes Gas Station Development Plan

Dear Mr. Bereket, Ms. Jones, and Ms. Palencia:

It's clear we need more housing in West Marin – but not at the cost of our community's health. Approval of the gas station remodel plan, with five new housing units, is directly contrary to the guidelines set out in 2005 by the California Air Resources Board (CARB). Because gas stations routinely emit benzene and other toxic hydrocarbons known to cause cancer and be a particular risk to children, CARB's air quality guidelines recommend that no residences, schools, day care facilities, or playgrounds be built within 50 feet of a typical gas station.<sup>i</sup> Because newer studies have detected benzene in the air between 300 and 500 feet from gas stations, have documented higher vent emissions than CARB used to set its guidelines,<sup>ii</sup> and because *there is no safe level for benzene exposure*,<sup>iii</sup> some experts have suggested that considerably larger setbacks would be more appropriate to protect public health. Benzene is a well-established cause of adult leukemia,<sup>iv</sup> the evidence is less clear for childhood cancer. A 2017 review of three epidemiological studies examining the association between childhood leukemia and residential proximity to gas stations found an overall increased risk of about 2.4-fold.<sup>v</sup>

While recognizing that the county planning department has primary jurisdiction over land use decisions, 2022 policy guidance from CARB recommends that “local governments work to ensure that areas around gas stations are zoned to avoid or minimize air quality impacts and that gas station projects include mitigation measures to avoid or reduce these impacts as conditions of approval.”<sup>vi</sup>

According to a review of the proposed gas station apartment project by Bay Area Air Quality Management District (BAAQMD) staff, “on-site health risks for residential receptors are concerning, even for small gas stations. As you can see from the figure<sup>vii</sup>, health risks within the station boundary could exceed a cancer risk of 10 in a million, with a cancer risk of 20

in a million at the maximum impact point.” This level of cancer risk would not be allowed under BAAQMD current rules if this was a proposal to build a new gas station.<sup>viii</sup>

Therefore, we are requesting that the County of Marin require the applicant to conduct a health risk assessment for the project to determine the potential risks to the future residents based on the likely emissions from the gas station. County officials need to know the potential health consequences to its residents prior to voting on whether this proposal should go forward.

Thank you for your consideration,

Kathy Hunting, PhD, MPH (Point Reyes Station, CA)  
Retired Epidemiologist  
Professor Emerita of Environmental & Occupational Health  
The George Washington University Milken Institute of Public Health  
[hunting@gwu.edu](mailto:hunting@gwu.edu)

Gail Bateson, MS (Inverness, CA)  
Occupational Health Consultant and  
Retired Executive Director, Worksafe, Inc.  
[batesong@gmail.com](mailto:batesong@gmail.com)

cc: Pamela Bridges (Point Reyes Station)  
Via Email: [p.bridges@mac.com](mailto:p.bridges@mac.com)

## Annotated References

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<sup>i</sup> California Air Resources Board. Air Quality and Land Use Handbook: A Community Health Perspective. 2005.

Based upon air quality modeling and health risk analysis, CARB recommends on pages 30-32 to: “Avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.” (The Point Reyes Station gas station would fall into this latter “typical” category.)

<sup>ii</sup> For example: Hilpert M, et al. Vent pipe emissions from storage tanks at gas stations: Implications for setback distances. *Science of the Total Environment* [Volume 650, Part 2](#), 10 February 2019, Pages 2239-2250.

“At gas stations, fuel vapors are released into the atmosphere from storage tanks through vent pipes. Little is known about when releases occur, their magnitude, and their potential health consequences.” Detailed air quality monitoring at two US gas stations found that “Recorded vent emission factors were >10 times higher than estimates used to derive setback distances for gas stations. Setback distances should be revisited to address temporal variability and [pollution controls](#) in vent emissions.”

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iii WHO Guidelines for Indoor Air Quality: Selected Pollutants, Chapter 1 – Benzene. Geneva, World Health Organization, 2010. <https://www.ncbi.nlm.nih.gov/books/NBK138708/>

“Benzene is a genotoxic carcinogen in humans and no safe level of exposure can be recommended.”  
(from section titled “Guidelines”)

iv American Cancer Society. Benzene and Cancer Risk, February 2023. <https://www.cancer.org/cancer/risk-prevention/chemicals/benzene.html>

“IARC [the International Agency for Research on Cancer] classifies benzene as ‘carcinogenic to humans,’ based on sufficient evidence that it causes acute myeloid leukemia (AML). IARC also notes that benzene exposure has been linked with acute lymphocytic leukemia (ALL), chronic lymphocytic leukemia (CLL), multiple myeloma, and non-Hodgkin lymphoma.”

v Steinmaus C and Smith MT. Steinmaus and Smith respond to “[Proximity to Gasoline Stations and Childhood Leukemia](#).” *American Journal of Epidemiology* 185(1): 5–7, 2017. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6267941/>

The authors conducted a meta-analysis of three case-control studies examining the association between childhood leukemia and residential proximity to gas stations. The summary relative risk was 2.42 with a statistically significant 95% confidence interval of 1.51 to 3.89. “This finding is consistent with an association between residential proximity to gasoline stations and a higher risk of childhood leukemia. Importantly though, this new result should be interpreted in light of the post-hoc manner in which it was generated and the relatively small number of studies on which it is based. Further research on childhood leukemia and residential proximity to gasoline stations that involves larger sample sizes and more detailed residential and exposure histories could add new insights into this important issue.

vi California Air Resources Board, Gasoline Service Station Industrywide Risk Assessment Supplemental Policy Guidance Document, July 21, 2022, page 7. [https://ww2.arb.ca.gov/sites/default/files/2022-08/2022\\_Gas\\_Station\\_IWG\\_Supplemental\\_%20Policy\\_Guidance.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-08/2022_Gas_Station_IWG_Supplemental_%20Policy_Guidance.pdf)

“CARB recommends that local governments work to ensure that areas around gas stations are zoned to avoid or minimize air quality impacts and that gas station projects include mitigation measures to avoid or reduce these impacts as conditions of approval. While CARB recommends that local governments not approve new gas stations immediately adjacent to housing and other locations with sensitive receptors, CARB recognizes that the critical need for affordable housing and infill development throughout the State will likely result in having gas stations near new or existing housing development. Therefore, CARB recommends that local governments implement land use policies to support additional housing while minimizing air quality impacts on nearby communities.”

vii Reference is to Figure 3 on p. 13 of the report in endnote vi.

viii Personal communication by email from Carol Allen (Manager, Engineering, BAAQMD) to Pamela Bridges of Point Reyes Station, February 21, 2024.

Ms. Allen states that “Cancer risks greater than 10 in a million would not be acceptable and would not be allowed by BAAQMD Regulation 2, Rule 5, if this was a new gas station locating near on-site apartments.” She notes that “These regulations do not apply to existing equipment that is not being modified, which appears to be the case for the Point Reyes Station project that involves adding apartments near an existing gas station.” She adds further: “However, these regulatory limits may give you some perspective about the level of health risks that would be allowed, if this project was a new gas station locating near existing apartments rather than apartments locating near an existing gas station.”

## Immanuel Bereket

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**From:** Tom Gardali <tgardali@gmail.com>  
**Sent:** Sunday, March 24, 2024 4:41 PM  
**To:** Immanuel Bereket  
**Subject:** support housing at Point Reyes gas station

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I am writing to express my support for housing at the Point Reyes gas station.

Thank you.

Tom Gardali  
380 Aberdeen Way, Inverness, Ca 94937

## Immanuel Bereket

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**From:** jam fusco <jamfusco@gmail.com>  
**Sent:** Sunday, March 24, 2024 3:19 PM  
**To:** Immanuel Bereket  
**Subject:** Gas station

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Please stop this project. Let Point Reyes Station residents' opinions matter. Please stop this.

Joanne Fusco 707-637-3444

## Immanuel Bereket

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**From:** Susan Brayton <susanbrayton@horizoncable.com>  
**Sent:** Sunday, March 24, 2024 3:15 PM  
**To:** Immanuel Bereket  
**Subject:** My concerns about the minimart/ apartments at the gas station

Attention: Immanuel Bereket, Principal Planner, Marin County  
Marin County should be paying attention to the “ghost” buildings in Point Reyes Station: The Grandi Building, The Green/Red Barn, the former Station House cafe, the empty homes owned by DeCarli on Highway One and seeking to renovate those as a priority over the plans that the gas station owners are proposing. We also have a “ghost town” in the area which we do not want to retain for historical reasons, and that is the Coast Guard property. Marin County should be speeding this project rather than paying attention to an extraneous project, such as the gas station remodel.

Thank you for your attention.  
Susan Brayton  
105 Vision Road  
Inverness, CA 94937  
Resident since 1977

## Immanuel Bereket

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**From:** Joyce Howe <ptrjoy@gmail.com>  
**Sent:** Sunday, March 24, 2024 2:35 PM  
**To:** Immanuel Bereket  
**Subject:** Pt reyes gas station

[You don't often get email from ptrjoy@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

This is a dangerous corner now. The changes would make it worse. Proposal not in character with village. Please no more competition with existing business. Please no mini mart that would cause more traffic and trash. Please no housing that would be in danger from gas and propane. There would be more traffic in an already dangerous situation for drivers and pedestrians. Thank you for your careful consideration. Joyce Howe, P.O. Box 1058, Pt. Reyes Station Sent from my iPad



To Marin County Planning Commissioners

From: Point Reyes Station Village Association

Re: Site Visit - Sydriel Coastal Permit and Use Permit (P4444)

Commissioners,

The Association asks you to make a site visit to the Redwood Oil gas station in Point Reyes Station before the April 4<sup>th</sup> hearing to consider our appeal of the DZA approval of the proposed development.

The myriad proposed improvements cannot be adequately considered without visualizing the combined impact of the components.

It is critical to make workable improvements to this essential service, the only gas station on the coastal stretch of Highway One in Marin County.

However, no matter what day you are able to visit you can observe the current intensive use of this business bounded by the most problematic intersection in the village with a three-way stop, the major access road to the residential areas north and the side streets leading to the Marin County offices, the Clinic, Senior Housing and Community Center.

On weekdays before sunrise until mid-morning garbage trucks, milk and water tankers, commercial supply trucks, school buses, cattle and horse trailers are mixed with essential workers commuting in and locals commuting out. In the afternoons the tide is reversed.

On weekends, holidays and any day good weather beckons, the ever-increasing number of visitors arrive by RVs, car, motorcycle, or bicycle many stopping for gas, oil, air, a bathroom or directions.

As the station has no curbs defining entrance to the pumps large vehicles and trailers swing into the station from all angles. Parking is limited and ill-defined. In short it can be chaotic.

The proposed 1930 sq. ft. mini-mart geared to attract passing customers for sales of food and beverages in single-use containers is hard to visualize.

The added congestion at the pumps with customers leaving their vehicles to make a purchase will only magnify the congestion created by limited sales from the current 250 sq. ft. kiosk office.

There is currently no pedestrian traffic to the station, With the proposed store, starting at 3:00pm on weekdays school children will be attracted to the proposed store using no defined crosswalks.

The proposed installation of a 1000-gallon propane storage tank on the residential side street to cater to camper vans and RVs double parked will require an employee to leave the store to control the delivery hose.

The requests by customers for bathroom use cannot be deflected by coin operated doors or direction to public bathroom down the road. Extending the building by demolishing the historic front porch will further constrain spaces between vehicles at the pumps and customers entering the store.

Be sure to visit the interior commercial spaces, if possible, and see for yourself the intact nature of the old growth wood floors throughout that are slated to be demolished. The porch is a character defining feature of the building and contributes to the character of Point Reyes Station and will be lost in order to expand the existing kiosk into a much larger minimart.

A wide variety of local and area residents, workers and business owners have addressed concerns to the Association and to the County. These concerns are based on everyday experience with the facility.

Let's make the development work.

The addition of the critically needed housing to the project can serve as an exemplary provision for potential workforce housing by a business. We rely on County agencies to ensure the housing is safe and healthy.

The proposed commercial activity of a large convenience store in an outlying gas station is too great. The expanded commercial operation is designed like a full-service station at the base of a freeway offramp, not for the confusing entry to the main street of a village.

We hope you will take the opportunity to see for yourself what is proposed on paper, which we are convinced will be a magnified problem in place.

## Immanuel Bereket

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**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Thursday, March 14, 2024 9:59 AM  
**To:** Maurice Armstrong  
**Cc:** Immanuel Bereket; Laura Arndt; Stuart Hayre  
**Subject:** propaneolema

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**Subject:** olema  
**Date:** March 14, 2024 at 9:56:39 AM PDT  
**To:** pamela bridges <[p.bridges@mac.com](mailto:p.bridges@mac.com)>



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## Immanuel Bereket

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**From:** Stuart Hayre  
**Sent:** Thursday, March 14, 2024 11:07 AM  
**To:** Immanuel Bereket  
**Cc:** Alicia Stamps; Farid Javandel; Maurice Armstrong  
**Subject:** FW: please share

fyi

***Stuart Hayre***  
*Principal Civil Engineer*



Department of Public Works – Land Development Division  
3501 Civic Center Drive, Suite 304  
San Rafael, CA 94903  
(415) 473-2825 T  
[Stuart.Hayre@MarinCounty.gov](mailto:Stuart.Hayre@MarinCounty.gov)

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**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Thursday, March 14, 2024 10:31 AM  
**To:** Stuart Hayre <Stuart.Hayre@MarinCounty.gov>  
**Subject:** please share

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## Immanuel Bereket

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**From:** Marshall Livingston <marshall@dream-farm.com>  
**Sent:** Wednesday, March 20, 2024 10:11 AM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni; Stephen Antonaros; Morgan Patton  
**Subject:** Sydriel Coastal Permit and Use Permit

Some people who received this message don't often get email from marshall@dream-farm.com. [Learn why this is important](#)

Re: Sydriel Coastal Permit and Use Permit

11401 State Route 1, Point Reyes

Assessor's Parcel: 119-198-03

Request for a waiver of Local Coastal Program, Implementation Plan, Section 20.62.080, Table 5-3-c, footnote (3)

Mr. Bereket:

Up to now I have refrained from comment on the Sydriel Coastal Permit and Use Permit plan for Point Reyes Station. I welcome new housing, both market rate and affordable, and the size difference of the market between 873 sf and 1920 sf is of small concern to me. I dread the loss of the historic character of the "pea shed" and its covered porch facing the main road.

My main concern and objection is to the request for a waiver of Local Coastal Program, Implementation Plan, Section 20.62.080, Table 5-3-c, footnote (3). Using the State Density Bonus Law in this case is inappropriate since the commercial use could easily be located in the Main Street facing part of the building that was previously the garage and is now planned for Apartment A. The location of Apartment A is a very busy and noisy corner that would become increasingly busy with the addition of the market. If the affordable apartment were to be in this inferior location I would strongly object and consider this housing discrimination. All of the apartments could be facing to the back of the building toward a relatively quiet open space and the porch, or a facsimile of the porch, could be added to restore some historic resemblance of the original building.

**If the waiver is approved this will set a precedent for all future mixed use development in the entire Coastal Zone. We cannot let this happen.**

Thank you,

Marshall Livingston  
M. S. Livingston & Sons  
P.O.Box 921  
Point Reyes, CA 94956  
415-999-5689  
CA DRE: 1328569  
marshall@dream-farm.com

## Immanuel Bereket

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**From:** Constance Mery <conniemeryart@gmail.com>  
**Sent:** Sunday, February 18, 2024 5:19 PM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station gas station remodel

[You don't often get email from conniemeryart@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Re the proposed "Convenience Store" makeover of the Point Reyes Station gas station:

a comment from a local person:

I live on Highway One, 1 1/2 blocks away from the gas station, can see it from my house. I have lived in Point Reyes Station for 40 years.

The main comment I have is about electric lights:

Just like the Point Reyes Village Association, I am concerned about the increase in artificial lighting after dark. I would prefer if there were no increase in lighting around that building.

thank you for listening,

Connie Mery  
11450 Highway One  
Point Reyes Station



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**From:** Immanuel Bereket  
**Sent:** Monday, January 8, 2024 11:47 AM  
**To:** Heather Furmidge <heatherfurmidge1@gmail.com>; Morgan Patton <Morgan.Patton@MarinCounty.gov>  
**Cc:** Maurice Armstrong <Maurice.Armstrong@marincounty.gov>  
**Subject:** RE: A question and Happy New Year!

Good morning,

Attached, please find project comments from Dept. of Public Works (DPW) and the Coastal Commission. The former exercises authority over matters related to parking, circulation, etc. Although I will defer to the DPW to explain in greater detail and specifications, onsite circulation and traffic studies are not automatically required for every project and is required on a case-by-case basis. In this instance, the proposed project is not anticipated to generate greater demand to parking or trip generation than the existing condition. I have copied DPW member who can explain in greater detail.

With respect to the rest of your inquiry, please see a detailed response below:

I'd be happy to discuss the review process in greater detail. Here is the basic outline:

- On **September 11, 2023**, a Coastal Permit and Conditional Use Permit applications.
  - Upon receipt, the application was transmitted to the Environmental Health Services Division (EHS), the Housing Division, the Department of Public Works (DPW), the California Coastal Commission (CCC), the Fire Department, and it was posted online.
  - Staff received written memorandums from EHS, DPW, the Point Reyes Station Village Association, and an e-mail correspondence from the CCC.
- On September 13, 2023, a webpage was created for the project, which you can access here: [Sydril Coastal Permit and Use Permit \(P4258\) - County of Marin \(marincounty.org\)](https://www.marincounty.org/development/permits-and-licensing/sydril-coastal-permit-and-use-permit-p4258)
- On **September 13, 2023**, a notice was posted on the project site, identifying the applicants and describing the project and its location, as well as listing the website where information about the project can be found.
- On **October 9, 2023**, the application was deemed incomplete.
- On **October 25, 2023**, the applicant submitted revised materials, which were promptly recirculated to DPW, EHS and the CCC.
  - Staff received written memos from DPW and EHS and an e-mail correspondence from the CCC.
- On **November 13, 2023**, the application was deemed incomplete due to partial resubmittal of the application.
- On **November 17, 2023**, the applicant submitted a complete set of plans, and, on **November 28, 2023**, the application was deemed complete.
- On **November 28, 2023**, a Notice of Referral was posted online and sent to service providers, community groups, interested parties, etc.
- On **December 26, 2023**, a public hearing notice (attached) was sent to property owners of record within 300-ft radius, service providers, community groups, interested parties, etc. The public hearing is scheduled to occur on **Thursday, January 18, 2024**. All the agencies have recommended approval, including the Department of Public Works who

exercises authority over matters related to traffic, parking, circulation etc. An infill project this size would not require a traffic study, analysis etc., because the existing commercial uses generate more trips than residential uses. DPW can explain this in greater details, but commercial uses generate more traffic/trips through the day as opposed residential uses that peak trip generation during morning even hours. Since the proposed uses would generate less traffic/trips than the existing conditions, a traffic study wasn't needed nor is there a nexus to require such a study,

#### **Types of permits required:**

- Coastal Development Permit approval is required under Marin County Local Coastal Program, Implementation Section 20.68.060.G, because the project involves installing a new septic system.
- A Conditional Use Permit is required under the Marin County Local Coastal Program, Implementation Section 20.62.080.D Table 5-3-c because the project involves the creation of multi-family housing in a Coastal Zone.
- A Use Conditional Permit is required under the Marin County Local Coastal Program, Implementation Section 20.62.080.D Table 5-3-e because the project involves the installation of a public utility facility (PG&E) transformer on a private property.

#### **Applicable Housing Laws:**

Government Code Section 65589.5(h)(2), commonly referred to as the Housing Accountability Act, provides that a Housing development project a use consisting of "[m]ixed-use developments consisting of residential and nonresidential uses with at least two-thirds of the square footage designated for residential use." Since the proposed consists of two-thirds residential, the project is considered a housing development project for purposes of compliance with the Housing Accountability Act.

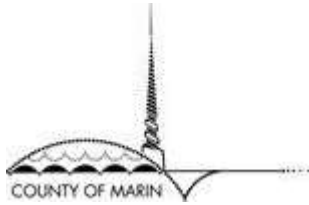
Section 65589.5(j) of the Housing Accountabilit Act requires that when a proposed housing development project complies with applicable, objective general plan and zoning standards, a local agency may not deny the project or approve it with reduced density unless the agency makes written findings supported by substantial evidence that:

- a. The development would have a specific adverse impact on public health or safety unless disapproved or approved at a lower density; and
- b. There is no feasible method to satisfactorily mitigate or avoid the specific adverse impact, other than the disapproval or approval at a lower density.

Because the Base Project would comply with applicable, objective Countywide Plan and zoning standards, §65589.5(j) applies to this project. No significant, quantifiable, direct and unavoidable impacts, based on objective, identified written public health or safety standards, polices, or conditions, have been identified by staff. The project includes construction of five dwelling units.

Let me know if you have any questions or would like discuss this further.

Regards,  
Manny



---

**Immanuel Bereket** | Principal Planner  
Housing Specialist  
County of Marin | Community Development Agency  
3501 Civic Center Drive, Suite 308 | San Rafael, CA 94903  
(415) 473-2755  
[lbereket@marincounty.org](mailto:lbereket@marincounty.org)

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**From:** Heather Furmidge <[heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com)>  
**Sent:** Saturday, January 6, 2024 8:27 AM  
**To:** Morgan Patton <[Morgan.Patton@MarinCounty.gov](mailto:Morgan.Patton@MarinCounty.gov)>; Immanuel Bereket <[Immanuel.Bereket@MarinCounty.gov](mailto:Immanuel.Bereket@MarinCounty.gov)>  
**Subject:** Re: A question and Happy New Year!

You don't often get email from [heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com). [Learn why this is important](#)

Thanks for the introduction, Morgan and Hi Manny!  
Manny, below is the email I sent to Morgan with some questions specifically about circulation issues with the gas station project in Point Reyes Station. Hope you can help me understand where this project stands, what the timeline of steps/approvals is and where on the County's website information is posted - specifically about how vehicles and pedestrians will be moving across/through these busy intersections.

Many thanks,  
Heather Furmidge  
Point Reyes Station

Hi Morgan,

Happy Almost New Year!! I hope you're settling into your new job well and I imagine that you're finding it challenging and super-interesting!

I have a question for you that I'm hoping you can help me with. The Point Reyes Village Assn has been following the plans submitted by the Point Reyes Gas Station owner to add/modify 5 housing units

(yay!) and a convenience food store (slightly less yay) to the existing footprint of the station. I'm a Village Assn member, so that's where I've heard some about this project.

What I could use your help with is understanding what kinds of permits and approvals are needed for this project and what the process and timeline are. Also, where could I find information or anything about it on Marin County's website?

Specifically, one of my concerns about the project (shared by others) is the pedestrian and vehicle impacts of the increased density of retail use. We are all aware that the corner of Hwy 1 and Mesa Rd is one of the busiest in town - and that the intersection of A and 4th Sts where Hwy 1 turns left confuses tourists and pretty much everyone else. In addition, gas station egress and ingress is dangerous and confusing as it stands now.

One of the things I'm hoping for, which I haven't seen any evidence of (so if it exists, great!) is a congestion and/or circulation study so we can all understand how pedestrians and the residents of the new housing units can safely navigate the new layout (including the kids from the school who will no doubt be eager visitors), where cars will be parked, and how large vehicles towing things like chippers will get in and out of the pumping bays. Will there be crosswalks and sidewalks along that side of the street, which don't exist currently?

Your guidance would be much appreciated - including pointing me to someone who can help with my questions.

Hoping that you and your family are planning warm, safe, joy-filled holidays and here's to 2024!

Thanks,  
Heather  
415-██████████

On Fri, Jan 5, 2024 at 9:38 AM Morgan Patton <[Morgan.Patton@marincounty.gov](mailto:Morgan.Patton@marincounty.gov)> wrote:

Hi Heather,

Happy to help!

I have requested that the planner, Immanuel "Manny" Bereket reach out to you. I passed along your email since he will be able to go through each of your questions and provide accurate and up to date information. He should be reaching out to you today or early next week.

Manny's contact information: [immanuel.bereket@marincounty.gov](mailto:immanuel.bereket@marincounty.gov), 415-473-2755

Wishing you a Happy New Year!! 😊

Morgan Patton  
Aide to Supervisor Dennis Rodoni

she/her  
Marin County Board of Supervisors  
3501 Civic Center Drive, Suite 329  
San Rafael CA 94903  
415-473-3246

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>



**From:** Heather Furmidge <[heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com)>  
**Sent:** Friday, January 5, 2024 8:52 AM  
**To:** Morgan Patton <[Morgan.Patton@MarinCounty.gov](mailto:Morgan.Patton@MarinCounty.gov)>  
**Subject:** Re: A question and Happy New Year!

You don't often get email from [heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com). [Learn why this is important](#)

Thanks Morgan! Great to hear from you and many thanks.  
Here's to 2024!  
Heather

On Jan 4, 2024, at 4:29 PM, Morgan Patton <[Morgan.Patton@marincounty.gov](mailto:Morgan.Patton@marincounty.gov)> wrote:

Hi Heather,

Happy New Year! I hope you had a wonderful holiday. I am working on this and will circle back tomorrow with additional information. Just back to the office today. 😊

Morgan Patton  
Aide to Supervisor Dennis Rodoni  
she/her  
Marin County Board of Supervisors  
3501 Civic Center Drive, Suite 329  
San Rafael CA 94903  
415-473-3246

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>

<[image001.png](#)>

**From:** Heather Furmidge <[heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com)>  
**Sent:** Sunday, December 31, 2023 10:17 AM  
**To:** Morgan Patton <[Morgan.Patton@MarinCounty.gov](mailto:Morgan.Patton@MarinCounty.gov)>; Heather Furmidge

<[heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com)>

**Subject:** A question and Happy New Year!

You don't often get email from [heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com). [Learn why this is important](#)

Hi Morgan,

Happy Almost New Year!! I hope you're settling into your new job well and I imagine that you're finding it challenging and super-interesting!

I have a question for you that I'm hoping you can help me with. The Point Reyes Village Assn has been following the plans submitted by the Point Reyes Gas Station owner to add/modify 5 housing units (yay!) and a convenience food store (slightly less yay) to the existing footprint of the station. I'm a Village Assn member, so that's where I've heard some about this project.

What I could use your help with is understanding what kinds of permits and approvals are needed for this project and what the process and timeline are. Also, where could I find information or anything about it on Marin County's website?

Specifically, one of my concerns about the project (shared by others) is the pedestrian and vehicle impacts of the increased density of retail use. We are all aware that the corner of Hwy 1 and Mesa Rd is one of the busiest in town - and that the intersection of A and 4th Sts where Hwy 1 turns left confuses tourists and pretty much everyone else. In addition, gas station egress and ingress is dangerous and confusing as it stands now.

One of the things I'm hoping for, which I haven't seen any evidence of (so if it exists, great!) is a congestion and/or circulation study so we can all understand how pedestrians and the residents of the new housing units can safely navigate the new layout (including the kids from the school who will no doubt be eager visitors), where cars will be parked, and how large vehicles towing things like chippers will get in and out of the pumping bays. Will there be crosswalks and sidewalks along that side of the street, which don't exist currently?

Your guidance would be much appreciated - including pointing me to someone who can help with my questions.

Hoping that you and your family are planning warm, safe, joy-filled holidays and here's to 2024!

Thanks,  
Heather

415-[REDACTED]

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January 17, 2024

Supervisor Dennis Rodoni

3501 Civic Center Dr.

San Rafael, CA 94903

Dear Supervisor Rodoni,

The Marin Horse Council (MHC) is writing to encourage you to modify the County's plans to remodel the only gas station in Pt. Reyes Station.

Currently, the gas station's fuel pumps are accessible to trucks with horse trailers, albeit in a very awkward manner. Under the proposed plan, many equestrians driving trucks and trailers will no longer be able to access these pumps at all. In addition, West Marin parks attract equestrians from all over California and beyond – most who camp at local facilities. A nearby and accessible vehicle fuel source is essential to support this activity – which in turn supports a thriving local economy. Likewise, having a local fuel source also enables cargo trucks, arborists, and those hauling boats and landscaping materials, etc. to serve local residents and visitors.

Perhaps most importantly, in the event of another natural disaster at the Seashore, a local and accessible source of fuel simply must be readily available for the larger vehicles of the first responders.

MHC is concerned that the County has decided that none of the proposed changes to the gas station require a traffic study. We think that a traffic/congestion study is *absolutely* necessary as the proposed layout will result in a longer back up of vehicles onto the road – especially on weekends and holidays.

In summary, MHC sincerely hopes that the County will reconsider some of its proposed changes to the gas station property in Pt Reyes Station and make it more accessible to equestrians, local merchants, service providers and first responders. To not take them into consideration, could result in increased traffic congestion. This in turn, could deter those who visit and provide services to Pt Reyes Station and its neighboring parks to spend their time elsewhere. This would be a hardship on the local economy and a loss to the community.

Thank you for your consideration,

*Amory Willis*

Amory Willis, President Marin Horse Council

Cc: Linda Novy, Judy Teichman, Pamela Bridges, Morgan Patton, Immanuel Bereket, Maurice Armstrong



Hello Julie.

We look forward to the zoom meeting with you 1/15/2024.

The following are questions and concerns from the community we would like to discuss with you.

1. The original 2019 plans for the remodel had a smaller market and was to be more bicycle-centric. The new plans are much larger and have a major impact on the corner. as this is the first franchise in town, we are concerned about lighting (both interior and exterior), signage, and hours of operation.

2. The town supports the 4 apartments in the rear of the building which are somewhat distanced from the gas station activity. Concerns have been raised regarding the front apartment and proximity to gas station. This apartment bedroom is 6' from the gas pumping area and car line up. Are there any California health regulations or safety standards applicable to this apartment? Could you tell us which apartment is to be affordable?

3. The existing area selling bagged chips and snacks is 215 sq ft and serves no freshly prepared food. The proposed minimart is 1,950 sq ft and will sell prepared foods, soda fountain drinks, and coffee. This minimart will generate "to go" trash (an ongoing issue in our village) which should be handled on the property with adequate garbage bins. Before purchasing any to-go cutlery, cups or containers, we would suggest that you connect with the Marin County consultants that are helping food purveyors comply with our new Food Container Ordinance. (for help to transition to reusables or compostable options, Susan Hopp [hlpearth@fastmail.fm](mailto:hlpearth@fastmail.fm) and Jinesee Reynolds [jrey94925@gmail.com](mailto:jrey94925@gmail.com)).

4. We do believe a circulation study should be performed and traffic patterns reviewed. That is an extremely busy intersection even now without a mini mart or housing complex. There is no existing safe access for pedestrians to the minimart, or the apartments. The existing cashier room does not generate foot traffic. We have heard from people in town concerned about the safety entering or leaving, and possible encroachment to CalTrans right of way on highway 1. Local workers with boats, chippers, garden trucks and large trailers are worried they cannot adequately access the pumps with the new handicap parking (corner of A and highway 1) blocking the turn. The 2 parallel parking slots in front of the minimart appear impossible to actually enter and park while cars are filling up.

## Immanuel Bereket

---

**From:** Stephen Antonaros <santonaros@gmail.com>  
**Sent:** Monday, January 15, 2024 12:07 PM  
**To:** Immanuel Bereket  
**Subject:** Pt Reyes Gas Station - DPW

You don't often get email from santonaros@gmail.com. [Learn why this is important](#)

Manny,

There is growing concern about the lack of review by DPW of the issues regarding intensification of vehicular and pedestrian traffic from the larger store and additional parking spaces proposed under the gas station renovation project.

As a result, there will likely be calls for the plans to be sent back to DPW for further review of these matters.

My questions are as follows:

- 1) Would it be better to have the permit sent back to DPW now and the hearing postponed?, or,
- 2) What could the DZA do at the hearing that would address the concerns that are DPW domain issues?
- 3) If the DZA approves the permit at the hearing, what are the appeal rights people have? and
- 4) Is an appeal the best way to address these questions that are not going away?

Please let me know as soon as possible. A phone call is fine as well.

Steve Antonaros

President

*Point Reyes Station Village Association*

415-864-2261

## Immanuel Bereket

---

**From:** Stephen Antonaros <santonaros@gmail.com>  
**Sent:** Tuesday, January 16, 2024 9:16 AM  
**To:** Immanuel Bereket  
**Subject:** Re: Pt Reyes Gas Station - DPW

Manny,

Thank you for forwarding all of the responses from DPW. For some reason I only received the first one.

The main point, from the community's perspective, is that DPW is not reviewing vehicular ingress and egress from the many points this parcel allows vehicles to cross. With no sidewalks and no clear curb cuts, the project will intensify egress issues all around the three abutting streets.

This is really the one issue that keeps coming up in the community and that is that this will be a more intensive use not less than the current one, especially in terms of how vehicles ingress and egress. The interpretation used by Planning and DPW that residential is less intensive and there is less commercial use proposed are all technically accurate but not in actuality.

The current commercial uses are minimal, mostly vacant and unused for years and create relatively low levels of traffic which still can create gridlock issues around all the frontages during tanker filling and customers queued up for gas. The one or two current residents do not have cars. The new use will add many more trips to a larger market, active parking access from all streets and the market will be expanding the sale of propane in tanks, which require vehicles to park and carry tanks into the store. All of this traffic, vehicular and pedestrian is now channeled through one entry door where now there are multiple retail doors, separated from each other.

I am just giving you a heads up that at the hearing these issues will be brought up although I do not intend to be there. I would recommend the approval have some language that allows review of traffic issues at some future point or some response from DPW about traffic in and out of all the possible configurations.

Steve Antonaros

President

*Point Reyes Station Village Association*

On Tue, Jan 16, 2024 at 8:47 AM Immanuel Bereket <[Immanuel.Bereket@marincounty.gov](mailto:Immanuel.Bereket@marincounty.gov)> wrote:

Stephen,

I don't concur with your assertion that DPW did not review the plans. It is incorrect. They have received these plans for nearly a year. Please see their memorandums in reviewing these plans for over a year.

Manny

---

**From:** Stephen Antonaros <[santonaros@gmail.com](mailto:santonaros@gmail.com)>  
**Sent:** Monday, January 15, 2024 12:07 PM  
**To:** Immanuel Bereket <[Immanuel.Bereket@MarinCounty.gov](mailto:Immanuel.Bereket@MarinCounty.gov)>  
**Subject:** Pt Reyes Gas Station - DPW

You don't often get email from [santonaros@gmail.com](mailto:santonaros@gmail.com). [Learn why this is important](#)

Manny,

There is growing concern about the lack of review by DPW of the issues regarding intensification of vehicular and pedestrian traffic from the larger store and additional parking spaces proposed under the gas station renovation project.

As a result, there will likely be calls for the plans to be sent back to DPW for further review of these matters.

My questions are as follows:

- 1) Would it be better to have the permit sent back to DPW now and the hearing postponed?, or,
- 2) What could the DZA do at the hearing that would address the concerns that are DPW domain issues?
- 3) If the DZA approves the permit at the hearing, what are the appeal rights people have? and
- 4) Is an appeal the best way to address these questions that are not going away?

Please let me know as soon as possible. A phone call is fine as well.

Steve Antonaros

President

*Point Reyes Station Village Association*

415-864-2261

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## Immanuel Bereket

---

**From:** bobbil@sonic.net  
**Sent:** Saturday, January 13, 2024 4:24 PM  
**To:** Immanuel Bereket  
**Subject:** gas station project

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This is a bad idea ! It will cause more traffic in a already dangerous inter section, we do not need another store,

building an apartment six feet from gas pumps is a heath hazard . We do need more housing but this is a terrible idea !!

Please do not approve this plan !--

Bobbi Loeb

## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Tuesday, January 16, 2024 9:45 PM  
**To:** julie van aylea  
**Cc:** Stephen Antonaros  
**Subject:** hello

[You don't often get email from p.bridges@mac.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

sorry.

a question from an A street resident next to MALT, she lives directly across from the proposed 1000 g propane tank.

will this tank be used for filling private portable propane tanks? or will RV's be pulling up to have storage tanks filled?  
if so, where is parking to accommodate RV's?

pamela bridges

## Immanuel Bereket

---

**From:** pamelabridges <p.bridges@mac.com>  
**Sent:** Thursday, January 11, 2024 3:10 PM  
**To:** Maurice Armstrong  
**Cc:** steve Antonaros  
**Subject:** point reyes gas station  
**Attachments:** hello Julie.docx

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hello mr. armstrong,

i am including some questions that steve atonaros and i will discuss via julie and her team zoom next monday prior to the county meeting.

of note the lack of traffic study from the DPW .

comments:

the present use of the gas station is

gas pumps, 215 sq ft cashier office which sells bagged chips and canned soda, a seldomly used art studio ( not open to the public for sales) , and

the Blue Water Kayak office. Blue Waters does a majority of bookings online, and has the office for visitors who may see the shop.

the proposed remodel is a minimart which is NINE times larger and is converted to prepared foods, salads, yogurt, coffee station, sodas and chips and minimart items.

this is a markedly different usage and will generate much more foot and car traffic than the present use.

the predicted delay of people pumping gas and going into the minimart to

get a coffee and burrito will hold up the flow and create more of a log jam than what now occurs in the summer, weekends and busy days.

we am requesting the DPW staff meet the design review members to walk the site together. We also wondering if CalTrans should be involved in this traffic/ circulation study.

the 2 parallel parking spots in front of the minimart are not practical in any way to enter, park or exit while cars are pumping gas.

the handicap parking spot on the corner blocks trucks or cars from safely entering the pumps.

there is no safe pedestrian access which is not really needed now since there is MINIMUM pedestrians going to the gas station,

but will be necessary if the proposed minimart goes forward.



thank you,  
we will see you at the county meeting 01/18/2024 @ 10:00 am  
please respond if you have any comments or questions

pamela bridges  
steve antonaros

design review  
point reyes village association

## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Tuesday, January 16, 2024 8:02 PM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni  
**Subject:** question re: gas station

I attempted to find marin county regulations re: sale of tobacco products ( cigarettes and oral chew tobacco) within 1500 or 1000 ft from a school.

has anyone in planning checked this out in terms of our west marin school and vicinity of the gas station?

the palace market does not sell any tobacco products.

thank you

pamela bridges

co-chair design review

point reyes village association

## Immanuel Bereket

---

**From:** C Dorinson <cdorinson@hotmail.com>  
**Sent:** Saturday, January 13, 2024 3:00 PM  
**To:** Maurice Armstrong; Immanuel Bereket; Morgan Patton; Dennis Rodoni; helpline@arb.ca.gov  
**Subject:** plan development of gas station in Pt Reyes Station, CA

You don't often get email from cdorinson@hotmail.com. [Learn why this is important](#)

I am writing as a concerned resident of Point Reyes Station about the proposed project to install a 1,980 square foot store and 5 apartments in the site of the current gas station building on the corner of Hwy One and Mesa Road in downtown Pt Reyes Station.

And I have learned you feel no Traffic Study is needed for this development. Perhaps that may be true by County or State legal standards, but I implore you to get out of your Civic Center office and drive out to Pt Reyes Station and spend a few hours sitting in a chair on the sidewalk next to Wells Fargo Bank and across from said gas station from 9am to 4pm on any upcoming weekend day of your choice to watch the hundreds of cars, trucks, trailers, etc., passing by along with dozens of bicyclists, several dozen motorcyclists, and even dozens of pedestrians trying to navigate their way around this particular one block area of our little town.

This part of town already has one of the most dangerous intersections in West Marin, and our town already has near to no parking available in that area. Yet you believe it is okay to put in a large franchise business selling all sorts of quick takeout food.

Where are its customers to park?

And how do they navigate to a parking place at this proposed business, around the many cars already pulling into and out of THE ONLY GAS STATION in West Marin?

And if they find another place in town to park and walk to this business, how do they safely cross the wide roadway while trying to dodge the large numbers of cyclists flying down the hill, the large groups of motorcyclists and automobile clubs out on their weekend rides, and drivers trying to pull into and out of the gas station?

I strongly suggest you make a site visit to this gas station and spend time in that part of our town to observe the traffic flows, parking, pedestrian and cyclist situation and more before approving this business for development.

And I don't want to even start on how close to gas pumps and gasoline storage tanks you want to place 5 residences for adults and children to live in. Seriously??

Cathleen Dorinson  
Point Reyes Station

## Immanuel Bereket

---

**From:** C Dorinson <cdorinson@hotmail.com>  
**Sent:** Saturday, January 13, 2024 3:27 PM  
**To:** Maurice Armstrong; Immanuel Bereket; Morgan Patton; Dennis Rodoni; helpline@arb.ca.gov  
**Subject:** plan development of gas station in Pt Reyes Station, CA

You don't often get email from cdorinson@hotmail.com. [Learn why this is important](#)

My second letter re this proposed project.

I have been told you feel there is no need for a traffic study because the development is going from totally commercial to 50% residential. Perhaps on a strictly square foot basis. However, you do not consider the huge increase of auto and pedestrian traffic coming to shop at the 1,980 sq ft convenience store. Much more than the gas station and 2 small businesses could ever draw now. I believe the commercial business will increase dramatically because of this expansion, not lessen.

Also, are you aware of where the gasoline storage tanks are located? Do you have any concerns about placing residences so close to these storage tanks and the gas pumps? Do you understand how flammable and explosive gasoline is? Do you believe there could never be a truck to lose its brakes coming down the hill into town and swerving over toward the gas station, hitting one or more pumps and blowing up the entire block? I know that can happen now, but there are not 5 families living on top of that potential situation right now.

We do not just have a cute, sleepy little town full of sweet family tourists visiting us occasionally. We regularly have double trailers, five or more bales high of hay or alfalfa heading out to feed the cattle on the ranches in West Marin, large metal trailers. two levels high, full of steers going to market, large tanker trucks full of fresh milk from the ranches, or full of propane, large school buses taking children from all over West Marin to their schools, large delivery trucks of food for the grocery or restaurants, large lumber and supply trucks delivering to the hardware store, construction worker's trucks by the dozens, utility and tree worker vehicles. And more I cannot remember at the moment. All of these, plus tourist's vehicles set up the possible scenario I described above. Or, if nothing else, simply adding to the congestion around the existing gas station. And you want to increase the traffic congestion, not just on the street in front, but on the actual plot of land the gas station and building sit upon.

Again I ask you to come sit for a while in our town and observe the traffic and parking situations before you consider approving this project.

Cathleen Dorinson  
Point Reyes Station

## Immanuel Bereket

---

**From:** Jeff Felix <felix2468@horizoncable.com>  
**Sent:** Sunday, January 14, 2024 8:43 AM  
**To:** Immanuel Bereket  
**Subject:** Gas Station expansion in PRS

[You don't often get email from felix2468@horizoncable.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Mr. Bweket

Regarding the expansion of the gas station here in PRS. I am concerned that with this expansion will result in the necessity of a traffic light on Mesa Rd. and HWY One and/or where HWY One curves in town, the block West of Mesa Rd..

Congestion is already becoming an issue in town. Parking is a problem. I would hate to see PRS become another tourist town like Carmel (got forbid). I also do not think the town has the septic capacity to accommodate more visitors and that will move the town to develop a sewer system and then the town as we know will cease to exist.

Change is inevitable. Of course. BUT, this change will be a paradigm shift in change And a bad one.

Jeff Felix  
171 Mesa Rd.  
PRS

## Immanuel Bereket

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**From:** Morgan Patton  
**Sent:** Tuesday, January 16, 2024 6:42 PM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni  
**Subject:** Fwd: Pt Reyes Gas Station

Morgan Patton  
Aide to Supervisor Dennis Rodoni  
she/her  
Marin County Board of Supervisors  
3501 Civic Center Drive, Suite 329  
San Rafael CA 94903  
415-473-3246

---

**From:** D G <dgilseth@gmail.com>  
**Sent:** Tuesday, January 16, 2024 3:33 PM  
**To:** Morgan Patton <Morgan.Patton@MarinCounty.gov>  
**Subject:** Pt Reyes Gas Station

You don't often get email from dgilseth@gmail.com. [Learn why this is important](#)

Hello, as a long time visitor and volunteer at PtReyes Natl Seashore, I know how difficult it is to get a truck and trailer into the one and only gas station in town. As unfortunate as some of the residents may feel, visitors to PTReyes keep the economy bustling. Also, the number of trucks and trailers that travel in and out of town, are absolutely necessary for deliveries to and from businesses. Please ensure access to this station is provided to trucks and trailers.

Thank you, Denise Gilseth

## Immanuel Bereket

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**From:** Morgan Patton  
**Sent:** Tuesday, January 16, 2024 6:43 PM  
**To:** Immanuel Bereket; Dennis Rodoni  
**Subject:** Fwd: Point Reyes Gas Station

Morgan Patton  
Aide to Supervisor Dennis Rodoni  
she/her  
Marin County Board of Supervisors  
3501 Civic Center Drive, Suite 329  
San Rafael CA 94903  
415-473-3246

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**From:** Sharon Vallejo <sharon@premierhce.com>  
**Sent:** Tuesday, January 16, 2024 5:38 PM  
**To:** Morgan Patton <Morgan.Patton@MarinCounty.gov>  
**Subject:** Point Reyes Gas Station

You don't often get email from sharon@premierhce.com. [Learn why this is important](#)

Dear Morgan,

I've been riding in West Marin for years and DEPEND on the gas station, especially since it offers diesel. The station needs to remain open and available to trucks and trailers for those who can't make the drive back "over the hill " to get gas!!

Many of these drivers are from out of the area and do not realize the distance to the next opportunity for gas,

I request that the decision to keep the gas station open to those who have trucks and trailers remain allowed to remain open. This is a service to the community!

Thank you.  
Sharon Vallejo

--  
**Sharon Vallejo, Broker Associate**  
Premier Homes & Country Estates



127 Fourth Street, Petaluma, CA 94952  
c: 707.953.4788  
[premierhce.com](http://premierhce.com)

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Chicago	Naples	Was
Dallas	Nashville	West
Denver	New York City	
Greenwich, CT	Philadelphia	



## Immanuel Bereket

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**Subject:** FW: DZA Hearing,

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**From:** Julie VanAlyea <julie@redwoodoil.net>

**Sent:** Wednesday, January 17, 2024 9:58 AM

**To:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>

**Cc:** Matt Donohue <mtonohue@transtechconsultants.com>; Maurice Armstrong <Maurice.Armstrong@MarinCounty.gov>

**Subject:** RE: DZA Hearing,

Manny

Please postpone the hearing for 2 weeks so we can rework the plans per our conversation.

Julie

## Immanuel Bereket

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**From:** Ron Wagner <ron.ronwagner@gmail.com>  
**Sent:** Monday, January 15, 2024 1:56 PM  
**To:** Dennis Rodoni  
**Cc:** Immanuel Bereket; Morgan Patton; Pamela Bridges, PRSVA, ; Bonnie Ruder; Ron Wagner  
**Subject:** Point Reyes Station Gas Station Project

You don't often get email from ron.ronwagner@gmail.com. [Learn why this is important](#)

Hello Dennis,

I offer summary because I'm sure you've been pounded with all the negative points this project contains. A simple summary at that !

There is Nothing Right about this project!

There is nothing "Point Reyes Station" about it! It is 100% Tourist oriented!

A face saving token low income housing unit doesn't make it Right!

I'd rather take this moment to ask you to use your office to reach out to the Planning Department and have them do their job as expected by this village.

And that is; to examine project documents in detail and not simply rubber stamp them as is so obviously apparent.

In fact Dennis, I think that the consequences of its outcome are important enough for you to consider making it a plank on your campaign trail ..... certainly important enough to have county Planners sit down at the same table with the PRSVA design team.

Please consider this email to be two negative votes towards the project as presented because it carries the signature of Bonnie Ruder also.

Thank you Dennis

Respectfully,

Ron Wagner and Bonnie Ruder

## Immanuel Bereket

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**From:** Bob Hunter <bolinas.hunters@sbcglobal.net>  
**Sent:** Tuesday, January 16, 2024 10:48 AM  
**To:** Dennis Rodoni; Morgan Patton; Immanuel Bereket; Maurice Armstrong  
**Subject:** Gas staion in Point Reyes

You don't often get email from bolinas.hunters@sbcglobal.net. [Learn why this is important](#)

Dear Supervisor Rodoni,

I am writting to express my concern about the new plans for the gas station in Point Reyes Station as it is the only place in West Marin where I can get fuel for my truck and horse trailer.

Do we really want people here to have to drive all the way to Novato to get fuel for their rigs ? Aren't we trying to reduce the amount of CO2 we produce ?

As it is I try to ride as close to home as possible and make fewer trips.

I'm sure there are others who pull trailer for work that would also need access to the station.

Thank you for your time,  
Lisa Herbert

## Immanuel Bereket

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**From:** Anne Sands <annedogtown@gmail.com>  
**Sent:** Tuesday, January 16, 2024 6:49 PM  
**To:** Dennis Rodoni; Morgan Patton; Immanuel Bereket; Maurice Armstrong  
**Cc:** Judy Teichman; loretta.n.murphy@gmail.com  
**Subject:** Point Reyes Gas Station remodel

You don't often get email from annedogtown@gmail.com. [Learn why this is important](#)

Dear Supervisor Rodoni, Morgan, Immanuel and Maurice,

I am writing today to express my concerns about the design and safety of the proposed remodel of Point Reyes Gas Station. Now that Bolinas has lost its gas station, the Point Reyes gas station will be the only one for many miles. Its proposed design and function have become even more in need of careful planning.

From my experience on the Marin County Planning Commission, as well as 40 years of driving around the Point Reyes Station area (many of those miles hauling large trailers), I highly recommend a **traffic study** be conducted to assess the impacts on traffic flow of changes in fuel pump access and proposed parking.

Having a reasonably accessible fueling station in Point Reyes Station has been essential to me and to my friends who are ranchers, equestrian business owners, contractors, landscapers, tree workers and fisherfolk who have large vehicles and often haul trailers or chippers as part of their professional services. Visitors with RV's will also be impacted.

Regarding a franchise snack bar, I believe there is no need for a franchise snack bar at the gas station as there are already several unique (and non-franchised) locally owned and managed coffee bars, bakeries, delis and restaurants within a short distance of this site.

Of course more housing is needed in West Marin. However, I believe more attention should be paid to health issues of having housing so close to fuel pumps.

Come and visit the site and observe the already limited access for large vehicles. Then imagine what the remodel will mean for vehicle and trailer access and the resulting traffic congestion as drivers attempt to safely maneuver to allow access to the fuel pumps.

Thank you for considering my concerns. I look forward to hearing about a modified plan addressing these concerns and those of others who will be directly impacted.

Anne Sutherland Sands

Past President of the Marin County Planning Commission  
Current Manager Woodville Ranch in Dogtown  
5755 Highway One  
Bolinas, CA 94924  
415.868.1618 Landline  
415.847.0678 TEXT only  
[annedogtown@gmail.com](mailto:annedogtown@gmail.com)

## Immanuel Bereket

---

**From:** Judy Teichman <judyteichman@gmail.com>  
**Sent:** Tuesday, January 16, 2024 7:55 PM  
**To:** Immanuel Bereket; Maurice Armstrong  
**Cc:** Dennis Rodoni; morgan@eacmarin.org; Don Dickenson  
**Subject:** Point Reyes Gas Station Remodel - Traffic Study is Essential

[You don't often get email from judyteichman@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Immanuel Berekat and Maurice Armstrong:

It is essential that a traffic study be conducted on the proposed remodel of the Point Reyes Gas Station.

The gas station in Point Reyes Station is the only gas station in West Marin. It is the primary source of fuel for people who live on the coast from Stinson Beach north to Marshall. Access is particularly important for those of us who live out here and use vehicles that haul trailers, e.g., equestrians, landscapers, people with boats, and others. It is also an essential source of fuel for visitors driving recreational vehicles. The gas station is located at a 90 degree turn on Highway 1 leading into and out of "downtown" Point Reyes. It's difficult today to access the fuel pumps on the highway side of the pump aisle with a large trailer in the garage's current configuration on weekdays and often impossible on holiday weekends. There is no space for vehicles to wait for access to the fuel pumps without blocking Mesa Road on the side of the station, or the 90 degree turn of Highway One in front of the station. There will be even less access to the fuel pumps 24/7 if vehicles are parked at the fuel pumps while occupants run into a convenience store.

In all respects, I join in the email Anne Sands sent on this same date expressing concern about the design and safety of the proposed remodel of the Point Reyes Gas Station.

Respectfully,

Judy Teichman  
145 Mesa Road  
Point Reyes Station

## Immanuel Bereket

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**From:** Stephen Antonaros <santonaros@gmail.com>  
**Sent:** Wednesday, January 31, 2024 12:52 PM  
**To:** Immanuel Bereket  
**Cc:** Julie VanAlyea  
**Subject:** Correct or incorrect plans posted?

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Manny,

Per my voicemail earlier today, the attached plans are downloaded from the Sydriel website and dated 1/30/24 per the notation next to the link. but I can not find a revision date on the plans themselves. Sheet 2 seems to either have reverted to the earlier scheme or is incorrect.

However, there was an earlier plan you sent of the proposed revised parking and spaces moved from the front of the store entryway.

Which is the one subject to the hearing? Please advise.

Thank you

*Stephen Antonaros, Architect  
2261 Market Street #324  
San Francisco, CA 94114  
415-864-2261*

## Immanuel Bereket

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**From:** Stephen Antonaros <santonaros@gmail.com>  
**Sent:** Wednesday, January 31, 2024 4:47 PM  
**To:** Immanuel Bereket  
**Cc:** Julie VanAlyea  
**Subject:** Need to review window design  
**Attachments:** Gas.station\_Windows.pdf

You don't often get email from santonaros@gmail.com. [Learn why this is important](#)

Manny,

The attached sketch details two concerns I have as an architect that are not being addressed by Planning's Design Review or by the project sponsor. This concern is separate from my other roles I have in the community.

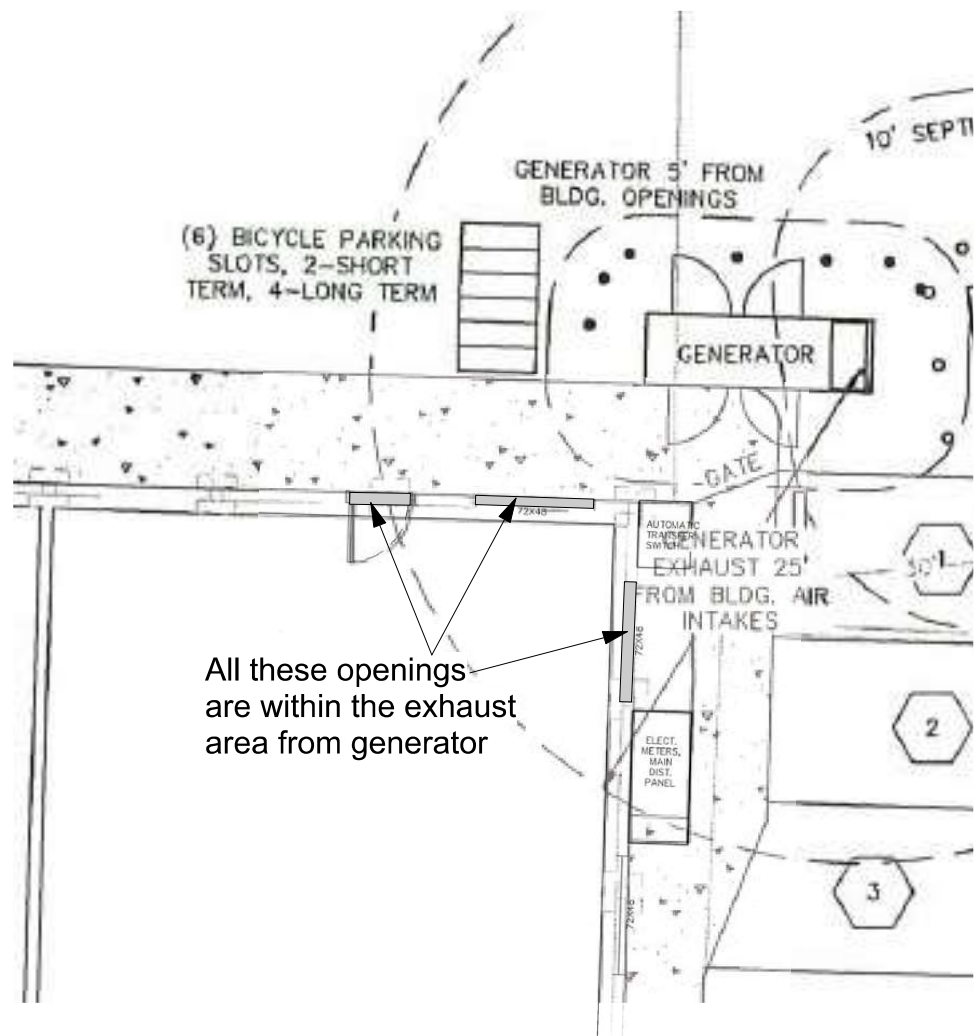
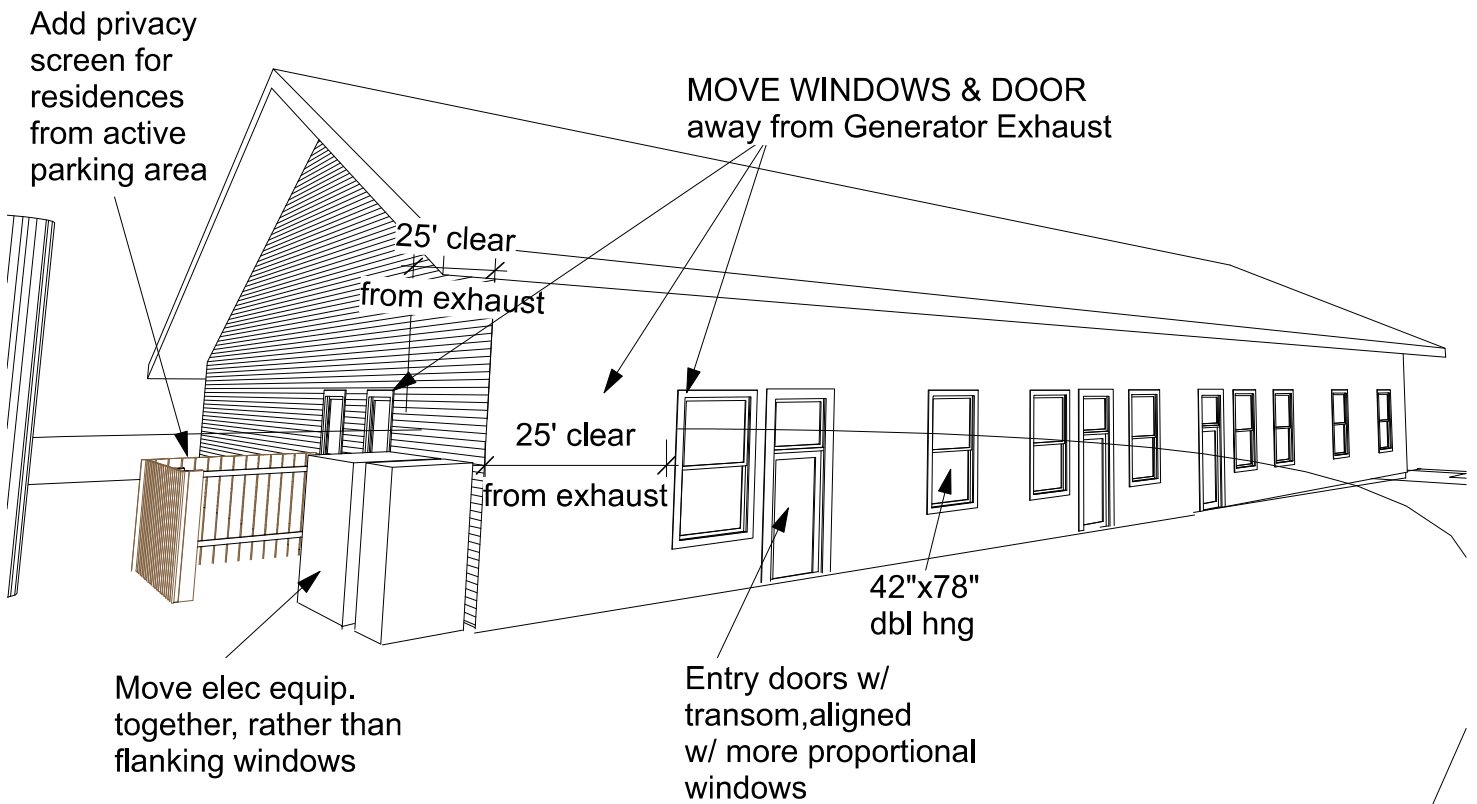
I do not want to see the new dwellings look out of place with the surrounding residential architecture and these suggestions are easy to implement and address a Code violation that is on the plans now.

1) On the plans slated for approval there is a clear note and dimension indicating no operable windows; however, three of the main operable openings are within that exclusion zone, including the entry door. They can be easily reshaped and relocated. See attached sketch.

2) The proposed windows appear to mimic the size of the historic windows that are to be removed, however, they no longer make sense since the use is now residential and those are warehouse windows not intended to add lots of light and air. I recommend the owner revisits the design of these new openings to address the above issue and also to create more residentially scaled windows which are more in keeping with the other homes largely built during the same period, tall and narrow and high header heights. The dwellings could have very high ceilings and taller windows will allow lower panes to be curtained while leaving the upper ones open for more light. Considering that all residents can walk past neighbors' windows, this approach will maintain privacy while increasing light and views to the sky from the interiors.

While I understand you are expediting the approval of this project, there are many small details that could improve the dwelling design.

Steve Antonaros, Architect  
PO Box 1142  
Point Reyes Station, CA 94956  
(415) 864-2261



All these openings are within the exhaust area from generator



## Immanuel Bereket

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**From:** Susan Brayton <susanbrayton@horizoncable.com>  
**Sent:** Wednesday, January 31, 2024 9:15 PM  
**To:** Immanuel Bereket  
**Subject:** Gas station conversion in Point Reyes Station

[You don't often get email from susanbrayton@horizoncable.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

To Immanuel Bereket, Principal Planner, Marin County

Dear Immanuel Bereket,

Having lived in this community for 46 years, the proposed changes to the gas station in Point Reyes Station are catastrophic given the historic nature of this West Marin Community - you have heard plenty about the competition involved with local community businesses, traffic congestion on an already busy and confusing corner, which is especially so to visitors to this old Western town and to the Point Reyes National Seashore, and the danger to school children who walk and bike this route to West Marin School. Even in its present state, this is already a dangerous corner. It is beyond belief that your County colleagues, planners and commissioners are oblivious to these points, so please listen to the presentations by others in this community as well as the Point Reyes Village Association.

Personally, I question the health of living accommodations being constructed at a gas station in this day and age and with one affordable unit. I am continually being disappointed by Marin County Government's lack of care and information about West Marin.

To fill the County affordable housing quota, instead make headway by imposing substantial fines to owners of unused/unoccupied buildings or insist on their renovation. Note the ghost buildings in Point Reyes Station: namely the former Coast Guard property, the Grandi Building on Main Street, the De Carli homes on Highway One, and the Red Green Barn on Mesa Road.

Please stop action on this gas station plan and put your time to a more constructive purpose.

Thank you for your attention to this matter.

Susan Brayton  
105 Vision Road  
Inverness, CA 94937

## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Wednesday, January 31, 2024 4:06 PM  
**To:** Immanuel Bereket  
**Subject:** 02/01 10:00 am / dza / gas station hearing @ civic center

[You don't often get email from p.bridges@mac.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

hello manny,

as I am sure you are well aware (!), we have a packet of concerns, questions, and action items for the project owner and county.

we will present it on thursday a.m.

is 1 copy sufficient, or do you need more?

would wednesday be better to receive the information? it would be late afternoon.

you have most of the comments/concerns from previous correspondence with design review and community members, however we wanted to have actionable items more clearly presented.

have you heard from the code enforcement office?

it would be so helpful to know IF the applicant plans on selling alcohol / and or tobacco, and if it is allowable.

several community members plan on coming to witness our county at work. is this an appropriate time for anyone to speak up?

please forward protocol for community comments.

thank you,

pamela bridges

## Immanuel Bereket

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**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Wednesday, January 31, 2024 5:08 PM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni  
**Subject:** Fwd: Health concerns at proposed residences at Gas Station  
**Attachments:** 2022\_Gas\_Station\_IWG\_Supplemental\_Policy\_Guidance (1).pdf; california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective (1).pdf

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

Begin forwarded message:

**From:** Pamalah MacNeily <[pamalah@bluewaterskayaking.com](mailto:pamalah@bluewaterskayaking.com)>  
**Subject:** Health concerns at proposed residences at Gas Station  
**Date:** January 31, 2024 at 5:06:20 PM PST  
**To:** pamela bridges <[p.bridges@mac.com](mailto:p.bridges@mac.com)>  
**Cc:** laura leek <[laura.l.arndt@att.net](mailto:laura.l.arndt@att.net)>

---

The Redwood Oil company at the Point Reyes Gas Station is proposing 5 full time residences within 25 to 50 feet of gasoline pumps. This type of mixed use has not been done anywhere in California. There is no other residence being put onto a working gas station. Other gas stations are being decommissioned to turn into residences. While, in the density of San Francisco, there are gas stations that are next door to residences. Even in the high density 19<sup>th</sup> Avenue, the residences are not ON the same lot as the gas station.

In the 2005 report from the Cal EPA and ARB, "Air Quality and Land Use Handbook: A Community Health Perspective" p. 30, ARB has written they recommend to " avoid siting new sensitive land use ( Residences, Schools, Daycare centers, playgrounds or medical facilities) within 300 feet of a large gasoline dispensing facility ( defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities. At this point, we do not know the throughput of Redwood Oil.

See Table 1-1 on page 4, or p. 30 for longer explanation.

The there is a CARB report: 2022 Gas Station Supplemental Report that indicates a 300 foot separation.

page 6 states that the Sources of emissions at a gas station are Loading, Breathing ( even when gas station closed), Fueling, Spillage and Hose Permeation. See Table 1, p. 6.

P. 7- CARB notes:

The proposed residences are also within 25 feet of a 1,000 gallon propane tank and a separate large generator. Two rental units will be inside of 25 feet to the exhaust of this equipment.

The problem is that this is such a novel mixed use that there are no regulations or zoning laws that have been developed. This would encourage Redwood Oil, which owns over 20 other gas stations, to create mixed use gas dispensing facilities with residential at other locations, or to have other companies try to do that also.

Best,

Attachments: 2022 Gas Station Industrywide Assessment Supplemental  
2005 Cal EPA/ARB: Air Quality and LandUse Handbook

# **AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE**



**April 2005**

California Environmental Protection Agency  
California Air Resources Board



# Air Agency Contacts

## Federal-

### U.S. EPA, Region 9

Phone: (866)-EPA-WEST  
Website: [www.epa.gov/region09](http://www.epa.gov/region09)  
Email: [r9.info@epa.gov](mailto:r9.info@epa.gov)

## -State-

### California Air Resources Board

Phone: (916) 322-2990 (public info)  
(800) 363-7664 (public info)  
(800) 952-5588 (complaints)  
(866)-397-5462 (env. justice)  
Website: [www.arb.ca.gov](http://www.arb.ca.gov)  
Email: [helpline@arb.ca.gov](mailto:helpline@arb.ca.gov)

## -Local-

### Amador County APCD

Phone: (209) 257-0112  
Website: [www.amadorapcd.org](http://www.amadorapcd.org)  
E-Mail: [jharris@amadorapcd.org](mailto:jharris@amadorapcd.org)

### Antelope Valley AQMD

Phone: (661) 723-8070  
Complaint Line: (888) 732-8070  
Website: [www.avaqmd.ca.gov](http://www.avaqmd.ca.gov)  
E-Mail: [bbanks@avaqmd.ca.gov](mailto:bbanks@avaqmd.ca.gov)

### Bay Area AQMD

Phone: (415) 749-5000  
Complaint Line: (800) 334-6367  
Website: [www.baaqmd.gov](http://www.baaqmd.gov)  
E-Mail: [webmaster@baaqmd.gov](mailto:webmaster@baaqmd.gov)

### Butte County AQMD

Phone: (530) 891-2882  
Website: [www.bcaqmd.org](http://www.bcaqmd.org)  
E-Mail: [air@bcaqmd.org](mailto:air@bcaqmd.org)

### Calaveras County APCD

Phone: (209) 754-6504  
E-Mail: [lgrewal@co.calaveras.ca.us](mailto:lgrewal@co.calaveras.ca.us)

### Colusa County APCD

Phone: (530) 458-0590  
Website: [www.colusanet.com/apcd](http://www.colusanet.com/apcd)  
E-Mail: [ccair@colusanet.com](mailto:ccair@colusanet.com)

### El Dorado County AQMD

Phone: (530) 621-6662  
Website: [www.co.el-dorado.ca.us/emd/apcd](http://www.co.el-dorado.ca.us/emd/apcd)  
E-Mail: [mcctaggart@co.el-dorado.ca.us](mailto:mcctaggart@co.el-dorado.ca.us)

### Feather River AQMD

Phone: (530) 634-7659  
Website: [www.fraqmd.org](http://www.fraqmd.org)  
E-Mail: [fracmd@fracmd.org](mailto:fracmd@fracmd.org)

### Glenn County APCD

Phone: (530) 934-6500  
[http://www.countyofglenn.net/air\\_pollution\\_control](http://www.countyofglenn.net/air_pollution_control)  
E-Mail: [ktokunaga@countyofglenn.net](mailto:ktokunaga@countyofglenn.net)

### Great Basin Unified APCD

Phone: (760) 872-8211  
Website: [www.gbuapcd.org](http://www.gbuapcd.org)  
E-Mail: [gb1@greatbasinapcd.org](mailto:gb1@greatbasinapcd.org)

### Imperial County APCD

Phone: (760) 482-4606  
E-Mail: [reyesromero@imperialcounty.net](mailto:reyesromero@imperialcounty.net)

### Kern County APCD

Phone: (661) 862-5250  
Website: [www.kernair.org](http://www.kernair.org)  
E-Mail: [kcapcd@co.kern.ca.us](mailto:kcapcd@co.kern.ca.us)

### Lake County AQMD

Phone: (707) 263-7000  
Website: [www.lcaqmd.net](http://www.lcaqmd.net)  
E-Mail: [bohr@pacific.net](mailto:bohr@pacific.net)

### Lassen County APCD

Phone: (530) 251-8110  
E-Mail: [lassenag@psln.com](mailto:lassenag@psln.com)

### Mariposa County APCD

Phone: (209) 966-2220  
E-Mail: [air@mariposacounty.org](mailto:air@mariposacounty.org)

### Mendocino County AQMD

Phone: (707) 463-4354  
Website: [www.co.mendocino.ca.us/aqmd](http://www.co.mendocino.ca.us/aqmd)  
E-Mail: [mcaqmd@co.mendocino.ca.us](mailto:mcaqmd@co.mendocino.ca.us)

### Modoc County APCD

Phone: (530) 233-6419  
E-Mail: [modapcd@hdo.net](mailto:modapcd@hdo.net)

### Mojave Desert AQMD

Phone: (760) 245-1661  
(800) 635-4617  
Website: [www.mdagmd.ca.gov](http://www.mdagmd.ca.gov)

### Monterey Bay Unified APCD

Phone: (831) 647-9411  
(800) 253-6028 (Complaints)  
Website: [www.mbuapcd.org](http://www.mbuapcd.org)  
E-Mail: [dquetin@mbuapcd.org](mailto:dquetin@mbuapcd.org)

### North Coast Unified AQMD

Phone: (707) 443-3093  
Website: [www.ncuaqmd.org](http://www.ncuaqmd.org)  
E-Mail: [lawrence@ncuaqmd.org](mailto:lawrence@ncuaqmd.org)

### Northern Sierra AQMD

Phone: (530) 274-9360  
Website: [www.myairdistrict.com](http://www.myairdistrict.com)  
E-Mail: [office@myairdistrict.com](mailto:office@myairdistrict.com)

### Northern Sonoma County APCD

Phone: (707) 433-5911  
E-Mail: [nsc@sonic.net](mailto:nsc@sonic.net)

### Placer County APCD

Phone: (530) 889-7130  
Website: <http://www.placer.ca.gov/airpollution/airpolut.htm>  
E-Mail: [pcapcd@placer.ca.gov](mailto:pcapcd@placer.ca.gov)

### Sacramento Metro AQMD

Phone: (916) 874-4800  
Website: [www.airquality.org](http://www.airquality.org)  
E-Mail: [kshearer@airquality.org](mailto:kshearer@airquality.org)

### San Diego County APCD

Phone: (858) 650-4700  
Website: [www.sdapcd.org](http://www.sdapcd.org)

### San Joaquin Valley APCD

Phone: (559) 230-6000 (General)  
(800) 281-7003  
(San Joaquin, Stanislaus, Merced)  
(800) 870-1037  
(Madera, Fresno, Kings)  
(800) 926-5550  
(Tulare and Valley portion of Kern)  
Website: [www.valleyair.org](http://www.valleyair.org)  
E-Mail: [svapcd@valleyair.org](mailto:svapcd@valleyair.org)

### San Luis Obispo County APCD

Phone: (805) 781-5912  
Website: [www.slocleanair.org](http://www.slocleanair.org)  
E-Mail: [info@slocleanair.org](mailto:info@slocleanair.org)

### Santa Barbara County APCD

Phone (805) 961-8800  
Website: [www.sbcapcd.org](http://www.sbcapcd.org)  
Email us: [apcd@sbcapcd.org](mailto:apcd@sbcapcd.org)

### Shasta County AQMD

Phone: (530) 225-5789  
Website: [www.co.shasta.ca.us/Departments/ResourceMgmt/drm/aqmain.htm](http://www.co.shasta.ca.us/Departments/ResourceMgmt/drm/aqmain.htm)  
E-Mail: [scdrm@snowcrest.net](mailto:scdrm@snowcrest.net)

### Siskiyou County APCD

Phone: (530) 841-4029  
E-Mail: [ebeck@siskiyou.ca.us](mailto:ebeck@siskiyou.ca.us)

### South Coast AQMD

Phone: (909) 396-2000  
Complaint Line: 1-800-CUT-SMOG  
Website: [www.aqmd.gov](http://www.aqmd.gov)  
Email: [bwallerstein@aqmd.gov](mailto:bwallerstein@aqmd.gov)

### Tehama County APCD

Phone: (530) 527-3717  
Website: [www.tehcoapcd.net](http://www.tehcoapcd.net)  
Email: [general@tehcoapcd.net](mailto:general@tehcoapcd.net)

### Tuolumne County APCD

Phone: (209) 533-5693  
E-Mail: [bsandman@co.tuolumne.ca.us](mailto:bsandman@co.tuolumne.ca.us)

### Ventura County APCD

Phone: (805) 645-1400  
Complaint Line: (805) 654-2797  
Website: [www.vcapcd.org](http://www.vcapcd.org)  
E-Mail: [info@vcapcd.org](mailto:info@vcapcd.org)

### Yolo-Solano AQMD

Phone: (530) 757-3650  
Website: [www.ysaqmd.org](http://www.ysaqmd.org)  
Email: [administration@ysaqmd.org](mailto:administration@ysaqmd.org)

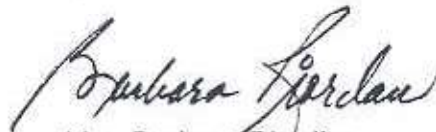
## ***To My Local Government Colleagues....***

I am pleased to introduce this informational guide to air quality and land use issues focused on community health. As a former county supervisor, I know from experience the complexity of local land use decisions. There are multiple factors to consider and balance. This document provides important public health information that we hope will be considered along with housing needs, economic development priorities, and other quality of life issues.

An important focus of this document is prevention. We hope the air quality information provided will help inform decision-makers about the benefits of avoiding certain siting situations. The overarching goal is to avoid placing people in harm's way. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. What is encouraging is that the health risk is greatly reduced with distance. For that reason, we have provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and land uses such as residences.

Land use decisions are a local government responsibility. The Air Resources Board's role is advisory and these recommendations do not establish regulatory standards of any kind. However, we hope that the information in this document will be seriously considered by local elected officials and land use agencies. We also hope that this document will promote enhanced communication between land use agencies and local air pollution control agencies. We developed this document in close coordination with the California Air Pollution Control Officers Association with that goal in mind.

I hope you find this document both informative and useful.



Mrs. Barbara Riordian  
Interim Chairman  
California Air Resources Board

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## **Acknowledgments**

The ARB staff would like to acknowledge the exceptional contributions made to this document by members of the ARB Environmental Justice Stakeholders Group. Since 2001, ARB staff has consistently relied on this group to provide critical and constructive input on implementing the specifics of ARB's environmental justice policies and actions. The Stakeholders Group is convened by the ARB, and comprised of representatives from local land use and air agencies, community interest groups, environmental justice organizations, academia, and business. Their assistance and suggestions throughout the development of this Handbook have been invaluable.

## Executive Summary

The Air Resources Board's (ARB) primary goal in developing this document is to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. Also, ARB community health risk assessments and regulatory programs have produced important air quality information about certain types of facilities that should be considered when siting new residences, schools, day care centers, playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.

Focusing attention on these siting situations is an important preventative action. ARB and local air districts have comprehensive efforts underway to address new and existing air pollution sources under their respective jurisdictions. The issue of siting is a local government function. As more data on the connection between proximity and health risk from air pollution become available, it is essential that air agencies share what we know with land use agencies. We hope this document will serve that purpose.

The first section provides ARB recommendations regarding the siting of new sensitive land uses near freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities. This list consists of the air pollution sources that we have evaluated from the standpoint of the proximity issue. It is based on available information and reflects ARB's primary areas of jurisdiction – mobile sources and toxic air contaminants. A key air pollutant common to many of these sources is particulate matter from diesel engines. Diesel particulate matter (diesel PM) is a carcinogen identified by ARB as a toxic air contaminant and contributes to particulate pollution statewide.

Reducing diesel particulate emissions is one of ARB's highest public health priorities and the focus of a comprehensive statewide control program that is reducing diesel PM emissions each year. ARB's long-term goal is to reduce diesel PM emissions 85% by 2020. However, cleaning up diesel engines will take time as new engine standards phase in and programs to accelerate fleet turnover or retrofit existing engines are implemented. Also, these efforts are reducing diesel particulate emissions on a statewide basis, but do not yet capture every site where diesel vehicles and engines may congregate. Because living or going to school too close to such air pollution sources may increase both cancer and non-cancer health risks, we are recommending that proximity be considered in the siting of new sensitive land uses.

There are also other key toxic air contaminants associated with specific types of facilities. Most of these are subject to stringent state and local air district regulations. However, what we know today indicates that keeping new homes and other sensitive land uses from siting too close to such facilities would provide additional health protection. Chrome platers are a prime example of facilities that should not be located near vulnerable communities because of the cancer health risks from exposure to the toxic material used during their operations.

In addition to source specific recommendations, we also encourage land use agencies to use their planning processes to ensure the appropriate separation of industrial facilities and sensitive land uses. While we provide some suggestions, how to best achieve that goal is a local issue. In the development of these guidelines, we received valuable input from local government about the spectrum of issues that must be considered in the land use planning process. This includes addressing housing and transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. All of these factors are important considerations. The recommendations in the Handbook need to be balanced with other State and local policies.

Our purpose with this document is to highlight the potential health impacts associated with proximity to air pollution sources so planners explicitly consider this issue in planning processes. We believe that with careful evaluation, infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level. One suggestion for achieving this goal is more communication between air agencies and land use planners. Local air districts are an important resource that should be consulted regarding sources of air pollution in their jurisdictions. ARB staff will also continue to provide updated technical information as it becomes available.

Our recommendations are as specific as possible given the nature of the available data. In some cases, like refineries, we suggest that the siting of new sensitive land uses should be avoided immediately downwind. However, we leave definition of the size of this area to local agencies based on facility specific considerations. Also, project design that would reduce air pollution exposure may be part of the picture and we encourage consultation with air agencies on this subject.

In developing the recommendations, our first consideration was the adequacy of the data available for an air pollution source category. Using that data, we assessed whether we could reasonably characterize the relative exposure and health risk from a proximity standpoint. That screening provided the list of air pollution sources that we were able to address with specific recommendations. We also considered the practical implications of making hard and fast recommendations where the potential impact area is large, emissions will be reduced with time, and air agencies are in the process of looking at options for additional emission control. In the end, we tailored our recommendations to minimize the highest exposures for each source category independently. Due to the large variability in relative risk in the source categories, we chose not to apply

a uniform, quantified risk threshold as is typically done in air quality permitting programs. Instead, because these guidelines are not regulatory or binding on local agencies, we took a more qualitative approach in developing the distance-based recommendations.

Where possible, we recommend a minimum separation between a new sensitive land use and known air pollution risks. In other cases, we acknowledge that the existing health risk is too high in a relatively large area, that air agencies are working to reduce that risk, and that in the meantime, we recommend keeping new sensitive land uses out of the highest exposure areas. However, it is critical to note that our implied identification of the high exposure areas for these sources does not mean that the risk in the remaining impact area is insignificant. Rather, we hope this document will bring further attention to the potential health risk throughout the impact area and help garner support for our ongoing efforts to reduce health risk associated with air pollution sources. Areas downwind of major ports, rail yards, and other inter-modal transportation facilities are prime examples.

We developed these recommendations as a means to share important public health information. The underlying data are publicly available and referenced in this document. We also describe our rationale and the factors considered in developing each recommendation, including data limitations and uncertainties. These recommendations are advisory and should not be interpreted as defined “buffer zones.” We recognize the opportunity for more detailed site-specific analyses always exists, and that there is no “one size fits all” solution to land use planning.

As California continues to grow, we collectively have the opportunity to use all the information at hand to avoid siting scenarios that may pose a health risk. As part of ARB’s focus on communities and children’s health, we encourage land use agencies to apply these recommendations and work more closely with air agencies. We also hope that this document will help educate a wider audience about the value of preventative action to reduce environmental exposures to air pollution.

## **1. ARB Recommendations on Siting New Sensitive Land Uses**

Protecting California's communities and our children from the health effects of air pollution is one of the most fundamental goals of state and local air pollution control programs. Our focus on children reflects their special vulnerability to the health impacts of air pollution. Other vulnerable populations include the elderly, pregnant women, and those with serious health problems affected by air pollution. With this document, we hope to more effectively engage local land use agencies as partners in our efforts to reduce health risk from air pollution in all California communities.

Later sections emphasize the need to strengthen the connection between air quality and land use in both planning and permitting processes. Because the siting process for many, but not all air pollution sources involves permitting by local air districts, there is an opportunity for interagency coordination where the proposed location might pose a problem. To enhance the evaluation process from a land use perspective, section 4 includes recommended project related questions to help screen for potential proximity related issues.

Unlike industrial and other stationary sources of air pollution, the siting of new homes or day care centers does not require an air quality permit. Because these situations fall outside the air quality permitting process, it is especially important that land use agencies be aware of potential air pollution impacts.

The following recommendations address the issue of siting "sensitive land uses" near specific sources of air pollution; namely:

- High traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

The recommendations for each category include a summary of key information and guidance on what to avoid from a public health perspective.

*Sensitive individuals refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses).*

We are characterizing sensitive land uses as simply as we can by using the example of residences, schools, day care centers, playgrounds, and medical facilities. However, a variety of facilities are encompassed. For example, residences can include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds could be play areas associated with parks or community centers.

In developing these recommendations, ARB first considered the adequacy of the data available for each air pollution source category. We assessed whether we could generally characterize the relative exposure and health risk from a proximity standpoint. The documented non-cancer health risks include triggering of asthma attacks, heart attacks, and increases in daily mortality and hospitalization for heart and respiratory diseases. These health impacts are well documented in epidemiological studies, but less easy to quantify from a particular air pollution source. Therefore, the cancer health impacts are used in this document to provide a picture of relative risk. This screening process provided the list of source categories we were able to address with specific recommendations. In evaluating the available information, we also considered the practical implications of making hard and fast recommendations where the potential impact area is large, emissions will be reduced with time, and air agencies are in the process of looking at options for additional emission control. Due to the large variability in relative risk between the source categories, we chose not to apply a uniform, quantified risk threshold as is typically done in regulatory programs. Therefore, in the end, we tailored our recommendations to minimize the highest exposures for each source category independently. Additionally, because this guidance is not regulatory or binding on local agencies, we took a more qualitative approach to developing distance based recommendations.

Where possible, we recommend a minimum separation between new sensitive land uses and existing sources. However, this is not always possible, particularly where there is an elevated health risk over large geographical areas. Areas downwind of ports and rail yards are prime examples. In such cases, we recommend doing everything possible to avoid locating sensitive receptors within the highest risk zones. Concurrently, air agencies and others will be working to reduce the overall risk through controls and measures within their scope of authority.

The recommendations were developed from the standpoint of siting new sensitive land uses. Project-specific data for new and existing air pollution sources are available as part of the air quality permitting process. Where such information is available, it should be used. Our recommendations are designed to fill a gap where information about existing facilities may not be readily available. These recommendations are only guidelines and are not designed to substitute for more specific information if it exists.

A summary of our recommendations is shown in Table 1-1. The basis and references<sup>1</sup> supporting each of these recommendations, including health studies, air quality modeling and monitoring studies is discussed below beginning with freeways and summarized in Table 1-2. As new information becomes available, it will be included on ARB's community health web page.

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<sup>1</sup>Detailed information on these references are available on ARB's website at: <http://www.ARB.ca.gov/ch/landuse.htm>.



**Table 1-1**

**Recommendations on Siting New Sensitive Land Uses  
Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical  
Facilities\***

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.</li> </ul>
Distribution Centers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).</li> <li>• Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.</li> </ul>
Rail Yards	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.</li> <li>• Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.</li> </ul>
Ports	<ul style="list-style-type: none"> <li>• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.</li> </ul>
Refineries	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.</li> </ul>
Chrome Platers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.</li> </ul>
Dry Cleaners Using Perchloro-ethylene	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.</li> <li>• Do not site new sensitive land uses in the same building with perc dry cleaning operations.</li> </ul>
Gasoline Dispensing Facilities	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.</li> </ul>

**\*Notes:**

- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

- Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
- A summary of the basis for the distance recommendations can be found in Table 1-2.

**Table 1-2**

**Summary of Basis for Advisory Recommendations**

Source Category	Range of Relative Cancer Risk <sup>1,2</sup>	Summary of Basis for Advisory Recommendations
Freeways and High-Traffic Roads	300 – 1,700	<ul style="list-style-type: none"> <li>In traffic-related studies, the additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70% drop off in particulate pollution levels at 500 feet.</li> </ul>
Distribution Centers <sup>3</sup>	Up to 500	<ul style="list-style-type: none"> <li>Because ARB regulations will restrict truck idling at distribution centers, transport refrigeration unit (TRU) operations are the largest onsite diesel PM emission source followed by truck travel in and out of distribution centers.</li> <li>Based on ARB and South Coast District emissions and modeling analyses, we estimate an 80 percent drop-off in pollutant concentrations at approximately 1,000 feet from a distribution center.</li> </ul>
Rail Yards	Up to 500	<ul style="list-style-type: none"> <li>The air quality modeling conducted for the Roseville Rail Yard Study predicted the highest impact is within 1,000 feet of the Yard, and is associated with service and maintenance activities. The next highest impact is between a half to one mile of the Yard, depending on wind direction and intensity.</li> </ul>
Ports	Studies underway	<ul style="list-style-type: none"> <li>ARB will evaluate the impacts of ports and develop a new comprehensive plan that will describe the steps needed to reduce public health impacts from port and rail activities in California. In the interim, a general advisory is appropriate based on the magnitude of diesel PM emissions associated with ports.</li> </ul>
Refineries	Under 10	<ul style="list-style-type: none"> <li>Risk assessments conducted at California refineries show risks from air toxics to be under 10 chances of cancer per million.<sup>4</sup></li> <li>Distance recommendations were based on the amount and potentially hazardous nature of many of the pollutants released as part of the refinery process, particularly during non-routine emissions releases.</li> </ul>
Chrome Platers	10-100	<ul style="list-style-type: none"> <li>ARB modeling and monitoring studies show localized risk of hexavalent chromium diminishing significantly at 300 feet. There are data limitations in both the modeling and monitoring studies. These include variability of plating activities and uncertainty of emissions such as fugitive dust. Hexavalent chromium is one of the most potent toxic air contaminants. Considering these factors, a distance of 1,000 feet was used as a precautionary measure.</li> </ul>
Dry Cleaners Using Perchloroethylene (perc)	15-150	<ul style="list-style-type: none"> <li>Local air district studies indicate that individual cancer risk can be reduced by as much as 75 percent by establishing a 300 foot separation between a sensitive land use and a one-machine perc dry cleaning operation. For larger operations (2 machines or more), a separation of 500 feet can reduce risk by over 85 percent.</li> </ul>

Source Category	Range of Relative Cancer Risk <sup>1,2</sup>	Summary of Basis for Advisory Recommendations
Gasoline Dispensing Facilities (GDF) <sup>5</sup>	<p>Typical GDF: Less than 10</p> <p>Large GDF: Between Less than 10 and 120</p>	<ul style="list-style-type: none"> <li>Based on the CAPCOA Gasoline Service Station Industry-wide Risk Assessment Guidelines, most typical GDFs (less than 3.6 million gallons per year) have a risk of less than 10 at 50 feet under urban air dispersion conditions. Over the last few years, there has been a growing number of extremely large GDFs with sales over 3.6 and as high as 19 million gallons per year. Under rural air dispersion conditions, these large GDFs can pose a larger risk at a greater distance.</li> </ul>

<sup>1</sup>For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million (e.g., 10 chances in a million).

<sup>2</sup>The estimated cancer risks are a function of the proximity to the specific category and were calculated independent of the regional health risk from air pollution. For example, the estimated regional cancer risk from air toxics in the Los Angeles region (South Coast Air Basin) is approximately 1,000 in a million.

<sup>3</sup>Analysis based on refrigerator trucks.

<sup>4</sup>Although risk assessments performed by refineries indicate they represent a low cancer risk, there is limited data on non-cancer effects of pollutants that are emitted from these facilities. Refineries are also a source of non-routine emissions and odors.

<sup>5</sup>A typical GDF in California dispenses under 3.6 million gallons of gasoline per year. The cancer risk for this size facility is likely to be less than 10 in a million at the fence line under urban air dispersion conditions.

A large GDF has fuel throughputs that can range from 3.6 to 19 million gallons of gasoline per year. The upper end of the risk range (i.e., 120 in a million) represents a hypothetical worst case scenario for an extremely large GDF under rural air dispersion conditions.

## **Freeways and High Traffic Roads**

Air pollution studies indicate that living close to high traffic and the associated emissions may lead to adverse health effects beyond those associated with regional air pollution in urban areas. Many of these epidemiological studies have focused on children. A number of studies identify an association between adverse non-cancer health effects and living or attending school near heavily traveled roadways (see findings below). These studies have reported associations between residential proximity to high traffic roadways and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children.

One such study that found an association between traffic and respiratory symptoms in children was conducted in the San Francisco Bay Area. Measurements of traffic-related pollutants showed concentrations within 300 meters (approximately 1,000 feet) downwind of freeways were higher than regional values. Most other studies have assessed exposure based on proximity factors such as distance to freeways or traffic density.

These studies linking traffic emissions with health impacts build on a wealth of data on the adverse health effects of ambient air pollution. The data on the effects of proximity to traffic-related emissions provides additional information that can be used in land use siting and regulatory actions by air agencies. The key observation in these studies is that close proximity increases both exposure and the potential for adverse health effects. Other effects associated with traffic emissions include premature death in elderly individuals with heart disease.

### **Key Health Findings**

- Reduced lung function in children was associated with traffic density, especially trucks, within 1,000 feet and the association was strongest within 300 feet. (Brunekreef, 1997)
- Increased asthma hospitalizations were associated with living within 650 feet of heavy traffic and heavy truck volume. (Lin, 2000)
- Asthma symptoms increased with proximity to roadways and the risk was greatest within 300 feet. (Venn, 2001)
- Asthma and bronchitis symptoms in children were associated with proximity to high traffic in a San Francisco Bay Area community with good overall regional air quality. (Kim, 2004)
- A San Diego study found increased medical visits in children living within 550 feet of heavy traffic. (English, 1999)

In these and other proximity studies, the distance from the roadway and truck traffic densities were key factors affecting the strength of the association with adverse health effects. In the above health studies, the association of traffic-related emissions with adverse health effects was seen within 1,000 feet and was

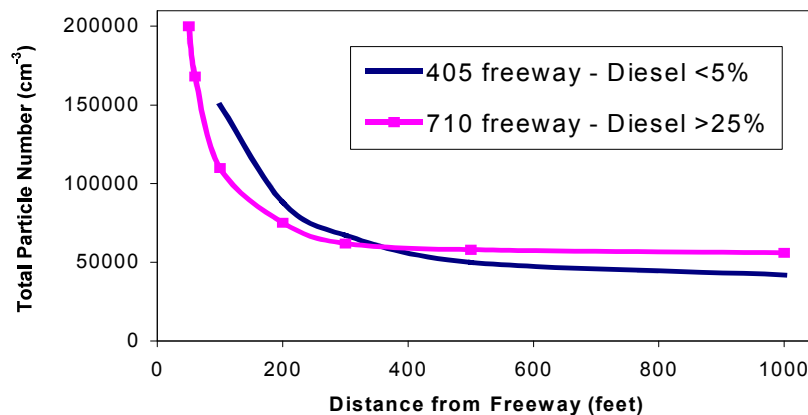
strongest within 300 feet. This demonstrates that the adverse effects diminished with distance.

In addition to the respiratory health effects in children, proximity to freeways increases potential cancer risk and contributes to total particulate matter exposure. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risk from motor vehicle traffic – diesel particulate matter (diesel PM) from trucks, and benzene and 1,3-butadiene from passenger vehicles. On a typical urban freeway (truck traffic of 10,000-20,000/day), diesel PM represents about 70 percent of the potential cancer risk from the vehicle traffic. Diesel particulate emissions are also of special concern because health studies show an association between particulate matter and premature mortality in those with existing cardiovascular disease.

### Distance Related Findings

A southern California study (Zhu, 2002) showed measured concentrations of vehicle-related pollutants, including ultra-fine particles, decreased dramatically within approximately 300 feet of the 710 and 405 freeways. Another study looked at the validity of using distance from a roadway as a measure of exposure

**Figure 1-1  
Decrease In Concentration of Freeway Diesel PM Emissions  
With Distance**



to traffic related air pollution (Knape, 1999). This study showed that concentrations of traffic related pollutants declined with distance from the road, primarily in the first 500 feet.

These findings are consistent with air quality modeling and risk analyses done by ARB staff that show an estimated range of potential cancer risk that decreases with distance from freeways. The estimated risk varies with the local meteorology, including wind pattern. As an example, at 300 feet downwind from a freeway (Interstate 80) with truck traffic of 10,000 trucks per day, the potential cancer risk was as high as 100 in one million (ARB Roseville Rail Yard Study). The cancer health risk at 300 feet on the upwind side of the freeway was much

less. The risk at that distance for other freeways will vary based on local conditions – it may be higher or lower. However, in all these analyses the relative exposure and health risk dropped substantially within the first 300 feet. This phenomenon is illustrated in Figure 1-1.

State law restricts the siting of new schools within 500 feet of a freeway, urban roadways with 100,000 vehicles/day, or rural roadways with 50,000 vehicles with some exceptions.<sup>2</sup> However, no such requirements apply to the siting of residences, day care centers, playgrounds, or medical facilities. The available data show that exposure is greatly reduced at approximately 300 feet. In the traffic-related studies the additional health risk attributable to the proximity effect was strongest within 1,000 feet.

The combination of the children's health studies and the distance related findings suggests that it is important to avoid exposing children to elevated air pollution levels immediately downwind of freeways and high traffic roadways. These studies suggest a substantial benefit to a 500-foot separation.

The impact of traffic emissions is on a gradient that at some point becomes indistinguishable from the regional air pollution problem. As air agencies work to reduce the underlying regional health risk from diesel PM and other pollutants, the impact of proximity will also be reduced. In the meantime, as a preventative measure, we hope to avoid exposing more children and other vulnerable individuals to the highest concentrations of traffic-related emissions.

### Recommendation

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.

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<sup>2</sup> Section 17213 of the California Education Code and section 21151.8 of the California Public Resources Code. See also Appendix E for a description of special processes that apply to school siting.

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### **Distribution Centers**

Distribution centers or warehouses are facilities that serve as a distribution point for the transfer of goods. Such facilities include cold storage warehouses, goods transfer facilities, and inter-modal facilities such as ports. These operations involve trucks, trailers, shipping containers, and other equipment with diesel engines. A distribution center can be comprised of multiple centers or warehouses within an area. The size can range from several to hundreds of acres, involving a number of different transfer operations and long waiting periods. A distribution center can accommodate hundreds of diesel trucks a day that deliver, load, and/or unload goods up to seven days a week. To the extent that these trucks are transporting perishable goods, they are equipped with diesel-powered transport refrigeration units (TRUs) or TRU generator sets.

The activities associated with delivering, storing, and loading freight produces diesel PM emissions. Although TRUs have relatively small diesel-powered engines, in the normal course of business, their emissions can pose a significant health risk to those nearby. In addition to onsite emissions, truck travel in and out of distribution centers contributes to the local pollution impact.

ARB is working to reduce diesel PM emissions through regulations, financial incentives, and enforcement programs. In 2004, ARB adopted two airborne toxic control measures that will reduce diesel PM emissions associated with distribution centers. The first will limit nonessential (or unnecessary) idling of diesel-fueled commercial vehicles, including those entering from other states or countries. This statewide measure, effective in 2005, prohibits idling of a vehicle more than five minutes at any one location.<sup>3</sup> The elimination of unnecessary idling will reduce the localized impacts caused by diesel PM and other air toxics

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<sup>3</sup> For further information on the Anti-Idling ATCM, please click on:  
<http://www.arb.ca.gov/toxics/idling/outreach/factsheet.pdf>



in diesel vehicle exhaust. This should be a very effective new strategy for reducing diesel PM emissions at distribution centers as well as other locations.

The second measure requires that TRUs operating in California become cleaner over time. The measure establishes in-use performance standards for existing TRU engines that operate in California, including out-of-state TRUs. The requirements are phased-in beginning in 2008, and extend to 2019.<sup>4</sup>

ARB also operates a smoke inspection program for heavy-duty diesel trucks that focuses on reducing truck emissions in California communities. Areas with large numbers of distribution centers are a high priority.

### Key Health Findings

Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

### Distance Related Findings

Although distribution centers are located throughout the state, they are usually clustered near transportation corridors, and are often located in or near population centers. Diesel PM emissions from associated delivery truck traffic and TRUs at these facilities may result in elevated diesel PM concentrations in neighborhoods surrounding those sites. Because ARB regulations will restrict truck idling at distribution centers, the largest continuing onsite diesel PM emission source is the operation of TRUs. Truck travel in and out of distribution centers also contributes to localized exposures, but specific travel patterns and truck volumes would be needed to identify the exact locations of the highest concentrations.

As part of the development of ARB's regulation for TRUs, ARB staff performed air quality modeling to estimate exposure and the associated potential cancer risk of onsite TRUs for a typical distribution center. For an individual person, cancer risk estimates for air pollution are commonly expressed as a probability of developing cancer from a lifetime (i.e., 70 years) of exposure. These risks were calculated independent of regional risk. For example, the estimated regional cancer risk from air toxics in the Los Angeles region (South Coast Air Basin) is approximately 1,000 additional cancer cases per one million population.

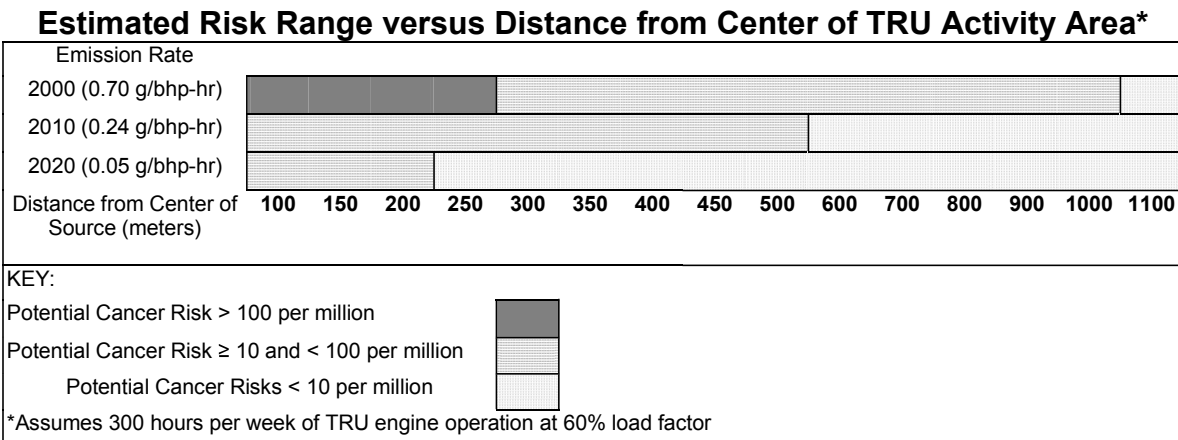
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<sup>4</sup> For further information on the Transport Refrigeration Unit ATCM, please click on: <http://www.arb.ca.gov/diesel/documents/trufaq.pdf>

The diesel PM emissions from a facility are dependent on the size (horsepower), age, and number of engines, emission rates, the number of hours the truck engines and/or TRUs operate, distance, and meteorological conditions at the site. This assessment assumes a total on-site operating time for all TRUs of 300 hours per week. This would be the equivalent of 40 TRU-equipped trucks a day, each loading or unloading on-site for one hour, 12 hours a day and seven days a week.

As shown in Figure 1-2 below, at this estimated level of activity and assuming a current fleet diesel PM emission rate, the potential cancer risk would be over 100 in a million at 800 feet from the center of the TRU activity. The estimated potential cancer risk would be in the 10 to 100 per million range between 800 to 3,300 feet and fall off to less than 10 per million at approximately 3,600 feet. However with the implementation of ARB’s regulation on TRUs, the risk will be significantly reduced.<sup>5</sup> We have not conducted a risk assessment for distribution centers based on truck traffic alone, but on an emissions basis, we would expect similar risks for a facility with truck volumes in the range of 100 per day.

**Figure 1-2**

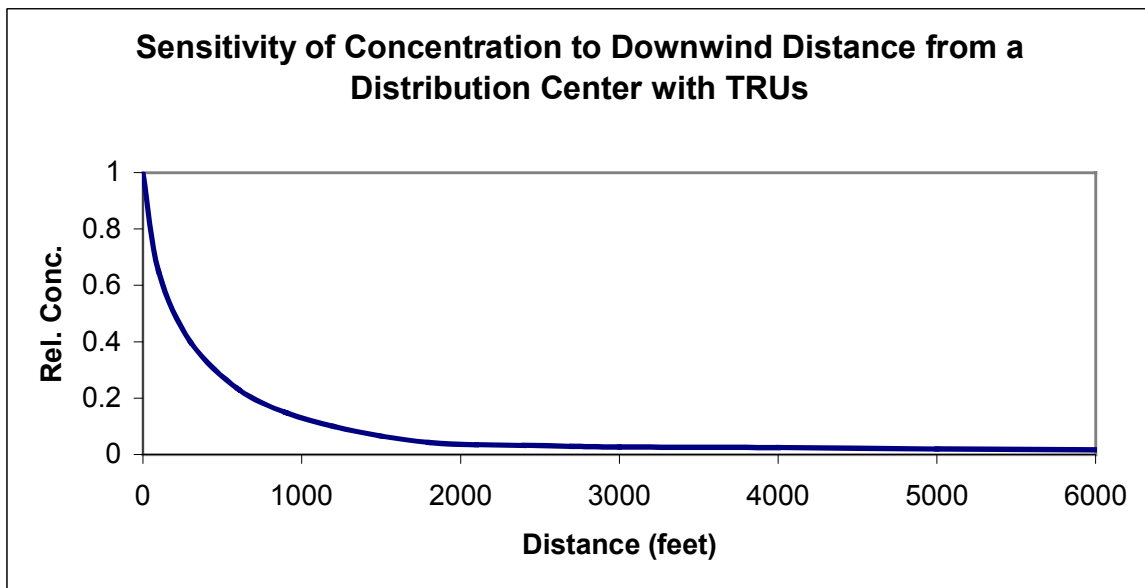


The estimated potential cancer risk level in Figure 1-2 is based on a number of assumptions that may not reflect actual conditions for a specific site. For example, increasing or decreasing the hours of diesel engine operations would change the potential risk levels. Meteorological and other facility specific parameters can also impact the results. Therefore, the results presented here are not directly applicable to any particular facility or operation. Rather, this information is intended to provide an indication as to the potential relative levels of risk that may be observed from operations at distribution centers. As shown in Figure 1-2, the estimated risk levels will decrease over time as lower-emitting diesel engines are used.

<sup>5</sup> These risk values assume an exposure duration of 70 years for a nearby resident and uses the methodology specified in the 2003 OEHHA health risk assessment guidelines.

Another air modeling analysis, performed by the South Coast Air Quality Management District (South Coast AQMD), evaluated the impact of diesel PM emissions from distribution center operations in the community of Mira Loma in southern California. Based on dispersion of diesel PM emissions from a large distribution center, Figure 1-3 shows the relative pollution concentrations at varying distances downwind. As Figure 1-3 shows, there is about an 80 percent drop off in concentration at approximately 1,000 feet.

**Figure 1-3**  
**Decrease In Relative Concentration of Risk**  
**With Distance**



Both the ARB and the South Coast AQMD analyses indicate that providing a separation of 1,000 feet would substantially reduce diesel PM concentrations and public exposure downwind of a distribution center. While these analyses do not provide specific risk estimates for distribution centers, they provide an indication of the range of risk and the benefits of providing a separation. ARB recommends a separation of 1,000 feet based on the combination of risk analysis done for TRUs and the decrease in exposure predicted with the South Coast AQMD modeling. However, ARB staff plans to provide further information on distribution centers as we collect more data and implement the TRU control measure.

Taking into account the configuration of distribution centers can also reduce population exposure and risk. For example, locating new sensitive land uses away from the main entry and exit points helps to reduce cancer risk and other health impacts.

## Recommendations

- Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating TRUs per day, or where TRU unit operations exceed 300 hours per week).
- Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.

## References

- *Airborne Toxic Control Measure To Limit Diesel-Fueled Commercial Motor Vehicle Idling*. ARB (August 20, 2004). Rule effectiveness date awaiting submittal of regulation to the Office of Administration Law.  
<http://www.arb.ca.gov/regact/idling/idling.htm>
- *Revised Staff Report: Initial Statement of Reasons for Proposed Rulemaking. Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate*. ARB (October 28, 2003).  
<http://www.arb.ca.gov/regact/trude03/revisor.doc>
- *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*. SCAQMD (August 2003) [http://www.aqmd.gov/ceqa/handbook/diesel\\_analysis.doc](http://www.aqmd.gov/ceqa/handbook/diesel_analysis.doc)
- “*Mira Loma Study: Analysis of the Impact of Diesel Particulate Emissions from Warehouse/Distribution Center Operations*”, PowerPoint presentation. SCAQMD (July 31, 2002)

## Rail Yards

Rail yards are a major source of diesel particulate air pollution. They are usually located near inter-modal facilities, which attract heavy truck traffic, and are often sited in mixed industrial and residential areas. ARB, working with the Placer County air district and Union Pacific Railroad, recently completed a study<sup>6</sup> of the Roseville Rail Yard (Yard) in northern California that focused on the health risk from diesel particulate. A comprehensive emissions analysis and air quality modeling were conducted to characterize the estimated potential cancer risk associated with the facility.

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<sup>6</sup> To review the study, please click on: <http://www.arb.ca.gov/diesel/documents/rstudy.htm>

The Yard encompasses about 950 acres on a one-quarter mile wide by four-mile long strip of land that parallels Interstate 80. It is surrounded by commercial, industrial, and residential properties. The Yard is one of the largest service and maintenance rail yards in the West with over 30,000 locomotives visiting annually.

Using data provided by Union Pacific Railroad, the ARB determined the number and type of locomotives visiting the Yard annually and what those locomotives were doing - moving, idling, or undergoing maintenance testing. Union Pacific provided the annual, monthly, daily, and hourly locomotive activity in the yard including locomotive movements; routes for arrival, departure, and through trains; and locomotive service and testing. This information was used to estimate the emissions of particulate matter from the locomotives, which was then used to model the potential impacts on the surrounding community.

The key findings of the study are:

- Diesel PM emissions in 2000 from locomotive operations at the Roseville Yard were estimated at about 25 tons per year.
- Of the total diesel PM in the Yard, moving locomotives accounted for about 50 percent, idling locomotives about 45 percent, and locomotive testing about five percent.
- Air quality modeling predicts potential cancer risks greater than 500 in a million (based on 70 years of exposure) in a 10-40 acre area immediately adjacent to the Yard's maintenance operations.
- The risk assessment also showed elevated cancer risk impacting a larger area covering about a 10 by 10 mile area around the Yard.

The elevated concentrations of diesel PM found in the study contribute to an increased risk of cancer and premature death due to cardiovascular disease, and non-cancer health effects such as asthma and other respiratory illnesses. The magnitude of the risk, the general location, and the size of the impacted area depended on the meteorological data used to characterize conditions at the Yard, the dispersion characteristics, and exposure assumptions. In addition to these variables, the nature of locomotive activity will influence a risk characterization at a particular rail yard. For these reasons, the quantified risk estimates in the Roseville Rail Yard Study cannot be directly applied to other rail yards. However, the study does indicate the health risk due to diesel PM from rail yards needs to be addressed. ARB, in conjunction with the U.S. Environmental Protection Agency (U.S. EPA), and local air districts, is working with the rail industry to identify and implement short term, mid-term and long-term mitigation strategies. ARB also intends to conduct a second rail study in southern California to increase its understanding of rail yard operations and the associated public health impacts.

## Key Health Findings

Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

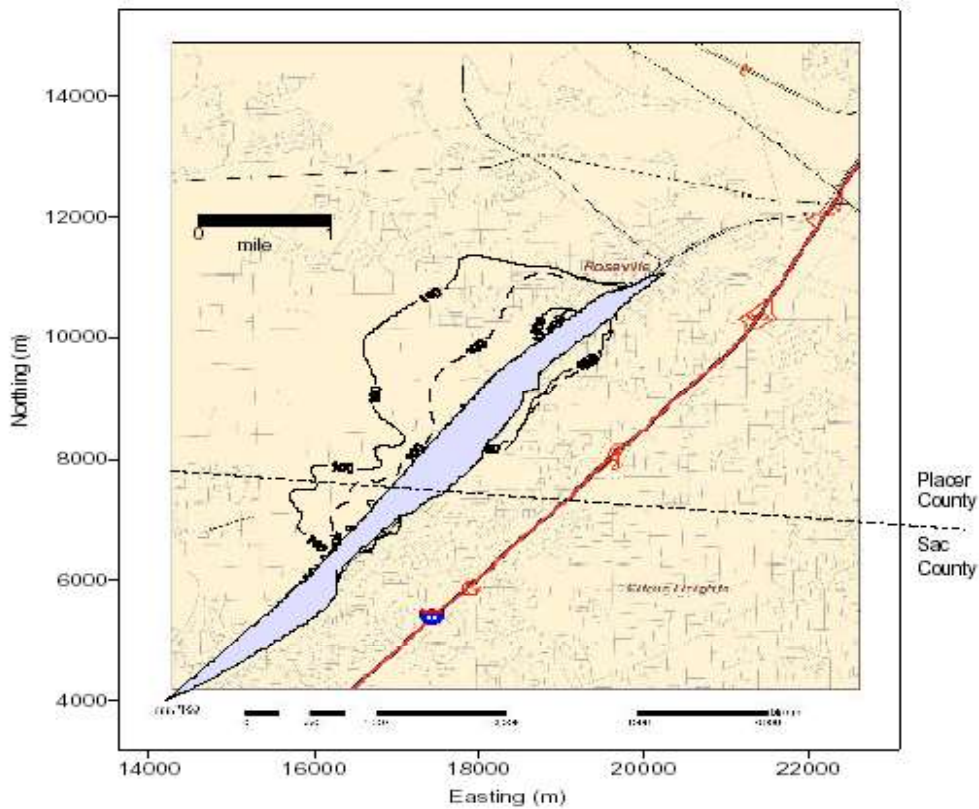
## Distance Related Findings

Two sets of meteorological data were used in the Roseville study because of technical limitations in the data. The size of the impact area was highly dependent on the meteorological data set used. The predicted highest impact area ranged from 10 - 40 acres with the two different meteorological data sets. This area, with risks estimated above 500 in a million, is adjacent to an area that includes a maintenance shop (see Figure 1-4). The high concentration of diesel PM emissions is due to the number of locomotives and nature of activities in this area, particularly idling locomotives.

The area of highest impact is within 1,000 feet of the Yard. The next highest impact zone as defined in the report had a predicted risk between 500 and 100 in one million and extends out between a half to one mile in some spots, depending on which meteorological conditions were assumed. The impact areas are irregular in shape making it difficult to generalize about the impact of distance at a particular location. However, the Roseville Rail Yard Study clearly indicates that the localized health risk is high, the impact area is large, and mitigation of the locomotive diesel PM emissions is needed.

For facilities like rail yards and ports, the potential impact area is so large that the real solution is to substantially reduce facility emissions. However, land use planners can avoid encroaching upon existing rail facilities and those scheduled for expansion. We also recommend that while air agencies tackle this problem, land use planners try not to add new sensitive individuals into the highest exposure areas. Finally, we recommend that land use agencies consider the potential health impacts of rail yards in their planning and permitting processes. Additional limitations and mitigation may be feasible to further reduce exposure on a site-specific basis.

**Figure 1-4**  
**Estimated Cancer Risk from the Yard**  
**(100 and 500 in a million risk isopleths)**



Notes: 100/Million Contours: Solid Line – Roseville Met Data; Dashed Line-McClellan Met Data, Urban Dispersion Coefficients, 80<sup>th</sup> Percentile Breathing Rate, All Locomotives' Activities (23 TPY), 70-Year Exposure

### Recommendation

- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard<sup>7</sup>.
- Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.

### References

- *Roseville Rail Yard Study*. ARB (2004)

<sup>7</sup> The rail yard risk analysis was conducted for the Union Pacific rail yard in Roseville, California. This rail yard is one of the largest in the state. There are other rail yards in California with comparable levels of activity that should be considered "major" for purposes of this Handbook.

## Ports

Air pollution from maritime port activities is a growing concern for regional air quality as well as air quality in nearby communities. The primary air pollutant associated with port operations is directly emitted diesel particulate. Port-related activities also result in emissions that form ozone and secondary particulate in the atmosphere. The emission sources associated with ports include diesel engine-powered ocean-going ships, harbor craft, cargo handling equipment, trucks, and locomotives. The size and concentration of these diesel engines makes ports one of the biggest sources of diesel PM in the state. For that reason, ARB has made it a top priority to reduce diesel PM emissions at the ports, in surrounding communities, and throughout California.

International, national, state, and local government collaboration is critical to reducing port emissions based on both legal and practical considerations. For example, the International Maritime Organization (IMO) and the U.S. EPA establish emission standards for ocean-going vessels and U.S.-flagged harbor craft, respectively. ARB is pursuing further federal actions to tighten these standards. In addition, ARB and local air districts are reducing emissions from ports through a variety of approaches. These include: incentive programs to fund cleaner engines, enhanced enforcement of smoke emissions from ships and trucks, use of dockside electricity instead of diesel engines, cleaner fuels for ships, harbor craft, locomotives, and reduced engine idling. The two ATCMs that limit truck idling and reduce emissions from TRUs (discussed under “Distribution Centers”) also apply to ports.

ARB is also developing several other regulations that will reduce port-related emissions. One rule would require ocean-going ships to use a cleaner marine diesel fuel to power auxiliary engines while in California coastal waters and at dock. Ships that frequently visit California ports would also be required to further reduce their emissions. ARB has adopted a rule that would require harbor craft to use the same cleaner diesel fuel used by on-road trucks in California. In 2005, ARB will consider a rule that would require additional controls for in-use harbor craft, such as the use of add-on emission controls and accelerated turnover of older engines.

## Key Health Findings

Port activities are a major source of diesel PM. Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.



## Distance Related Findings

The Ports of Los Angeles and Long Beach provide an example of the emissions impact of port operations. A comprehensive emissions inventory was completed in June 2004. These ports combined are one of the world's largest and busiest seaports. Located in San Pedro Bay, about 20 miles south of downtown Los Angeles, the port complex occupies approximately 16 square miles of land and water. Port activities include five source categories that produce diesel emissions. These are ocean-going vessels, harbor craft, cargo handling equipment, railroad locomotives, and heavy-duty trucks.

The baseline emission inventory provides emission estimates for all major air pollutants. This analysis focuses on diesel PM from in-port activity because these emissions have the most potential health impact on the areas adjacent to the port. Ocean vessels are the largest overall source of diesel PM related to the ports, but these emissions occur primarily outside of the port in coastal waters, making the impact more regional in nature.

The overall in-port emission inventory for diesel particulate for the ports of Los Angeles and Long Beach is estimated to be 550 tons per year. The emissions fall in the following major categories: ocean-going vessels (17%), harbor craft (25%), cargo handling (47%), railroad locomotive (3%), and heavy duty vehicles (8%). In addition to in-port emissions, ship, rail, and trucking activities also contribute to regional emissions and increase emissions in nearby neighborhoods. Off-port emissions associated with related ship, rail, and trucking activities contribute an additional 680 tons per year of diesel particulate at the Port of Los Angeles alone.

To put this in perspective, the diesel PM emissions estimated for the Roseville Yard in ARB's 2004 study are 25 tons per year. The potential cancer risk associated with these emissions is 100 in one million at a distance of one mile, or one half mile, depending on the data set used. This rail yard covers one and a half square miles. The Los Angeles and Long Beach ports have combined diesel PM emissions of 550 tons per year emitted from a facility that covers a much larger area - 16 miles. The ports have about twice the emission density of the rail yard - 34 tons per year per square mile compared to 16 tons per year per square mile. However, while this general comparison is illustrative of the overall size of the complex, a detailed air quality modeling analysis would be needed to assess the potential health impact on specific downwind areas near the ports.

ARB is in the process of evaluating the various port-related emission sources from the standpoint of existing emissions, growth forecasts, new control options, regional air quality impacts, and localized health risk. A number of public processes - both state and local - are underway to address various aspects of these issues. Until more of these analyses are complete, there is little basis for recommending a specific separation between new sensitive land uses and ports.

For example, the type of data we have showing the relationship between air pollutant concentrations and distance from freeways is not yet available.

Also, the complexity of the port facilities makes a site-specific analysis critical. Ports are a concentration of multiple emission sources with differing dispersion and other characteristics. In the case of the Roseville rail yard, we found a high, very localized impact associated with a particular activity, service and maintenance. By contrast, the location, size, and nature of impact areas can be expected to vary substantially for different port activities. For instance, ground level emissions from dockside activities would behave differently from ship stack level emissions.

Nonetheless, on an emissions basis alone, we expect locations downwind of ports to be substantially impacted. For that reason, we recommend that land use agencies track the current assessment efforts, and consider limitations on the siting of new sensitive land uses in areas immediately downwind of ports.

### Recommendations

Avoid siting new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.

### References

- *Roseville Rail Yard Study*. ARB (2004)
- Final Draft, "*Port-Wide Baseline Air Emissions Inventory*." Port of Los Angeles (June 2004)
- Final Draft, "*2002 Baseline Air Emissions Inventory*." Port of Long Beach (February 2004)

### Petroleum Refineries

A petroleum refinery is a complex facility where crude oil is converted into petroleum products (primarily gasoline, diesel fuel, and jet fuel), which are then transported through a system of pipelines and storage tanks for final distribution by delivery truck to fueling facilities throughout the state. In California, most crude oil is delivered either by ship from Alaska or foreign sources, or is delivered via pipeline from oil production fields within the state. The crude oil then undergoes many complex chemical and physical reactions, which include distillation, catalytic cracking, reforming, and finishing. These refining processes have the potential to emit air contaminants, and are subject to extensive emission controls by district regulations.

As a result of these regulations covering the production, marketing, and use of gasoline and other oil by-products, California has seen significant regional air quality benefits both in terms of cleaner fuels and cleaner operating facilities. In

the 1990s, California refineries underwent significant modifications and modernization to produce cleaner fuels in response to changes in state law. Nevertheless, while residual emissions are small when compared to the total emissions controlled from these major sources, refineries are so large that even small amounts of fugitive, uncontrollable emissions and associated odors from the operations, can be significant. This is particularly the case for communities that may be directly downwind of the refinery. Odors can cause health symptoms such as nausea and headache. Also, because of the size, complexity, and vast numbers of refinery processes onsite, the occasional refinery upset or malfunction can potentially result in acute or short-term health effects to exposed individuals.

### Key Health Findings

Petroleum refineries are large single sources of emissions. For volatile organic compounds (VOCs), eight of the ten largest stationary sources in California are petroleum refineries. For oxides of nitrogen (NO<sub>x</sub>), four of the ten largest stationary sources in California are petroleum refineries. Both of these compounds react in the presence of sunlight to form ozone. Ozone impacts lung function by irritating and damaging the respiratory system. Petroleum refineries are also large stationary sources of both particulate matter under 10 microns in size (PM<sub>10</sub>) and particulate matter under 2.5 microns in size (PM<sub>2.5</sub>). Exposure to particulate matter aggravates a number of respiratory illnesses, including asthma, and is associated with premature mortality in people with existing cardiac and respiratory disease. Both long-term and short-term exposure can have adverse health impacts. Finer particles pose an increased health risk because they can deposit deep in the lung and contain substances that are particularly harmful to human health. NO<sub>x</sub> are also significant contributors to the secondary formation of PM<sub>2.5</sub>.

Petroleum refineries also emit a variety of toxic air pollutants. These air toxics vary by facility and process operation but may include: acetaldehyde, arsenic, antimony, benzene, beryllium, 1,3-butadiene, cadmium compounds, carbonyl sulfide, carbon disulfide, chlorine, dibenzofurans, diesel particulate matter, formaldehyde, hexane, hydrogen chloride, lead compounds, mercury compounds, nickel compounds, phenol, 2,3,7,8 tetrachlorodibenzo-p-dioxin, toluene, and xylenes (mixed) among others. The potential health effects associated with these air toxics can include cancer, respiratory irritation, and damage to the central nervous system, depending on exposure levels.

### Distance Related Findings

Health risk assessments for petroleum refineries have shown risks from toxic air pollutants that have quantifiable health risk values to be around 10 potential cancer cases per million. Routine air monitoring and several air monitoring studies conducted in the San Francisco Bay Area (Crockett) and the South Coast Air Basin (Wilmington) have not identified significant health risks specifically

associated with refineries. However, these studies did not measure diesel PM as no accepted method currently exists, and there are many toxic air pollutants that do not have quantifiable health risk values.

In 2002, ARB published a report on the results of the state and local air district air monitoring done near oil refineries. The purpose of this evaluation was to try to determine how refinery-related emissions might impact nearby communities. This inventory of air monitoring activities included 10 ambient air monitoring stations located near refineries in Crockett and four stations near refineries in Wilmington. These monitoring results did not identify significant increased health risks associated with the petroleum refineries. In 2002-2003, ARB conducted additional monitoring studies in communities downwind of refineries in Crockett and Wilmington. These monitoring results also did not indicate significant increased health risks from the petroleum refineries.

Consequently, there are no air quality modeling or air monitoring data that provides a quantifiable basis for recommending a specific separation between refineries and new sensitive land uses. However, in view of the amount and potentially hazardous nature of many of the pollutants released as part of the refinery process, we believe the siting of new sensitive land uses immediately downwind should be avoided. Land use agencies should consult with the local air district when considering how to define an appropriate separation for refineries within their jurisdiction.

### Recommendations

- Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.

### References

- *Review of Current Ambient Air Monitoring Activities Related to California Bay Area and South Coast Refineries.* ARB (March 2002)  
<http://www.arb.ca.gov/aaqm/qmosqual/special/mldrefinery.pdf>
- *Community Air Quality Monitoring: Special Studies – Crockett.* ARB (September 2004)  
<http://www.arb.ca.gov/ch/communities/studies/crockett/crockett.htm>
- *Wilmington Study - Air Monitoring Results.* ARB (2003)  
<http://www.arb.ca.gov/ch/communities/studies/wilmington/wilmington.htm>

### Chrome Plating Operations

Chrome plating operations rely on the use of the toxic metal hexavalent chromium, and have been subject to ARB and local air district control programs for many years. Regulation of chrome plating operations has reduced statewide emissions substantially. However, due to the nature of chrome plating

operations and the highly toxic nature of hexavalent chromium, the remaining health risk to nearby residents is a continuing concern.

Chrome plating operations convert hexavalent chromium in solution to a chromium metal layer by electroplating, and are categorized based upon the thickness of the chromium metal layer applied. In “decorative plating”, a layer of nickel is first plated over a metal substrate. Following this step, a thin layer of chromium is deposited over the nickel layer to provide a decorative and protective finish, for example, on faucets and automotive wheels. “Hard chrome plating” is a process in which a thicker layer of chromium metal is deposited directly on metal substrates such as engine parts, industrial machinery, and tools to provide greater protection against corrosion and wear.

Hexavalent chromium is emitted into the air when an electric current is applied to the plating bath. Emissions are dependent upon the amount of electroplating done per year and the control requirements. A unit of production referred to as an ampere-hour represents the amount of electroplating produced. Small facilities have an annual production rate of 100,000 – 500,000 ampere-hours, while medium-size facilities may have a production rate of 500,000 to about 3 million ampere-hours. The remaining larger facilities have a range of production rates that can be as high as 80 million ampere-hours.

The control requirements, which reduce emissions from the plating tanks, vary according to the size and type of the operation. Facilities either install add-on pollution control equipment, such as filters and scrubbers, or in-tank controls, such as fume suppressants and polyballs. With this combination of controls, the overall hexavalent chromium emissions have been reduced by over 90 percent. Larger facilities typically have better controls that can achieve efficiencies greater than 99 percent. However, even with stringent controls, the lack of maintenance and good housekeeping practices can lead to problems. And, since the material itself is inherently dangerous, any lapse in compliance poses a significant risk to nearby residents.

A 2002 ARB study in the San Diego community of Barrio Logan measured unexpectedly high concentrations of hexavalent chromium near chrome platers. The facilities were located in a mixed-use area with residences nearby. The study found that fugitive dust laden with hexavalent chromium was an important source of emissions that likely contributed to the elevated cancer risk. Largely as a result of this study, ARB is in the process of updating the current requirements to further reduce the emissions from these facilities.

In December 2004, the ARB adopted an ATCM to reduce emissions of hexavalent chromium and nickel from thermal spraying operations through the installation of best available control technology. The ATCM requires all existing facilities to comply with its requirements by January 1, 2006. New and modified thermal spraying operations must comply upon initial startup. An existing thermal spraying facility may be exempt from the minimum control efficiency

requirements of the ATCM if it is located at least 1,640 feet from the nearest sensitive receptor and emits no more than 0.5 pound per year of hexavalent chromium.<sup>8</sup>

### Key Health Findings

Hexavalent chromium is one of the most toxic air pollutants regulated by the State of California. Hexavalent chromium is a carcinogen and has been identified in worker health studies as causing lung cancer. Exposure to even very low levels of hexavalent chromium should be avoided.

The California Office of Environmental Health Hazard Assessment has found that: 1) many epidemiological studies show a strong association between hexavalent chromium exposure in the work place and respiratory cancer; and 2) all short-term assays reported show that hexavalent chromium compounds can cause damage to human DNA.

Hexavalent chromium when inhaled over a period of many years can cause a variety of non-cancer health effects. These health effects include damage to the nose, blood disorders, lung disease, and kidney damage. The non-cancer health impacts occur with exposures considerably higher than exposures causing significant cancer risks. It is less likely that the public would be exposed to hexavalent chromium at levels high enough to cause these non-cancer health effects. Non-cancer health effects, unlike cancer health effects, have a threshold or exposure level below which non-cancer health effects would not be expected.

### Distance Related Findings

ARB's 2002 Barrio Logan Study measured concentrations of hexavalent chromium in the air near two chrome plating facilities. The study was conducted from December 2001 to May 2002. There were two chrome platers on the street - one decorative and one hard plater. The purpose of the study was to better understand the near source impact of hexavalent chromium emissions. Air monitors were placed at residences next to the platers and at varying distances down the street. The monitors were moved periodically to look at the spatial distribution of the impact. Source testing and facility inspections identified one of the facilities as the likely source.

The first two weeks of monitoring results showed unexpectedly high levels of hexavalent chromium at a number of the monitoring sites. The high concentrations were intermittent. The concentrations ranged from 1 to 22 ng/m<sup>3</sup> compared to the statewide average of 0.1 ng/m<sup>3</sup>. If these levels were to continue for 70 years, the potential cancer risk would be 150 in one million. The highest value was found at an air monitor behind a house adjacent to one of the

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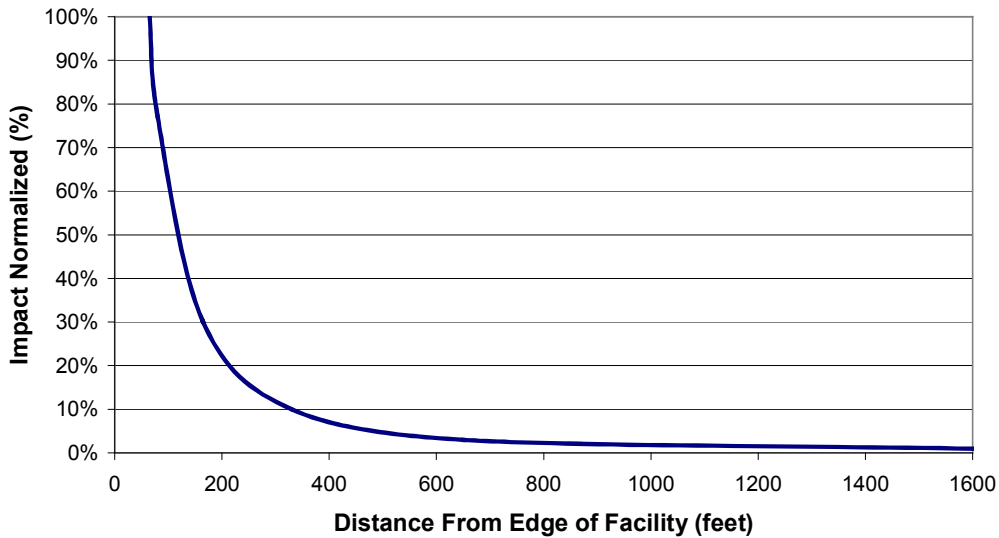
<sup>8</sup> For further information on the ATCM, please refer to:  
<http://www.arb.ca.gov/regact/thermspr/thermalspr.htm>

plating facilities—approximately 30 feet from the back entrance. Lower, but significant concentrations were found at an ambient air monitor 250 feet away.

The monitoring covered a period when the facility was not operating its plating tank. During this period, one of the highest concentrations was measured at an adjacent house. It appears that chromium-laden dust was responsible for high concentrations at this location since there was no plating activity at the time. Dust samples from the facility were tested and found to contain high levels of hexavalent chromium. On the day the highest concentration was measured at the house next door, a monitor 350 feet away from the plater's entrance showed very little impact. Similar proximity effects are shown in ARB modeling studies.

Figure 1-5 shows how the relative health risk varies as a function of distance from a chrome plater. This analysis is based on a medium-sized chrome plater with an annual production rate of 3 million ampere-hours. As shown in Figure 1- 5, the potential health risk drops off rapidly, with over 90 percent reduction in risk within 300 feet. This modeling was done in 2003 as part of a review of ARB's current air toxic control measure for chrome platers and is based on data from a recent ARB survey of chrome platers in California. The emission

**Figure 1-5**  
**Risk vs. Distance From Chrome Plater**  
**(Based on plating tank emissions)**



rates are only for plating operations. Because there are insufficient data available to directly quantify the impacts, the analysis does not include fugitive emissions, which the Barrio Logan analysis indicated could be significant.

Both the ARB Barrio Logan monitoring results and ARB's 2003 modeling analysis suggests that the localized emissions impact of a chrome plater diminishes significantly at 300 feet. However, in developing our recommendation, we also considered the following factors:

- some chrome platers will have higher volumes of plating activity,
- potential dust impacts were not modeled,
- we have only one monitoring study looking at the impact of distance, and,
- hexavalent chromium is one of the most potent toxic air contaminants ARB has identified.

Given these limitations in the analysis, we recommend a separation of 1,000 feet as a precautionary measure. For large chrome platers, site specific information should be obtained from the local air district.

### Recommendation

- Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.

### References

- *Ambient Air Monitoring for Hexavalent Chromium and Metals in Barrio Logan: May 2001 through May 2002.* ARB, Monitoring and Laboratory Division (October 14, 2003)
- *Draft Barrio Logan Report.* ARB, Planning and Technical Support Division (November 2004)
- *Proposed Amendments to the Hexavalent Chromium Control Measure for Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities.* ARB (April 1998)
- Murchison, Linda; Suer, Carolyn; Cook, Jeff. “*Neighborhood Scale Monitoring in Barrio Logan,*” (AWMA Annual Conference Proceedings, June 2003)

### **Dry Cleaners Using Perchloroethylene (Perc Dry Cleaners)**

Perchloroethylene (perc) is the solvent most commonly used by the dry cleaning industry to clean clothes or other materials. The ARB and other public health agencies have identified perc as a potential cancer-causing compound. Perc persists in the atmosphere long enough to contribute to both regional air pollution and localized exposures. Perc dry cleaners are the major source of perc emissions in California.

Since 1990, the statewide concentrations and health risk from exposure to perc has dropped over 70 percent. This is due to a number of regulatory requirements on perc dry cleaners and other sources, including degreasing operations, brake cleaners, and adhesives. ARB adopted an Airborne Toxic Control Measure (ATCM) for Perc Emissions from Dry Cleaning Operations in 1993. ARB has also prohibited the use of perc in aerosol adhesives and automotive brake cleaners.



Perc dry cleaners statewide are required to comply with ARB and local air district regulations to reduce emissions. However, even with these controls, some emissions continue to occur. Air quality studies indicate that there is still the potential for significant risks even near well-controlled dry cleaners. The South Coast AQMD has adopted a rule requiring that all new dry cleaners use alternatives to perc and that existing dry cleaners phase out the use of perc by December 2020. Over time, transition to non-toxic alternatives should occur. However, while perc continues to be used, a preventative approach should be taken to siting of new sensitive land uses.

### Key Health Findings

Inhalation of perc may result in both cancer and non-cancer health effects. An assessment by California's Office of Environmental Health Hazard Assessment (OEHHA) concluded that perc is a potential human carcinogen and can cause non-cancer health effects. In addition to the potential cancer risk, the effects of long-term exposure include dizziness, impaired judgment and perception, and damage to the liver and kidneys. Workers have shown signs of liver toxicity following chronic exposure to perc, as well as kidney dysfunction and neurological effects. Non-cancer health effects occur with higher exposure levels than those associated with significant cancer risks. The public is more likely to be exposed to perchloroethylene at levels causing significant cancer risks than to levels causing non-cancer health effects. Non-cancer health effects, unlike cancer health effects, have a threshold or exposure level below which non-cancer health effects would not be expected. The ARB formally identified perc as a toxic air contaminant in October 1991.

One study has determined that inhalation of perc is the predominant route of exposure to infants living in apartments co-located in the same building with a business operating perc dry cleaning equipment. Results of air sampling within co-residential buildings indicate that dry cleaners can cause a wide range of exposures depending on the type and maintenance of the equipment. For example, a well-maintained state-of-the-art system may have risks in the range of 10 in one million, whereas a badly maintained machine with major leaks can have potential cancer risks of thousands in one million.

The California Air Pollution Control Officers Association (CAPCOA) is developing Industry-wide Risk Assessment Guidelines for Perchloroethylene Dry Cleaners which, when published, will provide detailed information on public health risk from exposure to emissions from this source.

### Distance Related Findings

Risk created by perc dry cleaning is dependent on the amount of perc emissions, the type of dry cleaning equipment, proximity to the source, and how the emissions are released and dispersed (e.g., type of ventilation system, stack parameters, and local meteorology). Dry cleaners are often located near

residential areas, and near shopping centers, schools, day-care centers, and restaurants.

The vast majority of dry cleaners in California have one dry cleaning machine per facility. The South Coast AQMD estimates that an average well-controlled dry cleaner uses about 30 to 160 gallons of cleaning solvent per year, with an average of about 100 gallons. Based on these estimates, the South Coast AQMD estimates a potential cancer risk between 25 to 140 in one million at residential locations 75 feet or less from the dry cleaner, with an average of about 80 in one million. The estimate could be as high as 270 in one million for older machines.

CAPCOA's draft industry-wide risk assessment of perc dry cleaning operations indicates that the potential cancer risk for many dry cleaners may be in excess of potential cancer risk levels adopted by the local air districts. The draft document also indicates that, in general, the public's exposure can be reduced by at least 75 percent, by providing a separation distance of about 300 feet from the operation. This assessment is based on a single machine with perc use of about 100 gallons per year. At these distances, the potential cancer risk would be less than 10 potential cases per million for most scenarios.

The risk would be proportionately higher for large, industrial size, dry cleaners. These facilities typically have two or more machines and use 200 gallons or more per year of perc. Therefore, separation distances need to be greater for large dry cleaners. At a distance of 500 feet, the remaining risk for a large plant can be reduced by over 85 percent.

In California, a small number of dry cleaners that are co-located (sharing a common wall, floor, or ceiling) with a residence have the potential to expose the inhabitants of the residence to high levels of perc. However, while special requirements have been imposed on these existing facilities, the potential for exposure still exists. Avoiding these siting situations in the future is an important preventative measure.

Local air districts are a source of information regarding specific dry cleaning operations—particularly for large industrial operations with multiple machines. The 300 foot separation recommended below reflects the most common situation – a dry cleaner with only one machine. While we recommend 500 feet when there are two or more machines, site specific information should be obtained from the local air district for some very large industrial operations. Factors that can impact the risk include the number and type of machines, controls used, source configuration, building dimensions, terrain, and meteorological data.

## Recommendation

- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines provide 500 feet. For operations with 3 or more machines, consult with the local air district.
- Do not site new sensitive land uses in the same building with perc dry cleaning operations.

## References

- *Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*, Final Staff Report. South Coast AQMD. (October 2002)
- *Air Toxic Control Measure for Emissions of Perchloroethylene from Dry Cleaning Operations*. ARB (1994)  
(<http://www.arb.ca.gov/toxics/atcm/percatcm.htm>)
- “An Assessment of Tetrachloroethylene in Human Breast Milk”, Judith Schreiber, New York State Department of Health – Bureau of Toxic Substance Assessment, *Journal of Exposure Analysis and Environmental Epidemiology*, Vol.2, Suppl.2, pp. 15-26, 1992.
- *Draft Air Toxics “Hot Spots” Program Perchloroethylene Dry Cleaner Industry-wide Risk Assessment Guidelines*. (CAPCOA (November 2002)
- *Final Environmental Assessment for Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*. South Coast AQMD. (October 18, 2002)

## **Gasoline Dispensing Facilities**

Refueling at gasoline dispensing facilities releases benzene into the air. Benzene is a potent carcinogen and is one of the highest risk air pollutants regulated by ARB. Motor vehicles and motor vehicle-related activity account for over 90 percent of benzene emissions in California. While gasoline-dispensing facilities account for a small part of total benzene emissions, near source exposures for large facilities can be significant.

Since 1990, benzene in the air has been reduced by over 75 percent statewide, primarily due to the implementation of emissions controls on motor vehicle vapor recovery equipment at gas stations, and a reduction in benzene levels in gasoline. However, benzene levels are still significant. In urban areas, average benzene exposure is equivalent to about 50 in one million.

Gasoline dispensing facilities tend to be located in areas close to residential and shopping areas. Benzene emissions from the largest gas stations may result in near source health risk beyond the regional background and district health risk thresholds. The emergence of very high gasoline throughput at large retail or

wholesale outlets makes this a concern as these types of outlets are projected to account for an increasing market share in the next few years.

### Key Health Findings

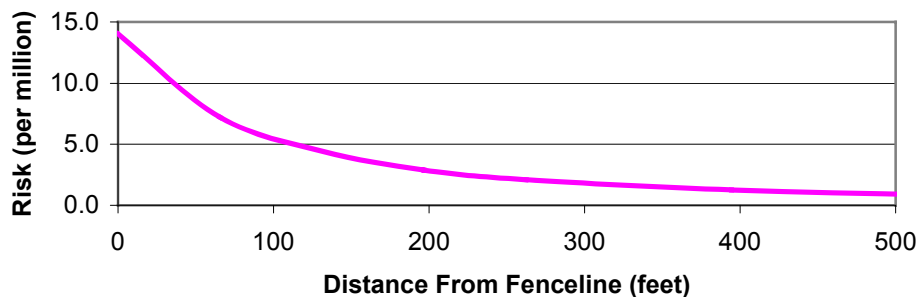
Benzene is a human carcinogen identified by ARB as a toxic air contaminant. Benzene also can cause non-cancer health effects above a certain level of exposure. Brief inhalation exposure to high concentrations can cause central nervous system depression. Acute effects include central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness. It is unlikely that the public would be exposed to levels of benzene from gasoline dispensing facilities high enough to cause these non-cancer health effects.

### Distance Related Findings

A well-maintained vapor recovery system can decrease emissions of benzene by more than 90% compared with an uncontrolled facility. Almost all facilities have emission control systems. Air quality modeling of the health risks from gasoline dispensing facilities indicate that the impact from the facilities decreases rapidly as the distance from the facility increases.

Statistics reported in the ARB's staff reports on Enhanced Vapor Recovery released in 2000 and 2002, indicated that almost 96 percent of the gasoline dispensing facilities had a throughput less than 2.4 million gallons per year. The remaining four percent, or approximately 450 facilities, had throughputs exceeding 2.4 million gallons per year. For these stations, the average gasoline throughput was 3.6 million gallons per year.

**Figure 1-6  
Gasoline Dispensing Facility Health Risk  
for 3,600,000 gal/yr throughput**



As shown in Figure 1-6, the risk levels for a gasoline dispensing facility with a throughput of 3.6 million gallons per year is about 10 in one million at a distance of 50 feet from the fenceline. However, as the throughput increases, the potential risk increases.

As mentioned above, air pollution levels in the immediate vicinity of large gasoline dispensing facilities may be higher than the surrounding area (although tailpipe emissions from motor vehicles dominates the health impacts). Very large gasoline dispensing facilities located at large wholesale and discount centers may dispense nine million gallons of gasoline per year or more. At nine million gallons, the potential risk could be around 25 in one million at 50 feet, dropping to about five in one million at 300 feet. Some facilities have throughputs as high as 19 million gallons.

### Recommendation

- Avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

### References

- *Gasoline Service Station Industry-wide Risk Assessment Guidelines*. California Air Pollution Control Officers Association (December 1997 and revised November 1, 2001)
- *Staff Report on Enhanced Vapor Recovery*. ARB (February 4, 2000)
- *The California Almanac of Emissions and Air Quality*. ARB (2004)
- *Staff Report on Enhanced Vapor Recovery Technology Review*. ARB (October 2002)

### **Other Facility Types that Emit Air Pollutants of Concern**

In addition to source specific recommendations, Table 1-3 includes a list of other industrial sources that could pose a significant health risk to nearby sensitive individuals depending on a number of factors. These factors include the amount of pollutant emitted and its toxicity, the distance to nearby individuals, and the type of emission controls in place. Since these types of facilities are subject to air permits from local air districts, facility specific information should be obtained where there are questions about siting a sensitive land use close to an industrial facility.

### **Potential Sources of Odor and Dust Complaints**

Odors and dust from commercial activities are the most common sources of air pollution complaints and concerns from the public. Land use planning and permitting processes should consider the potential impacts of odor and dust on surrounding land uses, and provide for adequate separation between odor and dust sources. As with other types of air pollution, a number of factors need to be considered when determining an adequate distance or mitigation to avoid odor or

**Table 1-3 – Examples of Other Facility Types That Emit<sup>1</sup> Air Pollutants of Concern**

<u>Categories</u>	<u>Facility Type</u>	<u>Air Pollutants of Concern</u>
Commercial	Autobody Shops Furniture Repair Film Processing Services Distribution Centers Printing Shops Diesel Engines	Metals, Solvents Solvents <sup>2</sup> , Methylene Chloride Solvents, Perchloroethylene Diesel Particulate Matter Solvents Diesel Particulate Matter
Industrial	Construction Manufacturers Metal Platers, Welders, Metal Spray (flame spray) Operations Chemical Producers Furniture Manufacturers Shipbuilding and Repair  Rock Quarries and Cement Manufacturers Hazardous Waste Incinerators Power Plants  Research and Development Facilities	Particulate Matter, Asbestos Solvents, Metals Hexavalent Chromium, Nickel, Metals Solvents, Metals Solvents Hexavalent chromium and other metals, Solvents Particulate Matter, Asbestos  Dioxin, Solvents, Metals Benzene, Formaldehyde, Particulate Matter Solvents, Metals, etc.
Public	Landfills  Waste Water Treatment Plants Medical Waste Incinerators  Recycling, Garbage Transfer Stations Municipal Incinerators	Benzene, Vinyl Chloride, Diesel Particulate Matter Hydrogen Sulfide Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene Diesel Particulate Matter  Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
Transportation	Truck Stops	Diesel Particulate Matter
Agricultural Operations	Farming Operations  Livestock and Dairy Operations	Diesel Particulate Matter, VOCs, NOx, PM10, CO, SOx, Pesticides Ammonia, VOCs, PM10

<sup>1</sup>Not all facilities will emit pollutants of concern due to process changes or chemical substitution. Consult the local air district regarding specific facilities.

<sup>2</sup>Some solvents may emit toxic air pollutants, but not all solvents are toxic air contaminants.

dust complaints in a specific situation. Local air districts should be consulted for advice when these siting situations arise.

Table 1-4 lists some of the most common sources of odor complaints received by local air districts. Complaints about odors are the responsibility of local air districts and are covered under state law. The types of facilities that can cause odor complaints are varied and can range from small commercial facilities to large industrial facilities, and may include waste disposal and recycling operations. Odors can cause health symptoms such as nausea and headache. Facilities with odors may also be sources of toxic air pollutants (See Table 1-3). Some common sources of odors emitted by facilities are sulfur compounds, organic solvents, and the decomposition/digestion of biological materials. Because of the subjective nature of an individual's sensitivity to a particular type of odor, there is no specific rule for assigning appropriate separations from odor sources. Under the right meteorological conditions, some odors may still be offensive several miles from the source.



Sources of dust are also common sources of air pollution-related complaints. Operations that can result in dust problems are rock crushing, gravel production, stone quarrying, and mining operations. A common source of complaints is the dust and noise associated with blasting that may be part of these operations. Besides the health impacts of dust as particulate matter, thick dust also impairs visibility, aesthetic values, and can soil homes and automobiles. Local air districts typically have rules for regulating dust sources in their jurisdictions, but dust sources can still be a concern. Therefore, separation of these facilities from residential and other new sensitive land uses should be considered.

In some areas of California, asbestos occurs naturally in stone deposits. Asbestos is a potent carcinogenic substance when inhaled. Asbestos-containing dust may be a public health concern in areas where asbestos-containing rock is mined, crushed, processed, or used. Situations where asbestos-containing gravel has been used in road paving materials are also a source of asbestos exposure to the general public. Planners are advised to consult with local air pollution agencies in areas where asbestos-containing gravel or stone products are produced or used.

## 2. Handbook Development

ARB and local air districts share responsibility for improving statewide air quality. As a result of California's air pollution control programs, air quality has improved and health risk has been reduced statewide. However, state and federal air quality standards are still exceeded in many areas of California and the statewide health risk posed by toxic air contaminants (air toxics) remains too high. Also, some communities experience higher pollution exposures than others - making localized impacts, as well regional or statewide impacts, an important consideration. It is for this reason that this Handbook has been produced - to promote better, more informed decision-making by local land use agencies that will improve air quality and public health in their communities.

Land use policies and practices, including planning, zoning, and siting activities, can play a critical role in air quality and public health at the local level. For instance, even with the best available control technology, some projects that are sited very close to homes, schools, and other public places can result in elevated air pollution exposures. The reverse is also true – siting a new school or home too close to an existing source of air pollution can pose a public health risk. The ARB recommendations in section 1 address this issue.

*This Handbook is an informational document that we hope will strengthen the relationship between air quality and land use agencies. It highlights the need for land use agencies to address the potential for new projects to result in localized health risk or contribute to cumulative impacts where air pollution sources are concentrated.*

Avoiding these incompatible land uses is a key to reducing localized air pollution exposures that can result in adverse health impacts, especially to sensitive individuals.

Individual siting decisions that result in incompatible land uses are often the result of locating “sensitive” land uses next to polluting sources. These decisions can be of even greater concern when existing air pollution exposures in a community are considered. In general terms, this is often referred to as the issue of “cumulative impacts.” ARB is working with local air districts to better define these situations and to make information about existing air pollution levels (e.g., from local businesses, motor vehicles, and other areawide sources) more readily available to land use agencies.

In December 2001, the ARB adopted “Policies and Actions for Environmental Justice” (Policies). These Policies were developed in coordination with a group of stakeholders, representing local government agencies, community interest



groups, environmental justice organizations, academia, and business (Environmental Justice Stakeholders Group).

The Policies included a commitment to work with land use planners, transportation agencies, and local air districts to develop ways to identify, consider, and reduce cumulative air pollution emissions, exposure, and health risks associated with land use planning and decision-making. Developed under the auspices of the ARB's Environmental Justice Stakeholders Group, this Handbook is a first step in meeting that commitment.

ARB has produced this Handbook to help achieve several objectives:

- Provide recommendations on situations to avoid when siting new residences, schools, day care centers, playgrounds, and medical-related facilities (sensitive sites or sensitive land uses);
- Identify approaches that land use agencies can use to prevent or reduce potential air pollution impacts associated with general plan policies, new land use development, siting, and permitting decisions;
- Improve and facilitate access to air quality data and evaluation tools for use in the land use decision-making process;
- Encourage stronger collaboration between land use agencies and local air districts to reduce community exposure to source-specific and cumulative air pollution impacts; and
- Emphasize community outreach approaches that promote active public involvement in the air quality/land use decision-making process.

This Handbook builds upon California's 2003 General Plan Guidelines. These Guidelines, developed by the Governor's Office of Planning and Research (OPR), explain the land use planning process and applicable legal requirements. This Handbook also builds upon a 1997 ARB report, "The Land Use-Air Quality Linkage" ("Linkage Report").<sup>9</sup> The Linkage Report was an outgrowth of the California Clean Air Act which, among other things, called upon local air districts to focus particular attention on reducing emissions from sources that indirectly cause air pollution by attracting vehicle trips. Such indirect sources include, but are not limited to, shopping centers, schools and universities, employment centers, warehousing, airport hubs, medical offices, and sports arenas. The Linkage Report summarizes data as of 1997 on the relationships between land use, transportation, and air quality, and highlights strategies that can help to reduce the use of single occupancy automobile use. Such strategies

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<sup>9</sup> To access this report, please refer to ARB's website or click on: <http://www.arb.ca.gov/ch/programs/link97.pdf>

complement ARB regulatory programs that continue to reduce motor vehicle emissions.

In this Handbook, we identify types of air quality-related information that we recommend land use agencies consider in the land use decision-making processes such as the development of regional, general, and community plans; zoning ordinances; environmental reviews; project siting; and permit issuance. The Handbook provides recommendations on the siting of new sensitive land uses based on current analyses. It also contains information on approaches and methodologies for evaluating new projects from an air pollution perspective.

The Handbook looks at air quality issues associated with emissions from industrial, commercial, and mobile sources of air pollution. Mobile sources continue to be the largest overall contributors to the state's air pollution problems, representing the greatest air pollution health risk to most Californians. Based on current health risk information for air toxics, the most serious pollutants on a statewide basis are diesel PM, benzene, and 1,3-butadiene, all of which are primarily emitted by motor vehicles. From a state perspective, ARB continues to pursue new strategies to further reduce motor vehicle-related emissions in order to meet air quality standards and reduce air toxics risk.

While mobile sources are the largest overall contributors to the state's air pollution problems, industrial and commercial sources can also pose a health risk, particularly to people near the source. For this reason, the issue of incompatible land uses is an important focus of this document.

### **Handbook Audience**

Even though the primary users of the Handbook will likely be agencies responsible for air quality and land use planning, we hope the ideas and technical issues presented in this Handbook will also be useful for:

- public and community organizations and community residents;
- federal, state and regional agencies that fund, review, regulate, oversee, or otherwise influence environmental policies and programs affected by land use policies; and
- private developers.

### 3. Key Community Focused Issues Land Use Agencies Should Consider

Two key air quality issues that land use agencies should consider in their planning, zoning, and permitting processes are:

- 1) **Incompatible Land Uses.** Localized air pollution impacts from incompatible land use can occur when polluting sources, such as a heavily trafficked roadway, warehousing facilities, or industrial or commercial facilities, are located near a land use where sensitive individuals are found such as a school, hospital, or homes.
- 2) **Cumulative Impacts.** Cumulative air pollution impacts can occur from a concentration of multiple sources that individually comply with air pollution control requirements or fall below risk thresholds, but in the aggregate may pose a public health risk to exposed individuals. These sources can be heavy or light-industrial operations, commercial facilities such as autobody shops, large gas dispensing facilities, dry cleaners, and chrome platers, and freeways or other nearby busy transportation corridors.

#### **Incompatible Land Uses**

Land use policies and practices can worsen air pollution exposure and adversely affect public health by mixing incompatible land uses. Examples include locating new sensitive land uses, such as housing or schools, next to small metal plating facilities that use a highly toxic form of chromium, or very near large industrial facilities or freeways. Based on recent monitoring and health-based studies, we now know that air quality impacts from incompatible land uses can contribute to increased risk of illness, missed work and school, a lower quality of life, and higher costs for public health and pollution control.<sup>10</sup>

Avoiding incompatible land uses can be a challenge in the context of mixed-use industrial and residential zoning. For a variety of reasons, government agencies and housing advocates have encouraged the proximity of affordable housing to employment centers, shopping areas, and transportation corridors, partially as a means to reduce vehicle trips and their associated emissions. Generally speaking, typical distances in mixed-use communities between businesses and industries and other land uses such as homes and schools, should be adequate to avoid health risks. However, generalizations do not always hold as we addressed in section 1 of this Handbook.

In terms of siting air pollution sources, the proposed location of a project is a major factor in determining whether it will result in localized air quality impacts. Often, the problem can be avoided by providing an adequate distance or setback

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<sup>10</sup> For more information, the reader should refer to ARB's website on community health: <http://www.arb.ca.gov/ch/ch.htm>

between a source of emissions and nearby sensitive land uses. Sometimes, suggesting project design changes or mitigation measures in the project review phase can also reduce or avoid potential impacts. This underscores the importance of addressing potential incompatible land uses as early as possible in the project review process, ideally in the general plan itself.

### **Cumulative Air Pollution Impacts**

The broad concept of cumulative air pollution impacts reflects the combination of regional air pollution levels and any localized impacts. Many factors contribute to air pollution levels experienced in any location. These include urban background air pollution, historic land use patterns, the prevalence of freeways and other transportation corridors, the concentration of industrial and commercial businesses, and local meteorology and terrain.

When considering the potential air quality impacts of polluting sources on individuals, project location and the concentration of emissions from air pollution sources need to be considered in the land use decision-making process. In section 4, the Handbook offers a series of questions that helps land use agencies determine if a project should undergo a more careful analysis. This holds true regardless of whether the project being sited is a polluting source or a sensitive land use project.

Large industrial areas are not the only land uses that may result in public health concerns in mixed-use communities. Cumulative air pollution impacts can also occur if land uses do not adequately provide setbacks or otherwise protect sensitive individuals from potential air pollution impacts associated with nearby light industrial sources. This can occur with activities such as truck idling and traffic congestion, or from indirect sources such as warehousing facilities that are located in a community or neighborhood.

In October 2004, Cal/EPA published its Environmental Justice Action Plan. In February 2005, the Cal/EPA Interagency Working Group approved a working definition of “cumulative impacts” for purposes of initially guiding the pilot projects that are being conducted pursuant to that plan. Cal/EPA is now in the process of developing a Cumulative Impacts Assessment Guidance document. Cal/EPA will revisit the working definition of “cumulative impacts” as the Agency develops that guidance. The following is the working definition:

*“Cumulative impacts means exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account sensitive populations and socio-economic factors, where applicable, and to the extent data are available.”*

#### **4. Mechanisms for Integrating Localized Air Quality Concerns Into Land Use Processes**

Land use agencies should use each of their existing planning, zoning, and permitting authorities to address the potential health risk associated with new projects. Land use-specific mechanisms can go a long way toward addressing both localized and cumulative impacts from new air pollution sources that are not otherwise addressed by environmental regulations. Likewise, close collaboration and communication between land use agencies and local air districts in both the planning and project approval stages can further reduce these impacts. Local agency partnerships can also result in early identification of potential impacts from proposed activities that might otherwise escape environmental review. When this happens, pollution problems can be prevented or reduced before projects are approved, when it is less complex and expensive to mitigate.

The land use entitlement process requires a series of planning decisions. At the highest level, the General Plan sets the policies and direction for the jurisdiction, and includes a number of mandatory elements dealing with issues such as housing, circulation, and health hazards. Zoning is the primary tool for implementing land use policies. Specific or community plans created in conjunction with a specific project also perform many of the same functions as a zoning ordinance. Zoning can be modified by means of variances and conditional use permits. The latter are frequently used to insure compatibility between otherwise conflicting land uses. Finally, new development usually requires the approval of a parcel or tract map before grading and building permits can be issued. These parcel or tract maps must be consistent with the applicable General Plan, zoning and other standards.

Land use agencies can use their planning authority to separate industrial and residential land uses, or to require mitigation where separation is not feasible. By separating incompatible land uses, land use agencies can prevent or reduce both localized and cumulative air pollution impacts without denying what might otherwise be a desirable project.<sup>11</sup> For instance:

- a dry cleaner could open a storefront operation in a community with actual cleaning operations performed at a remote location away from residential areas;
- gas dispensing facilities with lower fuel throughput could be sited in mixed-use areas;
- enhanced building ventilation or filtering systems in schools or senior care centers can reduce ambient air from nearby busy arterials; or
- landscaping and regular watering can be used to reduce fugitive dust at a building construction site near a school yard.

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<sup>11</sup> It should be noted that such actions should also be considered as part of the General Plan or Plan element process.

The following general and specific land use approaches can help to reduce potential adverse air pollution impacts that projects may have on public health.

### **General Plans**

The primary purpose of planning, and the source of government authority to engage in planning, is to protect public health, safety, and welfare. In its most basic sense, a local government General Plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, forming the basis for most land use decisions. Therefore, the most effective mechanism for dealing with the central land use concept of compatibility and its relationship to cumulative air pollution impacts is the General Plan. Well before projects are proposed within a jurisdiction, the General Plan sets the stage for where projects can be sited, and their compatibility with comprehensive community goals, objectives, and policies.

In 2003, OPR revised its General Plan Guidelines, highlighting the importance of incorporating sustainable development and environmental justice policies in the planning process. The OPR General Plan Guidelines provides an effective and long-term approach to reduce cumulative air pollution impacts at the earliest planning stages. In light of these important additions to the Guidelines, land use agencies should consider updating their General Plans or Plan elements to address these revisions.

The General Plan and related Plan elements can be used to avoid incompatible land uses by incorporating air quality considerations into these documents. For instance, a General Plan safety element with an air quality component could be used to incorporate policies or objectives that are intended to protect the public from the potential for facility breakdowns that may result in a dangerous release of air toxics. Likewise, an air quality component to the transportation circulation element of the General Plan could include policies or standards to prevent or reduce local exposure to diesel exhaust from trucks and other vehicles. For instance, the transportation circulation element could encourage the construction of alternative routes away from residential areas for heavy-duty diesel trucks. By considering the relationship between air quality and transportation, the circulation element could also include air quality policies to prevent or reduce trips and travel, and thus vehicle emissions. Policies in the land use element of the General Plan could identify areas appropriate for future industrial, commercial, and residential uses. Such policies could also introduce design and distance parameters that reduce emissions, exposure, and risk from industrial and some commercial land uses (e.g., dry cleaners) that are in close proximity to residential areas or schools.

Land use agencies should also consider updating or creating an air quality element in the jurisdiction's General Plan. In the air quality element, local decision-makers could develop long-term, effective plans and policies to address

air quality issues, including cumulative impacts. The air quality element can also provide a general reference guide that informs local land use planners about regional and community level air quality, regulatory air pollution control requirements and guidelines, and references emissions and pollution source data bases and assessment and modeling tools. As is further described in Appendix C of the Handbook, new assessment tools that ARB is developing can be included into the air quality element by reference. For instance, ARB's statewide risk maps could be referenced in the air quality element as a resource that could be consulted by developers or land use agencies

## **Zoning**

The purpose of "zoning" is to separate different land uses. Zoning ordinances establish development controls to ensure that private development takes place within a given area in a manner in which:

- All uses are compatible (e.g., an industrial plant is not permitted in a residential area);
- Common development standards are used (e.g., all homes in a given area are set back the same minimum distance from the street); and,
- Each development does not unreasonably impose a burden upon its neighbors (e.g., parking is required on site so as not to create neighborhood parking problems).

To do this, use districts called "zones" are established and standards are developed for these zones. The four basic zones are residential, commercial, industrial and institutional.

Land use agencies may wish to consider how zoning ordinances, particularly those for mixed-use areas, can be used to avoid exacerbating poor land use practices of the past or contributing to localized and cumulative air pollution impacts in the community.

Sometimes, especially in mixed-use zones, there is a potential for certain categories of existing businesses or industrial operations to result in cumulative air pollution impacts to new development projects. For example:

- An assisted living project is proposed for a mixed-use zone adjacent to an existing chrome plating facility, or several dry cleaners;
- Multiple industrial sources regulated by a local air district are located directly upwind of a new apartment complex;
- A new housing development is sited in a mixed-use zone that is downwind or adjacent to a distribution center that attracts diesel-fueled delivery trucks and TRUs; or
- A new housing development or sensitive land use is sited without adequate setbacks from an existing major transportation corridor or rail yard.

As part of the public process for making zoning changes, local land use agencies could work with community planning groups, local businesses, and community residents to determine how best to address existing incompatible land uses.

### **Land Use Permitting Processes**

#### **■ Questions to Consider When Reviewing New Projects**

Very often, just knowing what questions to ask can yield critical information about the potential air pollution impacts of proposed projects – both from the perspective of a specific project as well as in the nature of existing air pollution sources in the same impact area. Available land use information can reveal the proximity of air pollution sources to sensitive individuals, the potential for incompatible land uses, and the location and nature of nearby air pollution sources. Air quality data, available from the ARB and local air districts, can provide information about the types and amounts of air pollution emitted in an area, regional air quality concentrations, and health risk estimates for specific sources.

General Plans and zoning maps are an excellent starting point in reviewing project proposals for their potential air pollution impacts. These documents contain information about existing or proposed land uses for a specific location as well as the surrounding area. Often, just looking at a map of the proposed location for a facility and its surrounding area will help to identify a potential adjacent incompatible land use.

The following pages are a “pull-out” list of questions to consider along with cross-references to pertinent information in the Handbook. These questions are intended to assist land use agencies in evaluating potential air quality-related concerns associated with new project proposals.

The first group of questions contains project-related queries designed to help identify the potential for localized project impacts, particularly associated with incompatible land uses. The second group of questions focuses on the issue of potential cumulative impacts by including questions about existing emissions and air quality in the community, and community feedback. Depending on the answers to these questions, a land use agency may decide a more detailed review of the proposal is warranted.

The California Department of Education has already developed a detailed process for school siting which is outlined in Appendix E. However, school districts may also find this section helpful when evaluating the most appropriate site for new schools in their area. At a minimum, using these questions may encourage school districts to engage throughout their siting process with land use agencies and local air districts. The combined expertise of these entities can be useful in devising relevant design standards and mitigation measures that can



reduce exposure to cumulative emissions, exposure, and health risk to students and school workers.

As indicated throughout the Handbook, we strongly encourage land use agencies to consult early and often with local air districts. Local air districts have the expertise, many of the analytical tools, and a working knowledge of the sources they regulate. It is also critical to fully involve the public and businesses that could be affected by the siting decision. The questions provided in the chart below do not imply any particular action should be taken by land use agencies. Rather the questions are intended to improve the assessment process and facilitate informed decision-making.

■ **Project-Related Questions**

This section includes project-related questions that, in conjunction with the questions in the next section, can be used to tailor the project evaluation. These questions are designed to help identify the potential for incompatible land uses from localized project impacts.

**Questions to Consider When Reviewing New Projects**

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>1. Is the proposed project:</p> <ul style="list-style-type: none"> <li>▲ A business or commercial license renewal</li> <li>▲ A new or modified commercial project</li> <li>▲ A new or modified industrial project</li> <li>▲ A new or modified public facility project</li> <li>▲ A new or modified transportation project</li> <li>▲ A housing or other development in which sensitive individuals may live or play</li> </ul>	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.</p>
<p>2. Does the proposed project:</p> <ul style="list-style-type: none"> <li>▲ Conform to the zoning designation?</li> <li>▲ Require a variance to the zoning designation?</li> <li>▲ Include plans to expand operations over the life of the business such that additional emissions may increase the pollution burden in the community (e.g., from additional truck operations, new industrial operations or process lines, increased hours of operation, build-out to the property line, etc.)?</li> </ul>	<p>See Appendix F for a general explanation of land use processes.</p> <p>In addition, Section 3 contains a discussion of how land use planning, zoning, and permitting practices can result in incompatible land uses or cumulative air pollution impacts.</p>
<p>3. Has the local air district provided comments or information to assist in the analysis?</p>	<p>See Section 5 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>
<p>4. Have public meetings been scheduled with the affected community to solicit their involvement in the decision-making process for the proposed project?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>5. If the proposed project will be subject to local air district regulations:</p> <ul style="list-style-type: none"> <li>▲ Has the project received a permit from the local air district?</li> <li>▲ Would it comply with applicable local air district requirements?</li> <li>▲ Is the local air district contemplating new regulations that would reduce emissions from the source over time?</li> <li>▲ Will potential emissions from the project</li> </ul>	<p>See Appendix C for a description of local air district programs.</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>trigger the local air district's new source review for criteria pollutants or air toxics emissions?</p> <ul style="list-style-type: none"> <li>▲ Is the local air district expected to ask the proposed project to perform a risk assessment?</li> <li>▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project?</li> <li>▲ Are there plans to expand operations over time?</li> <li>▲ Are there land-use based air quality significance thresholds or design standards that could be applied to this project in addition to applicable air district requirements?</li> </ul>	
<p>6. If the proposed project will release air pollution emissions, either directly or indirectly, but is not regulated by the local air district:</p> <ul style="list-style-type: none"> <li>▲ Is the local air district informed of the project?</li> <li>▲ Does the local air district believe that there could be potential air pollution impacts associated with this project category because of the proximity of the project to sensitive individuals?</li> <li>▲ If the project is one in which individuals live or play (e.g., a home, playground, convalescent home, etc.), does the local air district believe that the project's proximity to nearby sources could pose potential air pollution impacts?</li> <li>▲ Are there indirect emissions that could be associated with the project (e.g., truck traffic or idling, transport refrigeration unit operations, stationary diesel engine operations, etc.) that will be in close proximity to sensitive individuals?</li> <li>▲ Will the proposed project increase or serve as a magnet for diesel traffic?</li> <li>▲ Are there land-use based air quality significance thresholds or design standards that could be applied to this project in addition to applicable air district requirements?</li> <li>▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project?</li> <li>▲ Should the site approval process include identification and mitigation of potential</li> </ul>	<p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>direct or indirect emissions associated with the potential project?</p>	
<p>7. Does the local air district or land use agency have pertinent information on the source, such as:</p> <ul style="list-style-type: none"> <li>▲ Available permit and enforcement data, including for the owner or operator of the proposed source that may have other sources in the State.</li> <li>▲ Proximity of the proposed project to sensitive individuals.</li> <li>▲ Number of potentially exposed individuals from the proposed project.</li> <li>▲ Potential for the proposed project to expose sensitive individuals to odor or other air pollution nuisances.</li> <li>▲ Meteorology or the prevailing wind patterns between the proposed project and the nearest receptor, or between the proposed sensitive receptor project and sources that could pose a localized or cumulative air pollution impact.</li> </ul>	<p>See Appendix C for a description of local air district programs.</p> <p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.</p> <p>Also, do not hesitate to contact your local air district regarding answers to any of these questions that might not be available at the land use agency.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>8. Based upon the project application, its location, and the nature of the source, could the proposed project:</p> <ul style="list-style-type: none"> <li>▲ Be a polluting source that is located in proximity to, or otherwise upwind, of a location where sensitive individuals live or play?</li> <li>▲ Attract sensitive individuals and be located in proximity to or otherwise downwind, of a source or multiple sources of pollution, including polluting facilities or transportation-related sources that contribute emissions either directly or indirectly?</li> <li>▲ Result in health risk to the surrounding community?</li> </ul>	<p>See Section 3 for a discussion of what is an incompatible land use and the potential cumulative air pollution impacts.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>9. If a CEQA categorical exemption is proposed, were the following questions considered:</p> <ul style="list-style-type: none"> <li>▲ Is the project site environmentally sensitive as defined by the project's location? (A project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant.)</li> <li>▲ Would the project and successive future projects of the same type in the approximate location potentially result in cumulative impacts?</li> <li>▲ Are there "unusual circumstances" creating the possibility of significant effects?</li> </ul>	<p>See CEQA Guidelines section 15300, and Public Resources Code, section 21084.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p> <p>See also Section 5 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>

■ **Questions Related to Cumulative Impact Assessment**

The following questions can be used to provide the decision-maker with a better understanding of the potential for cumulative air pollution impacts to an affected community. Answers to these questions will help to determine if new projects or activities warrant a more detailed review. It may also help to see potential environmental concerns from the perspective of the affected community. Additionally, responses can provide local decision-makers with information with which to assess the best policy options for addressing neighborhood-scale air pollution concerns.

The questions below can be used to identify whether existing tools and procedures are adequate to address land use-related air pollution issues. This process can also be used to pinpoint project characteristics that may have the greatest impact on community-level emissions, exposure, and risk. Such elements can include: the compliance record of existing sources including those owned or operated by the project proponent; the concentration of emissions from polluting sources within the approximate area of sensitive sites; transportation circulation in proximity to the proposed project; compatibility with the General Plan and General Plan elements; etc.

The local air district can provide useful assistance in the collection and evaluation of air quality-related information for some of the questions and should be consulted early in the process.

**Questions Related to Cumulative Impact Assessment**

Technical Questions	Cross-Reference to Relevant Handbook Sections
1. Is the community home to industrial facilities?	See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.
2. Do one or more major freeways or high-traffic volume surface streets cut through the community?	See transportation circulation element of your general plan. See also Appendix B for useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.  See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).
3. Is the area classified for mixed-use zoning?	See your general plan and zoning ordinances.
4. Is there an available list of air pollution sources in the community?	Contact your local air district.
5. Has a walk-through of the community been conducted to gather the following information:	See Appendix B for a listing of useful information that land use agencies

Technical Questions	Cross-Reference to Relevant Handbook Sections
<ul style="list-style-type: none"> <li>▲ Corroborate available information on land use activities in the area (e.g., businesses, housing developments, sensitive individuals, etc.)?</li> <li>▲ Determine the proximity of existing and anticipated future projects to residential areas or sensitive individuals?</li> <li>▲ Determine the concentration of emission sources (including anticipated future projects) to residential areas or sensitive individuals?</li> </ul>	<p>should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district.</p>
<p>6. Has the local air district been contacted to obtain information on sources in the community?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>7. What categories of commercial establishments are currently located in the area and does the local air district have these sources on file as being regulated or permitted?</p>	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants. Also contact your local air district.</p>
<p>8. What categories of indirect sources such as distribution centers or warehouses are currently located in the area?</p>	<p>See Appendix A for typical land use classifications and associated project categories that emit air pollutants.</p>
<p>9. What air quality monitoring data are available?</p>	<p>Contact your local air district.</p>
<p>10. Have any risk assessments been performed on emission sources in the area?</p>	<p>Contact your local air district.</p>
<p>11. Does the land use agency have the capability of applying a GIS spatial mapping tool that can overlay zoning, sub-development information, and other neighborhood characteristics, with air pollution and transportation data?</p>	<p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district for tools that can be used to supplement available land use agency tools.</p>
<p>12. Based on available information, is it possible to determine if the affected community or neighborhood experiences elevated health risk due to a concentration of air pollution sources in close proximity, and if not, can the necessary information be obtained?</p>	<p>Contact your local air district. Also see Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>13. Does the community have a history of chronic complaints about air quality?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools. Also contact your local air district.</p>
<p>14. Is the affected community included in the public participation process for the agency's decision?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>15. Have community leaders or groups been contacted about any pre-existing or chronic community air quality concerns?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools. Also contact your local air district.</p>

## ■ Mitigation Approaches

In addition to considering the suitability of the project location, opportunities for mitigation of air pollution impacts should be considered. Sometimes, a land use agency may find that selection of a different project location to avoid a health risk is not feasible. When that happens, land use agencies should consider design improvements or other strategies that would reduce the risk. Such strategies could include performance or design standards, consultation with local air districts and other agencies on appropriate actions that these agencies should, or plan to, undertake, and consultation and outreach in the affected community. Potential mitigation measures should be feasible, cost-effective solutions within the available resources and authority of implementing agencies to enforce.<sup>12</sup>

## ■ Conditional Use Permits and Performance Standards

Some types of land uses are only allowed upon approval of a conditional use permit (also called a CUP or special use permit). A conditional use permit does not re-zone the land but specifies conditions under which a particular land use will be permitted. Such land uses could be those with potentially significant environmental impacts. Local zoning ordinances specify the uses for which a conditional use permit is required, the zones they may be allowed in, and public hearing procedures. The conditional use permit imposes special requirements to ensure that the use will not be detrimental to its surroundings.

In the context of land use planning, performance standards are requirements imposed on projects or project categories through conditional use permits to ensure compliance with general plan policies and local ordinances. These standards could apply to such project categories as distribution centers, very large gas dispensing facilities, autobody shops, dry cleaners, and metal platers. Land use agencies may wish to consider adding land use-based performance standards to zoning ordinances in existing mixed-use communities for certain air pollution project categories. Such standards would provide certainty and equitable treatment to all projects of a similar nature, and reserve the more resource intensive conditional or special use permits to projects that require a more detailed analysis. In developing project design or performance standards, land use agencies should consult with the local air district. Early and regular consultation can avoid duplication or inconsistency with local air district control requirements when considering the site-specific design and operation of a project.

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<sup>12</sup> A land use agency has the authority to condition or deny a project based upon information collected and evaluated through the land use decision-making process. However, any denial would need to be based upon identifiable, generally applicable, articulated standards set forth in the local government's General Plan and zoning codes. One way of averting this is to conduct early and regular outreach to the community and the local air district so that community and environmental concerns can be addressed and accommodated into the project proposal.

Examples of land use-based air quality-specific performance standards include the following:

- Placing a process vent away from the direction of the local playground that is nearby or increasing the stack height so that emissions are dispersed to reduce the emissions impact on surrounding homes or schools.
- Setbacks between the project fence line and the population center.
- Limiting the hours of operation of a facility to avoid excess emissions exposure or foul odors to nearby individuals.
- An ordinance that requires fleet operators to use cleaner vehicles before project approval (if a new business), or when expanding the fleet (if an existing business); and
- Providing alternate routes for truck operations that discourage detours into residential neighborhoods.

### **Outreach to Other Agencies**

When questions arise regarding the air quality impacts of projects, including potential cumulative impacts, land use agencies should consult the local air district. Land use agencies should also consider the following suggestions to avoid creating new incompatible land uses:

- Consult with the local air district to help determine if emissions from a particular project will adversely impact sensitive individuals in the area, if existing or future effective regulations or permit requirements will affect the proposed project or other sources in the vicinity of the proposed project, or if additional inspections should be required.
- Check with ARB for new information and modeling tools that can help evaluate projects seeking to site within your jurisdiction.
- Become familiar with ARB's Land Use-Air Quality Linkage Report to determine whether approaches and evaluation tools contained in the Report can be used to reduce transportation-related impacts on communities.
- Contact and collaborate with other state agencies that play a role in the land use decision-making process, e.g., the State Department of Education, the California Energy Commission, and Caltrans. These agencies have information on mitigation measures and mapping tools that could be useful in addressing local problems.

### ■ **Information Clearinghouse**

- Land use agencies can refer to the ARB statewide electronic information clearinghouse for information on what measures other jurisdictions are using to address comparable issues or sources.<sup>13</sup>

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<sup>13</sup> This information can be accessed from ARB's website by going to:  
<http://www.arb.ca.gov/ch/clearinghouse.htm>



The next section addresses available air quality assessment tools that land use agencies can use to evaluate the potential for localized or cumulative impacts in their communities.

## 5. Available Tools to Evaluate Cumulative Air Pollution Emissions and Risk

Until recently, California has traditionally approached air pollution control from the perspective of assessing whether the pollution was regional, category-specific, or from new or existing sources. This methodology has been generally effective in reducing statewide and regional air pollution impacts and risk levels. However, such an incremental, category-by-category, source-by-source approach may not always address community health impacts from multiple sources - including mobile, industrial, and commercial facilities.

As a result of air toxics and children's health concerns over the past several years, ARB and local air districts have begun to develop new tools to evaluate and inform the public about cumulative air pollution impacts at the community level. One aspect of ARB's programs now underway is to consolidate and make accessible air toxics emissions and monitoring data by region, using modeling tools and other analytical techniques to take a preliminary look at emissions, exposure, and health risk in communities.

ARB has developed multiple tools to assist local air districts perform assessments of cumulative emissions, exposure, and risk on a neighborhood scale. These tools include:

- Regional risk maps that show trends in potential cancer risk from toxic air pollutants in southern and central California between 1990 and 2010. These maps are based on the U.S. EPA's ASPEN model. These maps provide an estimate of background levels of toxic air pollutant risk but are not detailed enough to assess individual neighborhoods or facilities.<sup>14</sup>
- The Community Health Air Pollution Information System (CHAPIS) is a user-friendly, Internet-based system for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicles. When released in 2004, CHAPIS did not contain information on every source of air pollution or every air pollutant. However, ARB continues to work with local air districts to include all of the largest air pollution sources and those with the highest documented air pollution risk. Additional facilities will be added to CHAPIS as more data become available.<sup>15</sup>

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<sup>14</sup> For further information on these maps, please visit ARB's website at:

<http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

<sup>15</sup> For further information on CHAPIS, please click on:

<http://www.arb.ca.gov/ch/chapis1/chapis1.htm>

- The Hot Spots Analysis and Reporting Program (HARP) is a software database package that evaluates emissions from one or more facilities to determine the overall health risk posed by the facility(-ies) on the surrounding community. Proper use of HARP ensures that the risk assessment meets the latest risk assessment guidelines published by the State Office of Environmental Health Hazard Assessment (OEHHA). HARP is designed with air quality professionals in mind and is available from the ARB.
- The Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses.

Local air districts, and others can use these tools to assess a new project, or plan revision. For example, these tools can be used to:

- Identify if there are multiple sources of air pollution in the community;
- Identify the major sources of air pollution in the area under consideration;
- Identify the background potential cancer risk from toxic air pollution in the area under consideration;
- Estimate the risk from a new facility and how it adds to the overall risk from other nearby facilities; and
- Provide information to decision-makers and key stakeholders on whether there may be significant issues related to cumulative emissions, exposure, and health risk due to a permitting or land use decision.

If an air agency wishes to perform a cumulative air pollution impact analysis using any of these tools, it should consult with the ARB and/or the local air district to obtain information or assistance on the data inputs and procedures necessary to operate the program. In addition, land use agencies could consult with local air districts to determine the availability of land use and air pollution data for entry into an electronic Geographical Information System (GIS) format. GIS is an easier mapping tool than the more sophisticated models described in Appendix C. GIS mapping makes it possible to superimpose land use with air pollution information so that the spatial relationship between air pollution sources, sensitive receptors, and air quality can be visually represented. Appendix C provides a general description of the impact assessment process and micro-scale, or community level modeling tools that are available to evaluate potential cumulative air pollution impacts. Modeling protocols will be accessible on ARB's website as they become available. The ARB will also provide land use agencies and local air districts with statewide regional modeling results and information regarding micro-scale modeling.

## 6. ARB Programs to Reduce Air Pollution in Communities

ARB's regulatory programs reduce air pollutant emissions through statewide strategies that improve public health in all California communities. ARB's overall program addresses motor vehicles, consumer products, air toxics, air-quality planning, research, education, enforcement, and air monitoring. Community health and environmental justice concerns are a consideration in all these programs. ARB's programs are statewide but recognize that extra efforts may be needed in some communities due to historical mixed land-use patterns, limited participation in public processes in the past, and a greater concentration of air pollution sources in some communities.

ARB's strategies are intended to result in better air quality and reduced health risk to residents throughout California. The ARB's priority is to prevent or reduce the public's exposure to air pollution, including from toxic air contaminants that pose the greatest risk, particularly to infants and children who are more vulnerable to air pollution.

In October 2003, ARB updated its statewide control strategy to reduce emissions from source categories within its regulatory authority. A primary focus of the strategy is to achieve federal and state air quality standards for ozone and particulate matter throughout California, and to reduce health risk from diesel PM. Along with local air districts, ARB will continue to address air toxics emissions from regulated sources (see Table 6-1 for a summary of ARB activities). As indicated earlier, ARB will also provide analytical tools and information to land use agencies and local air districts to help assess and mitigate cumulative air pollution impacts.

The ARB will continue to consider the adoption of or revisions to needed air toxics control measures as part of the state's ongoing air toxics assessment program.<sup>16</sup>

As part of its effort to reduce particulate matter and air toxics emissions from diesel PM, the ARB has developed a Diesel Risk Reduction Program<sup>17</sup> that lays out several strategies in a three-pronged approach to reduce emissions and their associated risk:

- Stringent emission standards for all new diesel-fueled engines;
- Aggressive reductions from in-use engines; and
- Low sulfur fuel that will reduce PM and still provide the quality of diesel fuel needed to control diesel PM.

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<sup>16</sup> For continuing information and updates on state measures, the reader can refer to ARB's website at <http://www.arb.ca.gov/toxics/toxics.htm>.

<sup>17</sup> For a comprehensive description of the program, please refer to ARB's website at <http://www.arb.ca.gov/diesel/dieselrrp.htm>.

**Table 6-1  
ARB ACTIONS TO ADDRESS  
CUMULATIVE AIR POLLUTION IMPACTS IN COMMUNITIES**

**Information Collection**

- Improve emission inventories, air monitoring data, and analysis tools that can help to identify areas with high cumulative air pollution impacts
- Conduct studies in coordination with OEHHA on the potential for cancer and non-cancer health effects from air pollutants emitted by specific source categories
- Establish web-based clearinghouse for local land use strategies

**Emission Reduction Approaches (2004-2006)\***

- Through a public process, consider development and/or amendment of regulations and related guidance to reduce emissions, exposure, and health risk at a statewide and local level for the following sources:
  - Diesel PM sources such as stationary diesel engines, transport refrigeration units, portable diesel engines, on-road public fleets, off-road public fleets, heavy-duty diesel truck idling, harbor craft vessels, waste haulers
  - Other air toxics sources, such as formaldehyde in composite wood products, hexavalent chromium for chrome plating and chromic acid anodizing, thermal spraying, and perchloroethylene dry cleaning
- Develop technical information for the following:\*
  - Distribution centers
  - Modeling tools such as HARP and CHAPIS
- Adopt rules and pollution prevention initiatives within legal authority to reduce emissions from mobile sources and fuels, and consumer products
- Develop and maintain Air Quality Handbook as a tool for use by land use agencies and local air districts to address cumulative air pollution impacts

**Other Approaches**

- Establish guidelines for use of statewide incentive funding for high priority mobile source emission reduction projects

\*Because ARB will continue to review the need to adopt or revise statewide measures, the information contained in this chart will be updated on an ongoing basis.

A number of ARB's diesel risk reduction strategies have been adopted. These include measures to reduce emissions from refuse haulers, urban buses, transport refrigeration units, stationary and portable diesel engines, and idling trucks and school buses. These sources are all important from a community perspective.<sup>18</sup>

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<sup>18</sup> The reader can refer to ARB's website for information on its mobile source-related programs at: <http://www.arb.ca.gov/msprog/msprog.htm>, as well as regulations adopted and under consideration as part of the Diesel Risk Reduction Program at: <http://www.arb.ca.gov/diesel/dieselrrp.htm>

The ARB will continue to evaluate the health effects of air pollutants while implementing programs with local air districts to reduce air pollution in all California communities.

Local air districts also have ambitious programs to reduce criteria pollutants and air toxics from regulated sources in their region. Many of these programs also benefit air quality in local communities as well as in the broader region. For more information on what is being done in your area to reduce cumulative air pollution impacts through air pollution control programs, you should contact your local air district.<sup>19</sup>

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<sup>19</sup> Local air district contacts can be found on the inside cover to this Handbook.

## **7. Ways to Enhance Meaningful Public Participation**

Community involvement is an important part of the land use process. The public is entitled to the best possible information about the air they breathe and what is being done to prevent or reduce unhealthy air pollution in their communities. In particular, information on how land use decisions can affect air pollution and public health should be made accessible to all communities, including low-income and minority communities.

Effective community participation consistently relies on a two-way flow of information – from public agencies to community members about opportunities, constraints, and impacts, and from community members back to public officials about needs, priorities, and preferences. The outreach process needed to build understanding and local neighborhood involvement requires data, methodologies, and formats tailored to the needs of the specific community. More importantly, it requires the strong collaboration of local government agencies that review and approve projects and land uses to improve the physical and environmental surroundings of the local community.

Many land use agencies, especially those in major metropolitan areas, are familiar with, and have a long-established public review process. Nevertheless, public outreach can often be improved. Active public involvement requires engaging the public in ways that do not require their previous interest in or knowledge of the land use or air pollution control requirements, and a commitment to taking action where appropriate to address the concerns that are raised.

### **■ Direct Community Outreach**

In conjunction with local air districts, land use agencies should consider designing an outreach program for community groups, other stakeholders, and local government agency staffs that address the problem of cumulative air pollution impacts, and the public and government role in reducing them. Such a program could consider analytical tools that assist in the preparation and presentation of information in a way that supports sensible decision-making and public involvement. Table 7-1 contains some general outreach approaches that might be considered.

**Table 7-1  
Public Participation Approaches**

- Staff and community leadership awareness training on environmental justice programs and community-based issues
- Surveys to identify the website information needs of interested community-based organizations and other stakeholders
- Information materials on local land use and air district authorities
- Community-based councils to facilitate and invite resident participation in the planning process
- Neighborhood CEQA scoping sessions that allows for community input prior to technical analysis
- Public information materials on siting issues are under review including materials written for the affected community, and in different media that widens accessibility
- Public meetings
- Identify other opportunities to include community-based organizations in the process

To improve outreach, local land use agencies should consider the following activities:

- Hold meetings in communities affected by agency programs, policies, and projects at times and in places that encourage public participation, such as evenings and weekends at centrally located community meeting rooms, libraries, and schools.
- Assess the need for and provide translation services at public meetings.
- Hold community meetings to update residents on the results of any special air monitoring programs conducted in their neighborhood.
- Hold community meetings to discuss and evaluate the various options to address cumulative impacts in their community.
- In coordination with local air districts, make staff available to attend meetings of community organizations and neighborhood groups to listen to and, where appropriate, act upon community concerns.
- Establish a specific contact person for environmental justice issues.
- Increase student and community awareness of local government land use activities and policies through outreach opportunities.
- Make air quality and land use information available to communities in an easily understood and useful format, including fact sheets, mailings, brochures, public service announcements, and web pages, in English and other languages.
- On the local government web-site, dedicate a page or section to what the land use program is doing regarding environmental justice and cumulative environmental impacts, and, as applicable, activities conducted with local air districts such as neighborhood air monitoring studies, pollution prevention, air pollution sources in neighborhoods, and risk reduction.



- Allow, encourage, and promote community access to land use activities, including public meetings, General Plan or Community Plan updates, zoning changes, special studies, CEQA reviews, variances, etc.
  - Distribute information in multiple languages, as needed, on how to contact the land use agency or local air district to obtain information and assistance regarding environmental justice programs, including how to participate in public processes.
  - Create and distribute a simple, easy-to-read, and understandable public participation handbook, which may be based on the “Public Participation Guidebook” developed by ARB.
- **Other Opportunities for Meaningful Public Outreach**
- Community-Based Planning Committees

Neighborhood-based or community planning advisory councils could be established to invite and facilitate direct resident participation into the planning process. With the right training and technical assistance, such councils can provide valuable input and a forum for the review of proposed amendments to plans, zone changes, land use permits, and suggestions as to how best to prevent or reduce cumulative air pollution impacts in their community.

- Regional Partnerships

Consider creating regional coalitions of key growth-related organizations from both the private and public sectors, with corporations, communities, other jurisdictions, and government agencies. Such partnerships could facilitate agreement on common goals and win-win solutions tailored specifically for the region. With this kind of dialogue, shared vision, and collaboration, barriers can be overcome and locally acceptable sustainable solutions implemented. Over the long term, such strategies will help to bring about clean air in communities as well as regionally.

**LAND USE CLASSIFICATIONS AND ASSOCIATED FACILITY CATEGORIES  
THAT COULD EMIT AIR POLLUTANTS**

<b>(1) Land Use Classifications – by Activity<sup>i</sup></b>	<b>(2) Facility or Project Examples</b>	<b>(3) Key Pollutants<sup>ii,iii</sup></b>	<b>(4) Air Pollution Permits<sup>iv</sup></b>
<b>COMMERCIAL/ LIGHT INDUSTRIAL: SHOPPING, BUSINESS, AND COMMERCIAL</b>			
▲ Primarily retail shops and stores, office, commercial activities, and light industrial or small business	Dry cleaners; drive-through restaurants; gas dispensing facilities; auto body shops; metal plating shops; photographic processing shops; textiles; apparel and furniture upholstery; leather and leather products; appliance repair shops; mechanical assembly cleaning; printing shops	VOCs, air toxics, including diesel PM, NOx, CO, SOx	Limited; Rules for applicable equipment
▲ Goods storage or handling activities, characterized by loading and unloading goods at warehouses, large storage structures, movement of goods, shipping, and trucking.	Warehousing; freight-forwarding centers; drop-off and loading areas; distribution centers	VOCs, air toxics, including diesel PM, NOx, CO, SOx	No <sup>v</sup>
<b>LIGHT INDUSTRIAL: RESEARCH AND DEVELOPMENT</b>			
▲ Medical waste at research hospitals and labs	Incineration; surgical and medical instrument manufacturers, pharmaceutical manufacturing, biotech research facilities	Air toxics, NOx, CO, SOx	Yes
▲ Electronics, electrical apparatus, components, and accessories	Computer manufacturer; integrated circuit board manufacturer; semiconductor production	Air toxics, VOCs	Yes
▲ College or university lab or research center	Medical waste incinerators; lab chemicals handling, storage and disposal	Air toxics, NOx, CO, SOx, PM10	Yes
▲ Research and development labs	Satellite manufacturer; fiber-optics manufacturer; defense contractors; space research and technology; new vehicle and fuel testing labs	Air toxics, VOCs	Yes
▲ Commercial testing labs	Consumer products; chemical handling, storage and disposal	Air toxics, VOCs	Yes

## APPENDIX A

(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>INDUSTRIAL: NON-ENERGY-RELATED</b>			
▲ Assembly plants, manufacturing facilities, industrial machinery	Adhesives; chemical; textiles; apparel and furniture upholstery; clay, glass, and stone products production; asphalt materials; cement manufacturers, wood products; paperboard containers and boxes; metal plating; metal and canned food product fabrication; auto manufacturing; food processing; printing and publishing; drug, vitamins, and pharmaceuticals; dyes; paints; pesticides; photographic chemicals; polish and wax; consumer products; metal and mineral smelters and foundries; fiberboard; floor tile and cover; wood and metal furniture and fixtures; leather and leather products; general industrial and metalworking machinery; musical instruments; office supplies; rubber products and plastics production; saw mills; solvent recycling; shingle and siding; surface coatings	VOCs, air toxics, including diesel PM, NOx, PM, CO, SOx	Yes
<b>INDUSTRIAL: ENERGY AND UTILITIES</b>			
▲ Water and sewer operations	Pumping stations; air vents; treatment	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
▲ Power generation and distribution	Power plant boilers and heaters; portable diesel engines; gas turbine engines	NOx, diesel PM, NOx, CO, SOx, PM10, VOCs	Yes
▲ Refinery operations	Refinery boilers and heaters; coke cracking units; valves and flanges; flares	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Oil and gas extraction	Oil recovery systems; uncovered wells	NOx, diesel PM, VOCs, CO, SOx, PM10	Yes
▲ Gasoline storage, transmission, and marketing	Above and below ground storage tanks; floating roof tanks; tank farms; pipelines	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Solid and hazardous waste treatment, storage, and disposal activities.	Landfills; methane digester systems; process recycling facility for concrete and asphalt materials	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
<b>CONSTRUCTION (NON-TRANSPORTATION)</b>			
	Building construction; demolition sites	PM (re-entrained road dust), asbestos, diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; state and federal off-road equipment standards

## APPENDIX A

(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>DEFENSE</b>			
	Ordnance and explosives demolition; range and testing activities; chemical production; degreasing; surface coatings; vehicle refueling; vehicle and engine operations and maintenance	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Limited; prescribed burning; equipment and solvent rules
<b>TRANSPORTATION</b>			
▲ Vehicular movement	Residential area circulation systems; parking and idling at parking structures; drive-through establishments; car washes; special events; schools; shopping malls, etc.	VOCs, NOx, PM (re-entrained road dust) air toxics e.g., benzene, diesel PM, formaldehyde, acetaldehyde, 1,3 butadiene, CO, SOx, PM10	No
▲ Road construction and surfacing	Street paving and repair; new highway construction and expansion	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	No
▲ Trains	Railroads; switch yards; maintenance yards		
▲ Marine and port activities	Recreational sailing; commercial marine operations; hotelling operations; loading and un-loading; servicing; shipping operations; port or marina expansion; truck idling	VOCs, NOx, CO, SOx, PM10, air toxics, including diesel PM	Limited; Applicable state and federal MV standards, and possible equipment rules
▲ Aircraft	Takeoff, landing, and taxiing; aircraft maintenance; ground support activities		
▲ Mass transit and school buses	Bus repair and maintenance		
<b>NATURAL RESOURCES</b>			
▲ Farming operations	Agricultural burning; diesel operated engines and heaters; small food processors; pesticide application; agricultural off-road equipment	Diesel PM, VOCs, NOx, PM10, CO, SOx, pesticides	Limited <sup>vi</sup> ; Agricultural burning requirements, applicable state and federal mobile source standards; pesticide rules
▲ Livestock and dairy operations	Dairies and feed lots	Ammonia, VOCs, PM10	Yes <sup>vii</sup>
▲ Logging	Off-road equipment e.g., diesel fueled chippers, brush hackers, etc.	Diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; Applicable state/federal mobile source standards
▲ Mining operations	Quarrying or stone cutting; mining; drilling or dredging	PM10, CO, SOx, VOCs, NOx, and asbestos in some geographical areas	Applicable equipment rules and dust controls

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(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>RESIDENTIAL</b>			
Housing	Housing developments; retirement developments; affordable housing	Fireplace emissions (PM10, NOx, VOCs, CO, air toxics); Water heater combustion (NOx, VOCs, CO)	No <sup>vii</sup>
<b>ACADEMIC AND INSTITUTIONAL</b>			
▲ Schools, including school-related recreational activities	Schools; school yards; vocational training labs/classrooms such as auto repair/painting and aviation mechanics	Air toxics	Yes/No <sup>viii</sup>
▲ Medical waste	Incineration	Air toxics, NOx, CO, PM10	Yes
▲ Clinics, hospitals, convalescent homes		Air toxics	Yes

<sup>i</sup> These classifications were adapted from the American Planning Association's "Land Based Classification Standards." The Standards provide a consistent model for classifying land uses based on their characteristics. The model classifies land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. Each dimension has its own set of categories and subcategories. These multiple dimensions allow users to have precise control over land-use classifications. For more information, the reader should refer to the Association's website at <http://www.planning.org/LBCS/GeneralInfo/>.

<sup>ii</sup> This column includes key criteria pollutants and air toxic contaminants that are most typically associated with the identified source categories.

Additional information on specific air toxics that are attributed to facility categories can be found in ARB's Emission Inventory Criteria and Guidelines Report for the Air Toxics Hot Spots Program (May 15, 1997). This information can be viewed at ARB's web site at <http://www.arb.ca.gov/ab2588/final96/guide96.pdf>.

Criteria air pollutants are those air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Criteria pollutants include ozone (formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of sunlight), particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead.

Volatile organic compounds (VOCs) combine with nitrogen oxides to form ozone, as well as particulate matter. VOC emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide VOC emissions. Stationary sources of VOC emissions include processes that use solvents (such as dry-cleaning, degreasing, and coating operations) and petroleum-related processes (such as petroleum refining, gasoline marketing and dispensing, and oil and gas extraction). Areawide VOC sources include consumer products, pesticides, aerosols and paints, asphalt paving and roofing, and other evaporative emissions.

Nitrogen oxides (NOx) are a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone and particulate matter. Most NOx emissions are produced by the combustion of fuels. Mobile sources make up about 80 percent of the total statewide NOx emissions. Mobile sources include on-road vehicles and trucks, aircraft, trains, ships, recreational boats, industrial and construction equipment, farm

equipment, off-road recreational vehicles, and other equipment. Stationary sources of NOx include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Areawide source, which include residential fuel combustion, waste burning, and fires, contribute only a small portion of the total statewide NOx emissions, but depending on the community, may contribute to a cumulative air pollution impact.

Particulate matter (PM) refers to particles small enough to be breathed into the lungs (under 10 microns in size). It is not a single substance, but a mixture of a number of highly diverse types of particles and liquid droplets. It can be formed directly, primarily as dust from vehicle travel on paved and unpaved roads, agricultural operations, construction and demolition.

Carbon monoxide (CO) is a colorless and odorless gas that is directly emitted as a by-product of combustion. The highest concentrations are generally associated with cold stagnant weather conditions that occur during winter. CO problems tend to be localized.

An Air Toxic Contaminant (air toxic) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. Similar to criteria pollutants, air toxics are emitted from stationary, areawide, and mobile sources. They contribute to elevated regional and localized risks near industrial and commercial facilities and busy roadways. The ten compounds that pose the greatest statewide risk are: acetaldehyde; benzene; 1,3-butadiene; carbon tetrachloride; diesel particulate matter (diesel PM); formaldehyde; hexavalent chromium; methylene chloride; para-dichlorobenzene; and perchloroethylene. The risk from diesel PM is by far the largest, representing about 70 percent of the known statewide cancer risk from outdoor air toxics. The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute about 26 percent of statewide diesel PM emissions, with an additional 72 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and other equipment. Stationary engines in shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations contribute about two percent of statewide emissions. However, when this number is disaggregated to a sub-regional scale such as neighborhoods, the risk factor can be far greater.

<sup>iii</sup> The level of pollution emitted is a major determinant of the significance of the impact.

<sup>iv</sup> Indicates whether facility activities listed in column 4 are generally subject to local air district permits to operate. This does not include regulated products such as solvents and degreasers that may be used by sources that may not require an operating permit per se, e.g., a gas station or dry cleaner.

<sup>v</sup> Generally speaking, warehousing or distribution centers are not subject to local air district permits. However, depending on the district, motor vehicle fleet rules may apply to trucks or off-road vehicles operated and maintained by the facility operator. Additionally, emergency generators or internal combustion engines operated on the site may require an operating permit.

<sup>vi</sup> Authorized by recent legislation SB700.

<sup>vii</sup> Local air districts do not require permits for woodburning fireplaces inside private homes. However, some local air districts and land use agencies do have rules or ordinances that require new housing developments or home re-sales to install U.S. EPA –certified stoves. Some local air districts also ban residential woodburning during weather inversions that concentrate smoke in residential areas. Likewise, home water heaters are not subject to permits; however, new heaters could be subject to emission limits that are imposed by federal or local agency regulations.

<sup>viii</sup> Technical training schools that conduct activities normally permitted by a local air district could be subject to an air permit.

**LAND USE-BASED REFERENCE TOOLS TO EVALUATE  
NEW PROJECTS FOR POTENTIAL AIR POLLUTION IMPACTS**

Land use agencies generally have a variety of tools and approaches at hand, or accessible from local air districts that can be useful in performing an analysis of potential air pollution impacts associated with new projects. These tools and approaches include:

- Base map of the city or county planning area and terrain elevations.
- General Plan designations of land use (existing and proposed).
- Zoning maps.
- Land use maps that identify existing land uses, including the location of facilities that are permitted or otherwise regulated by the local air district. Land use agencies should consult with their local air district for information on regulated facilities.
- Demographic data, e.g., population location and density, distribution of population by income, distribution of population by ethnicity, and distribution of population by age. The use of population data is a normal part of the planning process. However, from an air quality perspective, socioeconomic data is useful to identify potential community health and environmental justice issues.
- Emissions, monitoring, and risk-based maps created by the ARB or local air districts that show air pollution-related health risk by community across the state.
- Location of public facilities that enhance community quality of life, including parks, community centers, and open space.
- Location of industrial and commercial facilities and other land uses that use hazardous materials, or emit air pollutants. These include chemical storage facilities, hazardous waste disposal sites, dry cleaners, large gas dispensing facilities, auto body shops, and metal plating and finishing shops.
- Location of sources or facility types that result in diesel on-road and off-road emissions, e.g., stationary diesel power generators, forklifts, cranes, construction equipment, on-road vehicle idling, and operation of transportation refrigeration units. Distribution centers, marine terminals and ports, rail yards, large industrial facilities, and facilities that handle bulk goods are all examples of complex facilities where these types of emission sources are frequently concentrated.<sup>1</sup> Very large facilities, such as ports, marine terminals, and airports, could be analyzed regardless of proximity to a receptor if they are within the modeling area.
- Location and zoning designations for existing and proposed schools, buildings, or outdoor areas where sensitive individuals may live or play.
- Location and density of existing and proposed residential development.
- Zoning requirements, property setbacks, traffic flow requirements, and idling restrictions for trucks, trains, yard hostlers<sup>2</sup>, construction equipment, or school buses.
- Traffic counts (including diesel truck traffic counts), within a community to validate or augment existing regional motor vehicle trip and speed data.

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<sup>1</sup> The ARB is currently evaluating the types of facilities that may act as complex point sources and developing methods to identify them.

<sup>2</sup> Yard hostler means a tractor less than 300 horsepower that is used to transfer semi-truck or tractor-trailer containers in and around storage, transfer, or distribution yards or areas and is often equipped with a hydraulic lifting fifth wheel for connection to trailer containers.





**ARB AND LOCAL AIR DISTRICT INFORMATION AND TOOLS  
CONCERNING CUMULATIVE AIR POLLUTION IMPACTS**

It is the ARB's policy to support research and data collection activities toward the goal of reducing cumulative air pollution impacts. These efforts include updating and improving the air toxics emissions inventory, performing special air monitoring studies in specific communities, and conducting a more complete assessment of non-cancer health effects associated with air toxics and criteria pollutants.<sup>1</sup> This information is important because it helps us better understand links between air pollution and the health of sensitive individuals -- children, the elderly, and those with pre-existing serious health problems affected by air quality.

ARB is working with CAPCOA and OEHHA to improve air pollutant data and evaluation tools to determine when and where cumulative air pollution impacts may be a problem. The following provides additional information on this effort.

**How are emissions assessed?**

Detailed information about the sources of air pollution in an area is collected and maintained by local air districts and the ARB in what is called an emission inventory. Emission inventories contain information about the nature of the business, the location, type and amount of air pollution emitted, the air pollution-producing processes, the type of air pollution control equipment, operating hours, and seasonal variations in activity. Local districts collect emission inventory data for most stationary source categories.

Local air districts collect air pollution emission information directly from facilities and businesses that are required to obtain an air pollution operating permit. Local air districts use this information to compile an emission inventory for areas within their jurisdiction. The ARB compiles a statewide emission inventory based on the information collected by the ARB and local air districts. Local air districts provide most of the stationary source emission data, and ARB provides mobile source emissions as well as some areawide emission sources such as consumer products and paints. ARB is also developing map-based tools that will display information on air pollution sources.

Criteria pollutant data have been collected since the early 1970's, and toxic pollutant inventories began to be developed in the mid-1980's.

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<sup>1</sup> A criteria pollutant is any air pollutant for which EPA has established a National Ambient Air Quality Standard or for which California has established a State Ambient Air Quality Standard, including: carbon monoxide, lead, nitrogen oxides, ozone, particulates and sulfur oxides. Criteria pollutants are measured in each of California's air basins to determine whether the area meets or does not meet specific federal or state air quality standards. Air toxics or air toxic contaminants are listed pollutants recognized by California or EPA as posing a potential risk to health.

### **How is the toxic emission inventory developed?**

Emissions data for toxic air pollutants is a high priority for communities because of concerns about potential health effects. Most of ARB's air toxics data is collected through the toxic "Hot Spots" program. Local air districts collect emissions data from industrial and commercial facilities. Facilities that exceed health-based thresholds are required to report their air toxics emissions as part of the toxic "Hot Spots" program and update their emissions data every four years. Facilities are required to report their air toxics emissions data if there is an increase that would trigger the reporting threshold of the hotspots program. Air toxics emissions from motor vehicles and consumer products are estimated by the ARB. These estimates are generally regional in nature, reflecting traffic and population.

The ARB also maintains chemical speciation profiles that can be used to estimate toxics emissions when no toxic emissions data is available.

### **What additional toxic emissions information is needed?**

In order to assess cumulative air pollution impacts, updated information from individual facilities is needed. Even for sources where emissions data are available, additional information such as the location of emissions release points is often needed to better model cumulative impacts. In terms of motor vehicles, emissions data are currently based on traffic models that only contain major roads and freeways. Local traffic data are needed so that traffic emissions can be more accurately assigned to specific streets and roads. Local information is also needed for off-road emission sources, such as ships, trains, and construction equipment. In addition, hourly maximum emissions data are needed for assessing acute air pollution impacts.

### **What work is underway?**

ARB is working with CAPCOA to improve toxic emissions data, developing a community health air pollution information system to improve access to emission information, conducting neighborhood assessment studies to better understand toxic emission sources, and conducting surveys of sources of toxic pollutants.

### **How is air pollution monitored?**

While emissions data identify how much air pollution is going into the air, the state's air quality monitoring network measures air pollutant levels in outdoor air. The statewide air monitoring network is primarily designed to measure regional exposure to air pollutants, and consists of more than 250 air monitoring sites.

The air toxics monitoring network consists of approximately 20 permanent sites. These sites are supplemented by special monitoring studies conducted by ARB and local air districts. These sites measure approximately sixty toxic air pollutants. Diesel PM, which is the major driver of urban air toxic risk, is not monitored directly. Ten of the

60 toxic pollutants, not including diesel, account for most of the remaining potential cancer risk in California urban areas.

### **What additional monitoring has been done?**

Recently, additional monitoring has been done to look at air quality at the community level. ARB's community monitoring was conducted in six communities located throughout the state. Most sites were in low-income, minority communities located near major sources of air pollution, such as refineries or freeways. The monitoring took place for a year or more in each community, and included measurements of both criteria and toxic pollutants.

### **What is being learned from community monitoring?**

In some cases, the ARB or local air districts have performed air quality monitoring or modeling studies covering a particular region of the state. When available, these studies can give information about regional air pollution exposures.

The preliminary results of ARB's community monitoring are providing insights into air pollution at the community level. Urban background levels are a major contributor to the overall risk from air toxics in urban areas, and this urban background tends to mask the differences between communities. When localized elevated air pollutant levels were measured, they were usually associated with local ground-level sources of toxic pollutants. The most common source of this type was busy streets and freeways. The impact these ground-level sources had on local air quality decreased rapidly with distance from the source. Pollutant levels usually returned to urban background levels within a few hundred meters of the source.

These results indicate that tools to assess cumulative impacts must be able to account for both localized, near-source impacts, as well as regional background air pollution. The tools that ARB is developing for this purpose are air quality models.

### **How can air quality modeling be used?**

While air monitoring can directly measure cumulative exposure to air pollution, it is limited because all locations cannot be monitored. To address this, air quality modeling provides the capability to estimate exposure when air monitoring is not feasible. Air quality modeling can be refined to assess local exposure, identify locations of potential hot spots, and identify the relative contribution of emission sources to exposure at specific locations. The ARB has used this type of information to develop regional cumulative risk maps that estimate the cumulative cancer air pollution risk for most of California. While these maps only show one air pollution-related health risk, it does provide a useful starting point.

**What is needed for community modeling?**

Air quality models have been developed to assess near-source impacts, but they have very exacting data requirements. These near-source models estimate the impact of local sources, but do not routinely include the contribution from regional air pollution background. To estimate cumulative air pollution exposure at a neighborhood scale, a modeling approach needs to combine features of both micro-scale and regional models.

In addition, improved methods are needed to assess near-source impacts under light and variable wind conditions, when high local concentrations are more likely to occur. A method for modeling long-term exposure to air pollutants near freeways and other high traffic areas is also needed.

**What modeling work has ARB developed?**

A key component of ARB's Community Health Program is the Neighborhood Assessment Program (NAP). As described later in this section, the NAP studies are being conducted to better understand pollution impacts at the community level. Through two such studies conducted in Barrio Logan (San Diego) and Wilmington (Los Angeles), ARB is refining community-level modeling methodologies. Regional air toxics modeling is also being performed to better understand regional air pollution background levels.

In a parallel effort, ARB is developing modeling protocols for estimating cumulative emissions, exposure, and risk from air pollution. The protocols will cover modeling approaches and uncertainties, procedures for running the models, the development of statewide risk maps, and methods for estimating health risks. The protocols are subject to an extensive peer review process prior to release.

**How are air pollution impacts on community health assessed?**

On a statewide basis, ARB's toxic air contaminant program identifies and reduces public exposure to air toxics. The focus of the program has been on reducing potential cancer risk, because monitoring results show potential urban cancer risk levels are too high. ARB has also looked for potential non-cancer risks based on health reference levels provided by OEHHA. On a regional basis, the pollutants measured in ARB's toxic monitoring network are generally below the OEHHA non-cancer reference exposure levels.

As part of its community health program, the ARB is looking at potential cancer and non-cancer risk. This could include chronic or acute health effects. If the assessment work shows elevated exposures on a localized basis, ARB will work with OEHHA to assess the health impacts.

### **What tools has ARB developed to assess cumulative air pollution impacts?**

ARB has developed the following tools and reports to assist land use agencies and local air districts assess and reduce cumulative emissions, exposure, and risk on a neighborhood scale.

#### **Statewide Risk Maps**

ARB has produced regional risk maps that show the statewide trends for Southern and Central California in estimated potential cancer risk from air toxics between 1990 and 2010.<sup>2</sup> These maps will supplement U.S. EPA's ASPEN model and are available on the ARB's Internet site. These maps are best used to obtain an estimate of the regional background air pollution health risk and are not detailed enough to estimate the exact risk at a specific location.

ARB also has maps that focus in more detail on smaller areas that fall within the Southern and Central California regions for these same modeled years. The finest visual resolution available in the maps on this web site is two by two kilometers. These maps are not detailed enough to assess individual neighborhoods or facilities.

#### **Community Health Air Pollution Information System (CHAPIS)**

CHAPIS is an Internet-based procedure for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS uses Geographical Information System (GIS) software to deliver interactive maps over the Internet. CHAPIS relies on emission estimates reported to the ARB's emission inventory database - California Emissions Inventory Development and Reporting System, or CEIDARS.

Through CHAPIS, air district staff can quickly and easily identify pollutant sources and emissions within a specified area. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicle and areawide emissions. CHAPIS does not contain information on every source of air pollution or every air pollutant. It is a major long-term objective of CHAPIS to include all of the largest air pollution sources and those with the highest documented air pollution risk. CHAPIS will be updated on a periodic basis and additional facilities will be added to CHAPIS as more data becomes available.

CHAPIS is being developed in stages to assure data quality. The initial release of CHAPIS will include facilities emitting 10 or more tons per year of nitrogen oxides, sulfur dioxide, carbon monoxide, PM10, or reactive organic gases; air toxics from refineries and power plants of 50 megawatts or more; and facilities that conducted health risk

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<sup>2</sup>ARB maintains state trends and local potential cancer risk maps that show statewide trends in potential inhalable cancer risk from air toxics between 1990 and 2010. This information can be viewed at ARB's web site at <http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

assessments under the California Air Toxics “Hot Spots” Information and Assessment Program.<sup>3</sup>

CHAPIS can be used to identify the emission contributions from mobile, area, and point sources on that community.

### **“Hot Spots” Analysis and Reporting Program (HARP)**

HARP<sup>4</sup> is a software package available from the ARB and is designed with air quality professionals in mind. It models emissions and release data from one or more facilities to estimate the potential health risk posed by the selected facilities on the neighboring community. HARP uses the latest risk assessment guidelines published by OEHHA.

With HARP, a user can perform the following tasks:

- Create and manage facility databases;
- Perform air dispersion modeling;
- Conduct health risk analyses;
- Output data reports; and
- Output results to GIS mapping software.

HARP can model downwind concentrations of air toxics based on the calculated emissions dispersion at a single facility. HARP also has the capability of assessing the risk from multiple facilities, and for multiple locations of concern near those facilities. While HARP has the capability to assess multiple source impacts, there had been limited application of the multiple facility assessment function in the field at the time of HARP’s debut in 2003. HARP can also evaluate multi-pathway, non-inhalation health risk resulting from air pollution exposure, including skin and soil exposure, and ingestion of meat and vegetables contaminated with air toxics, and other toxics that have accumulated in a mother’s breast milk.

### **Neighborhood Assessment Program (NAP)**

The NAP<sup>5</sup> has been a key component of ARB’s Community Health Program. It includes the development of tools that can be used to perform assessments of cumulative air pollution impacts on a neighborhood scale. The NAP studies have been done to better understand how air pollution affects individuals at the neighborhood level. Thus far, ARB has conducted neighborhood scale assessments in Barrio Logan and Wilmington.

As part of these studies, ARB is collecting data and developing a modeling protocol that can be used to conduct cumulative air pollution impact assessments. Initially these

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<sup>3</sup> California Health & Safety Code section 44300, et seq.

<sup>4</sup> More detailed information can be found on ARB’s website at:  
<http://www.arb.ca.gov/toxics/harp/harp.htm>

<sup>5</sup> For more information on the Program, please refer to: <http://www.arb.ca.gov/ch/programs/nap/nap.htm>

assessments will focus on cumulative inhalation cancer health risk and chronic non-cancer impacts. The major challenge is developing modeling methods that can combine both regional and localized air pollution impacts, and identifying the critical data necessary to support these models. The objective is to develop methods and tools from these studies that can ultimately be applied to other areas of the state. In addition, the ARB plans to use these methods to replace the ASPEN regional risk maps currently posted on the ARB Internet site.

### **Urban Emissions Model (URBEMIS)**

URBEMIS<sup>6</sup> is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses. URBEMIS estimates sulfur dioxide emissions from motor vehicles in addition to reactive organic gases, nitrogen oxides, carbon monoxide, and PM10.

### **Land-Use Air Quality Linkage Report<sup>7</sup>**

This report summarizes data currently available on the relationships between land use, transportation and air quality. It also highlights strategies that can help to reduce the use of the private automobile. It also briefly summarizes two ARB-funded research projects. The first project analyzes the travel patterns of residents living in five higher density, mixed use neighborhoods in California, and compares them to travel in more auto-oriented areas. The second study correlates the relationship between travel behavior and community characteristics, such as density, mixed land uses, transit service, and accessibility for pedestrians.

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<sup>6</sup> For more information on this model, please refer to ARB's website at <http://www.arb.ca.gov/html/soft.htm>.

<sup>7</sup>To access this report, please refer to ARB's website or click on: <http://www.arb.ca.gov/ch/programs/link97.pdf>

## LAND USE AND AIR QUALITY AGENCY ROLES IN THE LAND USE PROCESS

A wide variety of federal, state, and local government agencies are responsible for regulatory, planning, and siting decisions that can have an impact on air pollution. They include local land use agencies, regional councils of government, school districts, local air districts, ARB, the California Department of Transportation (Caltrans), and the Governor's Office of Planning and Research (OPR) to name a few. This Section will focus on the roles and responsibilities of local and state agencies. The role of school districts will be discussed in Appendix E.

### Local Land Use Agencies

Under the State Constitution, land use agencies have the primary authority to plan and control land use.<sup>1</sup> Each of California's incorporated cities and counties are required to adopt a comprehensive, long-term General Plan.<sup>2</sup>

The General Plan's long-term goals are implemented through zoning ordinances. These are local laws adopted by counties and cities that describe for specific areas the kinds of development that will be allowed within their boundaries.

Land use agencies are also the lead for doing environmental assessments under CEQA for new projects that may pose a significant environmental impact, or for new or revised General Plans.

### Local Agency Formation Commissions (LAFCOs)

Operating in each of California's 58 counties, LAFCOs are composed of local elected officials and public members who are responsible for coordinating changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify, and streamline governmental structures, and preparing a sphere of influence for each city and special district within each county. Each Commission's efforts are directed toward seeing that local government services are provided efficiently and economically while agricultural and open-space lands are protected. LAFCO decisions strive to balance the competing needs in California for efficient services, affordable housing, economic opportunity, and conservation of natural resources.

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<sup>1</sup> The legal basis for planning and land use regulation is the "police power" of the city or county to protect the public's health, safety and welfare. The California Constitution gives cities and counties the power to make and enforce all local police, sanitary and other ordinances and regulations not in conflict with general laws. State law reference: California Constitution, Article XI §7.

<sup>2</sup>OPR General Plan Guidelines, 2003:

[http://www.opr.ca.gov/planning/PDFs/General\\_Plan\\_Guidelines\\_2003.pdf](http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf)



## Councils of Government (COG)

COGs are organizations composed of local counties and cities that serve as a focus for the development of sound regional planning, including plans for transportation, growth management, hazardous waste management, and air quality. They can also function as the metropolitan planning organization for coordinating the region's transportation programs. COGs also prepare regional housing need allocations for updates of General Plan housing elements.

## Local Air Districts

Under state law, air pollution control districts or air quality management districts (local air districts) are the local government agencies responsible for improving air quality and are generally the first point of contact for resolving local air pollution issues or complaints. There are 35 local air districts in California<sup>3</sup> that have authority and primary responsibility for regional clean air planning. Local air districts regulate stationary sources of air pollutants within their jurisdiction including but not limited to industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of air pollution. Some local air districts also regulate public and private motor vehicle fleet operators such as public bus systems, private shuttle and taxi services, and commercial truck depots.

### ■ Regional Clean Air Plans

Local air districts are responsible for the development and adoption of clean air plans that protect the public from the harmful effects of air pollution. These plans incorporate strategies that are necessary to attain ambient air quality standards. Also included in these regional air plans are ARB and local district measures to reduce statewide emissions from mobile sources, consumer products, and industrial sources.

### ■ Facility-Specific Considerations

*Permitting.* In addition to the planning function, local air districts adopt and enforce regulations, issue permits, and evaluate the potential environmental impacts of projects.

Pollution is regulated through permits and technology-based rules that limit emissions from operating units within a facility or set standards that vehicle fleet operators must meet. Permits to construct and permits to operate contain very specific requirements and conditions that tell each regulated source what it must do to limit its air pollution in compliance with local air district rules, regulations, and state law. Prior to receiving a permit, new facilities must go through a New Source Review (NSR) process that establishes air pollution control requirements for the facility. Permit conditions are typically contained in the permit to operate and specify requirements that businesses must follow; these may include limits on the amount of pollution that can be emitted, the

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<sup>3</sup> Contact information for local air districts in California is listed in the front of this Handbook.

type of pollution control equipment that must be installed and maintained, and various record-keeping requirements.

Local air districts also notify the public about new permit applications for major new facilities, or major modifications to existing facilities that seek to locate within 1,000 feet of a school.

Local air districts can also regulate other types of sources to reduce emissions. These include regulations to reduce emissions from the following sources:

- hazardous materials in products used by industry such as paints, solvents, and degreasers;
- agricultural and residential burning;
- leaking gasoline nozzles at service stations;
- public fleet vehicles such as sanitation trucks and school buses; and
- fugitive or uncontrolled dust at construction sites.

However, while emissions from industrial and commercial sources are typically subject to the permit authority of the local air district, sensitive sites such as a day care center, convalescent home, or playground are not ordinarily subject to an air permit. Local air district permits address the air pollutant emissions of a project but not its location.

Under the state's air toxics program, local air districts regulate air toxic emissions by adopting ARB air toxic control measures, or more stringent district-specific requirements, and by requiring individual facilities to perform a health risk assessment if emissions at the source exceed district-specific health risk thresholds<sup>4, 5</sup> (See the section on ARB programs for a more detailed summary of this program).

One approach by which local air districts regulate air toxics emissions is through the "Hot Spots" program.<sup>6</sup> The risk assessments submitted by the facilities under this

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<sup>4</sup> Cal/EPA's Office of Environmental Health Hazard Assessment has published "A Guide to Health Risk Assessment" for lay people involved in environmental health issues, including policymakers, businesspeople, members of community groups, and others with an interest in the potential health effects of toxic chemicals. To access this information, please refer to <http://www.oehha.ca.gov/pdf/HRsguide2001.pdf>

<sup>5</sup> Section 44306 of the California Health & Safety Code defines a health risk assessment as a detailed comprehensive analysis that a polluting facility uses to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

<sup>6</sup> AB-2588 (the Air Toxics "Hot Spots" Information and Assessment Act) requires local air districts to prioritize facilities by high, intermediate, and low priority categories to determine which must perform a health risk assessment. Each district is responsible for establishing the prioritization score threshold at which facilities are required to prepare a health risk assessment. In establishing priorities for each facility, local air districts must consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant risk. All facilities within the highest category must prepare a health risk assessment. In addition, each district may require facilities in the intermediate and low priority categories to also submit a health risk assessment.

**Table D-1  
Local Sources of Air Pollution, Responsible Agencies,  
and Associated Regulatory Programs**

Source	Examples	Primary Agency	Applicable Regulations
Large Stationary	Refineries, power plants, chemical facilities, certain manufacturing plants	Local air districts	Operating permit rules Air Toxics "Hot Spots" Law (AB 2588) Local district rules Air Toxic Control Measures (ATCMs)* New Source Review rules Title V permit rules
Small Stationary	Dry cleaners, auto body shops, welders, chrome plating facilities, service stations, certain manufacturing plants	Local air districts	Operating permit conditions, Air Toxics "Hot Spots" Law (AB 2588) Local district rules ATCMs* New Source Review rules
Mobile (non-fleet)	Cars, trucks, buses	ARB	Emission standards Cleaner-burning fuels (e.g., unleaded gasoline, low-sulfur diesel) Inspection and repair programs (e.g., Smog Check)
Mobile Equipment	Construction equipment	ARB, U.S. EPA	ARB rules U.S. EPA rules
Mobile (fleet)	Truck depots, school buses, taxi services	Local air districts, ARB	Local air district rules ARB urban bus fleet rule
Areawide	Paints and consumer products such as hair spray and spray paint	Local air district, ARB	ARB rules Local air district rules

\*ARB adopts ATCMs, but local air districts have the responsibility to implement and enforce these measures or more stringent ones.

program are reviewed by OEHHA and approved by the local air district. Risk assessments are available by contacting the local air district.

**Enforcement.** Local air districts also take enforcement action to ensure compliance with air quality requirements. They enforce air toxic control measures, agricultural and residential burning programs, gasoline vapor control regulations, laws that prohibit air pollution nuisances, visible emission limits, and many other requirements designed to

clean the air. Local districts use a variety of enforcement tools to ensure compliance. These include notices of violation, monetary penalties, and abatement orders. Under some circumstances, a permit may be revoked.

### ■ Environmental Review

As required by the California Environmental Quality Act (CEQA), local air districts also review and comment on proposed land use plans and development projects that can have a significant effect on the environment or public health.<sup>7</sup>

### California Air Resources Board

The ARB is the air pollution control agency at the state level that is responsible for the preparation of air plans required by state and federal law. In this regard, it coordinates the activities of all local air districts to ensure all statutory requirements are met and to reduce air pollution emissions for sources under its jurisdiction.

Motor vehicles are the single largest emissions source category under ARB's jurisdiction as well as the largest overall emissions source statewide. ARB also regulates emissions from other mobile equipment and engines as well as emissions from consumer products such as hair sprays, perfumes, cleaners, and aerosol paints.

### Air Toxics Program

Under state law, the ARB has a critical role to play in the identification, prioritization, and control of air toxic emissions. The ARB statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics.<sup>8</sup> The Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots program) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria to prioritize the identification and control of air toxics. In selecting substances for review, the ARB must consider criteria relating to emissions, exposure, and health risk, as well as persistence in the atmosphere, and ambient concentrations in the community. AB 1807 also requires the ARB to use available information gathered from the Hot Spots program when prioritizing compounds.

The ARB identifies pollutants as toxic air contaminants and adopts statewide air toxic control measures (ATCMs). Once ARB adopts an ATCM, local air districts must

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<sup>7</sup> Section 4 of this Handbook contains more information on the CEQA process.

<sup>8</sup> For a general background on California's air toxics program, the reader should refer to ARB's website at <http://www.arb.ca.gov/toxics/tac/appendxb.htm>.

implement the measure, or adopt and implement district-specific measures that are at least as stringent as the state standard. Taken in the aggregate, these ARB programs will continue to further reduce emissions, exposure, and health risk statewide.

With regard to the land use decision-making process, ARB, in conjunction with local air districts, plays an advisory role by providing technical information on land use-related air issues.

### **Other Agencies**

#### *Governor's Office of Planning and Research (OPR)*

In addition to serving as the Governor's advisor on land use planning, research, and liaison with local government, OPR develops and implements the state's policy on land use planning and coordinates the state's environmental justice programs. OPR updated its General Plan Guidelines in 2003 to highlight the importance of sustainable development and environmental justice policies in the planning process. OPR also advises project proponents and government agencies on CEQA provisions and operates the State Clearinghouse for environmental and federal grant documents.

#### *California Department of Housing and Community Development*

The Department of Housing and Community Development (HCD) administers a variety of state laws, programs and policies to preserve and expand housing opportunities, including the development of affordable housing. All local jurisdictions must update their housing elements according to a staggered statutory schedule, and are subject to certification by HCD. In their housing elements, cities and counties are required to include a land inventory which identifies and zones sites for future residential development to accommodate a mix of housing types, and to remove barriers to the development of housing.

An objective of state housing element law is to increase the overall supply and affordability of housing. Other fundamental goals include conserving existing affordable housing, improving the condition of the existing housing stock, removing regulatory barriers to housing production, expanding equal housing opportunities, and addressing the special housing needs of the state's most vulnerable residents (frail elderly, disabled, large families with children, farmworkers, and the homeless).

#### *Transportation Agencies*

Transportation agencies can also influence mobile source-related emissions in the land use decision-making process. Local transportation agencies work with land use agencies to develop a transportation (circulation) element for the General Plan. These local government agencies then work with other transportation-related agencies, such as the Congestion Management Agency (CMA), Metropolitan Planning Organization

(MPO), Regional Transportation Planning Agency (RTPA), and Caltrans to develop long and short range transportation plans and projects.

Caltrans is the agency responsible for setting state transportation goals and for state transportation planning, design, construction, operations and maintenance activities. Caltrans is also responsible for delivering California's multibillion-dollar state Transportation Improvement Program, a list of transportation projects that are approved for funding by the California Transportation Commission in a 4-year cycle.

When safety hazards or traffic circulation problems are identified in the existing road system, or when land use changes are proposed such as a new residential subdivision, shopping mall or manufacturing center, Caltrans and/or the local transportation agency ensure the projects meet applicable state, regional, and local goals and objectives.

Caltrans also evaluates transportation-related projects for regional air quality impacts, from the perspective of travel-related emissions as well as road congestion and increases in road capacity (new lanes).

### *California Energy Commission (CEC)*

The CEC is the state's CEQA lead agency for permitting large thermal power plants (50 megawatts or greater). The CEC works closely with local air districts and other federal, state and local agencies to ensure compliance with applicable laws, ordinances, regulations and standards in the permitting, construction, operation and closure of such plants. The CEC uses an open and public review process that provides communities with outreach and multiple opportunities to participate and be heard. In addition to its comprehensive environmental impact and engineering design assessment process, the CEC also conducts an environmental justice evaluation. This evaluation involves an initial demographic screening to determine if a qualifying minority or low-income population exists in the vicinity of the proposed project. If such a population is present, staff considers possible environmental justice impacts including from associated project emissions in its technical assessments.<sup>9</sup>

### *Department of Pesticides Regulation (DPR)*

Pesticides are industrial chemicals produced specifically for their toxicity to a target pest. They must be released into the environment to do their job. Therefore, regulation of pesticides focuses on using toxicity and other information to ensure that when pesticides are used according to their label directions, potential for harm to people and the environment is minimized. DPR imposes strict controls on use, beginning before pesticide products can be sold in California, with an extensive scientific program to ensure they can be used safely. DPR and county enforcement staff tracks the use of pesticides to ensure that pesticides are used properly. DPR collects periodic

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<sup>9</sup> See California Energy Commission, "Environmental Performance Report," July 2001 at [http://www.energy.ca.gov/reports/2001-11-20\\_700-01-001.PDF](http://www.energy.ca.gov/reports/2001-11-20_700-01-001.PDF)

measurements of any remaining amounts of pesticides in water, air, and on fresh produce. If unsafe levels are found, DPR requires changes in how pesticides are used, to reduce the possibility of harm. If this cannot be done - that is, if a pesticide cannot be used safely - use of the pesticide will be banned in California.<sup>10</sup>

### *Federal Agencies*

Federal agencies have permit authority over activities on federal lands and certain resources, which have been the subject of congressional legislation, such as air, water quality, wildlife, and navigable waters. The U.S. Environmental Protection Agency generally oversees implementation of the federal Clean Air Act, and has broad authority for regulating certain activities such as mobile sources, air toxics sources, the disposal of toxic wastes, and the use of pesticides. The responsibility for implementing some federal regulatory programs such as those for air and water quality and toxics is delegated by management to specific state and local agencies. Although federal agencies are not subject to CEQA they must follow their own environmental process established under the National Environmental Policy Act (NEPA).

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<sup>10</sup> For more information, the reader is encouraged to visit the Department of Pesticide Regulation web site at [www.cdpr.ca.gov/docs/empm/pubs/tacmenu.htm](http://www.cdpr.ca.gov/docs/empm/pubs/tacmenu.htm).

**SPECIAL PROCESSES THAT APPLY TO SCHOOL SITING**

The [California Education Code](#) and the [California Public Resources Code](#) place primary authority for siting public schools with the local school district, which is the 'lead agency' for purposes of CEQA. The California Education Code requires public school districts to notify the local planning agency about siting a new public school or expanding an existing school. The planning agency then reports back to the school district regarding a project's conformity with the adopted General Plan. However, school districts can overrule local zoning and land use designations for schools if they follow specified procedures. In addition, all school districts must evaluate new school sites using site selection standards established in Section 14010 of Title 5 of the California Code of Regulations. Districts seeking state funding for school site acquisition must also obtain site approval from the California Department of Education.

Before making a final decision on a school site acquisition, a school district must comply with CEQA and evaluate the proposed site acquisition/new school project for air emissions and health risks by preparing and certifying an environmental impact report or negative declaration. Both the California Education Code section 17213 and the California Public Resources Code section 21151.8 require school districts to consult with administering agencies and local air districts when preparing the environmental assessment. Such consultation is required to identify both permitted and non-permitted "facilities" that might significantly affect health at the new site. These facilities include, but are not limited to, freeways and other busy traffic corridors, large agricultural operations, and rail yards that are within one-quarter mile of the proposed school site, and that might emit hazardous air emissions, or handle hazardous or acutely hazardous materials, substances, or waste.

As part of the CEQA process and before approving a school site, the school district must make a finding that either it found none of the facilities or significant air pollution sources, or alternatively, if the school district finds that there are such facilities or sources, it must determine either that they pose no significant health risks, or that corrective actions by another governmental entity would be taken so that there would be no actual or potential endangerment to students or school workers.

In addition, if the proposed school site boundary is within 500 feet of the edge of the closest traffic lane of a freeway or traffic corridor that has specified minimum average daily traffic counts, the school district is required to determine through specified risk assessment and air dispersion modeling that neither short-term nor long term exposure poses significant health risks to pupils.

State law changes effective January 1, 2004 (SB352, Escutia 2003, amending Education Code section 17213 and Public Resources Code section 21151.8) also provides for cases in which the school district cannot make either of those two findings and cannot find a suitable alternative site. When this occurs, the school district must adopt a statement of over-riding considerations, as part of an environmental impact



report, that the project should be approved based on the ultimate balancing of the merits.

Some school districts use a standardized assessment process to determine the environmental impacts of a proposed school site. In the assessment process, school districts can use maps and other available information to evaluate risk, including a local air district's database of permitted source emissions. School districts can also perform field surveys and record searches to identify and calculate emissions from non-permitted sources within one-quarter mile radius of a proposed site. Traffic count data and vehicular emissions data can also be obtained from Caltrans for major roadways and freeways in proximity to the proposed site to model potential emissions impacts to students and school employees. This information is available from the local COG, Caltrans, or local cities and counties for non-state maintained roads.

## GENERAL PROCESSES USED BY LAND USE AGENCIES TO ADDRESS AIR POLLUTION IMPACTS

There are several separate but related processes for addressing the air pollution impacts of land use projects. One takes place as part of the planning and zoning function. This consists of preparing and implementing goals and policies contained in county or city General Plans, community or area plans, and specific plans governing land uses such as residential, educational, commercial, industrial, and recreational activities. It also includes recommending locations for thoroughfares, parks and other public improvements.

Land use agencies also have a permitting function that includes performing environmental reviews and mitigation when projects may pose a significant environmental impact. They conduct inspections for zoning permits issued, enforce the zoning regulations and issue violations as necessary, issue zoning certificates of compliance, and check compliance when approving certificates of occupancy.

### **Planning**

#### ■ **General Plan<sup>1</sup>**

The General Plan is a local government “blueprint” of existing and future anticipated land uses for long-term future development. It is composed of the goals, policies, and general elements upon which land use decisions are based. Because the General Plan is the foundation for all local planning and development, it is an important tool for implementing policies and programs beneficial to air quality. Local governments may choose to adopt a separate air quality element into their General Plan or to integrate air quality-beneficial objectives, policies, and strategies in other elements of the Plan, such as the land use, circulation, conservation, and community design elements.

More information on General Plan elements is contained in Appendix D.

#### ■ **Community Plans**

Community or area plans are terms for plans that focus on a particular region or community within the overall general plan area. It refines the policies of the general plan as they apply to a smaller geographic area and is implemented by ordinances and other discretionary actions, such as zoning.

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<sup>1</sup> In October 2003, OPR revised its General Plan Guidelines. An entire chapter is now devoted to a discussion of how sustainable development and environmental justice goals can be incorporated into the land use planning process. For further information, the reader is encouraged to obtain a copy of OPR’s General Plan Guidelines, or refer to their website at:  
[http://www.opr.ca.gov/planning/PDFs/General\\_Plan\\_Guidelines\\_2003.pdf](http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf)

■ **Specific Plan**

A specific plan is a hybrid that can combine policies with development regulations or zoning requirements. It is often used to address the development requirements for a single project such as urban infill or a planned community. As a result, its emphasis is on concrete standards and development criteria.

■ **Zoning**

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. For instance, zoning ordinances designate what projects and activities can be sited in particular locations. Each zone designates allowable uses of land within that zone, such as residential, commercial, or industrial. Zoning ordinances can address building development standards, e.g., minimum lot size, maximum building height, minimum building setback, parking, signage, density, and other allowable uses.

**Land Use Permitting**

In addition to the planning and zoning function, land use agencies issue building and business permits, and evaluate the potential environmental impacts of projects. To be approved, projects must be located in a designated zone and comply with applicable ordinances and zoning requirements.

Even if a project is sited properly in a designated zone, a land use agency may require a new source to mitigate potential localized environmental impacts to the surrounding community below what would be required by the local air district. In this case, the land use agency could condition the permit by limiting or prescribing allowable uses including operating hour restrictions, building standards and codes, property setbacks between the business property and the street or other structures, vehicle idling restrictions, or traffic diversion.

Land use agencies also evaluate the environmental impacts of proposed land use projects or activities. If a project or activity falls under CEQA, the land use agency requires an environmental review before issuing a permit to determine if there is the potential for a significant impact, and if so, to mitigate the impact or possibly deny the project.

■ **Land Use Permitting Process**

In California, the authority to regulate land use is delegated to city and county governments. The local land use planning agency is the local government administrative body that typically provides information and coordinates the review of development project applications. Conditional Use Permits (CUP) typically fall within a land use agency's discretionary authority and therefore are subject to CEQA. CUPs are

intended to provide an opportunity to review the location, design, and manner of development of land uses prior to project approval. A traditional purpose of the CUP is to enable a municipality to control certain uses that could have detrimental environmental effects on the community.

The process for permitting new discretionary projects is quite elaborate, but can be broken down into five fundamental components:

- Project application
- Environmental assessment
- Consultation
- Public comment
- Public hearing and decision

Project Application

The permit process begins when the land use agency receives a project application, with a detailed project description, and support documentation. During this phase, the agency reviews the submitted application for completeness. When the agency deems the application to be complete, the permit process moves into the environmental review phase.

Environmental Assessment

If the project is discretionary and the application is accepted as complete, the project proposal or activity must undergo an environmental clearance process under CEQA and the CEQA Guidelines adopted by the California Resources Agency.<sup>2</sup> The purpose of the CEQA process is to inform decision-makers and the public of the potential significant environmental impacts of a project or activity, to identify measures to minimize or eliminate those impacts to the point they are no longer significant, and to discuss alternatives that will accomplish the project goals and objectives in a less environmentally harmful manner.

**What is a “Lead Agency”?**

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project that is subject to CEQA. In general, the land use agency is the preferred public agency serving as lead agency because it has jurisdiction over general land uses. The lead agency is responsible for determining the appropriate environmental document, as well as its preparation.

**What is a “Responsible Agency”?**

A responsible agency is a public agency with discretionary approval authority over a portion of a CEQA project (e.g., projects requiring a permit). As a responsible agency, the agency is available to the lead agency and project proponent for early consultation on a project to apprise them of applicable rules and regulations, potential adverse impacts, alternatives, and mitigation measures, and provide guidance as needed on applicable methodologies or other related issues.

**What is a “Commenting Agency”?**

A commenting agency is any public agency that comments on a CEQA document, but is neither a lead agency nor a responsible agency. For example, a local air district, as the agency with the responsibility for comprehensive air pollution control, could review and comment on an air quality analysis in a CEQA document for a proposed distribution center, even though the project was not subject to a permit or other pollution control requirements.

<sup>2</sup> Projects and activities that may have a significant adverse impact on the environment are evaluated under CEQA Guidelines set forth in title 14 of the California Code of Regulations, sections 15000 et seq.

To assist the lead agency in determining whether the project or activity may have a significant effect that would require the preparation of an EIR, the land use agency may consider criteria, or thresholds of significance, to assess the potential impacts of the project, including its air quality impacts. The land use agency must consider any credible evidence in addition to the thresholds, however, in determining whether the project or activity may have a significant effect that would trigger the preparation of an EIR.

The screening criteria to determine significance is based on a variety of factors, including local, state, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards. However, the final determination of significance for individual projects is the responsibility of the lead agency. In the case of land use projects, the lead agency would be the City Council or County Board of Supervisors.

A new land use plan or project can also trigger an environmental assessment under CEQA if, among other things, it will expose sensitive sites such as schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences to substantial pollutant concentrations.<sup>3</sup>

CEQA only applies to “discretionary projects.” Discretionary means the public agency must exercise judgment and deliberation when deciding to approve or disapprove a particular project or activity, and may append specific conditions to its approval. Examples of discretionary projects include the issuance of a CUP, re-zoning a property, or widening of a public road. Projects that are not subject to the exercise of agency discretion, and can therefore be approved administratively through the application of set standards are referred to as ministerial projects. CEQA does not apply to ministerial projects.<sup>4</sup> Examples of typical ministerial projects include the issuance of most building permits or a business license.

Once a potential environmental impact associated with a project is identified through an environmental assessment, mitigation must be considered. A land use agency should incorporate mitigation measures that are suggested by the local air district as part of the project review process.

### Consultation

Application materials are provided to various departments and agencies that may have an interest in the project (e.g., air pollution, building, police, fire, water agency, Fish and Game, etc.) for consultation and input.

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<sup>3</sup> Readers interested in learning more about CEQA should contact OPR or visit their website at <http://www.opr.ca.gov/>.

<sup>4</sup> See California Public Resources Code section 21080(b)(1).

Public Comment

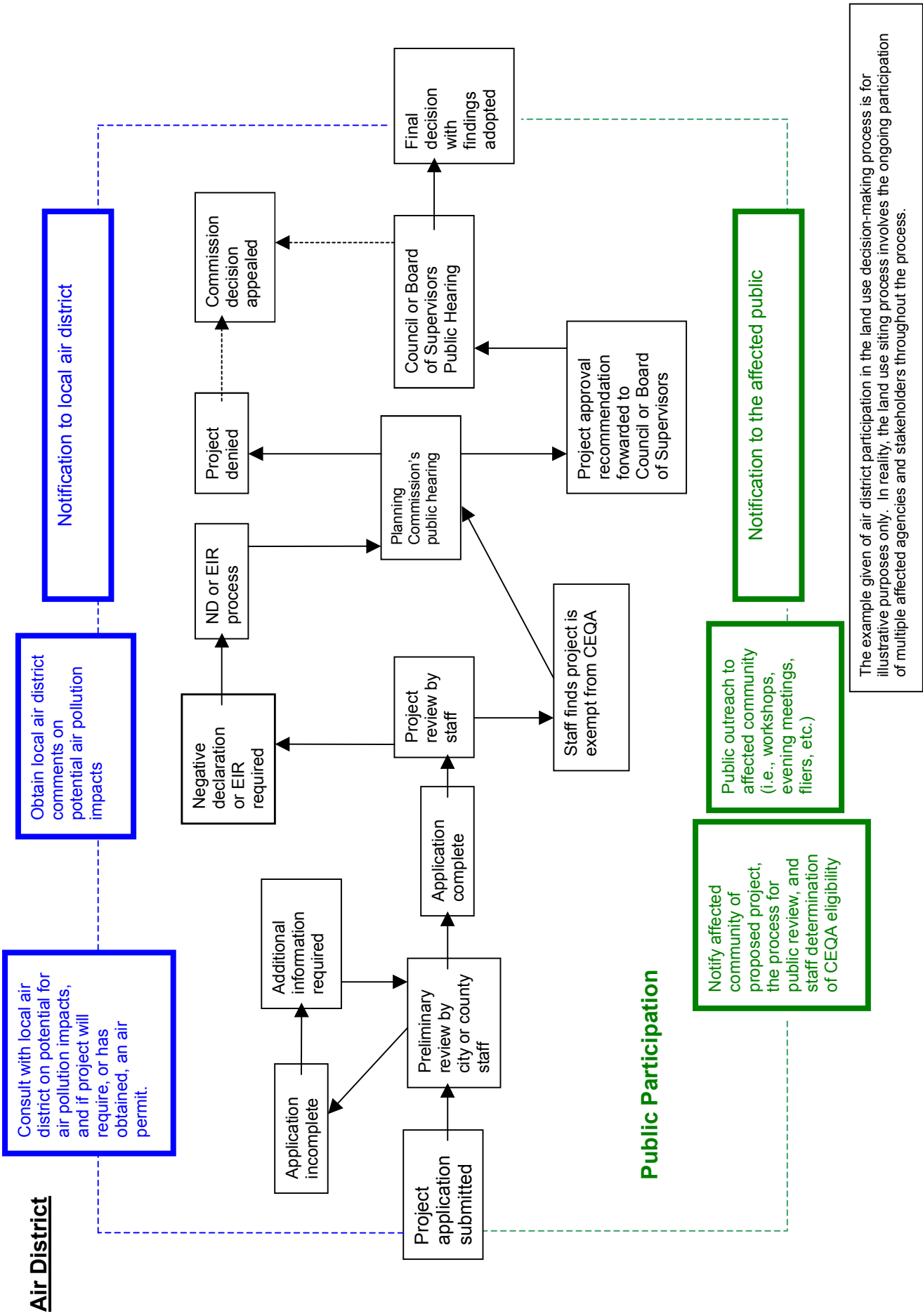
Following the environmental review process, the Planning Commission reviews application along with the staff's report on the project assessment and a public comment period is set and input is solicited.

Public Hearing and Decision

Permit rules vary depending on the particular permit authority in question, but the process generally involves comparing the proposed project with the land use agency standards or policies. The procedure usually leads to a public hearing, which is followed by a written decision by the agency or its designated officer. Typically, a project is approved, denied, or approved subject to specified conditions.

**APPENDIX F**

**USE PERMIT (DISCRETIONARY ACTION) REVIEW PROCESS\***



The example given of air district participation in the land use decision-making process is for illustrative purposes only. In reality, the land use siting process involves the ongoing participation of multiple affected agencies and stakeholders throughout the process.

## GLOSSARY OF KEY AIR POLLUTION TERMS

**Air Pollution Control Board or Air Quality Management Board:** Serves as the governing board for local air districts. It consists of appointed or elected members from the public or private sector. It conducts public hearings to adopt local air pollution regulations.

**Air Pollution Control Districts or Air Quality Management Districts (local air district):** A county or regional agency with authority to regulate stationary and area sources of air pollution within a given county or region. Governed by a district air pollution control board.

**Air Pollution Control Officer (APCO):** Head of a local air pollution control or air quality management district.

**Air Toxic Control Measures (ATCM):** A control measure adopted by the ARB (Health and Safety Code section 39666 et seq.), which reduces emissions of toxic air contaminants.

**Ambient Air Quality Standards:** An air quality standard defines the maximum amount of a pollutant that can be present in the outdoor air during a specific time period without harming the public's health. Only U.S. EPA and the ARB may establish air quality standards. No other state has this authority. Air quality standards are a measure of clean air. More specifically, an air quality standard establishes the concentration at which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Federal standards are referred to as National Ambient Air Quality Standards (NAAQS); state standards are referred to as California ambient air quality standards (CAAQS).

**Area-wide Sources:** Sources of air pollution that individually emit small amounts of pollution, but together add up to significant quantities of pollution. Examples include consumer products, fireplaces, road dust, and farming operations.

**Attainment vs. Nonattainment Area:** An attainment area is a geographic area that meets the National Ambient Air Quality Standards for the criteria pollutants and a non-attainment area is a geographic area that doesn't meet the NAAQS for criteria pollutants.

**Attainment Plan:** Attainment plans lay out measures and strategies to attain one or more air quality standards by a specified date.

**California Clean Air Act (CCAA):** A California law passed in 1988, which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS



must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

**California Environmental Quality Act (CEQA):** A California law that sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process helps decision-makers determine whether any potential, significant, adverse environmental impacts are associated with a proposed project and to identify alternatives and mitigation measures that will eliminate or reduce such adverse impacts.<sup>1</sup>

**California Health and Safety Code:** A compilation of California laws, including state air pollution laws, enacted by the Legislature to protect the health and safety of people in California. Government agencies adopt regulations to implement specific provisions of the California Health and Safety Code.

**Clean Air Act (CAA):** The federal Clean Air Act was adopted by the United States Congress and sets forth standards, procedures, and requirements to be implemented by the U.S. Environmental Protection Agency (U.S. EPA) to protect air quality in the United States.

**Councils of Government (COGs):** There are 25 COGs in California made up of city and county elected officials. COGs are regional agencies concerned primarily with transportation planning and housing; they do not directly regulate land use.

**Criteria Air Pollutant:** An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5. The term "criteria air pollutants" derives from the requirement that the U.S. EPA and ARB must describe the characteristics and potential health and welfare effects of these pollutants. The U.S. EPA and ARB periodically review new scientific data and may propose revisions to the standards as a result.

**District Hearing Board:** Hears local air district permit appeals and issues variances and abatement orders. The local air district board appoints the members of the hearing board.

**Emission Inventory:** An estimate of the amount of pollutants emitted into the atmosphere from mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

**Environmental Impact Report (EIR):** The public document used by a governmental agency to analyze the significant environmental effects of a proposed project, to identify

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<sup>1</sup> To track the submittal of CEQA documents to the State Clearinghouse within the Office of Planning and Research, the reader can refer to CEQAnet at <http://www.ceqanet.ca.gov>.

alternatives, and to disclose possible ways to reduce or avoid the possible negative environmental impacts.

**Environmental Justice:** California law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (California Government Code sec.65040.12(c)).

**General Plans:** A statement of policies developed by local governments, including text and diagrams setting forth objectives, principles, standards, and plan proposals for the future physical development of the city or county.

**Hazardous Air Pollutants (HAPs):** An air pollutant listed under section 112 (b) of the federal Clean Air Act as particularly hazardous to health. U.S. EPA identifies emission sources of hazardous air pollutants, and emission standards are set accordingly. In California, HAPs are referred to as toxic air contaminants.

**Land Use Agency:** Local government agency that performs functions associated with the review, approval, and enforcement of general plans and plan elements, zoning, and land use permitting. For purposes of this Handbook, a land use agency is typically a local planning department.

**Mobile Source:** Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

**National Ambient Air Quality Standard (NAAQS):** A limit on the level of an outdoor air pollutant established by the US EPA pursuant to the Clean Air Act. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

**Negative Declaration (ND):** When the lead agency (the agency responsible for preparing the EIR or ND) under CEQA, finds that there is no substantial evidence that a project may have a significant environmental effect, the agency will prepare a "negative declaration" instead of an EIR.

**New Source Review (NSR):** A federal Clean Air Act requirement that state implementation plans must include a permit review process, which applies to the construction and operation of new or modified stationary sources in nonattainment areas. Two major elements of NSR to reduce emissions are best available control technology requirements and emission offsets.

**Office of Planning and Research (OPR):** OPR is part of the Governor's office. OPR has a variety of functions related to local land-use planning and environmental programs. It provides General Plan Guidelines for city and county planners, and coordinates the state clearinghouse for Environmental Impact Reports.

**Ordinance:** A law adopted by a City Council or County Board of Supervisors. Ordinances usually amend, repeal or supplement the municipal code; provide zoning specifications; or appropriate money for specific purposes.

**Overriding Considerations:** A ruling made by the lead agency in the CEQA process when the lead agency finds the importance of the project to the community outweighs potential adverse environmental impacts.

**Public Comment:** An opportunity for the general public to comment on regulations and other proposals made by government agencies. You can submit written or oral comments at the public meeting or send your written comments to the agency.

**Public Hearing:** A public hearing is an opportunity to testify on a proposed action by a governing board at a public meeting. The public and the media are welcome to attend the hearing and listen to, or participate in, the proceedings.

**Public Notice:** A public notice identifies the person, business, or local government seeking approval of a specific course of action (such as a regulation). It describes the activity for which approval is being sought, and describes the location where the proposed activity or public meeting will take place.

**Public Nuisance:** A public nuisance, for the purposes of air pollution regulations, is defined as a discharge from any source whatsoever of such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. (Health and Safety Code section 41700).

**Property Setback:** In zoning parlance, a setback is the minimum amount of space required between a lot line and a building line.

**Risk:** For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million (e.g., 10 chances in a million).

**Sensitive Individuals:** Refers to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality).

**Sensitive Sites or Sensitive Land Uses:** Land uses where sensitive individuals are most likely to spend time, including schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

**Setback:** An area of land separating one parcel of land from another that acts to soften or mitigate the effects of one land use on the other.

**State Implementation Plan (SIP):** A plan prepared by state and local agencies and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical information about emission inventories, air quality monitoring, control measures and strategies, and enforcement mechanisms. A SIP is composed of local air quality management plans and state air quality regulations.

**Stationary Sources:** Non-mobile sources such as power plants, refineries, and manufacturing facilities.

**Toxic Air Contaminant (TAC):** An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code section 39650 et seq.) than pollutants subject to State Ambient Air Quality Standards. Health effects associated with TACs may occur at extremely low levels. It is often difficult to identify safe levels of exposure, which produce no adverse health effects.

**Urban Background:** The term is used in this Handbook to represent the ubiquitous, elevated, regional air pollution levels observed in large urban areas in California.

**Zoning ordinances:** City councils and county boards of supervisors adopts zoning ordinances that set forth land use classifications, divides the county or city into land use zones as delineated on the official zoning, maps, and set enforceable standards for future develop

California Air Resources Board

# **Gasoline Service Station Industrywide Risk Assessment Supplemental Policy Guidance Document**

July 21, 2022



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# Introduction

California Air Resources Board (CARB) staff developed the 2022 Gasoline Service Station Industrywide Risk Assessment Supplemental Policy Guidance Document (Supplemental Policy Guidance or Guidance) to provide recommendations regarding public policy for gasoline service stations<sup>1</sup> (gas stations) and discuss potential community-scale health impacts caused by gas station emissions. Community risk information gathered through industrywide risk assessments can be used to support the assessment of community impacts under Assembly Bill 617.<sup>2</sup> The Supplemental Policy Guidance is a companion document to the 2022 Gasoline Service Station Industrywide Risk Assessment Technical Guidance Manual<sup>3</sup> (Technical Guidance). The Technical Guidance, developed by staff from CARB<sup>4</sup>, the California Air Pollution Control Officers Association<sup>5</sup> (CAPCOA), and the Office of Environmental Health Hazard Assessment<sup>6</sup> (OEHHA), outlines the procedures for preparing gas station emission inventories and health risk assessments to meet the requirements of Assembly Bill 2588<sup>7</sup> (the Hot Spots Act or Hot Spots Program).

In addition to discussing community-scale health impacts, this document provides considerations and recommendations for the siting and permitting of new and modified gas stations. Local governments that make land use decisions<sup>8</sup> (local governments) evaluate proposals for new gas station projects and have primary authority over siting, zoning, and land use permitting decisions, while Districts conduct health risk assessments on new and modified gas stations and have primary authority over air quality permitting decisions. This document also outlines many of the significant challenges in addressing cumulative impacts from multiple sources of gas stations and other sources. For the purposes of this document, “cumulative impacts”

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<sup>1</sup> Gasoline service stations are also referred to as gasoline dispensing facilities or gas stations.

<sup>2</sup> Assembly Bill 617, Garcia, C., Chapter 136, Statutes of 2017, modified the California Health and Safety Code, amending § 40920.6, § 42400, and § 42402, and adding § 39607.1, § 40920.8, § 42411, § 42705.5, and § 44391.2 dated July 26, 2017.

<sup>3</sup> The 2022 Gasoline Service Station Industrywide Risk Assessment Technical Guidance is available at: [Gasoline Service Station Industrywide Risk Assessment Guidance | California Air Resources Board](#)

<sup>4</sup> The California Air Resources Board (CARB) is a state agency that works to protect the public from the harmful effects of air pollution and develops programs and actions to fight climate change.

<sup>5</sup> The California Air Pollution Control Officers Association (CAPCOA) is an association of air pollution control officers representing the 35 Air Pollution Control and Quality Management Districts (Districts) in California.

<sup>6</sup> The Office of Environmental Health Hazard Assessment (OEHHA) is a state agency that evaluates health risks from chemical pollutants in the environment.

<sup>7</sup> Assembly Bill 2588, Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots Act), Connelly, Statutes of 1987, Chapter 1252, in California Health and Safety Code § 44300-44394.

<sup>8</sup> Local governments that make land use decisions include, but are not limited to: land use agencies, planning departments, planning commissions, and the elected bodies with authority over land use projects.

are the combined effects of air pollution from multiple sources of toxic emissions in close proximity to one another.

The Supplemental Policy Guidance provides an overview of the following topics in a question-and-answer format:

- Existing issues and challenges related to addressing cumulative impacts at gas stations and other sources of air pollution
- Existing public policy related to gas stations
- Exposure impacts from individual gas stations
- Exposure impacts from multiple gas stations
- Recommendations to reduce emissions from gas stations

## **I. What are the existing issues and challenges related to addressing cumulative impacts at gas stations and other sources of air pollution?**

Assessing the combined effects of air pollution from multiple sources of toxic emissions in close proximity (cumulative impacts) has been a long-standing issue in many communities. Many communities continue to be exposed to cumulative impacts from multiple facilities, such as gas stations. This section identifies many of the existing issues and challenges that need to be addressed before cumulative impacts can be considered in District permitting and other regulatory programs.

- District rules (e.g., permitting, new source review) are written for review of individual facilities and do not account for cumulative impacts from multiple sources nearby. Therefore, Districts are only able to consider the health impacts from individual facilities during the permitting of new and modified sources. Districts have health thresholds (cancer and non-cancer) for air toxics that facilities must meet for permit approval. Additionally, in many cases, Districts do not have the authority to deny a permit if a single facility meets their District health threshold for permitting.
- Under the Hot Spots Program, Districts also have public notification and risk reduction thresholds<sup>9</sup> for individual facilities, with these thresholds generally ranging from 10 to 100 chances per million for cancer risk, for example. Establishing public notification and risk thresholds for multiple facilities will require Districts to develop tools and metrics to allocate risk, and risk reduction responsibilities, to a group of facilities.
- There are existing legal requirements under the California Environmental

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<sup>9</sup> A cancer risk public notification threshold is the health risk level at which a facility must notify exposed members of the public of potential health risks associated with facility emissions. A risk reduction threshold is a level at which a facility must reduce their risks below that level.

Quality Act (CEQA) process that preclude the consideration of emissions from existing facilities in the permit approval processes for new, unrelated facilities.<sup>10</sup>

- Local governments and Districts do not currently consider cumulative impacts in siting and permitting processes for gas stations. Local governments have primary authority over siting, zoning, and land use permitting decisions, while Districts have primary authority over air quality permitting decisions. Districts do not have authority over land use decisions but they, along with CARB, may comment on air quality aspects of prospective gas station projects through the CEQA process.
- Although this Guidance does not apply to emissions from mobile sources and mobile refueling operations, these applications should also be considered in a cumulative impacts assessment because they can have a significant health impact on communities. Mobile refueling operations are a source of gasoline emissions which may increase adverse health impacts to people nearby. Mobile refuelers have the potential to fuel vehicles and equipment adjacent to various sensitive receptors at several locations. Also, multiple mobile refuelers are capable of fueling fleets at a single location at the same time. More information on mobile refueling can be found in the Technical Guidance (Executive Summary, Section A).

Developing the tools and metrics needed to incorporate cumulative impacts into siting and permitting processes for gas stations, and other facilities, will involve multiple jurisdictions and require coordination between various State and local agencies. CARB, Districts, and local governments will need to develop methods to assess and incorporate exposure and health impacts from both stationary sources (e.g., nearby gas stations) and mobile sources (e.g., traffic from nearby roads and freeways) into siting and permitting processes. Utilizing this type of information when making siting and permitting decisions is anticipated to provide a more comprehensive, health-protective approach to reducing potential exposures.

We recognize that these and other issues will take time to work through. Many agencies, including legal expertise, will be involved in these future considerations. Further discussion on many of these issues can be found throughout the document.

## **II. What type of gas stations are addressed in the Supplemental Policy Guidance?**

For the purposes of this document, a gas station is any new or existing retail motor vehicle fueling facility where gasoline is transferred from underground storage tanks to motor vehicles, fuel containers, and other gasoline-powered equipment. Retail motor

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<sup>10</sup> An example of one such legal requirement is the California Supreme Court's ruling in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* which held that a "CEQA analysis is concerned with a project's impact on the environment, rather than with the environment's impact on a project and its users or residents."

vehicle fueling facilities (retail gas stations) may include additional fuel types such as natural gas, propane, diesel, or alternative fuels; however, this Supplemental Policy Guidance only applies to the gasoline dispensed at those stations. Any retail gas station dispensing automotive gasoline is subject to this Guidance.

This Guidance does not apply to commercial gas stations<sup>11</sup>, bulk-fueling stations<sup>12</sup>, or mobile refueling operations<sup>13</sup> which were excluded from the Technical Guidance because they operate differently from retail gas stations. Since the Supplemental Policy Guidance highlights the work done specifically for the Technical Guidance, these sources were not included. However, these fueling applications are also sources of gasoline emissions which may increase adverse health impacts to people nearby. To address potential health impacts, CARB recommends that all owners and/or operators of these applications work closely with their local Air Quality Management Districts or Air Pollution Control Districts (Districts) to comply with local rules and permitting requirements. Additional detail on applicability can be found in the Technical Guidance (Executive Summary, Section A).

### **III. What types of evaluations are gas stations subject to under Assembly Bill 2588?**

The Hot Spots Act requires that each District determine which facilities will prepare a health risk assessment. Generally, facilities that are deemed high priority<sup>14</sup> are required to conduct a health risk assessment. A health risk assessment includes a comprehensive analysis of the dispersion of hazardous substances in the environment, their potential for human exposure, and a quantitative assessment of both individual and population-wide health risks associated with those levels of exposure. The level of detail required for analysis (e.g., screening or refined) requires case-by-case analysis and professional judgment.

As an industrywide source, gas stations are subject to all applicable requirements under the Hot Spots Act, including both individual and population-wide health risk analyses. The individual receptor<sup>15</sup> approach evaluates the exposures that may occur to an individual person in a given location over a period of time at a specific location. The population-wide approach (e.g., cancer burden or population exposure estimates) evaluates potential exposures to an entire population over a 70-year period using

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<sup>11</sup> Commercial gas stations service industrial or privately-owned fleets.

<sup>12</sup> Bulk-fueling stations service fuel tanker trucks that deliver gasoline to gas stations.

<sup>13</sup> For the purposes of this document, a mobile refueling operation is any tanker truck or trailer that is used to transport and dispense gasoline from an on-board storage tank into any motor vehicle fuel tank. Mobile refueling operations are also referred to as mobile dispensing facilities or mobile refuelers.

<sup>14</sup> Under the Hot Spots Act, prioritization methods are used by Districts to determine which facilities will be required to submit a health risk assessment to the District. These methods consider factors such as the quantity of emissions, the cancer or noncancer health factor associated with each emitted substance, and the proximity of the nearest residence or business.

<sup>15</sup> Receptors may include nearby residences, workplaces, schools, hospitals, and care facilities.

site-specific meteorology and population information. It provides an illustration of widespread impacts for facilities that may have individual cancer risks<sup>16</sup> below public notification thresholds, but expose a larger population to emissions. A cancer risk notification threshold is the health risk level at which a facility must notify exposed members of the public of potential health risks associated with facility emissions. Many Districts use a cancer risk public notification threshold of 10 chances per million.<sup>17</sup>

The Technical Guidance provides a generic presentation of potential impacts to individual receptors and does not include site-specific data necessary to perform population-wide health analyses (e.g., cancer burden and population exposure estimates); thus, no population exposure estimates are included. However, the Supplemental Policy Guidance includes an analysis of population-wide (community-wide) risk for multiple facilities in close proximity to one another in Appendix B. For gas stations requiring site-specific assessments, CARB recommends that Districts evaluate both individual and population-wide health impacts to provide a more complete illustration of a facility's health impacts. Methods for evaluating population-wide health impacts are outlined in the OEHHA's *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments*<sup>18</sup> (OEHHA Manual).

#### **IV. How does Assembly Bill 617 affect gas stations?**

The goal of Assembly Bill (AB) 617 is to reduce cumulative exposure and improve public health in communities most impacted by air pollution. It requires new, community-focused actions that go beyond existing State and regional programs to reduce air pollution exposure in disproportionately burdened communities.<sup>19</sup> To support implementation of AB 617, CARB's Office of Community Air Protection released the *Community Air Protection Blueprint*<sup>20</sup> (Blueprint) in October 2018. The Blueprint defines statewide strategies and establishes requirements for: public engagement and community partnerships; selecting communities for focused action; conducting community air monitoring, and preparing community emissions reduction programs.

The Blueprint also identifies developing updated guidance on conducting health risk assessments for gas stations (i.e., the Technical and Supplemental Guidance

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<sup>16</sup> Cancer risk is the probability of developing cancer based on exposure to a substance over a specified period. Cancer risk is expressed in chances of developing cancer per million people exposed.

<sup>17</sup> Each Air District determines the appropriate risk notification threshold for their district, through the [AB 2588 District Prioritization Scores and Risk Threshold Levels](#).

<sup>18</sup>Office of Environmental Health Hazard Assessment, [The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments](#), February 2015.

<sup>19</sup> Assembly Bill 617, Garcia, C., Chapter 136, Statutes of 2017, modified the California Health and Safety Code, amending § 40920.6, § 42400, and § 42402, and adding § 39607.1, § 40920.8, § 42411, § 42705.5, and § 44391.2 dated July 26, 2017.

<sup>20</sup> California Air Resources Board, [Community Air Protection Blueprint](#), October 2018.

documents) as an important tool to support community engagement on land use and transportation strategies for impacted communities. The Technical Guidance provides updated procedures for preparing health risk assessments for gas stations since the original Gasoline Service Station Industrywide Risk Assessment Guidelines document was published in 1997. This Supplemental Guidance provides recommendations regarding public policy for gas stations and discusses community-scale health impacts of gas station emissions. Consistent with the goals of AB 617, CARB includes recommendations for reducing gas station emissions and community exposures in Sections VI through XII.

## V. What are the sources of emissions at gas stations?

Both gas station infrastructure and vehicles visiting gas stations are sources of emissions at gas stations. However, potential emissions from vehicles driving to or idling at the station are not included in the Technical or Supplemental Guidance documents. For more information as to why these emissions are not included in these guidance documents, see Section II.K of the Technical Guidance. There are five routine (i.e., recurring, predictable sources) sources of emissions from gas station infrastructure: loading, breathing<sup>21</sup>, fueling, spillage, and hose permeation.

Table 1 below includes a detailed explanation of these sources. Additional detail on the sources of emissions at gas stations can be found in the Technical Guidance (Executive Summary, Section C).

**Table 1. Emissions Sources at Gas Stations**

Emission Source	Description
Loading	Loading emissions occur when a fuel tanker truck makes a delivery to a gas station. During each delivery, gas is transferred from the fuel tanker trunk into the underground storage tanks at a gas station. Gasoline vapors may be emitted as the liquid gasoline enters the underground storage tanks.
Breathing	Breathing emissions (or breathing losses) occur during periods of low activity or inactivity (e.g., after hours, station closed for repairs) at a gas station. During these periods, temperature changes inside the underground storage tank can cause gasoline vapor pressures to increase. If the vapor pressure rises above the pressure limit for the underground storage tank, excess pressure will be released from the gas station vent pipe in the form of gasoline vapor emissions. Breathing emissions are also called breathing losses or pressure-driven losses.
Fueling	Fueling emissions occur at the gas pump during vehicle fueling. During the fueling process, gasoline vapors are emitted from the space due to a poor seal between the nozzle and the vehicle.
Spillage	Spillage emissions occur when gas leaks from the nozzle during vehicle fueling.
Hose Permeation	Hose Permeation emissions occur from the fueling hoses at the gas pump. Gasoline vapors can pass through (or permeate) the fuel delivery hoses.

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<sup>21</sup> Breathing emissions refers to emissions from an underground storage tank at a gas station.

## VI. What are the exposure impacts of individual gas stations, and what does CARB recommend when considering these exposures?

Gas stations are typically located in areas where people live and work. Health risk assessments show that estimated health risks from gas stations are typically higher in populated areas where large amounts of gasoline are dispensed. Thus, all new and modified gas stations should be evaluated during siting and permitting processes to mitigate the potential health impacts to nearby residents, workers, and sensitive populations.

CARB recommends that local governments work to ensure that areas around gas stations are zoned to avoid or minimize air quality impacts and that gas station projects include mitigation measures to avoid or reduce these impacts as conditions of approval. While CARB recommends that local governments not approve new gas stations immediately adjacent to housing and other locations with sensitive receptors, CARB recognizes that the critical need for affordable housing and infill development throughout the State will likely result in having gas stations near new or existing housing development. Therefore, CARB recommends that local governments implement land use policies to support additional housing while minimizing air quality impacts on nearby communities.

Examples include, but are not limited to, the following:

- Including gas station emission reduction measures in agency general plans, zoning codes, and municipal codes that avoid or reduce air quality impacts from gas stations on nearby communities (see Section XII for examples).
- Involving community members during the planning process of proposed gas station projects and working with them on solutions to address neighborhood air pollution concerns.
- Coordinating with Districts and Intergovernmental Review<sup>22</sup> (IGR) programs/entities during the planning processes for local plans and proposed gas station projects (e.g., during CEQA processes) to ensure health-protective public policy, exposure reduction strategies, and building/equipment configurations to reduce exposure near gas stations.
- Considering comments on air quality impacts, and corresponding mitigation measures, submitted through CEQA review processes before allowing prospective gas station projects to progress in the permit process.
- Evaluating gas station proposals, and adjacent housing or worksite proposals,

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<sup>22</sup>Intergovernmental review is required under [Presidential Executive Order 12372](#) and requires federal agencies to provide opportunities for state, area-wide, regional, and local agencies to review applications for federal grants and financial assistance programs, federally required state plans, federal development activities, and federal environmental documents.



to ensure inclusion of existing and emerging mitigation measures that avoid or lessen air quality impacts (e.g., installing air filters in new housing or worksites).

Furthermore, CARB recommends that Districts collaborate with gas station operators on ways to minimize air pollution from new and existing gas stations (e.g., relocating emission sources away from receptors or retrofitting equipment at gas stations currently without enhanced vapor recovery). Additional examples of options that can be used to reduce emissions from gas stations are listed in Section XII.

## **VII. What are the exposure impacts of multiple gas stations located near each other, and what does CARB recommend when considering these exposures?**

Analyses by CARB staff indicate that gas stations located on multiple corners of an intersection may increase individual and population-wide health impacts to people nearby depending on the distance from the gas station and gasoline throughput.<sup>23</sup> If there are other existing sources of toxic emissions<sup>24</sup> in the area, the cumulative impacts can result in a larger number of people being exposed to higher levels of emissions. Therefore, CARB recommends that local governments and Districts consider the cumulative impacts from multiple gas stations, and other surrounding sources of toxic emissions, in siting and permitting decisions to reduce exposure to the already impacted public. By considering cumulative impacts in the evaluation of proposed projects, local governments may reduce higher potential exposures to people living and working near gas stations. Similarly, considering cumulative impacts will allow Districts to determine whether nearby receptors will potentially be exposed to emissions of toxic air contaminants from multiple emission sources.

## **VIII. What are some considerations for addressing cumulative impacts in siting and permitting processes for gas stations?**

As discussed in Section I, local governments and Districts do not currently consider cumulative impacts in siting and permitting processes for gas stations. Local governments have primary authority over siting, zoning, and land use permitting decisions, while Districts have primary authority over air quality permitting decisions. Districts do not have authority over land use decisions but they, along with CARB, may comment on air quality aspects of prospective gas station projects through the CEQA process. Lead agencies<sup>25</sup> should consider and implement District and CARB comments because they are an important step towards reducing public exposure to air

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<sup>23</sup> Gasoline throughput is the amount of gas dispensed at a gas station over a period of time.

<sup>24</sup> Sources of toxic emissions include, but are not limited to, existing or planned gas stations or other industrial or commercial sources of air toxics.

<sup>25</sup> A "lead agency" on a California Environmental Quality Act (CEQA) project is the public agency that has the principal responsibility for carrying out or approving the project.

pollutants. This will also help to ensure that local government decisions in siting, zoning, and land use permitting are made in a way that maximizes public health protection. Moving forward, an integral part of this process will be establishing mechanisms for early communication and collaboration with Districts, in addition to the existing CEQA process.

To incorporate cumulative impacts into siting and permitting processes for gas stations, tools and metrics will need to be developed. This effort will require Districts and local governments to develop methods to assess and incorporate exposure and health impacts from both stationary sources (e.g., nearby gas stations) and mobile sources (e.g., traffic from nearby roads and freeways) into siting and permitting processes. Due to the involvement of multiple jurisdictions, developing these methods will require coordination between various State and local agencies. Utilizing this type of information when making siting and permitting decisions will provide a more comprehensive, health-protective approach to reducing potential exposures.

One potential approach to consider cumulative impacts in permitting of new or modified gas stations is to initially focus efforts in areas with designated AB 617 communities<sup>26</sup> and then expand to other areas. Local governments and Districts without designated AB 617 communities may choose to focus initial efforts on disadvantaged communities designated by CalEnviroScreen<sup>27</sup> and Senate Bill 535<sup>28</sup>.

## **IX. What were the results of CARB's analyses of multiple gas stations nearby each other?**

CARB staff evaluated the potential cancer risk and potential population exposure caused by the presence of four three-million-gallon gas stations, one on each corner of an intersection, compared to a single three-million-gallon gas station, and a single 12-million-gallon gas station. A three-million-gallon gas station is more commonly seen throughout the state and can be located on a corner in a neighborhood, often located around areas where people live and work. Whereas, a 12-million-gallon gas station is usually found at larger retail establishments, typically located further away from where people live and work. When considering the four three-million-gallon gas stations, staff analyzed health impacts at varying distances between each gas station. The primary goal of this analysis was to compare the total area exposed to gas station emissions, or zone of impact<sup>29</sup>, of the single three-million-gallon station to the zone of

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<sup>26</sup> Designated AB 617 communities are communities that have been selected by the CARB Board for community air monitoring and/or community emissions reduction programs.

<sup>27</sup> [CalEnviroScreen](#) is a screening tool that evaluates the burden of pollution from multiple sources in communities while accounting for potential vulnerability to the adverse effects of pollution.

<sup>28</sup> Senate Bill SB (SB) 535 requires the California Environmental Protection Agency (CalEPA) to identify disadvantaged communities based on geographic, socioeconomic, public health and environmental hazard criteria. SB 535 also directs 25 percent of the proceeds from the Greenhouse Gas Reduction Fund go to projects that provide a benefit to disadvantaged communities.

<sup>29</sup> The zone of impact for a given level of risk is the total area exposed to gas station emissions.

impact of four three-million-gallon stations. Staff included the single 12-million-gallon-station in this analysis to provide additional context for the four smaller stations. In this case, the single 12-million-gallon station has a throughput equal to the cumulative throughput of the four smaller stations. Additional details on the multiple gas station analyses can be found in Appendix A of this document.

CARB staff evaluated urban and rural areas in our analyses. Urban and rural areas are designated based on population density and land cover, or topography. This evaluation considered impacts using meteorological data from San Jose (urban) and Redding (rural). CARB staff chose San Jose and Redding because they are the meteorological data sets that result in the highest potential cancer risk in the Technical Guidance. More information on the urban and rural scenarios can be found in Sections II.G.1 and II.H.3 in the Technical Guidance.

For these analyses, staff evaluated the risk results at the point of maximum impact (PMI). The PMI is the highest estimated pollutant concentration that might occur offsite of the gas station. The results of these analyses showed that cancer risk at the PMI of a single three-million-gallon gas station was 20 chances per million<sup>30</sup> for the urban scenario and 26 chances per million for the rural scenario, while the cancer risk at the PMI of four three-million-gallon gas stations in close proximity could be as high as 23 chances per million for the urban scenario and 30 chances per million for the rural scenario. Many Districts have cancer risk permitting and public notification thresholds<sup>31</sup> below these levels for individual facilities, with the typical public notification threshold being 10 chances per million.

Per the OEHHA Manual, an exposure duration (ED) of 70 years is used to evaluate population-wide risk impacts, while an ED of 30 years is used to evaluate individual residential risk impacts. The multiple gas station assessment assumes a population is exposed to gas station emissions for 70 years. Thus, multiple gas stations in close proximity may warrant further evaluation to determine cumulative health impacts (see Section VII above for recommendations for multiple gas stations). Districts do not currently have permitting or public notification thresholds for multiple facilities; therefore, some Districts may find it challenging to use the results of cumulative risk analyses in air quality permitting decisions until relevant thresholds are developed.

Additional results are summarized below. Due to the site-specific nature of this assessment, similar analyses elsewhere may yield different results depending on the modeling inputs. The full analyses and results for the individual cancer risk approach can be found in Appendix A and the results of the population-wide approach can be found in Appendix B.

- The potential impacts from four gas stations increase the size of the cumulative

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<sup>30</sup> A cancer risk of 20 chances per million means that in a population of one million people exposed to a substance, 20 people may potentially develop cancer.

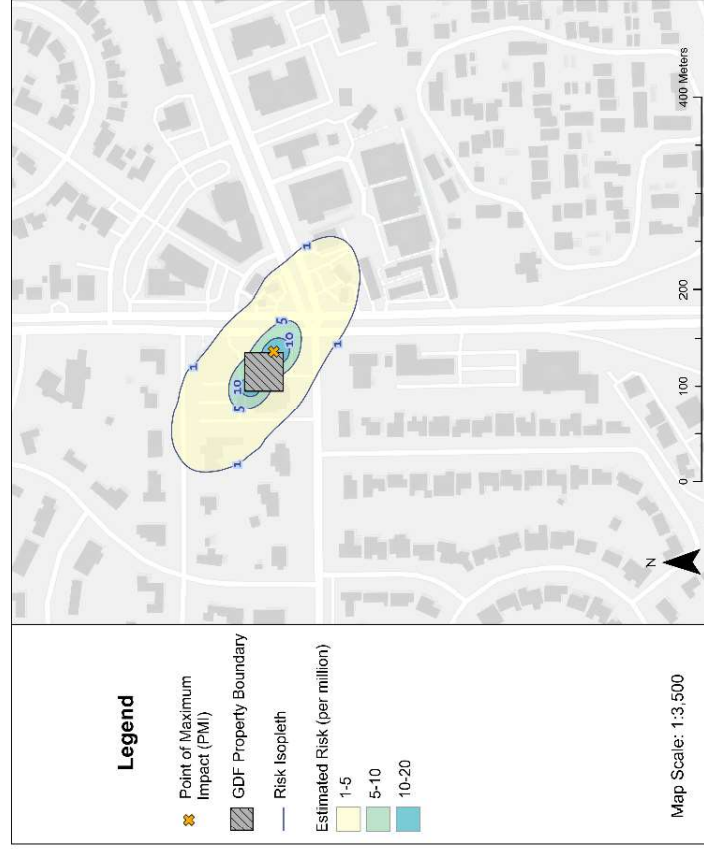
<sup>31</sup> A cancer risk public notification threshold is the health risk level at which a facility must notify exposed members of the public of potential health risks associated with facility emissions.

area of exposure to emissions, and potentially the corresponding risk, to people living and working nearby. In some cases, the zone of impact for four three-million-gallon gas stations could be over four times larger than the zone of impact of a single three-million-gallon station.

- The potential cumulative cancer risk from the four three-million-gallon gas stations varies depending on their proximity to each other. In our analyses, we evaluated offsite cancer risks for gas stations separated by distances ranging from 100 meters to 300 meters for both urban and rural scenarios. For these separation distances, our results showed the largest zones of impact for a potential cancer risk of 5 to 10 chances per million at a separation distance of 100 meters for the urban analyses and 10 to 20 chances per million for the rural analyses. However, impacts may vary for larger gas station throughputs, control configurations, and separation distances.
- The cancer risk from gas stations significantly decreases as the receptor moves further from the source. For a single gas station, cancer risk drops by about half the value from 10 to 20 meters away from the source, and quickly drops to below 1 chance per million at about 60 to 70 meters. In the multiple gas station analyses, at the 100-meter separation distance for the urban scenario, the zones of impact for each station interact with each other at cancer risks of 5 to 10 chances per million but no longer impact each other as the separation distance increases. For the rural scenario, the zones of impact for each station at cancer risks of 5 to 10 chances per million completely separate at a separation distance of 200 meters.
- In the urban scenario, the cancer risks at the PMIs of the multiple gas station scenarios ranged from 21 to 23 chances per million in which the highest cancer risk at the PMI occurred at a separation distance of 100 meters.
- In the rural scenario, the cancer risks at the PMIs of the multiple gas station scenarios ranged from 27 to 29 chances per million in which the highest cancer risk at the PMI occurred at a separation distance of 100 meters.
- The potential health impacts from multiple gas stations in close proximity to each other can be highly site-specific. Potential impacts do not increase linearly or in proportion to gas station throughput and can be affected by meteorological conditions, gas station configurations, distance to potential receptors, emission source release parameters, and grid spacing used in the modeling analysis.

The figures below show the zones of impact for gas stations using San Jose meteorological data (urban). Figure 1 shows the zone of impact of a single three-million-gallon gas station. Figure 2 shows the zone of impact of four three-million-gallon gas stations with a separation distance of 100 meters. The map used in the figures below is a generic representation of a geographic area with a four-corner intersection with one gas station located on each corner and may not be representative of all urban areas.

**Figure 1. Zone of Impact of Gas Station Emissions: Single Three-Million-Gallon Gas Station (Urban)**

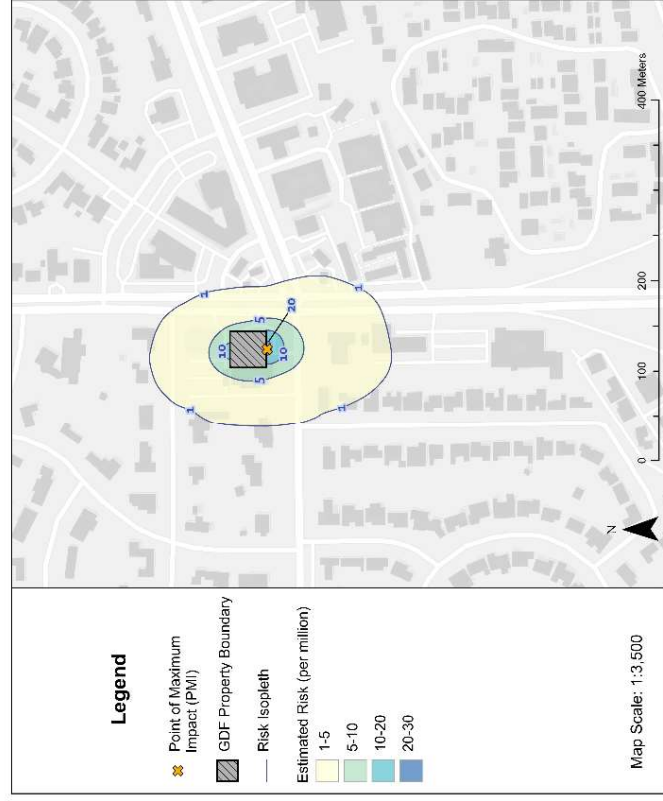


**Figure 2. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 100 m Separation (Urban)**



The figures below show the zones of impact for gas stations using Redding meteorological data (rural). Figure 3 shows the zone of impact of a single three-million-gallon gas station. Figure 4 shows the zone of impact of four three-million-gallon gas stations with a separation distance of 100 meters. The map used in the figures below is a generic representation of a geographic area with a four-corner intersection with one gas station located on each corner and may not be representative of all rural areas.

**Figure 3. Zone of Impact of Gas Station Emissions: Single Three-Million-Gallon Gas Station (Rural)**



**Figure 4. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 100 m Separation (Rural)**

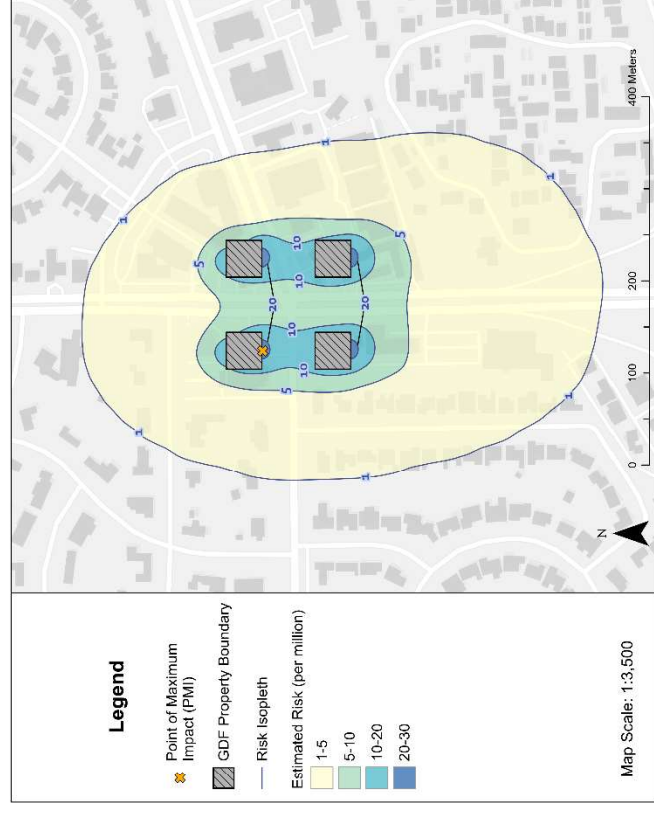
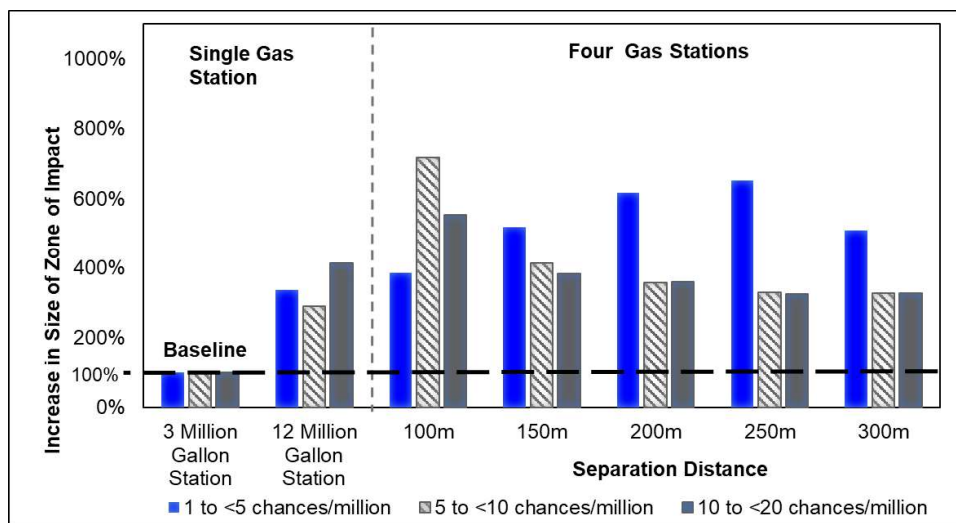


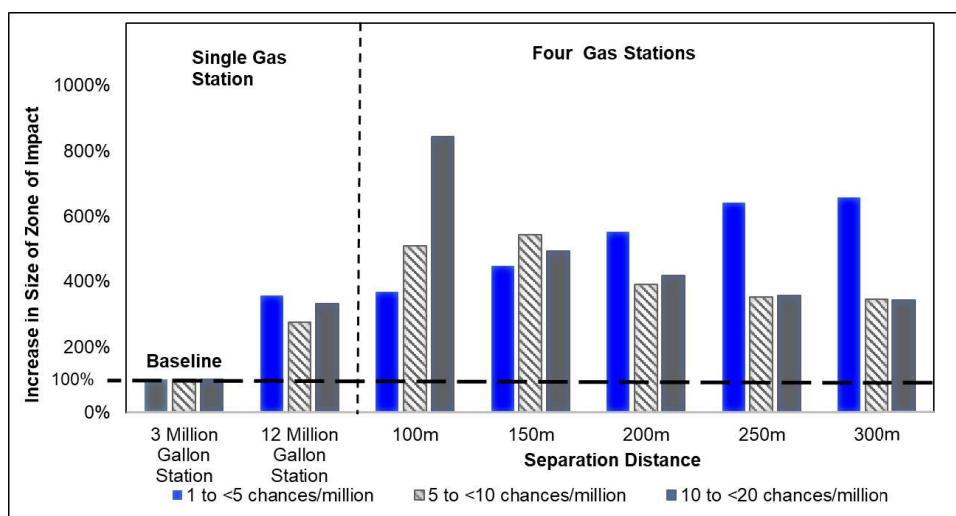
Figure 5 and Figure 6 below show the percent increase in the zone of impact from a baseline of a single three-million-gallon gas station to a single 12-million-gallon station, and four three-million-gallon gas stations for urban and rural scenarios, respectively. Both figures show the zone of impact for potential cancer risks up to 10 chances in a million.

**Figure 5. Percent Increase in Size of Zone of Impact of Gas Station Emissions: San Jose Meteorological Data (Urban)<sup>1,2,3</sup>**



1. Results will vary for different locations, throughputs, and separation distances.
2. "Separation Distance" is the distance between each of the four gas stations.
3. The zone of impact for a given level of risk is the total area exposed to gas station emissions.

**Figure 6. Percent Increase in Size of Zone of Impact: Redding Meteorological Data (Rural)<sup>1,2,3</sup>**



1. Results will vary for different locations, throughputs, and separation distances.
2. "Separation Distance" is the distance between each of the four gas stations.
3. The zone of impact for a given level of risk is the total area exposed to gas station emissions.

## **X. What are the options to reduce emissions from existing gas stations?**

Emissions from gas stations have been significantly reduced through California's air quality programs and regulations (see Section XI below for the list of regulations). However, additional reductions in gas station emissions can be achieved by improved emissions control technologies at gas stations and encouraging modes of transportation that either do not use gas or use gas more efficiently.

Examples include, but are not limited to, the following:

- Retrofitting high-throughput stations with high-capacity vapor processors<sup>32</sup>.
- Driving zero emission vehicles including all-electric and fuel cell vehicles.
- Driving hybrids and other fuel-efficient vehicles that reduce the amount of gas required per vehicle mile.
- Riding non-gas public transit methods (e.g., electric light rail trains and buses).
- Riding electric and non-motorized bicycles or scooters.
- Creating safe walking and bicycling corridors to maximize safety while using alternative transit modes.

## **XI. What regulations are currently in place to reduce emissions and community exposure from gas stations in California?**

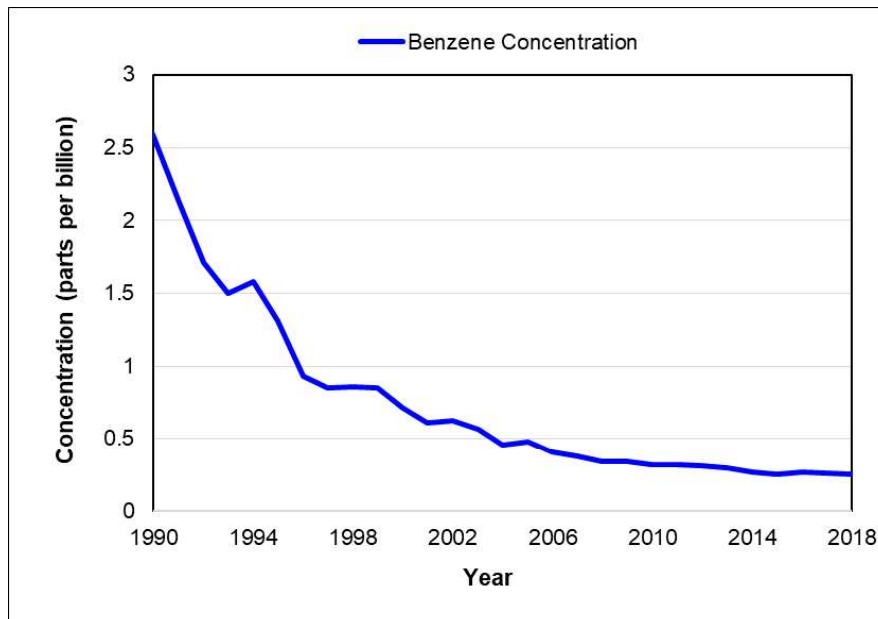
Beginning in 1988, emissions from gas stations were significantly reduced due to air quality regulations requiring reformulated gasoline and emission control technology. Data from CARB's statewide ambient air monitoring network shows that concentrations of benzene, the most toxic of the gas station emissions, have decreased by approximately 90 percent since 1989. This trend is shown in Figure 7 on the next page. Benzene is also emitted through many industrial sources such as oil refineries, landfills, gas stations, and the production of lubricants and synthetic fibers.

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<sup>32</sup> A vapor processor is a control device that manages the pressure of the vapor in a gasoline storage tank to prevent overpressure issues and reduce breathing emissions from the pressure/vent valve. The high-capacity vapor processors currently certified by CARB are capable of processing 350 gallons of gasoline vapor per hour at a concentration of 61 percent hydrocarbon, as propane.



Figure 7. Statewide Average Ambient Benzene Concentrations from 1990 to 2018 (parts per billion)



1. The data presented in this table comes from the CARB, [iADAM Annual Toxics Statewide Summary for Benzene](#).

The State and national gas and vapor recovery regulations that address gasoline and gas stations are listed below:

- In 1988, the Benzene Airborne Toxic Control Measure<sup>33</sup> required all existing and new gas stations with annual throughput<sup>34</sup> greater than 480,000 gallons to install vapor recovery systems<sup>35</sup> by 1991.
- From 1995 to 2005, national standards required on-board refueling vapor Recovery<sup>36</sup> (ORVR) systems to be phased in on all passenger cars and trucks.
- In 2001, the Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities (CP-201)<sup>37</sup> required enhanced vapor recovery (EVR) systems to be phased in for existing gas stations in State ozone nonattainment areas<sup>38</sup> and new stations statewide. CARB certification procedures have been used to specify performance standards for gas station vapor recovery systems

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<sup>33</sup> California Code of Regulations, Title 17 § 93101.

<sup>34</sup> Annual throughput is the amount of gas dispensed at a gas station in one year.

<sup>35</sup> A vapor recovery system reduces the amount of gas station emissions escaping into the atmosphere by capturing gasoline vapors emitted during fuel tanker truck deliveries or vehicle refueling.

<sup>36</sup> On Board Refueling Vapor Recovery is a vehicle system that captures gasoline vapor emissions during vehicle fueling.

<sup>37</sup> California Air Resources Board, [Certification procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities \(CP-201\)](#), April 23, 2015, accessed January 2019.

<sup>38</sup> A State ozone nonattainment area is an area with ozone levels above the State air quality standard.

since 1975.

- In 2003, California’s Phase 3 Reformulated Gasoline (CaRFG Phase 3) Regulations<sup>39</sup> lowered Reid Vapor Pressure requirements on gas used in motor vehicles below the national standard.
- In 2015, specifications for Enhanced Conventional (ECO) Nozzles<sup>40</sup> were approved for non-retail gas stations.
- In 2018, CARB approved specifications for Enhanced ORVR Vehicle- Recognition (EOR) nozzles<sup>41</sup> for gas stations with vapor assist control systems.
- In 2018, CARB approved amendments to specifications for fill pipes<sup>42</sup> and openings of motor vehicle fuel tanks.
- In September 2020, in recognition of the severity of the climate crisis and the need for immediate action, Governor Newsom signed Executive Order N-79-20. This order established a first-in-the-nation goal for 100 percent of in-state sales of new passenger cars and trucks to be zero-emission by 2035.

## **XII. What does CARB recommend to reduce exposure and minimize potential health impacts from gas station emissions?**

In addition to the recommendations in Sections VI through X, CARB encourages local governments and Districts to consider the following recommendations to reduce potential exposures to people living and working near gas stations.

### **A. Local Governments**

During the land use permitting and siting processes for new gas stations, CARB recommends that local governments include gas station emission reduction measures in agency general plans, zoning codes, and municipal codes that avoid or reduce air quality impacts from gas stations on nearby communities. Examples include, but are not limited to, the following:

- Adopting or updating zoning codes and ordinances requiring gas station site design and operational standards that reduce community exposure to the gas stations emissions (e.g., locating gas station equipment away from people both

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<sup>39</sup> California Code of Regulations, Title 13 § 2260.

<sup>40</sup> Enhanced Conventional (ECO) Nozzles reduce liquid gasoline emissions due to gas spilling on the ground after vehicle fueling, or spillage. ECO nozzles allow only three drops of liquid gasoline to spill from the nozzle.

<sup>41</sup> Enhanced ORVR Vehicle Recognition (EOR) nozzles reduce gasoline vapor emissions during vehicle fueling by forming a tight seal at the vehicle/nozzle interface.

<sup>42</sup> A fill pipe is part of a vehicle fueling system that connects the gas cap to the fuel tank.

within the property boundary and adjacent to the station, considering wind patterns and the location of buildings inside the property boundary when locating equipment).

- Adopting or updating conditions of approval for the permitting and siting of new gas station projects to require use of the cleanest possible equipment during construction (e.g., all construction equipment must meet or exceed CARB-certification standards).
- Requiring gas stations to conduct periodic reviews of operations to identify opportunities to upgrade or phase out older equipment, as part of local government Development Agreements<sup>43</sup>.
- Including language in construction contracts, tenant lease agreements, and development agreements requiring gas station developers/operators to include existing and emerging mitigation measures in the construction and operation of gas stations (e.g., vegetative walls<sup>44</sup> or other effective barriers that separate gas station operations and people living or working nearby).
- Requiring gas stations to add fueling/charging stations for advanced technology vehicles (i.e., electric charging stations, hydrogen fueling stations).

## **B. Districts**

During the air quality permitting process for new or modified gas stations, CARB recommends Districts consider all control strategies available to reduce community exposures to gas station emissions. Examples include, but are not limited to, the following:

- Retrofitting equipment at gas stations currently without enhanced vapor recovery.
- Adding high-capacity vapor processors to high-throughput gas stations.
- Limiting the amount of throughput at gas stations.
- Reconfiguring gas stations or relocating gas station equipment away from receptors (e.g., raising the release height of a P/V valve).

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<sup>43</sup> A Development Agreement is a contract between a local jurisdiction and a person who owns or controls property within the jurisdiction. It details the obligations of both parties, specifying the standards and conditions that will govern development of the property.

<sup>44</sup> *Effectiveness of Sound Wall-Vegetation Combination Barriers as Near-Roadway Pollutant Mitigation Strategies* (2017).

### **XIII. List of Appendices**

Appendix A: Analysis of Multiple Gas Stations

Appendix B: Population-Wide Cancer Risk

## Appendix A: Analysis of Multiple Gas Stations

CARB staff evaluated the potential cancer risk caused by the presence of four gas stations, one on each corner of an intersection. Gas stations are typically located in areas where people live, shop, and work. Health risk assessments show that estimated health risks from gas stations are typically higher in areas where large amounts of gasoline are dispensed. The purpose of this analysis was to determine how multiple gas stations in close proximity to each other, compared to a single station, affect the size of the area where people could be exposed to emissions (zone of impact).

### A. Approach

This evaluation considered impacts in urban and rural scenarios using meteorological data from San Jose and Redding, respectively. Staff modeled the following scenarios in the Hotspots Analysis and Reporting Program (HARP)<sup>45</sup> for each meteorological data set:

- A single, three-million-gallon gas station
- A single, 12-million-gallon gas station
- Four three-million-gallon gas stations, modeled at five separation distances (100 m, 150 m, 200 m, 250 m, 300 m) for each meteorological data set. One modeling run was created for each separation distance.

The primary goal of this analysis was to compare the size of the zone of impact of a single three-million-gallon station to the zone of impact of four three-million-gallon stations, as smaller throughput stations are more likely to be located in and around areas where people live and work. Although larger throughput stations are typically located further away from these areas, staff included the 12-million-gallon gas station to provide additional context as a comparison to the four smaller stations.

After completing the modeling runs, staff generated contours or risk isopleths that could be mapped for each modeled scenario. Maps showing the risk isopleths in relation to gas station locations are located in the results section of this appendix, Section XIII.C.1 (urban meteorology) and Section XIII.C.2 (rural meteorology). Collectively, all risk isopleths within a map scenario represent the total area exposed to gas station emissions or the “zone of impact”. Zones of impact were calculated for each risk isopleth, gas station separation distance, and meteorological data set. Tables and charts showing zone of impact comparisons are located in the results section of this appendix, Section XIII.C.3.

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<sup>45</sup> The *Hotspots Analysis and Reporting Program* (HARP) is a collection of computer programs that addresses the requirements of Assembly Bill 2588 (Hot Spots Act).

## **B. Summary of Modeling Parameters and Assumptions**

The assumptions used in the risk assessment for gas stations located on multiple corners of an intersection (multiple gas station assessment) are the same as those used in the individual gas station assessment. However, there are some differences in the modeling parameters. A detailed list of the modeling parameters and assumptions used in the individual gas station assessment can be found in the Technical Guidance (Appendix D, Section 4). The sections below outline the modeling parameters used in both assessments and highlight the differences between them.

### **1. Operational Schedule**

The multiple gas station assessment uses the operational schedule provided in the Technical Guidance (Appendix D, Section 1).

### **2. Gas Station Scenarios**

The multiple gas station assessment uses the same gas station scenarios provided in the Technical Guidance (Appendix D, Section 2). Staff modeled risk values for Scenario 1 as 97 percent of California gas stations fall into this scenario.

### **3. Exposure Parameters**

Per the OEHHA Manual<sup>46</sup>, an exposure duration (ED) of 70 years is used to evaluate population-wide risk impacts, while an ED of 30 years is used to evaluate individual residential risk impacts. Thus, the ED was changed from 30 years to 70 years for the multiple gas station assessment assuming a population is exposed to gas station emissions for 70 years.

### **4. Modeling Parameters**

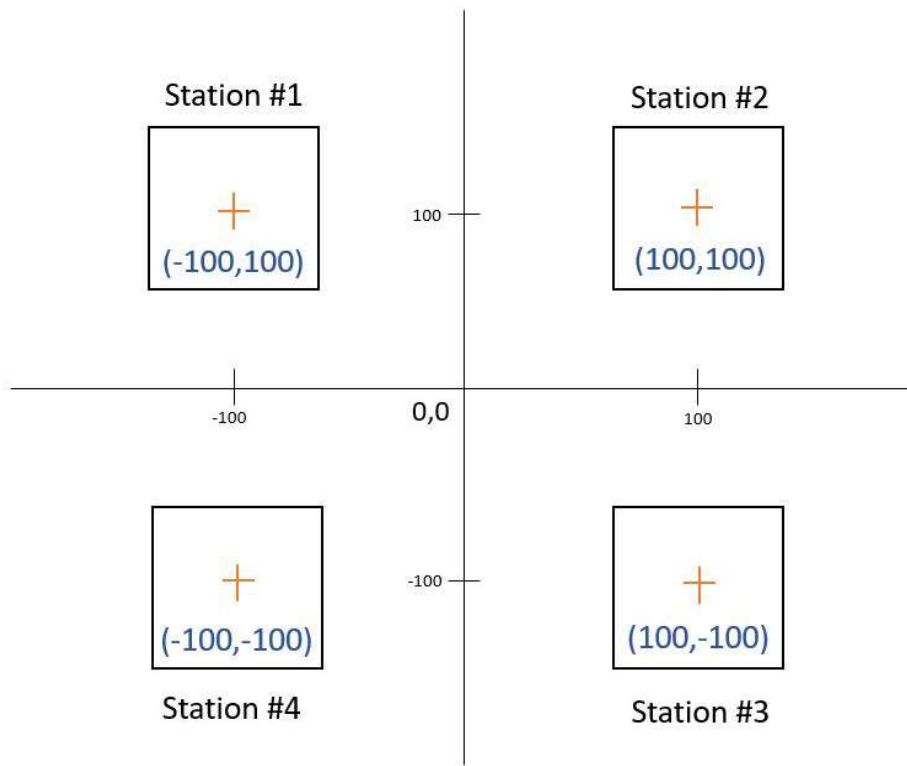
The multiple gas station assessment modeled four gas stations with the same dispersion parameters as the individual gas station in the Technical Guidance (Appendix D, Section 4). All gas stations were centered around (0,0) on a Cartesian grid according to the following separation distances: 100 m, 150 m, 200 m, 250 m, 300 m.

On the next page, Figure A1 shows the modeling schematic for the gas station locations.

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<sup>46</sup>Office of Environmental Health Hazard Assessment, *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, February 2015.

Figure A1. Modeling Schematic for Multiple Gas Station Assessment: 100m Gas Station Separation Distance



## 5. Meteorological Data

The multiple gas station assessment uses the same meteorological data provided in the Technical Guidance. Staff used San Jose (urban) and Redding (rural) meteorological data sets in the multiple gas station assessment because they are the most health protective meteorological data sets in the Technical Guidance. The meteorological data sets can be found in the Technical Guidance (Appendix D, Section 5).

In this analysis, each of the meteorological data sets were modeled over a four-corner intersection with one gas station located on each corner (see modeling schematic in Figure A1 above).

## 6. Site-Specific Data Considerations: Variations and Uncertainties

There are many site-specific considerations that can impact health risk assessments. The estimated concentrations and potential health risks produced by a risk assessment are based on assumptions, many of which are designed to be health protective so that potential risks to individuals are not underestimated. Variations in site-specific

modeling parameters can yield different modeling results and introduce uncertainty to the risk assessment process.

The results of the multiple gas station risk assessment showed that health impacts from multiple sources in close proximity to each other can be highly site-specific. One example of a site-specific modeling parameter is the separation distance between gas stations. When multiple gas stations are in close proximity to each other, there is a range of separation distances in which the size of the zone of impact for each individual station increases due to emissions from the surrounding stations. Depending on site-specific considerations, an increased zone of impact may not occur for all risk levels. Outside this range of separation distances, the stations will no longer influence each other and the zone of impact for each station will mimic that of a single isolated station.

Additional examples of site-specific modeling parameters can be found in the Technical Guidance (Appendix D, Section 6).

### C. Results

Table A1 below summarizes the potential cancer risk levels, or isopleths, observed for each separation distance and meteorological data set modeled in this analysis. The urban meteorological data is represented by "U" and the rural meteorological data is represented by "R". See the results section of this appendix (Section XIII.C.1 and Section XIII.C.2 for maps of the zone of impact results for each meteorological data set and separation distance.

**Table A1. Potential Cancer Risk Isopleths for Gas Station Separation Distances - Urban and Rural Meteorological Data<sup>1,2,3,4</sup>**

Potential Cancer Risk	Separation Distances					
	Single Station	100m	150m	200m	250m	300m
1 chance per million	U, R	U, R	U, R	U, R	U, R	U, R
5 chances per million	U, R	U, R	U, R	U, R	U, R	U, R
10 chances per million	U, R	U, R	U, R	U, R	U, R	U, R
20 chances per million	U, R	U, R	U, R	U, R	U, R	U, R
30 chances per million <sup>3</sup>		U, R	R only	R only	R only	U only

1. U = Urban (San Jose meteorological data), R = Rural (Redding meteorological data)]
2. Includes data for 12 scenarios, six urban and six rural.
3. "Separation Distance" is the distance between each of the four gas stations.
4. Twenty meter spacing was used for the receptor grid. The presence of the 30 chances per million isopleth is dependent on the spacing of the receptor grid. More refined spacing reveals additional receptors within the isopleth.

On the next page, Table A2 and Figure A2 show the percent increases in the size of zones of impact for a 12-million-gallon station and a group of four three-million-gallon gas stations (separated by 100 m, 150 m, 200 m, 250 m and 300 m) versus a single three-million-gallon gas station for an urban meteorological data set. See the results section of this appendix (Section XIII.C.3) for detailed figures of the one to less than



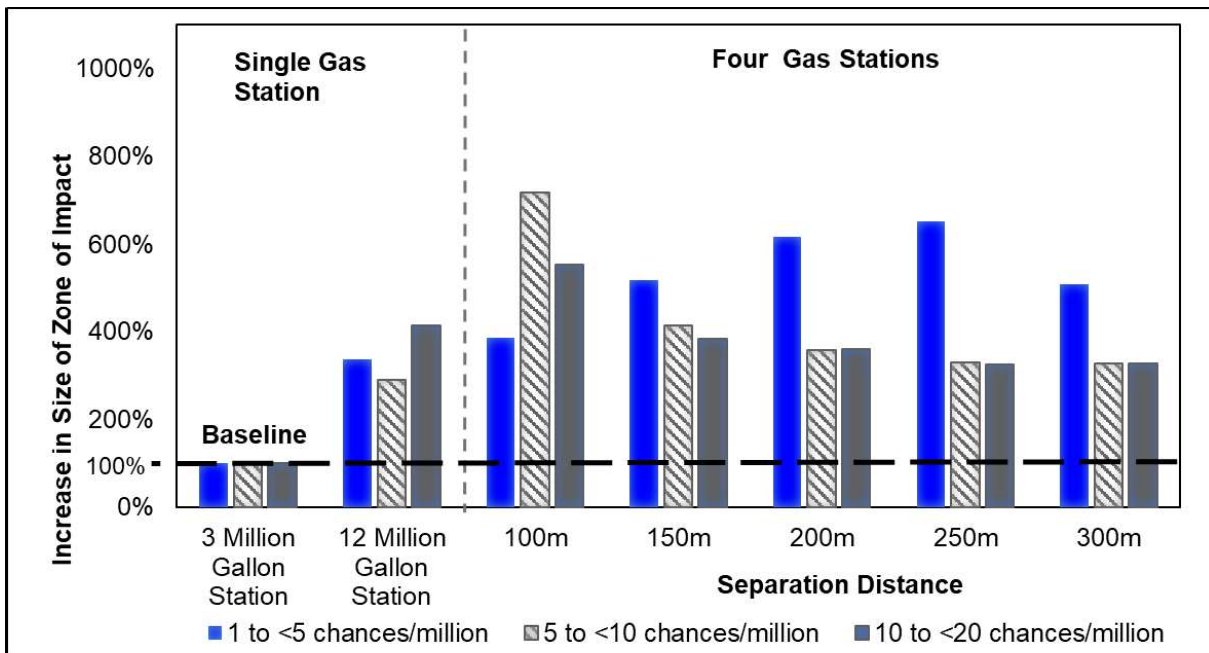
five chances per million, five to less than 10 chances per million, and 10 to less than 20 chances per million risk isopleths.

**Table A2. Percent Increase in Size of Zone of Impact of Gas Station Emissions: San Jose Meteorological Data (Urban)<sup>1,2</sup>**

Separation Distance (m)	Percent Increase in Size of Zone of Impact (%)		
	1 to <5 Chances per Million	5 to <10 Chances per Million	10 to <20 Chances per Million
Single Three-Million-Gallon Station	Baseline	Baseline	Baseline
Single 12-Million-Gallon Station	337%	290%	414%
100m	386%	717%	553%
150m	519%	414%	384%
200m	616%	357%	360%
250m	652%	330%	325%
300m	510%	327%	328%

1. Percent increase results are not provided for the 20 and 30 chances per million isopleths because the single three-million-gallon gas station only included isopleths for one, five, and 10 chances per million.
2. "Separation Distance" is the distance between each of the four gas stations.

**Figure A2. Percent Increase in Size of Zone of Impact of Gas Station Emissions: San Jose Meteorological Data (Urban)<sup>1,2,3,4</sup>**



1. Results will vary for different locations, throughputs, and separation distances.
2. "Separation Distance" is the distance between each of the four gas stations.
3. The zone of impact for a given level of risk is the total area exposed to emissions.

4. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single three-million-gallon gas station only included isopleths for one, five, and 10 chances per million.

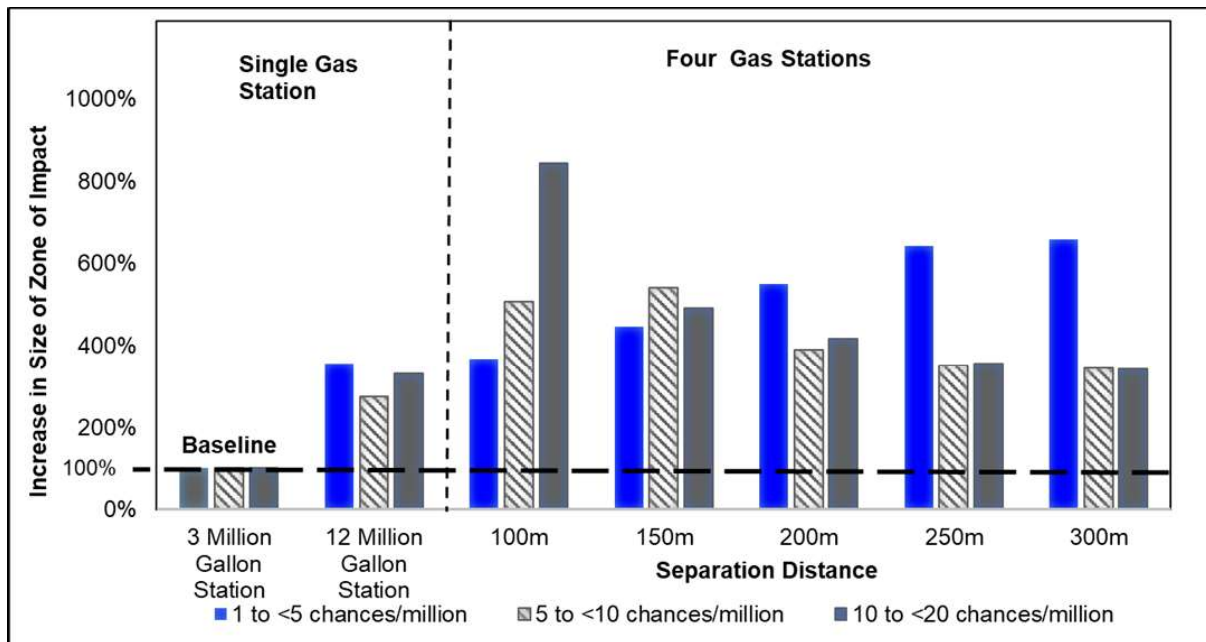
Table A3 and Figure A3 summarize the percent increases in the size of zones of impact for a 12-million-gallon station and a group of four three-million-gallon gas stations (separated by 100 m, 150 m, 200 m, 250 m and 300 m) versus a single three-million-gallon gas station for a rural meteorological data set. See the results section of this appendix (Section XIII.C.3) for detailed figures of the one to less than five chances per million, five to less than 10 chances per million, and 10 to less than 20 chances per million risk isopleths.

**Table A3. Percent Increase in Size of Zone of Impact of Gas Station Emissions: Redding Meteorological Data (Rural)<sup>1,2</sup>**

Separation Distance (m)	Percent Increase in Size of Zone of Impact (%)		
	1 to <5 Chances per Million	5 to <10 Chances per Million	10 to <20 Chances per Million
Single Three-Million-Gallon Station	Baseline	Baseline	Baseline
Single 12-Million-Gallon Station	357%	276%	332%
100m	369%	508%	843%
150m	448%	541%	492%
200m	551%	390%	418%
250m	644%	351%	357%
300m	660%	344%	342%

1. Percent increase results are not provided for the 20 and 30 chances per million isopleths because the single three-million-gallon gas station only included isopleths for one, five, and 10 chances per million.
2. Separation distance is the distance between each of the four gas stations.

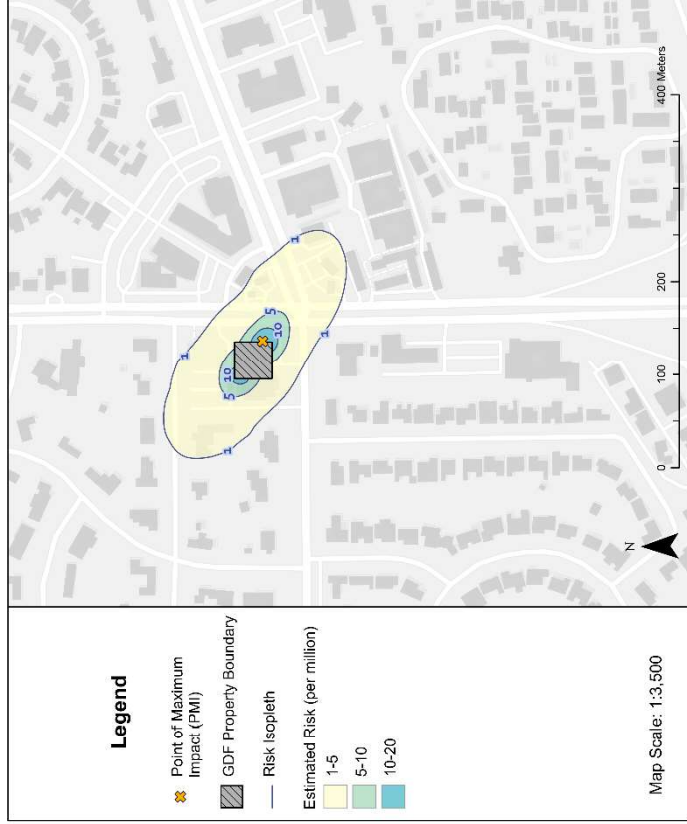
Figure A3. Percent Increase in Size of Zone of Impact of Gas Station Emissions: Redding Meteorological Data (Rural)<sup>1,2,3,4</sup>



1. Results will vary for different locations, throughputs, and separation distances.
2. "Separation Distance" is the distance between each of the four gas stations.
3. The zone of impact for a given level of risk is the total area exposed to emissions.
4. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single three-million-gallon gas station only included isopleths for one, five, and 10 chances per million.

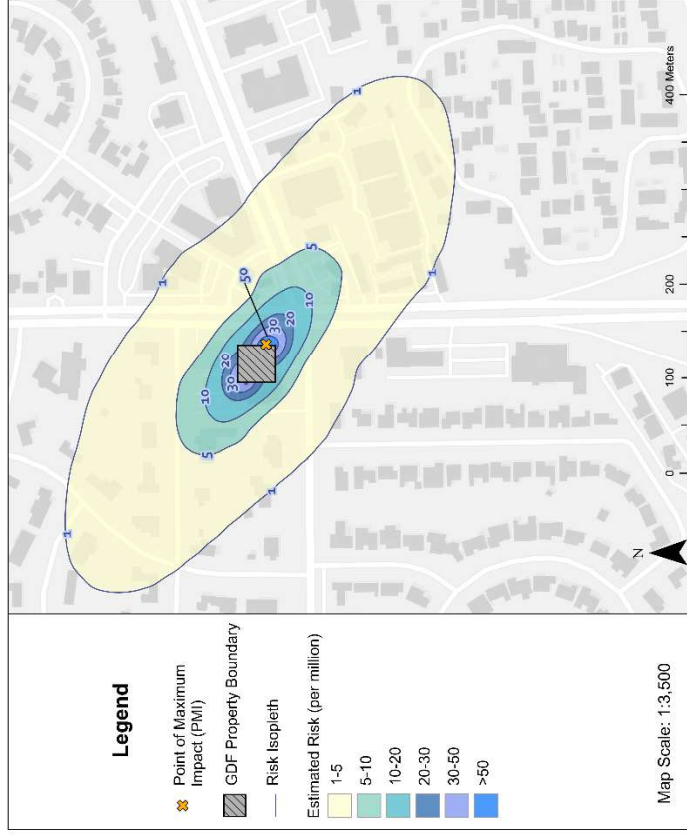
# 1. Zone of Impact Maps - Urban Meteorology (San Jose Meteorological Data)

Figure A4. Zone of Impact of Gas Station Emissions: Single Three-Million-Gallon Gas Station (Urban)<sup>1,2</sup>



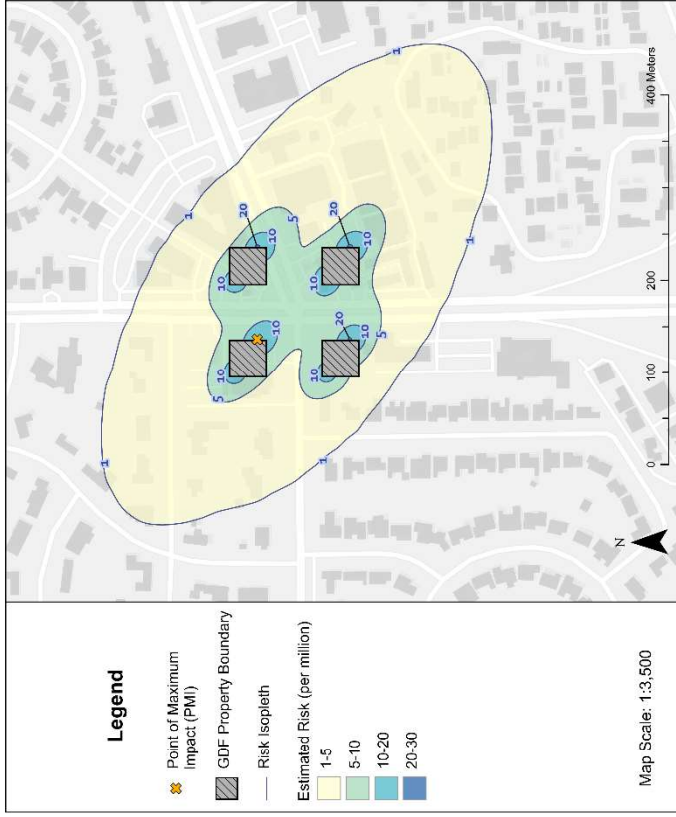
1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 20 chances per million.

Figure A5. Zone of Impact of Gas Station Emissions: Single 12-Million-Gallon Gas Station (Urban)<sup>1,2</sup>



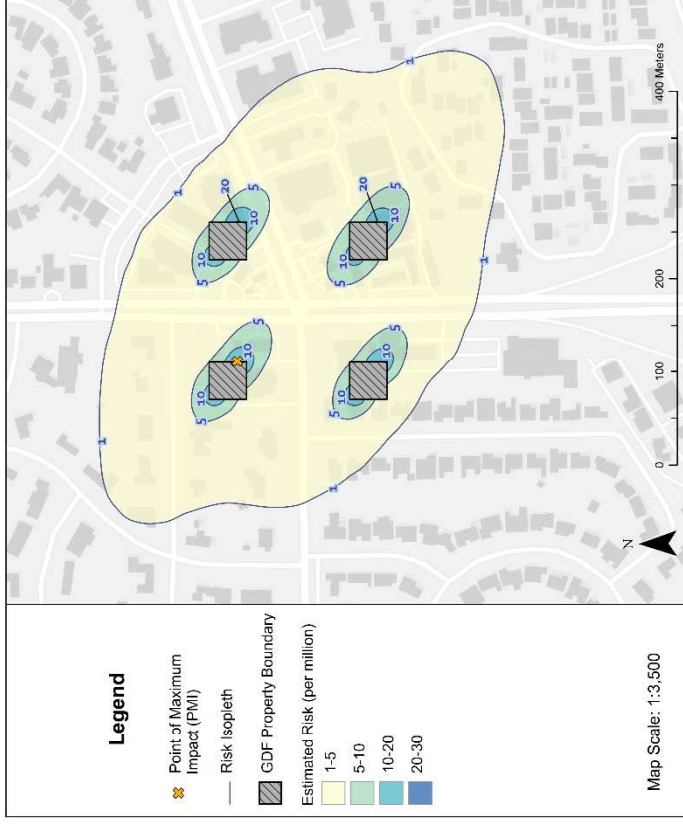
1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 80 chances per million.

**Figure A6. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 100m Separation (Urban)**<sup>1,2</sup>



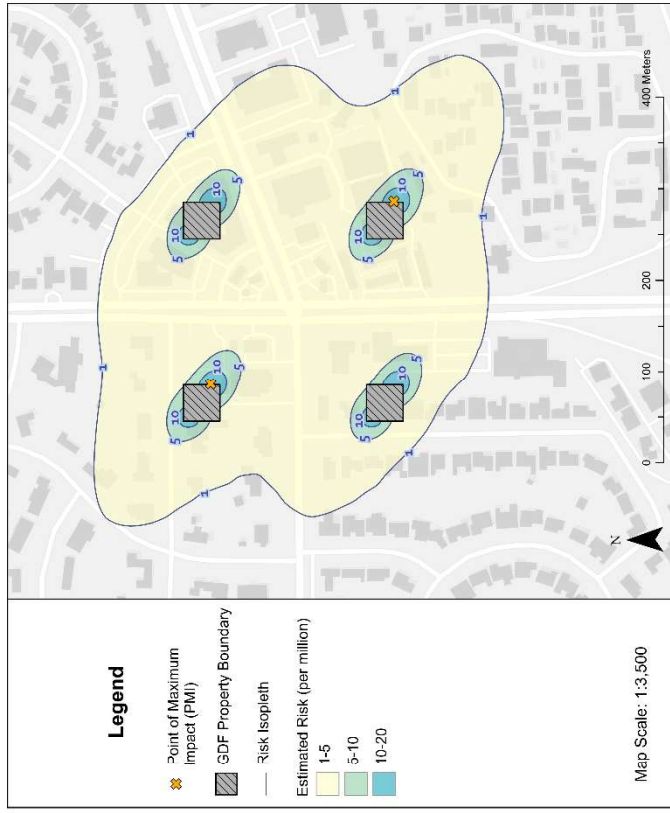
1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 23 chances per million.

**Figure A7. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 150m Separation (Urban)**<sup>1,2</sup>



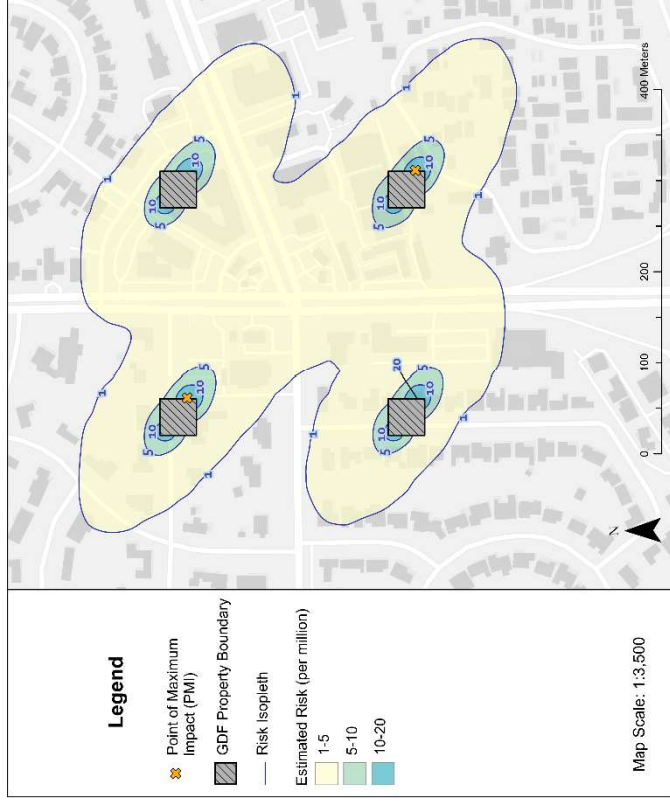
1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 22 chances per million.

**Figure A8. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 200m Separation (Urban)<sup>1,2</sup>**



1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 21 chances per million.

**Figure A9. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 250m Separation (Urban)<sup>1,2</sup>**



1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 21 chances per million.

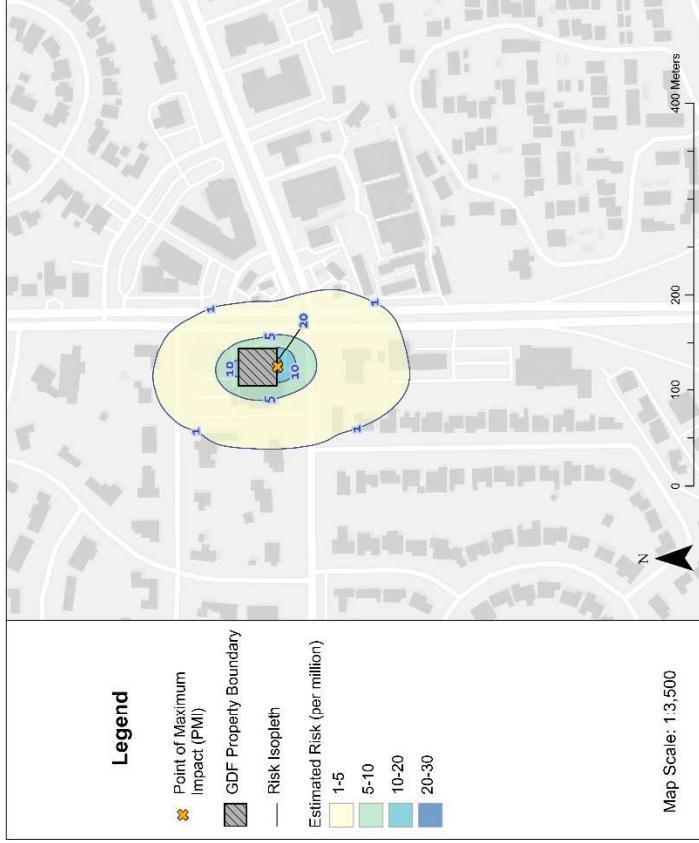
**Figure A10. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 300m Separation (Urban)<sup>1,2</sup>**



1. Urban = San Jose meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all urban areas.
3. The Point of Maximum Impact (PMI) is 21 chances per million.

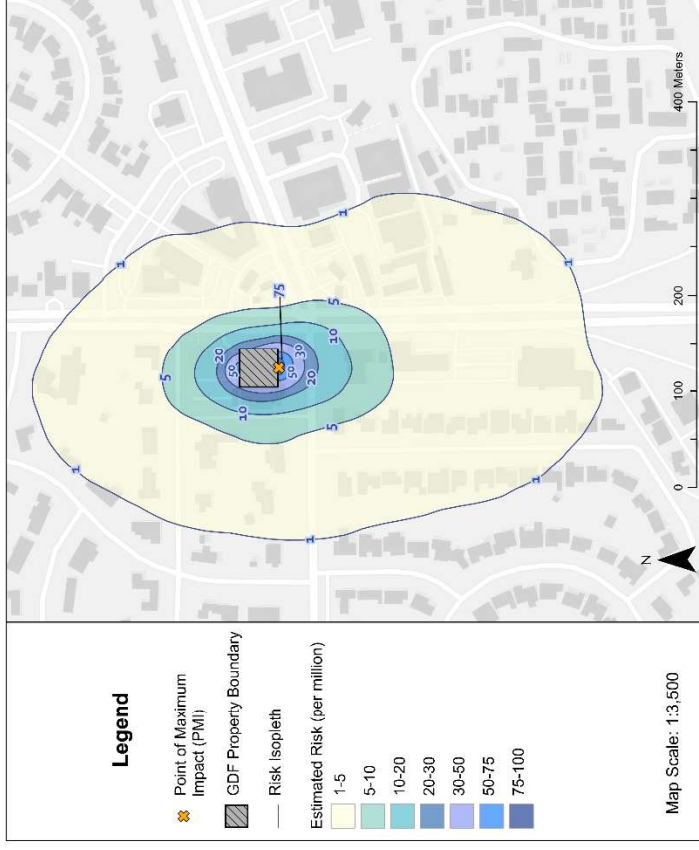
## 2. Zone of Impact Maps - Rural Meteorology (Redding Meteorological Data)

Figure A11. Zone of Impact of Gas Station Emissions: Single Three-Million-Gallon Gas Station (Rural)<sup>1,2</sup>



1. Rural = Redding meteorological data.
2. This map was used for illustration purposes and may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 26 chances per million.

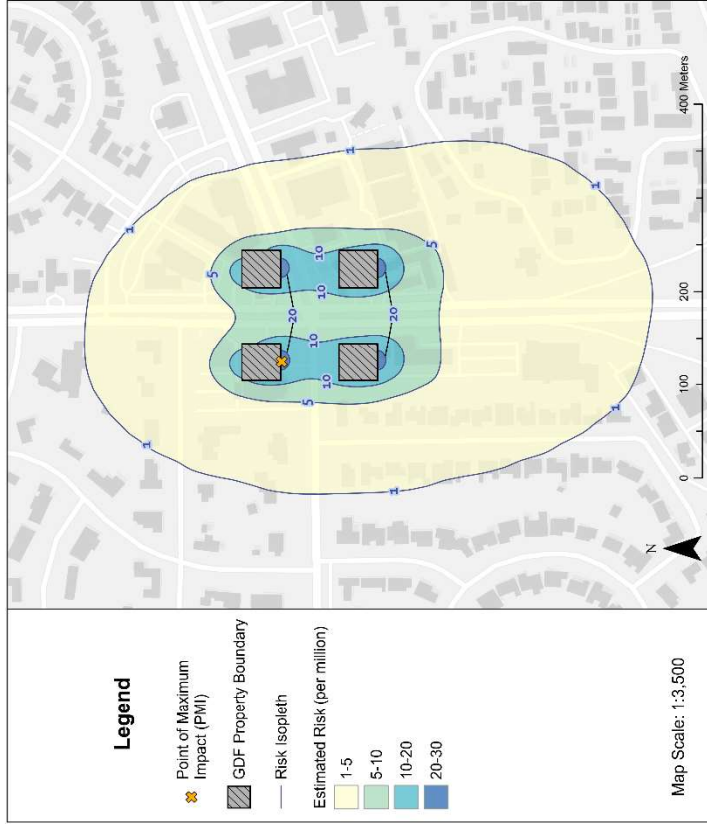
Figure A12. Zone of Impact of Gas Station Emissions: Single 12-Million-Gallon Gas Station (Rural)<sup>1,2</sup>



1. Rural = Redding meteorological data.
2. This map was used for illustration purposes and may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 104 chances per million.

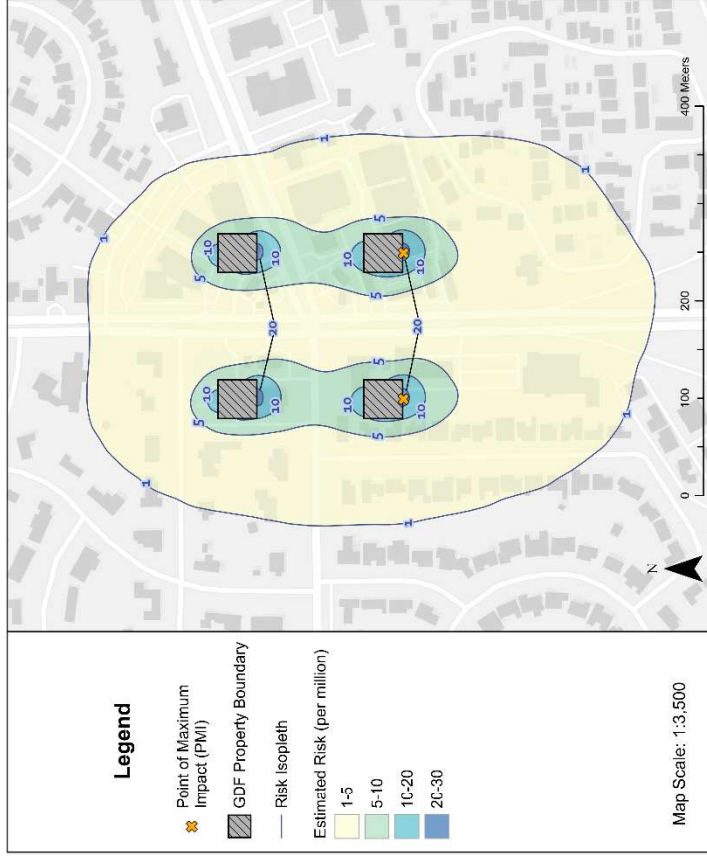


Figure A13. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 100m Separation (Rural)<sup>1,2</sup>



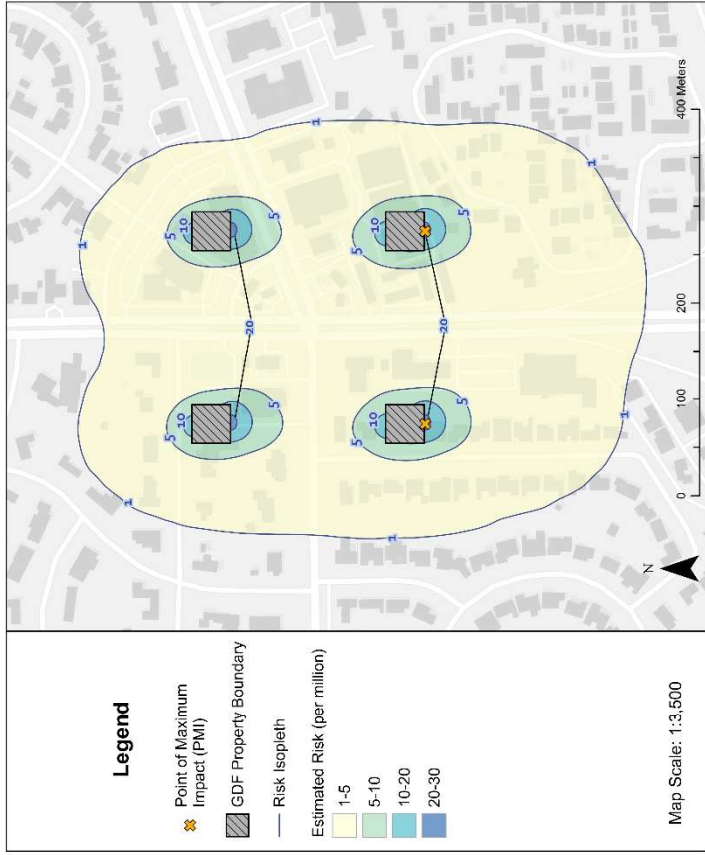
1. Rural = Redding meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 29 chances per million.

Figure A14. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 150m Separation (Rural)<sup>1,2</sup>



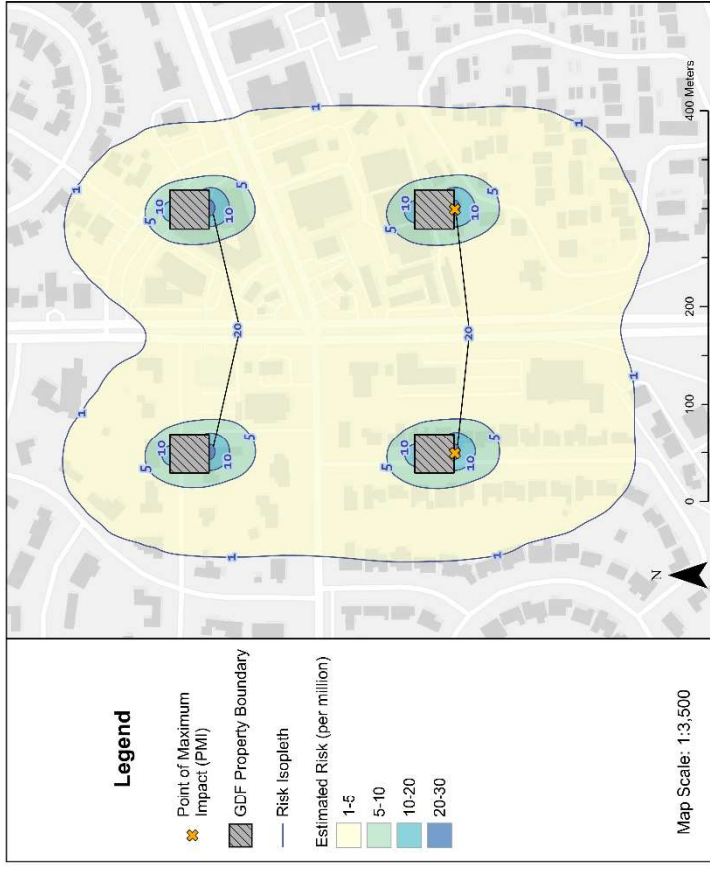
1. Rural = Redding meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 28 chances per million.

Figure A15. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 200m Separation (Rural)<sup>1,2</sup>



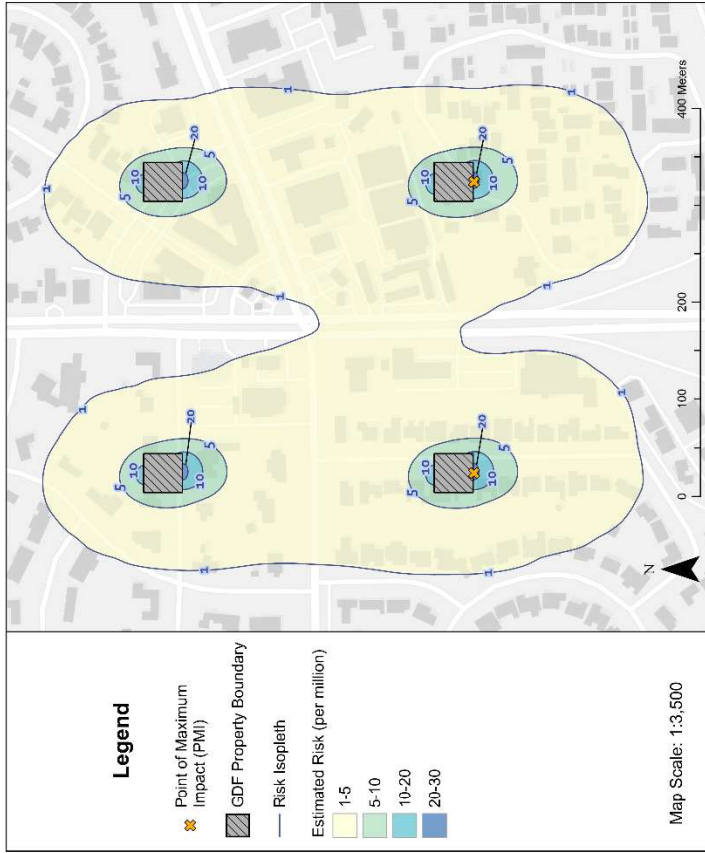
1. Rural = Redding meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 27 chances per million.

Figure A16. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 250m Separation (Rural)<sup>1,2</sup>



1. Rural = Redding meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 27 chances per million.

Figure A17. Zone of Impact of Gas Station Emissions: Four Three-Million-Gallon Gas Stations with 300m Separation (Rural)<sup>1,2</sup>

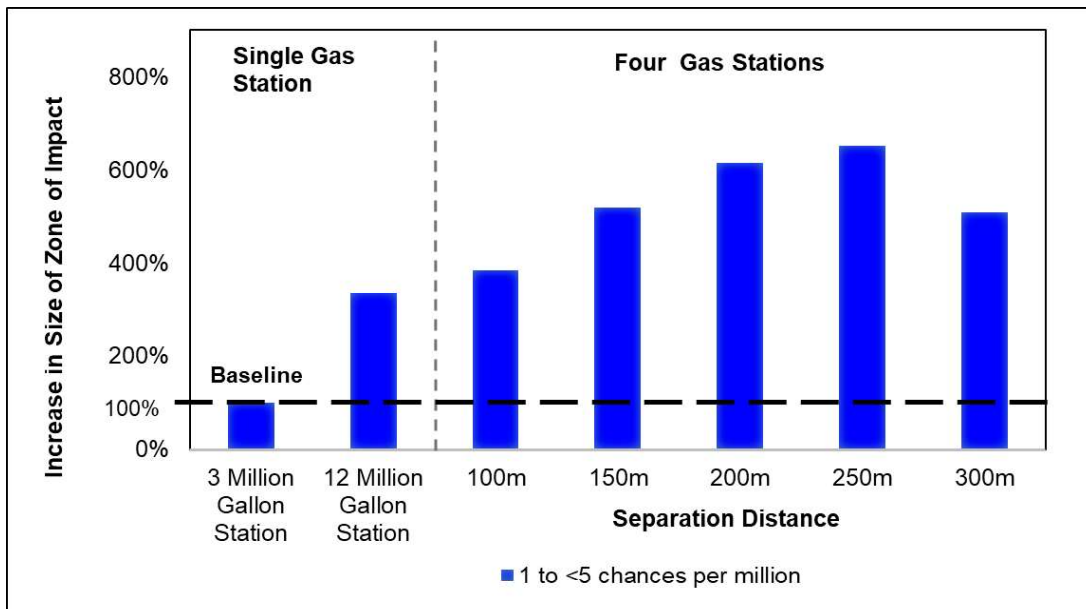


1. Rural = Redding meteorological data.
2. This map is a generic representation of an area with a four-corner intersection with one gas station on each corner. This layout may not be representative of all rural areas.
3. The Point of Maximum Impact (PMI) is 27 chances per million.

### 3. Percent Increase in Zone of Impact Analysis: 1 to <5, 5 to <10, and 10 to <20 Chances per Million Risk Isopleths

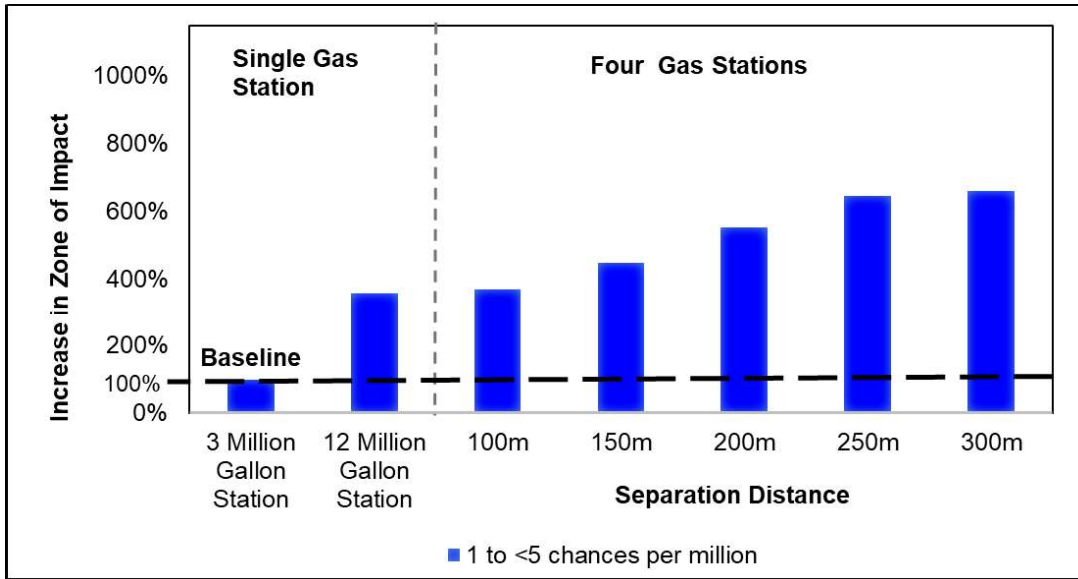
On the next page, Figure A18 through Figure A23 show the percent increase in the size of zones of impact for a 12-million-gallon station and a group of four three-million-gallon gas stations versus a single three-million-gallon gas station for urban and rural meteorological data sets. In all cases, four three-million-gallon stations has a larger zone of impact than a single three-million-gallon gas station. For both the urban and rural scenarios, the zone of impact of four three-million-gallon stations is generally larger than the zone of impact of the 12-million-gallon station, regardless of separation distance.

Figure A18. Size of Zone of Impact of Gas Station Emissions: One Chance per Million Isopleth (Urban)<sup>1,2,3</sup>



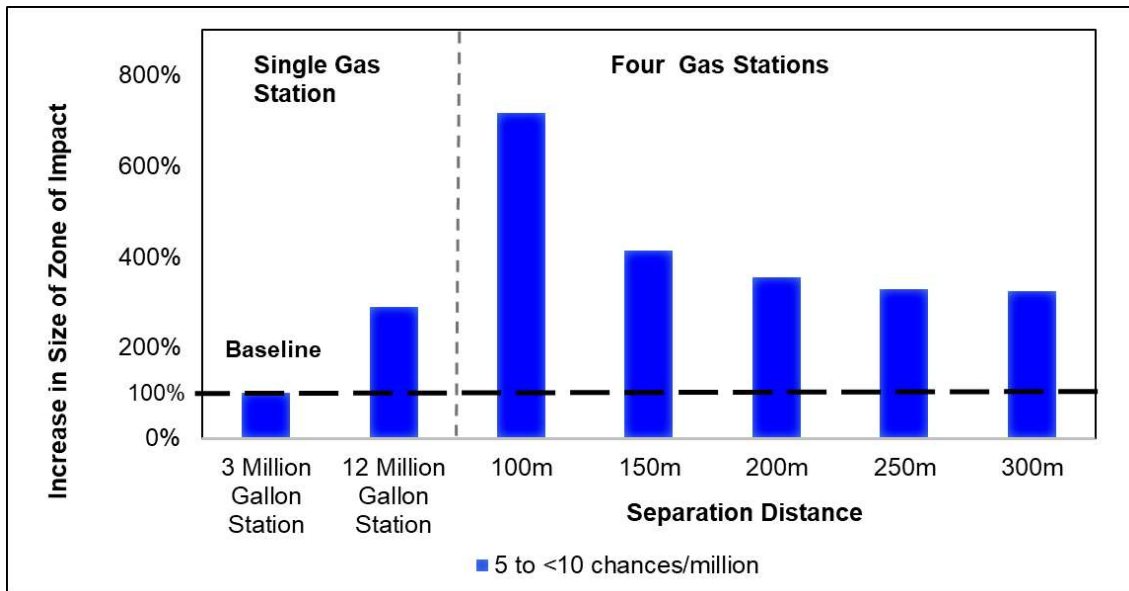
1. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single three-million-gallon gas station only included isopleths for one, five, and 10 chances per million.
2. Urban = San Jose meteorological data.
3. "Separation Distance" is the distance between each of the four gas stations.

Figure A19. Size of Zone of Impact of Gas Station Emissions: One Chance per Million Isopleth (Rural)<sup>1,2,3</sup>



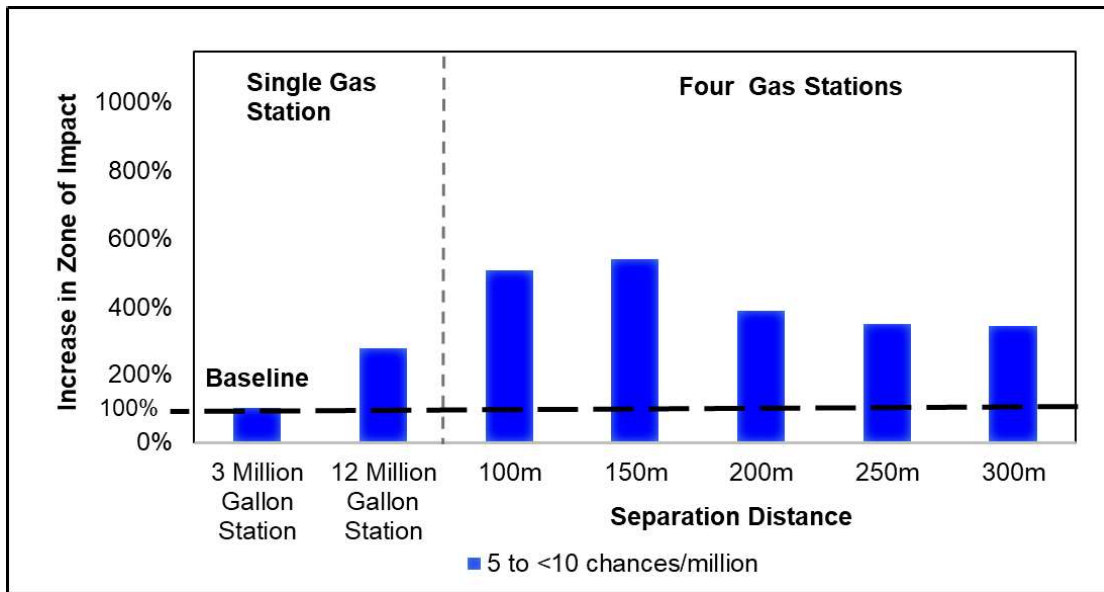
1. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single gas station only included isopleths for one, five, and 10 chances per million.
2. Rural = Redding meteorological data.
3. "Separation Distance" is the distance between each of the four gas stations.

Figure A20. Size of Zone of Impact of Gas Station Emissions: Five Chances per Million Isopleth (Urban)<sup>1,2,3</sup>



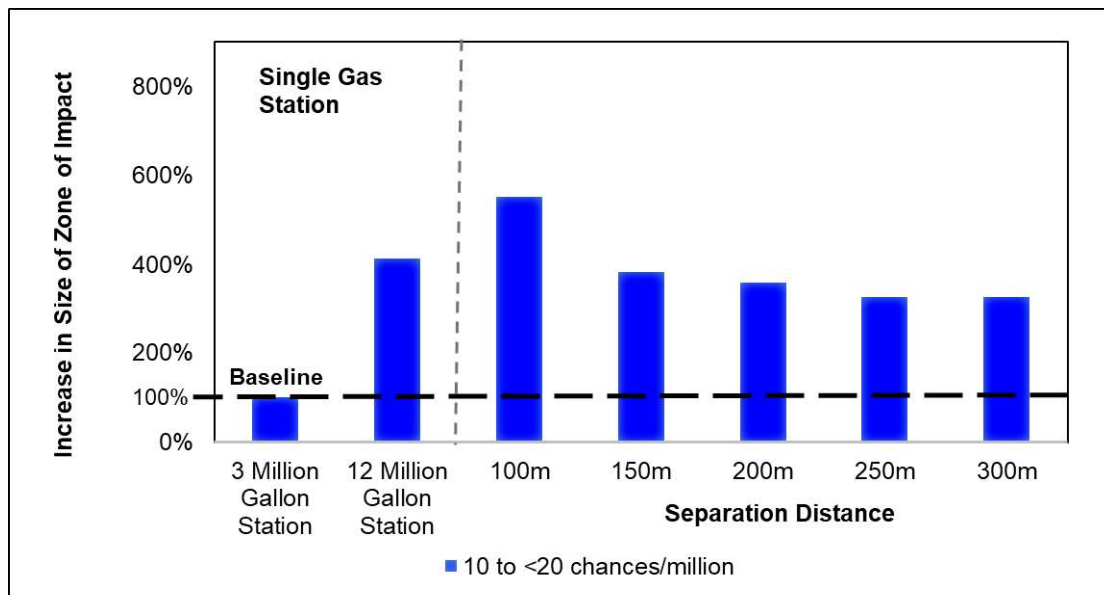
1. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single gas station only included isopleths for one, five, and 10 chances per million.
2. Urban = San Jose meteorological data.
3. "Separation Distance" is the distance between each of the four gas stations.

Figure A21. Size of Zone of Impact of Gas Station Emissions: Five Chances per Million Isopleth (Rural)<sup>1,2,3</sup>



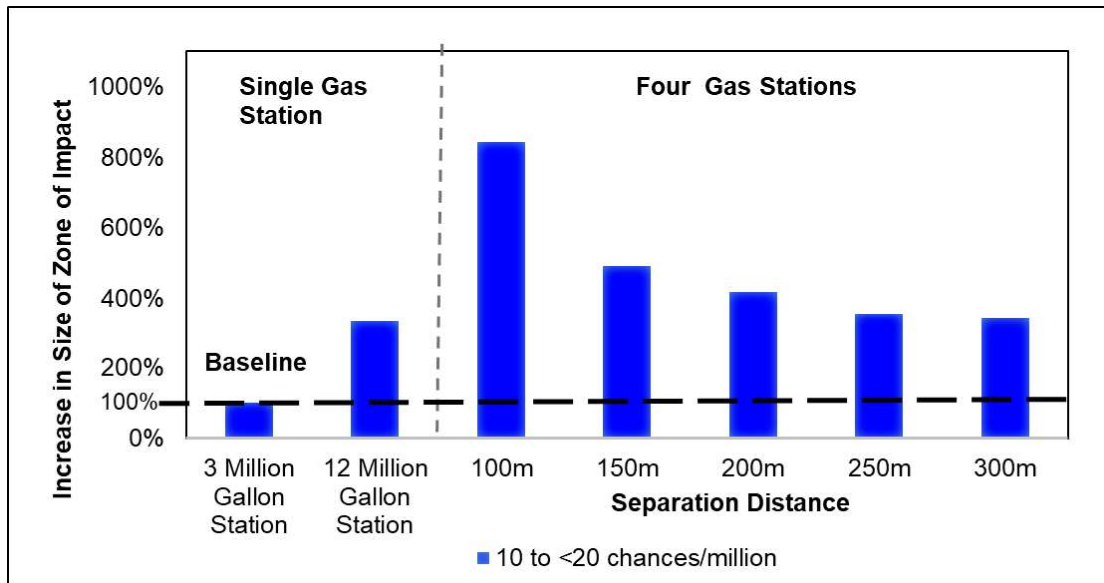
1. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single gas station only included isopleths for one, five, and 10 chances per million.
2. Rural = Redding meteorological data.
3. "Separation Distance" is the distance between each of the four gas stations.

Figure A22. Size of Zone of Impact of Gas Station Emissions: Ten Chances per Million Isopleth (Urban)<sup>1,2,3</sup>



1. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single gas station only included isopleths for one, five, and 10 chances per million.
2. Urban = San Jose meteorological data.
3. "Separation Distance" is the distance between each of the four gas stations.

Figure A23. Size of Zone of Impact of Gas Station Emissions: Ten Chances per Million Isopleth (Rural)<sup>1,2,3</sup>



1. Percent increase results are not shown for the 20 and 30 chances per million isopleths because the single gas station only included isopleths for one, five, and 10 chances per million.
2. Rural = Redding meteorological data.
3. "Separation Distance" is the distance between each of the four gas stations.

## D. Summary of Findings

The results of the multiple gas station assessment show that the presence of multiple gas stations in close proximity to each other increase the zone of impact, and potentially the corresponding risk, to people living and working nearby when compared to an individual station. In most cases, the zone of impact for multiple gas stations was over four times larger than the zone of impact of a single station. The largest zones of impact occurred at a separation distance of 100 m for both the urban (San Jose meteorological data) and rural scenarios (Redding meteorological data). The modeling results showed potential population-wide (70 year) cancer risks as high as 30 chances per million.

The results also showed that the zone of impact of four three-million-gallon stations in an urban area can range from three to seven times larger than the zone of impact for a single three-million-gallon-station. The largest increase in the zone of impact occurred for the 5 to less than 10 chances per million risk isopleth at a separation distance of 100 m. Many districts use a cancer risk public notification threshold<sup>47</sup> of 10 chances per million. The zone of impact of four three-million-gallon stations is larger than the zone of impact of the single 12-million-gallon station, except when risk reaches 10 to less than 20 chances per million.

Based on the results, the zone of impact of four three-million-gallon stations in a rural area can range from about three and half times to eight and a half times larger than the zone of

<sup>47</sup> A cancer risk notification threshold is the health risk level at which a facility must notify exposed members of the public of potential health risks associated with facility emissions.

impact for a single three-million-gallon station. The largest increase in the zone of impact occurred in the 10 to less than 20 chances per million isopleth. Additionally, the largest 10 to less than 20 chances per million isopleth for the group of four three-million-gallon stations was eight and a half times larger than the same isopleth in the single three-million-gallon station. Similar to the urban scenario, the group of four three-million-gallon stations in a rural area generally have a larger zone of impact than a single 12-million-gallon station.

The cancer risk from gas stations significantly decreases as the receptor moves further from the source. Cancer risk drops by about half the value from 10 to 20 meters, and quickly drops to below 1 chance per million at about 60 to 70 meters. At the 100-meter separation distance for the urban scenario, the zones of impact for each station interact with each other at cancer risks of 5 to 10 chances per million but no longer impact each other as the separation distance increases. For the rural scenario, the zones of impact for each station at cancer risks of 5 to 10 chances per million completely separate at a separation distance of 200 meters.

In the urban scenario, the cancer risk at the Point of Maximum Impact (PMI) for the single three-million-gallon station is 20 chances per million. The cancer risk at the PMIs for the multiple gas station scenarios ranged from 21 to 23 chances per million in which the highest cancer risk at the PMI occurred at a separation distance of 100 meters.

In the rural scenario, the cancer risk at the PMI of the single three-million-gallon station is 26 chances per million. The cancer risk at the PMIs for the multiple gas station scenarios ranged from 27 to 29 chances per million in which the highest cancer risk at the PMI occurred at a separation distance of 100 meters.

At the PMI of each scenario, the cancer risk is substantially driven by emissions from the nearest gas station. The impacts from the other stations are minor in comparison and vary due to the meteorological data used. The PMI is located at the property boundary because risk is typically driven by spillage and is modeled as a volume source. Therefore, we can expect to observe the PMI close to the source. For some scenarios, we may see two PMIs. This is likely attributed to the meteorological data used. In these cases, the predominant wind direction and calm meteorological conditions only allowed the emissions from two stations to interact.



## Appendix B: Population-Wide Cancer Risk

The purpose of Appendix B is to illustrate how population-wide risk estimates can be evaluated for individual gas stations and multiple gas stations in close proximity to one another. Under the Hot Spots Act, health risk assessments should quantify both individual and population-wide health impacts<sup>48</sup>. The Office of Health Hazard Assessment's (OEHHA) *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for the Preparation of Health Risk Assessments*<sup>49</sup> (OEHHA Manual) presents procedures for evaluating both individual and population-wide health impacts. Both approaches are necessary to provide a complete illustration of a facility's health impacts.

For example, the individual health impact approach may show that gas stations impact a small number of people with high individual cancer risks and a larger number of people with low individual cancer risks. However, because gas stations are ubiquitous in nature and are often found in groups of two or more throughout the State, many more people are exposed to the lower levels of individual cancer risk from gas station emissions. This potential for higher population impacts is not captured by the individual cancer risk methodology. Population-wide risk provides an illustration of widespread impacts for facilities that may have individual cancer risks below public notification thresholds but expose a larger population to emissions.

Population-wide risk is independent of individual risk and is calculated on the basis of a 70-year lifetime, regardless of how many people move in or out of the vicinity of the source of emissions during that time period. The level of detail and procedures required for analyzing population-wide risk require case-by-case analysis. Thus, Districts should be consulted before beginning analysis on population-wide health impacts. The OEHHA Manual includes two methods of evaluating population-wide cancer risk, cancer burden and population-wide risk estimates. CARB's Hotspots Analysis and Reporting Program<sup>50</sup> (HARP) software can provide population-wide cancer risk as a cancer burden number or as a population-wide risk estimate. Both of these methods are detailed in Sections A (XIII.A.1) and B (XIII.B.1) of this appendix.

### A. Cancer Burden

Cancer burden is an estimate of the increase in potential cancer risk within a population as a result of exposures to toxic emissions. This calculation results in a single number that represents the potential cancer risk within the population that was exposed to the emissions for over a 70-year lifetime.

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<sup>48</sup> Assembly Bill 2588, Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots Act), Connelly, Statutes of 1987, Chapter 1252, in California Health and Safety Code § 44306.

<sup>49</sup>Office of Environmental Health Hazard Assessment, *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, February 2015.

<sup>50</sup> The *Hotspots Analysis and Reporting Program* (HARP) is a collection of computer programs that addresses the requirements of Assembly Bill 2588 (Hot Spots Act).

Cancer burden is calculated in two parts: (1) multiplying the potential cancer risk at a census block centroid<sup>51,52</sup> by the number of people who live in the census block<sup>53</sup>, and (2) summing the cancer burden values for each census block centroid across the zone of impact. The units for potential cancer risk and the population of a census block are chances per million and number of people, respectively. However, cancer burden itself is a unitless number. Cancer burden values can be compared to District permitting and/or public notification thresholds to determine whether additional evaluation is warranted for a facility. Most Districts do not currently have permitting or public notification thresholds for cancer burden; therefore, some Districts will most likely not be able to use the results of a cancer burden analyses in air quality permitting decisions until relevant thresholds are developed.

An example cancer burden calculation is shown below.

## 1. Example Cancer Burden Calculation

Table B1 lists population-wide risk information for three census blocks within the 0.1 chance per million ( $1 \times 10^{-7}$ ) zone of impact of a gas station.

**Table B1. Example Population-Wide Risk Information**

Census Block	Cancer Risk at Census Block Centroid <sup>1</sup>	Census Block Population
1	$7.51 \times 10^{-7}$	278
2	$2.20 \times 10^{-7}$	160
3	$1.27 \times 10^{-7}$	152

1. Per the OEHHA Manual, the zone of impact for estimating the number of people exposed to a given cancer risk from facility emissions can be set at a minimum of 0.1 chance per million ( $1 \times 10^{-7}$ ).

To determine cancer burden, first determine a cancer burden value for each of the five census blocks using Equation B1:

### Equation B1. Cancer Burden at a Census Block Centroid

$$\text{Cancer Burden}_{\text{Census Block Centroid}} = \text{Cancer Risk}_{\text{Census Block Centroid}} \times \text{Population}_{\text{Census Block}}$$

Applying Equation B1 to the population-wide risk information from Table B2:

$$\text{Cancer Burden}_{\text{Census Block Centroid 1}} = 7.51 \times 10^{-7} \times 278 = 2.09 \times 10^{-4}$$

$$\text{Cancer Burden}_{\text{Census Block Centroid 2}} = 2.20 \times 10^{-7} \times 160 = 3.52 \times 10^{-5}$$

$$\text{Cancer Burden}_{\text{Census Block Centroid 3}} = 1.27 \times 10^{-7} \times 152 = 1.93 \times 10^{-5}$$

<sup>51</sup> The centroid is defined as the central location within a specified geographic area.

<sup>52</sup> U.S. Department of Commerce, (1994), Geographic Areas Reference Manual, U. S. Department of Commerce, November, 1994.

<sup>53</sup> A census block is defined as the smallest entity for which the Census Bureau collects and tabulates decennial census information. It is bounded on all sides by visible and nonvisible features shown on Census Bureau maps.

Once values are calculated for each census block centroid, sum the values to determine the cumulative cancer burden across the zone of impact using Equation B2:

**Equation B2. Cumulative Cancer Burden**

$$\text{Cancer Burden}_{\text{Zone of Impact}} = \text{Sum of Individual Cancer Burden values from each Census Block Centroid}$$

Applying Equation B2, the final cancer burden across the zone of impact is:

$$\text{Cancer Burden}_{\text{Zone of Impact}=10^{-7}} = 2.09 \times 10^{-4} + 3.52 \times 10^{-5} + 1.27 \times 10^{-5} = \mathbf{2.63 \times 10^{-4}}$$

Although cancer burden is a widely accepted method for calculating population-wide risk, it does not characterize the difference between a facility with a high risk in a sparsely populated area and the same facility with a low risk in a densely populated area. For example, if 100,000 people are exposed to a cancer risk of 10 chances per million ( $1 \times 10^{-5}$ ), and 1,000,000 people are exposed to a cancer risk of 1 chance per million ( $1 \times 10^{-6}$ ), the cancer burden in both cases would be one. However, the overall public health impact is unclear because the impact by the same facility can differ depending on the surrounding population. As a result, population-wide risk estimates may provide a more complete illustration of population-wide health impacts in certain situations.

## **B. Population-Wide Risk Estimates**

Population-wide risk estimates characterize the number of people exposed to certain cancer risk levels at census block centroids. This approach can be used in lieu of the cancer burden calculation or it can be used to provide additional population-wide risk information. An estimate of the number of people exposed at various cancer risk levels can provide perspective on the magnitude of the potential public health impact of an individual facility or multiple facilities. Per the OEHHA Manual, the zone of impact for estimating the number of people exposed to a given cancer risk from facility emissions should be set at a minimum of one chance per million ( $1 \times 10^{-6}$ ), and can extend out to 0.1 chances per million ( $1 \times 10^{-7}$ ) to better illustrate the zone of impact for cancer risk.

An example of presenting population-wide risk estimates for individual gas stations and multiple stations in close proximity are shown below.

### **1. Example Estimate of Population-Wide Risk**

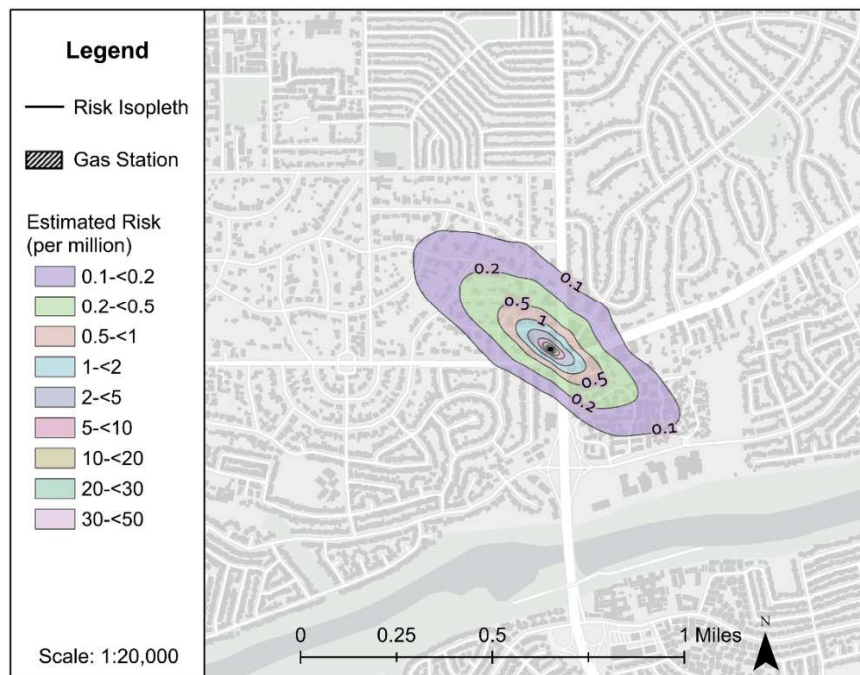
Staff modeled the following scenarios in HARP, using many of the same assumptions found in Appendix A (Section XIII.B.4):

- A single, three-million-gallon gas station.
- Four three-million-gallon stations, modeled at a separation distance of 100 meters between each station (see modeling schematic in Appendix A, Section XIII.B.4)

For the site-specific data necessary to evaluate population-wide risk, staff used the San Jose (urban) meteorological data set and fictitious census data created using census data from various urban locations. Staff used HARP to calculate risk results and generate a population exposure estimate report which presents information about the number of people exposed to a given cancer risk. After all the modeling runs were complete, staff used GIS to generate contours or risk isopleths that could be mapped for each modeled scenario. Collectively, all risk isopleths within a map scenario represent the zone of impact.

Figure B1 shows the zone of impact map for a single three-million-gallon station. Table B2 shows the potential cancer risk and the estimated number of people exposed at each level of risk. The risk levels in the table correspond to the risk isopleths shown in Figure B1.

**Figure B1. Zone of Impact Map for Population-Wide Cancer Risk: Single Three-Million-Gallon Gas Station**



1. The zone of impact for a given level of risk is the total area exposed to emissions from the single three-million-gallon gas station.

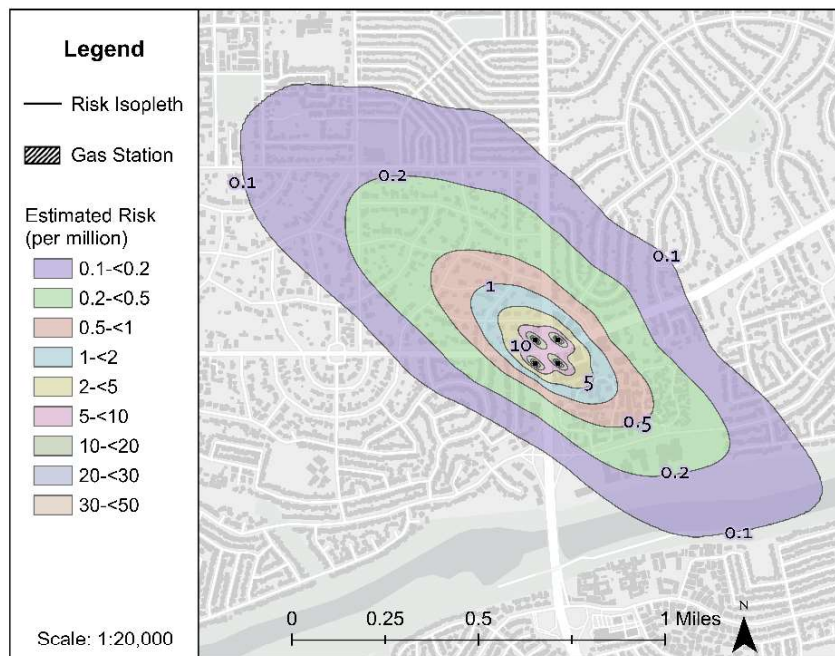
**Table B2. Population-Wide Cancer Risk Estimates: Single Three-Million-Gallon Gas Station<sup>1,2</sup>**

Cancer Risk <sup>2</sup> (chances per million)	Number of People
0.1 to <0.2	3200
0.2 to <0.5	1238
0.5 to <1	438
1 to <2	744
2 to <5	186
5 to <10	0
10 to <20	0
20 to <30	0
30 to <50	0

1. Results will vary for different locations, throughputs, and separation distances.
2. Per the OEHHA Manual, the zone of impact for estimating the number of people exposed to a given cancer risk from facility emissions can be set at a minimum of 0.1 chances per million ( $1 \times 10^{-7}$ ).

Figure B2 shows an example of a risk isopleth map for four three-million-gallon stations, separated by 100 meters. Table B3 is an example table showing the potential population-wide cancer risk and the estimated number of people exposed corresponding to the risk isopleths in Figure B2.

**Figure B2. Zone of Impact Map for Population-Wide Cancer Risk: Four Three-Million-Gallon Gas Stations**



1. The zone of impact for a given level of risk is the total area exposed to emissions from all four gas stations.

**Table B3. Population-Wide Cancer Risk Estimates: Four Three-Million-Gallon Gas Stations<sup>1,2</sup>**

<b>Cancer Risk<sup>2</sup> (chances per million)</b>	<b>Number of People</b>
0.1 to <0.2	15111
0.2 to <0.5	8154
0.5 to <1	1724
1 to <2	1271
2 to <5	681
5 to <10	593
10 to <20	0
20 to <30	0
30 to <50	0

1. Results will vary for different locations, throughputs, and separation distances.
2. Per the OEHHA Manual, the zone of impact for estimating the number of people exposed to a given cancer risk from facility missions can be set at a minimum of 0.1 chances per million ( $1 \times 10^{-7}$ ).

## Immanuel Bereket

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**From:** mark chambers <chambers9975@currently.com>  
**Sent:** Wednesday, January 31, 2024 3:49 PM  
**To:** Immanuel Bereket; djrodoni@gmail.com  
**Subject:** NO on PRS gas station/minimart development

You don't often get email from chambers9975@currently.com. [Learn why this is important](#)

Sirs: I simply don't want a minimart in PRS, and the problems that go with it (traffic, trash, ugliness out-of-character with the town as a whole, etc., as outlined by others). We certainly don't need one.

Mark Chambers

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January 31, 2024

Dear Mr. Bereket

I would like to say that after reading the article in the Pt Reyes Light and having discussions with our neighbors, that this proposition by the Redwood Oil Company is not in keeping with the small town charm of our historic town of Point Reyes.

My mom Nadine Booras, a forty year resident of this community and I her son, now full time caregiver and visitor also over the last 40 years, really appreciates the slow health growth of this community.

I know many who feel the same and have read some of the letters they have written, they have articulated the arguments far better than I can. My mom and I wish to lend our support to those who will speak on Thursday.

Sincerely yours,

Auguste Haboush and Nadine Booras.



To whom it may concern,

We are writing to express our deep concern and opposition to the proposed project at 11401 State Route 1, Point Reyes Station. The backbone of our community is comprised of small, locally-owned establishments that significantly contribute to the town's identity and help maintain a sense of community pride. The existing gas station aligns well with the Point Reyes Station ethos, providing essential services, housing beloved local businesses, and blending in with the town's aesthetics.

Point Reyes Station and the greater West Marin area do not have a need for a fast-food restaurant and convenience store. Multiple establishments already sell similar products at comparable prices, examples being Palace Market, Whale of a Deli, and Point Reyes Pharmacy. Furthermore, our region takes pride in its commitments to regenerative agriculture, organic farming, and local sourcing. The proposed food facility contradicts the preferences of local residents in terms of food choices and support for local businesses. Upon examining the submitted plans, it becomes apparent that there are no traditional cooking facilities planned for the Aztec Grill, making it clear that it is not the healthy, fresh option Redwood Oil advertises.

Additionally, we would like to draw attention to the potential parking issues that may arise with the introduction of a fast-food franchise and additional residences at this location. Our town already struggles with parking during busy summer months, and the influx of customers idling at the pumps while waiting for their meals or shopping at the convenience store will only exacerbate this problem. Insufficient parking facilities will lead to congestion, inconvenience for residents, and a negative and unsafe impact on the overall experience for both visitors and locals.

As a business, we understand the importance of economic growth but believe it should always be achieved in a way that respects the unique qualities of our community. Instead of a fast-food franchise and a large convenience store, we encourage the exploration of alternative development options that align more closely with the values and aesthetics of our small coastal town.

Thank you for taking the time to consider our additional concerns. We implore you to consider the specific need this project aims to fulfill, its target audience, and how they will benefit from it. We look forward to a positive resolution that benefits both Redwood Oil and the residents of our quiet coastal hamlet.

Sincerely,



Brittany Hartwell

*General Manager*

*Palace Market, Point Reyes Station*

415-663-1016

## Immanuel Bereket

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**From:** Burr Heneman <burr@igc.org>  
**Sent:** Wednesday, January 31, 2024 5:03 PM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni; Maurice Armstrong; Maurice Armstrong  
**Subject:** Point Reyes Station gas station proposal

[You don't often get email from burr@igc.org. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

January 30, 2024

To: Immanuel Bereket  
Senior Planner, Community Development Agency  
County of Marin

Please include my comments in the record in regard to the proposed gas station project in Point Reyes Station.

I am a full-time resident of Pt. Reyes Station. I live on Mesa Road and therefore have daily familiarity with the intersection of Mesa Road and Route 1 at the gas station. I am very concerned about the impact of this project on traffic and safety. The project should not go forward with the level of traffic and safety review that it has had.

Here is the situation as it is now, without the complications accompanying the food service/convenience store element of the project.

1. Mesa Road intersects Route 1 on one side of the gas station. On the other side, Route 1 has a 90° turn. There is no stop sign for Route 1 in either direction. There is a lot of visitor traffic. Drivers approaching from the North who are unfamiliar with the area commonly are uncertain about whether there is a stop or whether Route 1 goes straight or left. They hesitate and are focused on answering those questions. What I'm describing is obvious, and we witness this all the time, especially on high-visitation days.
2. The situation in #1 is complicated further by cars entering and exiting both ends of the line of pumps at the gas station. (That's without the added in and out traffic that the gas station project will entail.)
3. There is a heavily used cross walk at Mesa Road and Route 1. Much of the use is by unaccompanied kids walking to and from West Marin School just up the hill. Slower, observant drivers aren't a problem. But many drivers are driving too fast to fully account for the cross walk, the gas station traffic, (#2) and the uncertainty about the Route 1 configuration (#1).
4. The first block of Mesa Road north of Route 1 is heavily used by people and cars making pick ups and drop offs at West Marin Community Services. The WMCS Thrift Store is right on the corner. A car is often either double parked or parked too close to the intersection in order to drop off or pick up thrift store items. Every Thursday WMCS has food distribution there. Early in the day, vehicle drop off food. Most of the day, clients are picking up food. Again, there frequently is double parking. The radio station and at least two other establishments are in the same building facing onto Mesa Road, all of which contribute to Mesa Road traffic and a lack of adequate parking.

The gas station project would exacerbate all 4 of the problems I've listed. I think that the impact on traffic and safety for this expansion has not been studied well enough so far to allow the project to go forward.

Regards,

Burr Heneman  
PO Box 657 (220 Mesa Road)  
Point Reyes Station,  
CA 94956

## Immanuel Bereket

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**From:** cheryl higgins gmail <cherylhiggins8@gmail.com>  
**Sent:** Wednesday, January 31, 2024 12:49 PM  
**To:** Immanuel Bereket  
**Subject:** Gas Station Remodel in Point Reyes Station

[You don't often get email from cherylhiggins8@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Hello Mr. Bereket,

I am a 25 year resident of Inverness Park. I want to strongly echo the objections of the Point Reyes Village Association regarding the gas station project.

There are so many serious concerns we have about the project as it has been presented. I urge you to put the project on pause while we work out a plan that takes into account the safety and character of this small community.

Thank you,

Cheryl Higgins  
6 Sunshine Court #1348  
Point Reyes Station, CA 94956  
Cell phone 707-227-5737

## Immanuel Bereket

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**From:** Nicole Lavelle <nicolelavelle@gmail.com>  
**Sent:** Wednesday, January 31, 2024 4:28 PM  
**To:** Dennis Rodoni; BOS; Immanuel Bereket  
**Subject:** Point Reyes Gas Station Project: please consider community input

You don't often get email from nicolelavelle@gmail.com. [Learn why this is important](#)

Hello,

**I am writing to advocate for the Board of Supervisors to please step in and require a more thorough review, including community input,** of the proposed renovations to the gas station in Point Reyes Station.

Please consider community input. I don't advocate for the project to be shut down, or for everything to remain as it always has been. I just advocate for a more involved process.

I drive by the gas station twice every weekday. I purchase my gas there and I visit KWMR, the library, the pharmacy, the grocery store, the bank, and the bookstore on a regular basis.

**I embrace change**, I welcome change, and I do not fear change. I also think it is imperative to make informed choices when making permanent changes to the built environment. **City planning is complex: it should be thought of more like place-making**, which considers the nuanced use of the place and all the parties involved.

Housing is critical and I actually do support the idea of housing being built at that location. **But it is important to consider how residents will access their homes, and how traffic and gas station fumes will interact with the air quality and safety of peoples' homes.** Will the residents have a fenced yard? Will they be able to safely walk outside their front doors, or will they step outside into an active parking lot or traffic jam? Will that intersection become more hectic than it already is?

Point Reyes Station attracts a lot of visitors because it is charming, with historic buildings and remnants of agricultural industry. **A redevelopment that is out of step with the vibe of the town may harm the tourism economy.** Concerns about **added trash** in a town without public trash cans are valid. Concerns about the store **selling tobacco products so close to a school** are very valid.

I'm also concerned about the changes impacting the ability for larger vehicles to navigate the pumps, which have been voiced very clearly by people like Anne Sands, who has a lot of experience with both agriculture AND disaster preparedness. Horse trailers, RVs, arborist's vehicles, and those giant campervans cruising up the highway: they're big, and they all get gas, and they're already squeezing in pretty tight, as it is now. **Does the new plan allow for improved traffic circulation? Or at least maintaining the space that's there now?**

Please consider community input. I don't advocate for the project to be shut down, or for everything to remain as it always has been. I just advocate for a more involved process.

Thank you for considering my opinion.

Sincerely,  
Nicole Lavelle

Homeowner, **Lagunitas**

Volunteer programmer at KWMR, day-care drop-off parent, library user, gas station customer, pharmacy customer, grocery shopper, bank user, all in **Point Reyes Station**

## Immanuel Bereket

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**From:** Kerry Livingston <kmlivings@hotmail.com>  
**Sent:** Thursday, February 1, 2024 7:19 AM  
**To:** Immanuel Bereket  
**Subject:** Gas station project in Pt Reyes Station

[You don't often get email from kmlivings@hotmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Dear Immanuel,

I am writing to ask you to allow community input into this proposal to add housing and a mini mart to the gas station in Pt Reyes Station. The community has not been given any access to these plans until now. That is unacceptable.

I sincerely hope you will see that this is not in our towns character and should not be allowed. Please listen to the people this morning and read the letters with respect.

Kerry Livingston, longtime resident and Marin County employee Sent from my iPad

## Immanuel Bereket

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**From:** Pamalah MacNeily <pamalah23@gmail.com>  
**Sent:** Wednesday, January 31, 2024 10:41 PM  
**To:** Immanuel Bereket  
**Subject:** Gas stations emitting 10 times more benzene than previously thought.

You don't often get email from pamalah23@gmail.com. [Learn why this is important](#)

<https://www.publichealth.columbia.edu/news/gas-stations-vent-far-more-toxic-fumes-previously-thought>

# Gas Stations Vent Far More Toxic Fumes Than Previously Thought

[News](#)

October 4, 2018

A study led by environmental health scientists at Columbia University Mailman School of Public Health examined the release of vapors from gas station vent pipes, finding emissions were 10 times higher than estimates used in setback regulations that determine how close schools, playgrounds, and parks can be to the facilities. Findings appear in the journal [Science of the Total Environment \(link is external and opens in a new window\)](#).

Gasoline vapors, invisible but odorous, contain a number of toxic chemicals, notably benzene, a carcinogen.

The researchers attached gas flow meters to venting pipes at two large gas stations in the Midwest and Northwest and took measurements over a three-week period. They report average daily evaporative losses of 7 and 3 gallons of liquid gasoline, respectively, or 1.4 pounds and 1.7 pounds per 1,000 gallons dispensed at the pump. By comparison, the California Air Pollution Control Officers Association (CAPCOA) used an estimate of 0.11 pounds per 1,000 gallons. Based on CAPCOA emission estimates, the California Air Resources Board (CARB) determined their setback regulation of 300 feet (91 meters) from large gas stations. Similar rules exist in many, but not all states and localities. In urban areas like New York City, some gas stations are located directly adjacent to apartment buildings.

The study also simulated how the fuel vapor was carried in the air to assess the potential for short- and medium-term benzene exposures, comparing their measurements to three established thresholds. The California Office of Environmental Health Hazard Assessment one-hour Reference Exposure Level (REL) for benzene—**defined as a continuous hour of exposure to the chemical—was exceeded at both gas stations at distances greater than 50 meters. At the Midwest gas station, REL was exceeded on two different days at distances greater than 50 meters, and once as far as 160 meters.** The Agency for Toxic Substances and Disease Registry's Minimal Risk Level (MRL) for benzene exposure over a period between two weeks and a



year was exceeded within 7 or 8 meters of the two gas stations. A less stringent measure used for short-term exposures of first responders, the American Industrial Hygiene Association's Emergency Response Planning Guidelines (ERPG), was not exceeded.

"We found evidence that much more benzene is released by gas stations than previously thought. In addition, even during a relatively short study period, we saw a number of instances in which people could be exposed to the chemical at locations beyond the setback distance of 300 feet," said first author [Markus Hilpert](#), PhD, associate professor of [Environmental Health Sciences](#) at the Columbia Mailman School. "Officials should reconsider their regulations based on these data with particular attention to the possibility of short spikes in emissions resulting from regular operations or improper procedures related to fuel deliveries and the use of pollution prevention technology."

In previous work, Hilpert and colleagues documented the release of gasoline as fuel is stored and transferred between tanker trucks, storage tanks, and vehicle tanks, and how these spills can contaminate the surrounding environment. Next, the researchers will explore additional short-term measures of vapor spread to determine the bounds of safe setbacks.

Co-authors of the new study include Ana Maria Rule at Johns Hopkins, Bernat Adria-Mora formerly at Columbia, and Tedmund Tiberi at ARID Technologies, Inc. In a competing interest statement, the authors note that Tiberi directs a company that develops technologies for reducing fuel emissions from gasoline-handling operations. The research is supported by a grant from the National Institutes of Health (ES009089).



February 1, 2024

Mr. Emmanuel Bereket  
Principal Planner  
Community Development Department  
3501 Civic Center Drive  
San Rafael, CA

Dear Mr. Bereket,

Marin Horse Council implores the County of Marin to reconsider the proposed remodel of the gas station in Pt. Reyes Station. We wrote to the County two weeks ago outlining our rationale for requesting an anticipated circulation and traffic pattern before any approval of the project. We foresee issues with vehicles with service trailers, equestrians with horse trailers, and other situations that could arise.

A proper study of the traffic flow is critical and should be done for the residents of and the visitors to Pt. Reyes Station, and the surrounding parks and tourist attractions.

Thank you for responding to this request.

Sincerely,

*Linda Novy*

Linda Novy  
President, Marin Horse Council

Cc: Maurice Armstrong, County of Marin Public Works [marmstrong@marincounty.org](mailto:marmstrong@marincounty.org)

Amory Willis, Judy Teichman, Pamela Bridges, Morgan Patton

## Immanuel Bereket

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**From:** Susan M. Pierson <susanmpierson@gmail.com>  
**Sent:** Wednesday, January 31, 2024 10:18 PM  
**To:** Immanuel Bereket  
**Subject:** Proposal for Redwood Oil's Property in Point Reyes Station  
**Attachments:** 2022\_Gas\_Station\_IWG\_Supplemental\_Policy\_Guidance (1).pdf; california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective (1).pdf

You don't often get email from susanmpierson@gmail.com. [Learn why this is important](#)

Hello Mr. Bereket,



I am emailing in regard to the proposed development by Redwood Oil at the Point Reyes Gas Station, specifically with concern regarding residential development.

**I am concerned about the potential health effects on future residents living at an active, working gas station.**

Redwood Oil's proposal includes 5 full time residences within 25 to 50 feet of gasoline pumps. So far as my research suggests, this type of mixed use (residences on an active gas station property) has not been done anywhere in California. Even in population dense areas such as San Francisco, including areas like 19th Avenue, there are not residences on the same property as gas stations.

Furthermore, the proposed residences are also within 25 feet of a 1,000 gallon propane tank and a separate large generator. Two rental units appear to be inside of 25 feet to the exhaust of this equipment.

It doesn't seem like the impact of residing so close to gasoline and propane dispensing operations has been examined prior to moving forward with Redwood Oil's proposed development. We know that exposure to benzene from gas pumps and tailpipe emissions from the vehicles using those facilities is unhealthy. **What dangers are posed to people living on the same property as a gas station, immediately adjacent to the pumps and vehicles using those pumps for refueling?**

This is such a novel mixed use that no regulations or zoning laws have been developed. Approving new development would set a precedent for Redwood Oil (which owns over 20 other gas stations) or other businesses to create mixed use gas dispensing/residential facilities at other locations. Is that a precedent Marin County wants to set with no evaluation of the health consequences for residents?

I am attaching:

1. "Gasoline Service Station Industrywide Risk Assessment Supplemental Policy Guidance Document" published by the California Air Resources Board (July 21, 2022) and
2. "Air Quality and Land Use Handbook: A Community Health Perspective" published by the California Environmental Protection Agency & the California Air Resources Board (April 2005)

to this email.

I encourage everyone involved in this proposal to review both, especially:

1. Pages 6-8 of the Gasoline Service Station Industrywide Risk Assessment

Supplemental Policy Guidance Document

2. Table 1-1 on page 4 and pages 30-32 of the Air Quality & Land Use Handbook

for more information about how gasoline dispensing facilities affect air quality and human health.

I have worked in Point Reyes Station since 2017, and was fortunate enough to live nearby in Inverness Park from 2017-2018. I now live in Sonoma County and commute over 30 miles (each way) to work. I would love for more housing to be available in Point Reyes Station--especially housing affordable to workers--so I could possibly move back to West Marin. I look forward to the redevelopment of the Coast Guard property, and I support CLAM's efforts to advocate for and create more affordable housing. However, creating apartments at the gas station without a thorough examination to ensure safety for future renters is not the kind of housing solution I'm seeking. **Please take the time necessary to evaluate the safety of housing people at a busy gas station before moving forward with Redwood Oil's proposed expansion.**

Best,

Susan Pierson

# **AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE**



**April 2005**

California Environmental Protection Agency  
California Air Resources Board



# Air Agency Contacts

## Federal-

### U.S. EPA, Region 9

Phone: (866)-EPA-WEST  
Website: [www.epa.gov/region09](http://www.epa.gov/region09)  
Email: [r9.info@epa.gov](mailto:r9.info@epa.gov)

## -State-

### California Air Resources Board

Phone: (916) 322-2990 (public info)  
(800) 363-7664 (public info)  
(800) 952-5588 (complaints)  
(866)-397-5462 (env. justice)  
Website: [www.arb.ca.gov](http://www.arb.ca.gov)  
Email: [helpline@arb.ca.gov](mailto:helpline@arb.ca.gov)

## -Local-

### Amador County APCD

Phone: (209) 257-0112  
Website: [www.amadorapcd.org](http://www.amadorapcd.org)  
E-Mail: [jharris@amadorapcd.org](mailto:jharris@amadorapcd.org)

### Antelope Valley AQMD

Phone: (661) 723-8070  
Complaint Line: (888) 732-8070  
Website: [www.avaqmd.ca.gov](http://www.avaqmd.ca.gov)  
E-Mail: [bbanks@avaqmd.ca.gov](mailto:bbanks@avaqmd.ca.gov)

### Bay Area AQMD

Phone: (415) 749-5000  
Complaint Line: (800) 334-6367  
Website: [www.baaqmd.gov](http://www.baaqmd.gov)  
E-Mail: [webmaster@baaqmd.gov](mailto:webmaster@baaqmd.gov)

### Butte County AQMD

Phone: (530) 891-2882  
Website: [www.bcaqmd.org](http://www.bcaqmd.org)  
E-Mail: [air@bcaqmd.org](mailto:air@bcaqmd.org)

### Calaveras County APCD

Phone: (209) 754-6504  
E-Mail: [lgrewal@co.calaveras.ca.us](mailto:lgrewal@co.calaveras.ca.us)

### Colusa County APCD

Phone: (530) 458-0590  
Website: [www.colusanet.com/apcd](http://www.colusanet.com/apcd)  
E-Mail: [ccair@colusanet.com](mailto:ccair@colusanet.com)

### El Dorado County AQMD

Phone: (530) 621-6662  
Website: [www.co.el-dorado.ca.us/emd/apcd](http://www.co.el-dorado.ca.us/emd/apcd)  
E-Mail: [mcctaggart@co.el-dorado.ca.us](mailto:mcctaggart@co.el-dorado.ca.us)

### Feather River AQMD

Phone: (530) 634-7659  
Website: [www.fraqmd.org](http://www.fraqmd.org)  
E-Mail: [fracmd@fracmd.org](mailto:fracmd@fracmd.org)

### Glenn County APCD

Phone: (530) 934-6500  
[http://www.countyofglenn.net/air\\_pollution\\_control](http://www.countyofglenn.net/air_pollution_control)  
E-Mail: [ktokunaga@countyofglenn.net](mailto:ktokunaga@countyofglenn.net)

### Great Basin Unified APCD

Phone: (760) 872-8211  
Website: [www.gbuapcd.org](http://www.gbuapcd.org)  
E-Mail: [gb1@greatbasinapcd.org](mailto:gb1@greatbasinapcd.org)

### Imperial County APCD

Phone: (760) 482-4606  
E-Mail: [reyesromero@imperialcounty.net](mailto:reyesromero@imperialcounty.net)

### Kern County APCD

Phone: (661) 862-5250  
Website: [www.kernair.org](http://www.kernair.org)  
E-Mail: [kcapcd@co.kern.ca.us](mailto:kcapcd@co.kern.ca.us)

### Lake County AQMD

Phone: (707) 263-7000  
Website: [www.lcaqmd.net](http://www.lcaqmd.net)  
E-Mail: [bohr@pacific.net](mailto:bohr@pacific.net)

### Lassen County APCD

Phone: (530) 251-8110  
E-Mail: [lassenag@psln.com](mailto:lassenag@psln.com)

### Mariposa County APCD

Phone: (209) 966-2220  
E-Mail: [air@mariposacounty.org](mailto:air@mariposacounty.org)

### Mendocino County AQMD

Phone: (707) 463-4354  
Website: [www.co.mendocino.ca.us/aqmd](http://www.co.mendocino.ca.us/aqmd)  
E-Mail: [mcaqmd@co.mendocino.ca.us](mailto:mcaqmd@co.mendocino.ca.us)

### Modoc County APCD

Phone: (530) 233-6419  
E-Mail: [modapcd@hdo.net](mailto:modapcd@hdo.net)

### Mojave Desert AQMD

Phone: (760) 245-1661  
(800) 635-4617  
Website: [www.mdagmd.ca.gov](http://www.mdagmd.ca.gov)

### Monterey Bay Unified APCD

Phone: (831) 647-9411  
(800) 253-6028 (Complaints)  
Website: [www.mbuapcd.org](http://www.mbuapcd.org)  
E-Mail: [dquetin@mbuapcd.org](mailto:dquetin@mbuapcd.org)

### North Coast Unified AQMD

Phone: (707) 443-3093  
Website: [www.ncuaqmd.org](http://www.ncuaqmd.org)  
E-Mail: [lawrence@ncuaqmd.org](mailto:lawrence@ncuaqmd.org)

### Northern Sierra AQMD

Phone: (530) 274-9360  
Website: [www.myairdistrict.com](http://www.myairdistrict.com)  
E-Mail: [office@myairdistrict.com](mailto:office@myairdistrict.com)

### Northern Sonoma County APCD

Phone: (707) 433-5911  
E-Mail: [nsc@sonic.net](mailto:nsc@sonic.net)

### Placer County APCD

Phone: (530) 889-7130  
Website: <http://www.placer.ca.gov/airpollution/airpolut.htm>  
E-Mail: [pcapcd@placer.ca.gov](mailto:pcapcd@placer.ca.gov)

### Sacramento Metro AQMD

Phone: (916) 874-4800  
Website: [www.airquality.org](http://www.airquality.org)  
E-Mail: [kshearer@airquality.org](mailto:kshearer@airquality.org)

### San Diego County APCD

Phone: (858) 650-4700  
Website: [www.sdapcd.org](http://www.sdapcd.org)

### San Joaquin Valley APCD

Phone: (559) 230-6000 (General)  
(800) 281-7003  
(San Joaquin, Stanislaus, Merced)  
(800) 870-1037  
(Madera, Fresno, Kings)  
(800) 926-5550  
(Tulare and Valley portion of Kern)  
Website: [www.valleyair.org](http://www.valleyair.org)  
E-Mail: [svapcd@valleyair.org](mailto:svapcd@valleyair.org)

### San Luis Obispo County APCD

Phone: (805) 781-5912  
Website: [www.slocleanair.org](http://www.slocleanair.org)  
E-Mail: [info@slocleanair.org](mailto:info@slocleanair.org)

### Santa Barbara County APCD

Phone (805) 961-8800  
Website: [www.sbcapcd.org](http://www.sbcapcd.org)  
Email us: [apcd@sbcapcd.org](mailto:apcd@sbcapcd.org)

### Shasta County AQMD

Phone: (530) 225-5789  
Website: [www.co.shasta.ca.us/Departments/ResourceMgmt/drm/aqmain.htm](http://www.co.shasta.ca.us/Departments/ResourceMgmt/drm/aqmain.htm)  
E-Mail: [scdrm@snowcrest.net](mailto:scdrm@snowcrest.net)

### Siskiyou County APCD

Phone: (530) 841-4029  
E-Mail: [ebeck@siskiyou.ca.us](mailto:ebeck@siskiyou.ca.us)

### South Coast AQMD

Phone: (909) 396-2000  
Complaint Line: 1-800-CUT-SMOG  
Website: [www.aqmd.gov](http://www.aqmd.gov)  
Email: [bwallerstein@aqmd.gov](mailto:bwallerstein@aqmd.gov)

### Tehama County APCD

Phone: (530) 527-3717  
Website: [www.tehcoapcd.net](http://www.tehcoapcd.net)  
Email: [general@tehcoapcd.net](mailto:general@tehcoapcd.net)

### Tuolumne County APCD

Phone: (209) 533-5693  
E-Mail: [bsandman@co.tuolumne.ca.us](mailto:bsandman@co.tuolumne.ca.us)

### Ventura County APCD

Phone: (805) 645-1400  
Complaint Line: (805) 654-2797  
Website: [www.vcapcd.org](http://www.vcapcd.org)  
E-Mail: [info@vcapcd.org](mailto:info@vcapcd.org)

### Yolo-Solano AQMD

Phone: (530) 757-3650  
Website: [www.ysaqmd.org](http://www.ysaqmd.org)  
Email: [administration@ysaqmd.org](mailto:administration@ysaqmd.org)

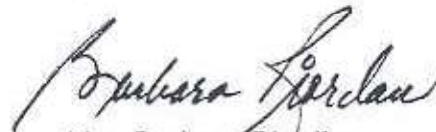
## ***To My Local Government Colleagues....***

I am pleased to introduce this informational guide to air quality and land use issues focused on community health. As a former county supervisor, I know from experience the complexity of local land use decisions. There are multiple factors to consider and balance. This document provides important public health information that we hope will be considered along with housing needs, economic development priorities, and other quality of life issues.

An important focus of this document is prevention. We hope the air quality information provided will help inform decision-makers about the benefits of avoiding certain siting situations. The overarching goal is to avoid placing people in harm's way. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. What is encouraging is that the health risk is greatly reduced with distance. For that reason, we have provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and land uses such as residences.

Land use decisions are a local government responsibility. The Air Resources Board's role is advisory and these recommendations do not establish regulatory standards of any kind. However, we hope that the information in this document will be seriously considered by local elected officials and land use agencies. We also hope that this document will promote enhanced communication between land use agencies and local air pollution control agencies. We developed this document in close coordination with the California Air Pollution Control Officers Association with that goal in mind.

I hope you find this document both informative and useful.



Mrs. Barbara Riordan  
Interim Chairman  
California Air Resources Board

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- Appendix B** Land Use-Based Reference Tools To Evaluate New Projects For Potential Air Pollution Impacts
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- Appendix D** Land Use And Air Quality Agency Roles In The Land Use Process
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## **Acknowledgments**

The ARB staff would like to acknowledge the exceptional contributions made to this document by members of the ARB Environmental Justice Stakeholders Group. Since 2001, ARB staff has consistently relied on this group to provide critical and constructive input on implementing the specifics of ARB's environmental justice policies and actions. The Stakeholders Group is convened by the ARB, and comprised of representatives from local land use and air agencies, community interest groups, environmental justice organizations, academia, and business. Their assistance and suggestions throughout the development of this Handbook have been invaluable.



## Executive Summary

The Air Resources Board's (ARB) primary goal in developing this document is to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. Other studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. Also, ARB community health risk assessments and regulatory programs have produced important air quality information about certain types of facilities that should be considered when siting new residences, schools, day care centers, playgrounds, and medical facilities (i.e., sensitive land uses). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals.

Focusing attention on these siting situations is an important preventative action. ARB and local air districts have comprehensive efforts underway to address new and existing air pollution sources under their respective jurisdictions. The issue of siting is a local government function. As more data on the connection between proximity and health risk from air pollution become available, it is essential that air agencies share what we know with land use agencies. We hope this document will serve that purpose.

The first section provides ARB recommendations regarding the siting of new sensitive land uses near freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline dispensing facilities. This list consists of the air pollution sources that we have evaluated from the standpoint of the proximity issue. It is based on available information and reflects ARB's primary areas of jurisdiction – mobile sources and toxic air contaminants. A key air pollutant common to many of these sources is particulate matter from diesel engines. Diesel particulate matter (diesel PM) is a carcinogen identified by ARB as a toxic air contaminant and contributes to particulate pollution statewide.

Reducing diesel particulate emissions is one of ARB's highest public health priorities and the focus of a comprehensive statewide control program that is reducing diesel PM emissions each year. ARB's long-term goal is to reduce diesel PM emissions 85% by 2020. However, cleaning up diesel engines will take time as new engine standards phase in and programs to accelerate fleet turnover or retrofit existing engines are implemented. Also, these efforts are reducing diesel particulate emissions on a statewide basis, but do not yet capture every site where diesel vehicles and engines may congregate. Because living or going to school too close to such air pollution sources may increase both cancer and non-cancer health risks, we are recommending that proximity be considered in the siting of new sensitive land uses.

There are also other key toxic air contaminants associated with specific types of facilities. Most of these are subject to stringent state and local air district regulations. However, what we know today indicates that keeping new homes and other sensitive land uses from siting too close to such facilities would provide additional health protection. Chrome platers are a prime example of facilities that should not be located near vulnerable communities because of the cancer health risks from exposure to the toxic material used during their operations.

In addition to source specific recommendations, we also encourage land use agencies to use their planning processes to ensure the appropriate separation of industrial facilities and sensitive land uses. While we provide some suggestions, how to best achieve that goal is a local issue. In the development of these guidelines, we received valuable input from local government about the spectrum of issues that must be considered in the land use planning process. This includes addressing housing and transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. All of these factors are important considerations. The recommendations in the Handbook need to be balanced with other State and local policies.

Our purpose with this document is to highlight the potential health impacts associated with proximity to air pollution sources so planners explicitly consider this issue in planning processes. We believe that with careful evaluation, infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level. One suggestion for achieving this goal is more communication between air agencies and land use planners. Local air districts are an important resource that should be consulted regarding sources of air pollution in their jurisdictions. ARB staff will also continue to provide updated technical information as it becomes available.

Our recommendations are as specific as possible given the nature of the available data. In some cases, like refineries, we suggest that the siting of new sensitive land uses should be avoided immediately downwind. However, we leave definition of the size of this area to local agencies based on facility specific considerations. Also, project design that would reduce air pollution exposure may be part of the picture and we encourage consultation with air agencies on this subject.

In developing the recommendations, our first consideration was the adequacy of the data available for an air pollution source category. Using that data, we assessed whether we could reasonably characterize the relative exposure and health risk from a proximity standpoint. That screening provided the list of air pollution sources that we were able to address with specific recommendations. We also considered the practical implications of making hard and fast recommendations where the potential impact area is large, emissions will be reduced with time, and air agencies are in the process of looking at options for additional emission control. In the end, we tailored our recommendations to minimize the highest exposures for each source category independently. Due to the large variability in relative risk in the source categories, we chose not to apply

a uniform, quantified risk threshold as is typically done in air quality permitting programs. Instead, because these guidelines are not regulatory or binding on local agencies, we took a more qualitative approach in developing the distance-based recommendations.

Where possible, we recommend a minimum separation between a new sensitive land use and known air pollution risks. In other cases, we acknowledge that the existing health risk is too high in a relatively large area, that air agencies are working to reduce that risk, and that in the meantime, we recommend keeping new sensitive land uses out of the highest exposure areas. However, it is critical to note that our implied identification of the high exposure areas for these sources does not mean that the risk in the remaining impact area is insignificant. Rather, we hope this document will bring further attention to the potential health risk throughout the impact area and help garner support for our ongoing efforts to reduce health risk associated with air pollution sources. Areas downwind of major ports, rail yards, and other inter-modal transportation facilities are prime examples.

We developed these recommendations as a means to share important public health information. The underlying data are publicly available and referenced in this document. We also describe our rationale and the factors considered in developing each recommendation, including data limitations and uncertainties. These recommendations are advisory and should not be interpreted as defined “buffer zones.” We recognize the opportunity for more detailed site-specific analyses always exists, and that there is no “one size fits all” solution to land use planning.

As California continues to grow, we collectively have the opportunity to use all the information at hand to avoid siting scenarios that may pose a health risk. As part of ARB’s focus on communities and children’s health, we encourage land use agencies to apply these recommendations and work more closely with air agencies. We also hope that this document will help educate a wider audience about the value of preventative action to reduce environmental exposures to air pollution.



## **1. ARB Recommendations on Siting New Sensitive Land Uses**

Protecting California's communities and our children from the health effects of air pollution is one of the most fundamental goals of state and local air pollution control programs. Our focus on children reflects their special vulnerability to the health impacts of air pollution. Other vulnerable populations include the elderly, pregnant women, and those with serious health problems affected by air pollution. With this document, we hope to more effectively engage local land use agencies as partners in our efforts to reduce health risk from air pollution in all California communities.

Later sections emphasize the need to strengthen the connection between air quality and land use in both planning and permitting processes. Because the siting process for many, but not all air pollution sources involves permitting by local air districts, there is an opportunity for interagency coordination where the proposed location might pose a problem. To enhance the evaluation process from a land use perspective, section 4 includes recommended project related questions to help screen for potential proximity related issues.

Unlike industrial and other stationary sources of air pollution, the siting of new homes or day care centers does not require an air quality permit. Because these situations fall outside the air quality permitting process, it is especially important that land use agencies be aware of potential air pollution impacts.

The following recommendations address the issue of siting "sensitive land uses" near specific sources of air pollution; namely:

- High traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

The recommendations for each category include a summary of key information and guidance on what to avoid from a public health perspective.



*Sensitive individuals refer to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality). Land uses where sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses).*

We are characterizing sensitive land uses as simply as we can by using the example of residences, schools, day care centers, playgrounds, and medical facilities. However, a variety of facilities are encompassed. For example, residences can include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds could be play areas associated with parks or community centers.

In developing these recommendations, ARB first considered the adequacy of the data available for each air pollution source category. We assessed whether we could generally characterize the relative exposure and health risk from a proximity standpoint. The documented non-cancer health risks include triggering of asthma attacks, heart attacks, and increases in daily mortality and hospitalization for heart and respiratory diseases. These health impacts are well documented in epidemiological studies, but less easy to quantify from a particular air pollution source. Therefore, the cancer health impacts are used in this document to provide a picture of relative risk. This screening process provided the list of source categories we were able to address with specific recommendations. In evaluating the available information, we also considered the practical implications of making hard and fast recommendations where the potential impact area is large, emissions will be reduced with time, and air agencies are in the process of looking at options for additional emission control. Due to the large variability in relative risk between the source categories, we chose not to apply a uniform, quantified risk threshold as is typically done in regulatory programs. Therefore, in the end, we tailored our recommendations to minimize the highest exposures for each source category independently. Additionally, because this guidance is not regulatory or binding on local agencies, we took a more qualitative approach to developing distance based recommendations.

Where possible, we recommend a minimum separation between new sensitive land uses and existing sources. However, this is not always possible, particularly where there is an elevated health risk over large geographical areas. Areas downwind of ports and rail yards are prime examples. In such cases, we recommend doing everything possible to avoid locating sensitive receptors within the highest risk zones. Concurrently, air agencies and others will be working to reduce the overall risk through controls and measures within their scope of authority.

The recommendations were developed from the standpoint of siting new sensitive land uses. Project-specific data for new and existing air pollution sources are available as part of the air quality permitting process. Where such information is available, it should be used. Our recommendations are designed to fill a gap where information about existing facilities may not be readily available. These recommendations are only guidelines and are not designed to substitute for more specific information if it exists.

A summary of our recommendations is shown in Table 1-1. The basis and references<sup>1</sup> supporting each of these recommendations, including health studies, air quality modeling and monitoring studies is discussed below beginning with freeways and summarized in Table 1-2. As new information becomes available, it will be included on ARB's community health web page.

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<sup>1</sup>Detailed information on these references are available on ARB's website at: <http://www.ARB.ca.gov/ch/landuse.htm>.

**Table 1-1**

**Recommendations on Siting New Sensitive Land Uses  
Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical  
Facilities\***

<b>Source Category</b>	<b>Advisory Recommendations</b>
Freeways and High-Traffic Roads	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.</li> </ul>
Distribution Centers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week).</li> <li>• Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.</li> </ul>
Rail Yards	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.</li> <li>• Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.</li> </ul>
Ports	<ul style="list-style-type: none"> <li>• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.</li> </ul>
Refineries	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.</li> </ul>
Chrome Platers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.</li> </ul>
Dry Cleaners Using Perchloro-ethylene	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.</li> <li>• Do not site new sensitive land uses in the same building with perc dry cleaning operations.</li> </ul>
Gasoline Dispensing Facilities	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.</li> </ul>

**\*Notes:**

- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

- Recommendations are based primarily on data showing that the air pollution exposures addressed here (i.e., localized) can be reduced as much as 80% with the recommended separation.
- The relative risk for these categories varies greatly (see Table 1-2). To determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.
- These recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists. The recommended distances take into account other factors in addition to available health risk data (see individual category descriptions).
- Site-specific project design improvements may help reduce air pollution exposures and should also be considered when siting new sensitive land uses.
- This table does not imply that mixed residential and commercial development in general is incompatible. Rather it focuses on known problems like dry cleaners using perchloroethylene that can be addressed with reasonable preventative actions.
- A summary of the basis for the distance recommendations can be found in Table 1-2.

**Table 1-2**

**Summary of Basis for Advisory Recommendations**

<b>Source Category</b>	<b>Range of Relative Cancer Risk<sup>1,2</sup></b>	<b>Summary of Basis for Advisory Recommendations</b>
Freeways and High-Traffic Roads	300 – 1,700	<ul style="list-style-type: none"> <li>In traffic-related studies, the additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70% drop off in particulate pollution levels at 500 feet.</li> </ul>
Distribution Centers <sup>3</sup>	Up to 500	<ul style="list-style-type: none"> <li>Because ARB regulations will restrict truck idling at distribution centers, transport refrigeration unit (TRU) operations are the largest onsite diesel PM emission source followed by truck travel in and out of distribution centers.</li> <li>Based on ARB and South Coast District emissions and modeling analyses, we estimate an 80 percent drop-off in pollutant concentrations at approximately 1,000 feet from a distribution center.</li> </ul>
Rail Yards	Up to 500	<ul style="list-style-type: none"> <li>The air quality modeling conducted for the Roseville Rail Yard Study predicted the highest impact is within 1,000 feet of the Yard, and is associated with service and maintenance activities. The next highest impact is between a half to one mile of the Yard, depending on wind direction and intensity.</li> </ul>
Ports	Studies underway	<ul style="list-style-type: none"> <li>ARB will evaluate the impacts of ports and develop a new comprehensive plan that will describe the steps needed to reduce public health impacts from port and rail activities in California. In the interim, a general advisory is appropriate based on the magnitude of diesel PM emissions associated with ports.</li> </ul>
Refineries	Under 10	<ul style="list-style-type: none"> <li>Risk assessments conducted at California refineries show risks from air toxics to be under 10 chances of cancer per million.<sup>4</sup></li> <li>Distance recommendations were based on the amount and potentially hazardous nature of many of the pollutants released as part of the refinery process, particularly during non-routine emissions releases.</li> </ul>
Chrome Platers	10-100	<ul style="list-style-type: none"> <li>ARB modeling and monitoring studies show localized risk of hexavalent chromium diminishing significantly at 300 feet. There are data limitations in both the modeling and monitoring studies. These include variability of plating activities and uncertainty of emissions such as fugitive dust. Hexavalent chromium is one of the most potent toxic air contaminants. Considering these factors, a distance of 1,000 feet was used as a precautionary measure.</li> </ul>
Dry Cleaners Using Perchloroethylene (perc)	15-150	<ul style="list-style-type: none"> <li>Local air district studies indicate that individual cancer risk can be reduced by as much as 75 percent by establishing a 300 foot separation between a sensitive land use and a one-machine perc dry cleaning operation. For larger operations (2 machines or more), a separation of 500 feet can reduce risk by over 85 percent.</li> </ul>

Source Category	Range of Relative Cancer Risk <sup>1,2</sup>	Summary of Basis for Advisory Recommendations
Gasoline Dispensing Facilities (GDF) <sup>5</sup>	<p>Typical GDF: Less than 10</p> <p>Large GDF: Between Less than 10 and 120</p>	<ul style="list-style-type: none"> <li>Based on the CAPCOA Gasoline Service Station Industry-wide Risk Assessment Guidelines, most typical GDFs (less than 3.6 million gallons per year) have a risk of less than 10 at 50 feet under urban air dispersion conditions. Over the last few years, there has been a growing number of extremely large GDFs with sales over 3.6 and as high as 19 million gallons per year. Under rural air dispersion conditions, these large GDFs can pose a larger risk at a greater distance.</li> </ul>

<sup>1</sup>For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million (e.g., 10 chances in a million).

<sup>2</sup>The estimated cancer risks are a function of the proximity to the specific category and were calculated independent of the regional health risk from air pollution. For example, the estimated regional cancer risk from air toxics in the Los Angeles region (South Coast Air Basin) is approximately 1,000 in a million.

<sup>3</sup>Analysis based on refrigerator trucks.

<sup>4</sup>Although risk assessments performed by refineries indicate they represent a low cancer risk, there is limited data on non-cancer effects of pollutants that are emitted from these facilities. Refineries are also a source of non-routine emissions and odors.

<sup>5</sup>A typical GDF in California dispenses under 3.6 million gallons of gasoline per year. The cancer risk for this size facility is likely to be less than 10 in a million at the fence line under urban air dispersion conditions.

A large GDF has fuel throughputs that can range from 3.6 to 19 million gallons of gasoline per year. The upper end of the risk range (i.e., 120 in a million) represents a hypothetical worst case scenario for an extremely large GDF under rural air dispersion conditions.

## **Freeways and High Traffic Roads**

Air pollution studies indicate that living close to high traffic and the associated emissions may lead to adverse health effects beyond those associated with regional air pollution in urban areas. Many of these epidemiological studies have focused on children. A number of studies identify an association between adverse non-cancer health effects and living or attending school near heavily traveled roadways (see findings below). These studies have reported associations between residential proximity to high traffic roadways and a variety of respiratory symptoms, asthma exacerbations, and decreases in lung function in children.

One such study that found an association between traffic and respiratory symptoms in children was conducted in the San Francisco Bay Area. Measurements of traffic-related pollutants showed concentrations within 300 meters (approximately 1,000 feet) downwind of freeways were higher than regional values. Most other studies have assessed exposure based on proximity factors such as distance to freeways or traffic density.

These studies linking traffic emissions with health impacts build on a wealth of data on the adverse health effects of ambient air pollution. The data on the effects of proximity to traffic-related emissions provides additional information that can be used in land use siting and regulatory actions by air agencies. The key observation in these studies is that close proximity increases both exposure and the potential for adverse health effects. Other effects associated with traffic emissions include premature death in elderly individuals with heart disease.

### **Key Health Findings**

- Reduced lung function in children was associated with traffic density, especially trucks, within 1,000 feet and the association was strongest within 300 feet. (Brunekreef, 1997)
- Increased asthma hospitalizations were associated with living within 650 feet of heavy traffic and heavy truck volume. (Lin, 2000)
- Asthma symptoms increased with proximity to roadways and the risk was greatest within 300 feet. (Venn, 2001)
- Asthma and bronchitis symptoms in children were associated with proximity to high traffic in a San Francisco Bay Area community with good overall regional air quality. (Kim, 2004)
- A San Diego study found increased medical visits in children living within 550 feet of heavy traffic. (English, 1999)

In these and other proximity studies, the distance from the roadway and truck traffic densities were key factors affecting the strength of the association with adverse health effects. In the above health studies, the association of traffic-related emissions with adverse health effects was seen within 1,000 feet and was

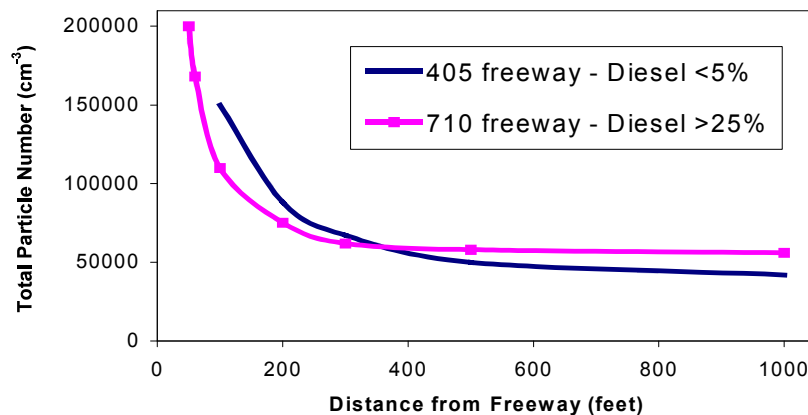
strongest within 300 feet. This demonstrates that the adverse effects diminished with distance.

In addition to the respiratory health effects in children, proximity to freeways increases potential cancer risk and contributes to total particulate matter exposure. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risk from motor vehicle traffic – diesel particulate matter (diesel PM) from trucks, and benzene and 1,3-butadiene from passenger vehicles. On a typical urban freeway (truck traffic of 10,000-20,000/day), diesel PM represents about 70 percent of the potential cancer risk from the vehicle traffic. Diesel particulate emissions are also of special concern because health studies show an association between particulate matter and premature mortality in those with existing cardiovascular disease.

### Distance Related Findings

A southern California study (Zhu, 2002) showed measured concentrations of vehicle-related pollutants, including ultra-fine particles, decreased dramatically within approximately 300 feet of the 710 and 405 freeways. Another study looked at the validity of using distance from a roadway as a measure of exposure

**Figure 1-1  
Decrease In Concentration of Freeway Diesel PM Emissions  
With Distance**



to traffic related air pollution (Knape, 1999). This study showed that concentrations of traffic related pollutants declined with distance from the road, primarily in the first 500 feet.

These findings are consistent with air quality modeling and risk analyses done by ARB staff that show an estimated range of potential cancer risk that decreases with distance from freeways. The estimated risk varies with the local meteorology, including wind pattern. As an example, at 300 feet downwind from a freeway (Interstate 80) with truck traffic of 10,000 trucks per day, the potential cancer risk was as high as 100 in one million (ARB Roseville Rail Yard Study). The cancer health risk at 300 feet on the upwind side of the freeway was much



less. The risk at that distance for other freeways will vary based on local conditions – it may be higher or lower. However, in all these analyses the relative exposure and health risk dropped substantially within the first 300 feet. This phenomenon is illustrated in Figure 1-1.

State law restricts the siting of new schools within 500 feet of a freeway, urban roadways with 100,000 vehicles/day, or rural roadways with 50,000 vehicles with some exceptions.<sup>2</sup> However, no such requirements apply to the siting of residences, day care centers, playgrounds, or medical facilities. The available data show that exposure is greatly reduced at approximately 300 feet. In the traffic-related studies the additional health risk attributable to the proximity effect was strongest within 1,000 feet.

The combination of the children's health studies and the distance related findings suggests that it is important to avoid exposing children to elevated air pollution levels immediately downwind of freeways and high traffic roadways. These studies suggest a substantial benefit to a 500-foot separation.

The impact of traffic emissions is on a gradient that at some point becomes indistinguishable from the regional air pollution problem. As air agencies work to reduce the underlying regional health risk from diesel PM and other pollutants, the impact of proximity will also be reduced. In the meantime, as a preventative measure, we hope to avoid exposing more children and other vulnerable individuals to the highest concentrations of traffic-related emissions.

### Recommendation

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.

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### **Distribution Centers**

Distribution centers or warehouses are facilities that serve as a distribution point for the transfer of goods. Such facilities include cold storage warehouses, goods transfer facilities, and inter-modal facilities such as ports. These operations involve trucks, trailers, shipping containers, and other equipment with diesel engines. A distribution center can be comprised of multiple centers or warehouses within an area. The size can range from several to hundreds of acres, involving a number of different transfer operations and long waiting periods. A distribution center can accommodate hundreds of diesel trucks a day that deliver, load, and/or unload goods up to seven days a week. To the extent that these trucks are transporting perishable goods, they are equipped with diesel-powered transport refrigeration units (TRUs) or TRU generator sets.

The activities associated with delivering, storing, and loading freight produces diesel PM emissions. Although TRUs have relatively small diesel-powered engines, in the normal course of business, their emissions can pose a significant health risk to those nearby. In addition to onsite emissions, truck travel in and out of distribution centers contributes to the local pollution impact.

ARB is working to reduce diesel PM emissions through regulations, financial incentives, and enforcement programs. In 2004, ARB adopted two airborne toxic control measures that will reduce diesel PM emissions associated with distribution centers. The first will limit nonessential (or unnecessary) idling of diesel-fueled commercial vehicles, including those entering from other states or countries. This statewide measure, effective in 2005, prohibits idling of a vehicle more than five minutes at any one location.<sup>3</sup> The elimination of unnecessary idling will reduce the localized impacts caused by diesel PM and other air toxics

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<sup>3</sup> For further information on the Anti-Idling ATCM, please click on:  
<http://www.arb.ca.gov/toxics/idling/outreach/factsheet.pdf>

in diesel vehicle exhaust. This should be a very effective new strategy for reducing diesel PM emissions at distribution centers as well as other locations.

The second measure requires that TRUs operating in California become cleaner over time. The measure establishes in-use performance standards for existing TRU engines that operate in California, including out-of-state TRUs. The requirements are phased-in beginning in 2008, and extend to 2019.<sup>4</sup>

ARB also operates a smoke inspection program for heavy-duty diesel trucks that focuses on reducing truck emissions in California communities. Areas with large numbers of distribution centers are a high priority.

### Key Health Findings

Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

### Distance Related Findings

Although distribution centers are located throughout the state, they are usually clustered near transportation corridors, and are often located in or near population centers. Diesel PM emissions from associated delivery truck traffic and TRUs at these facilities may result in elevated diesel PM concentrations in neighborhoods surrounding those sites. Because ARB regulations will restrict truck idling at distribution centers, the largest continuing onsite diesel PM emission source is the operation of TRUs. Truck travel in and out of distribution centers also contributes to localized exposures, but specific travel patterns and truck volumes would be needed to identify the exact locations of the highest concentrations.

As part of the development of ARB's regulation for TRUs, ARB staff performed air quality modeling to estimate exposure and the associated potential cancer risk of onsite TRUs for a typical distribution center. For an individual person, cancer risk estimates for air pollution are commonly expressed as a probability of developing cancer from a lifetime (i.e., 70 years) of exposure. These risks were calculated independent of regional risk. For example, the estimated regional cancer risk from air toxics in the Los Angeles region (South Coast Air Basin) is approximately 1,000 additional cancer cases per one million population.

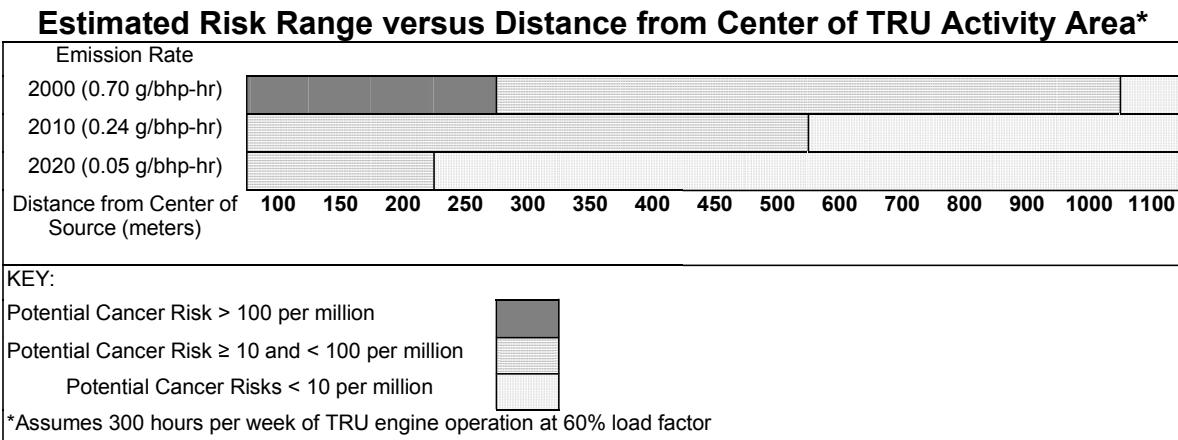
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<sup>4</sup> For further information on the Transport Refrigeration Unit ATCM, please click on: <http://www.arb.ca.gov/diesel/documents/trufaq.pdf>

The diesel PM emissions from a facility are dependent on the size (horsepower), age, and number of engines, emission rates, the number of hours the truck engines and/or TRUs operate, distance, and meteorological conditions at the site. This assessment assumes a total on-site operating time for all TRUs of 300 hours per week. This would be the equivalent of 40 TRU-equipped trucks a day, each loading or unloading on-site for one hour, 12 hours a day and seven days a week.

As shown in Figure 1-2 below, at this estimated level of activity and assuming a current fleet diesel PM emission rate, the potential cancer risk would be over 100 in a million at 800 feet from the center of the TRU activity. The estimated potential cancer risk would be in the 10 to 100 per million range between 800 to 3,300 feet and fall off to less than 10 per million at approximately 3,600 feet. However with the implementation of ARB’s regulation on TRUs, the risk will be significantly reduced.<sup>5</sup> We have not conducted a risk assessment for distribution centers based on truck traffic alone, but on an emissions basis, we would expect similar risks for a facility with truck volumes in the range of 100 per day.

**Figure 1-2**

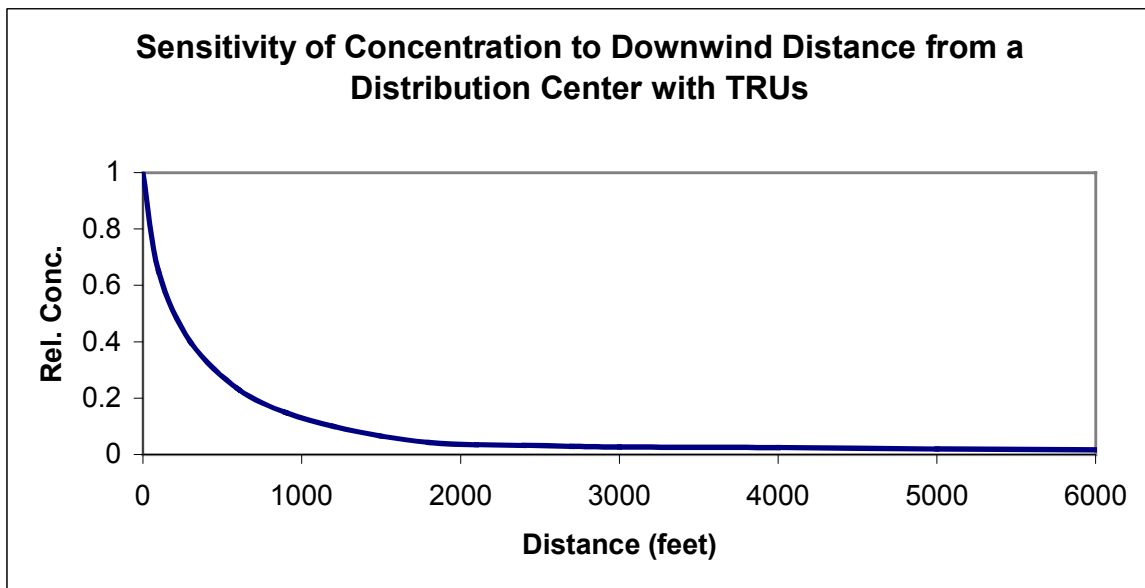


The estimated potential cancer risk level in Figure 1-2 is based on a number of assumptions that may not reflect actual conditions for a specific site. For example, increasing or decreasing the hours of diesel engine operations would change the potential risk levels. Meteorological and other facility specific parameters can also impact the results. Therefore, the results presented here are not directly applicable to any particular facility or operation. Rather, this information is intended to provide an indication as to the potential relative levels of risk that may be observed from operations at distribution centers. As shown in Figure 1-2, the estimated risk levels will decrease over time as lower-emitting diesel engines are used.

<sup>5</sup> These risk values assume an exposure duration of 70 years for a nearby resident and uses the methodology specified in the 2003 OEHHA health risk assessment guidelines.

Another air modeling analysis, performed by the South Coast Air Quality Management District (South Coast AQMD), evaluated the impact of diesel PM emissions from distribution center operations in the community of Mira Loma in southern California. Based on dispersion of diesel PM emissions from a large distribution center, Figure 1-3 shows the relative pollution concentrations at varying distances downwind. As Figure 1-3 shows, there is about an 80 percent drop off in concentration at approximately 1,000 feet.

**Figure 1-3**  
**Decrease In Relative Concentration of Risk**  
**With Distance**



Both the ARB and the South Coast AQMD analyses indicate that providing a separation of 1,000 feet would substantially reduce diesel PM concentrations and public exposure downwind of a distribution center. While these analyses do not provide specific risk estimates for distribution centers, they provide an indication of the range of risk and the benefits of providing a separation. ARB recommends a separation of 1,000 feet based on the combination of risk analysis done for TRUs and the decrease in exposure predicted with the South Coast AQMD modeling. However, ARB staff plans to provide further information on distribution centers as we collect more data and implement the TRU control measure.

Taking into account the configuration of distribution centers can also reduce population exposure and risk. For example, locating new sensitive land uses away from the main entry and exit points helps to reduce cancer risk and other health impacts.

## Recommendations

- Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating TRUs per day, or where TRU unit operations exceed 300 hours per week).
- Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.

## References

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<http://www.arb.ca.gov/regact/idling/idling.htm>
- *Revised Staff Report: Initial Statement of Reasons for Proposed Rulemaking. Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate*. ARB (October 28, 2003).  
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- *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*. SCAQMD (August 2003) [http://www.aqmd.gov/ceqa/handbook/diesel\\_analysis.doc](http://www.aqmd.gov/ceqa/handbook/diesel_analysis.doc)
- “*Mira Loma Study: Analysis of the Impact of Diesel Particulate Emissions from Warehouse/Distribution Center Operations*”, PowerPoint presentation. SCAQMD (July 31, 2002)

## Rail Yards

Rail yards are a major source of diesel particulate air pollution. They are usually located near inter-modal facilities, which attract heavy truck traffic, and are often sited in mixed industrial and residential areas. ARB, working with the Placer County air district and Union Pacific Railroad, recently completed a study<sup>6</sup> of the Roseville Rail Yard (Yard) in northern California that focused on the health risk from diesel particulate. A comprehensive emissions analysis and air quality modeling were conducted to characterize the estimated potential cancer risk associated with the facility.

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<sup>6</sup> To review the study, please click on: <http://www.arb.ca.gov/diesel/documents/rstudy.htm>

The Yard encompasses about 950 acres on a one-quarter mile wide by four-mile long strip of land that parallels Interstate 80. It is surrounded by commercial, industrial, and residential properties. The Yard is one of the largest service and maintenance rail yards in the West with over 30,000 locomotives visiting annually.

Using data provided by Union Pacific Railroad, the ARB determined the number and type of locomotives visiting the Yard annually and what those locomotives were doing - moving, idling, or undergoing maintenance testing. Union Pacific provided the annual, monthly, daily, and hourly locomotive activity in the yard including locomotive movements; routes for arrival, departure, and through trains; and locomotive service and testing. This information was used to estimate the emissions of particulate matter from the locomotives, which was then used to model the potential impacts on the surrounding community.

The key findings of the study are:

- Diesel PM emissions in 2000 from locomotive operations at the Roseville Yard were estimated at about 25 tons per year.
- Of the total diesel PM in the Yard, moving locomotives accounted for about 50 percent, idling locomotives about 45 percent, and locomotive testing about five percent.
- Air quality modeling predicts potential cancer risks greater than 500 in a million (based on 70 years of exposure) in a 10-40 acre area immediately adjacent to the Yard's maintenance operations.
- The risk assessment also showed elevated cancer risk impacting a larger area covering about a 10 by 10 mile area around the Yard.

The elevated concentrations of diesel PM found in the study contribute to an increased risk of cancer and premature death due to cardiovascular disease, and non-cancer health effects such as asthma and other respiratory illnesses. The magnitude of the risk, the general location, and the size of the impacted area depended on the meteorological data used to characterize conditions at the Yard, the dispersion characteristics, and exposure assumptions. In addition to these variables, the nature of locomotive activity will influence a risk characterization at a particular rail yard. For these reasons, the quantified risk estimates in the Roseville Rail Yard Study cannot be directly applied to other rail yards. However, the study does indicate the health risk due to diesel PM from rail yards needs to be addressed. ARB, in conjunction with the U.S. Environmental Protection Agency (U.S. EPA), and local air districts, is working with the rail industry to identify and implement short term, mid-term and long-term mitigation strategies. ARB also intends to conduct a second rail study in southern California to increase its understanding of rail yard operations and the associated public health impacts.

## Key Health Findings

Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

## Distance Related Findings

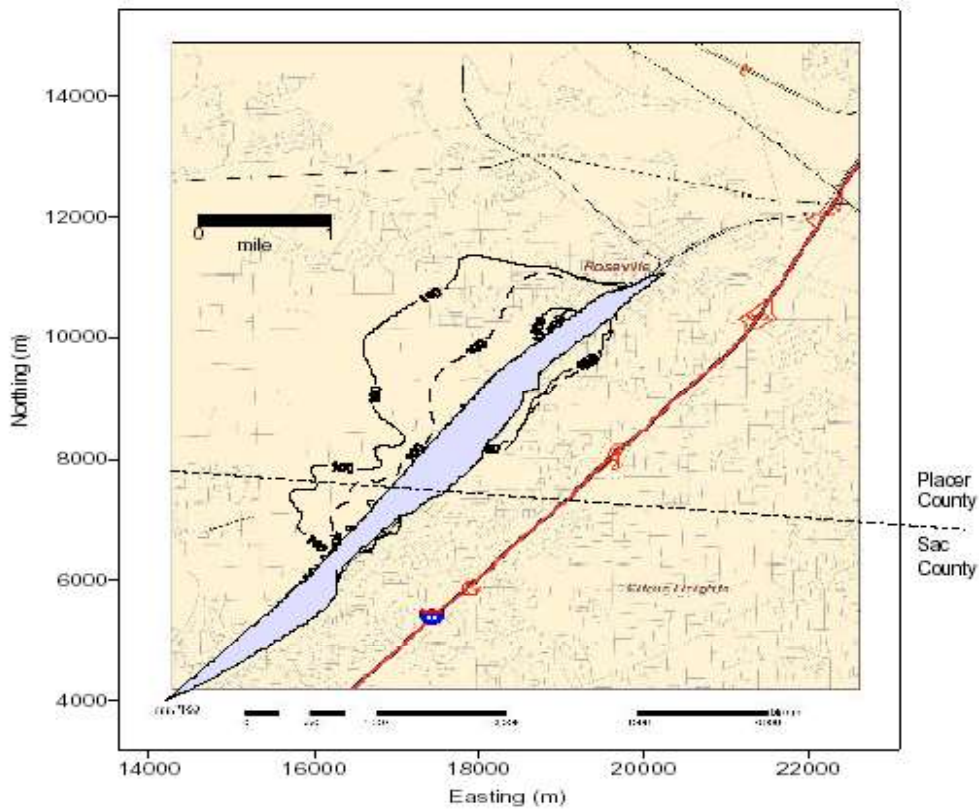
Two sets of meteorological data were used in the Roseville study because of technical limitations in the data. The size of the impact area was highly dependent on the meteorological data set used. The predicted highest impact area ranged from 10 - 40 acres with the two different meteorological data sets. This area, with risks estimated above 500 in a million, is adjacent to an area that includes a maintenance shop (see Figure 1-4). The high concentration of diesel PM emissions is due to the number of locomotives and nature of activities in this area, particularly idling locomotives.

The area of highest impact is within 1,000 feet of the Yard. The next highest impact zone as defined in the report had a predicted risk between 500 and 100 in one million and extends out between a half to one mile in some spots, depending on which meteorological conditions were assumed. The impact areas are irregular in shape making it difficult to generalize about the impact of distance at a particular location. However, the Roseville Rail Yard Study clearly indicates that the localized health risk is high, the impact area is large, and mitigation of the locomotive diesel PM emissions is needed.

For facilities like rail yards and ports, the potential impact area is so large that the real solution is to substantially reduce facility emissions. However, land use planners can avoid encroaching upon existing rail facilities and those scheduled for expansion. We also recommend that while air agencies tackle this problem, land use planners try not to add new sensitive individuals into the highest exposure areas. Finally, we recommend that land use agencies consider the potential health impacts of rail yards in their planning and permitting processes. Additional limitations and mitigation may be feasible to further reduce exposure on a site-specific basis.



**Figure 1-4**  
**Estimated Cancer Risk from the Yard**  
**(100 and 500 in a million risk isopleths)**



Notes: 100/Million Contours: Solid Line – Roseville Met Data; Dashed Line-McClellan Met Data, Urban Dispersion Coefficients, 80<sup>th</sup> Percentile Breathing Rate, All Locomotives' Activities (23 TPY), 70-Year Exposure

### Recommendation

- Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard<sup>7</sup>.
- Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.

### References

- *Roseville Rail Yard Study*. ARB (2004)

<sup>7</sup> The rail yard risk analysis was conducted for the Union Pacific rail yard in Roseville, California. This rail yard is one of the largest in the state. There are other rail yards in California with comparable levels of activity that should be considered "major" for purposes of this Handbook.

## Ports

Air pollution from maritime port activities is a growing concern for regional air quality as well as air quality in nearby communities. The primary air pollutant associated with port operations is directly emitted diesel particulate. Port-related activities also result in emissions that form ozone and secondary particulate in the atmosphere. The emission sources associated with ports include diesel engine-powered ocean-going ships, harbor craft, cargo handling equipment, trucks, and locomotives. The size and concentration of these diesel engines makes ports one of the biggest sources of diesel PM in the state. For that reason, ARB has made it a top priority to reduce diesel PM emissions at the ports, in surrounding communities, and throughout California.

International, national, state, and local government collaboration is critical to reducing port emissions based on both legal and practical considerations. For example, the International Maritime Organization (IMO) and the U.S. EPA establish emission standards for ocean-going vessels and U.S.-flagged harbor craft, respectively. ARB is pursuing further federal actions to tighten these standards. In addition, ARB and local air districts are reducing emissions from ports through a variety of approaches. These include: incentive programs to fund cleaner engines, enhanced enforcement of smoke emissions from ships and trucks, use of dockside electricity instead of diesel engines, cleaner fuels for ships, harbor craft, locomotives, and reduced engine idling. The two ATCMs that limit truck idling and reduce emissions from TRUs (discussed under “Distribution Centers”) also apply to ports.

ARB is also developing several other regulations that will reduce port-related emissions. One rule would require ocean-going ships to use a cleaner marine diesel fuel to power auxiliary engines while in California coastal waters and at dock. Ships that frequently visit California ports would also be required to further reduce their emissions. ARB has adopted a rule that would require harbor craft to use the same cleaner diesel fuel used by on-road trucks in California. In 2005, ARB will consider a rule that would require additional controls for in-use harbor craft, such as the use of add-on emission controls and accelerated turnover of older engines.

## Key Health Findings

Port activities are a major source of diesel PM. Diesel PM has been identified by ARB as a toxic air contaminant and represents 70 percent of the known potential cancer risk from air toxics in California. Diesel PM is an important contributor to particulate matter air pollution. Particulate matter exposure is associated with premature mortality and health effects such as asthma exacerbation and hospitalization due to aggravating heart and lung disease.

## Distance Related Findings

The Ports of Los Angeles and Long Beach provide an example of the emissions impact of port operations. A comprehensive emissions inventory was completed in June 2004. These ports combined are one of the world's largest and busiest seaports. Located in San Pedro Bay, about 20 miles south of downtown Los Angeles, the port complex occupies approximately 16 square miles of land and water. Port activities include five source categories that produce diesel emissions. These are ocean-going vessels, harbor craft, cargo handling equipment, railroad locomotives, and heavy-duty trucks.

The baseline emission inventory provides emission estimates for all major air pollutants. This analysis focuses on diesel PM from in-port activity because these emissions have the most potential health impact on the areas adjacent to the port. Ocean vessels are the largest overall source of diesel PM related to the ports, but these emissions occur primarily outside of the port in coastal waters, making the impact more regional in nature.

The overall in-port emission inventory for diesel particulate for the ports of Los Angeles and Long Beach is estimated to be 550 tons per year. The emissions fall in the following major categories: ocean-going vessels (17%), harbor craft (25%), cargo handling (47%), railroad locomotive (3%), and heavy duty vehicles (8%). In addition to in-port emissions, ship, rail, and trucking activities also contribute to regional emissions and increase emissions in nearby neighborhoods. Off-port emissions associated with related ship, rail, and trucking activities contribute an additional 680 tons per year of diesel particulate at the Port of Los Angeles alone.

To put this in perspective, the diesel PM emissions estimated for the Roseville Yard in ARB's 2004 study are 25 tons per year. The potential cancer risk associated with these emissions is 100 in one million at a distance of one mile, or one half mile, depending on the data set used. This rail yard covers one and a half square miles. The Los Angeles and Long Beach ports have combined diesel PM emissions of 550 tons per year emitted from a facility that covers a much larger area - 16 miles. The ports have about twice the emission density of the rail yard - 34 tons per year per square mile compared to 16 tons per year per square mile. However, while this general comparison is illustrative of the overall size of the complex, a detailed air quality modeling analysis would be needed to assess the potential health impact on specific downwind areas near the ports.

ARB is in the process of evaluating the various port-related emission sources from the standpoint of existing emissions, growth forecasts, new control options, regional air quality impacts, and localized health risk. A number of public processes - both state and local - are underway to address various aspects of these issues. Until more of these analyses are complete, there is little basis for recommending a specific separation between new sensitive land uses and ports.

For example, the type of data we have showing the relationship between air pollutant concentrations and distance from freeways is not yet available.

Also, the complexity of the port facilities makes a site-specific analysis critical. Ports are a concentration of multiple emission sources with differing dispersion and other characteristics. In the case of the Roseville rail yard, we found a high, very localized impact associated with a particular activity, service and maintenance. By contrast, the location, size, and nature of impact areas can be expected to vary substantially for different port activities. For instance, ground level emissions from dockside activities would behave differently from ship stack level emissions.

Nonetheless, on an emissions basis alone, we expect locations downwind of ports to be substantially impacted. For that reason, we recommend that land use agencies track the current assessment efforts, and consider limitations on the siting of new sensitive land uses in areas immediately downwind of ports.

### Recommendations

Avoid siting new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.

### References

- *Roseville Rail Yard Study*. ARB (2004)
- Final Draft, "*Port-Wide Baseline Air Emissions Inventory*." Port of Los Angeles (June 2004)
- Final Draft, "*2002 Baseline Air Emissions Inventory*." Port of Long Beach (February 2004)

### Petroleum Refineries

A petroleum refinery is a complex facility where crude oil is converted into petroleum products (primarily gasoline, diesel fuel, and jet fuel), which are then transported through a system of pipelines and storage tanks for final distribution by delivery truck to fueling facilities throughout the state. In California, most crude oil is delivered either by ship from Alaska or foreign sources, or is delivered via pipeline from oil production fields within the state. The crude oil then undergoes many complex chemical and physical reactions, which include distillation, catalytic cracking, reforming, and finishing. These refining processes have the potential to emit air contaminants, and are subject to extensive emission controls by district regulations.

As a result of these regulations covering the production, marketing, and use of gasoline and other oil by-products, California has seen significant regional air quality benefits both in terms of cleaner fuels and cleaner operating facilities. In

the 1990s, California refineries underwent significant modifications and modernization to produce cleaner fuels in response to changes in state law. Nevertheless, while residual emissions are small when compared to the total emissions controlled from these major sources, refineries are so large that even small amounts of fugitive, uncontrollable emissions and associated odors from the operations, can be significant. This is particularly the case for communities that may be directly downwind of the refinery. Odors can cause health symptoms such as nausea and headache. Also, because of the size, complexity, and vast numbers of refinery processes onsite, the occasional refinery upset or malfunction can potentially result in acute or short-term health effects to exposed individuals.

### Key Health Findings

Petroleum refineries are large single sources of emissions. For volatile organic compounds (VOCs), eight of the ten largest stationary sources in California are petroleum refineries. For oxides of nitrogen (NO<sub>x</sub>), four of the ten largest stationary sources in California are petroleum refineries. Both of these compounds react in the presence of sunlight to form ozone. Ozone impacts lung function by irritating and damaging the respiratory system. Petroleum refineries are also large stationary sources of both particulate matter under 10 microns in size (PM<sub>10</sub>) and particulate matter under 2.5 microns in size (PM<sub>2.5</sub>). Exposure to particulate matter aggravates a number of respiratory illnesses, including asthma, and is associated with premature mortality in people with existing cardiac and respiratory disease. Both long-term and short-term exposure can have adverse health impacts. Finer particles pose an increased health risk because they can deposit deep in the lung and contain substances that are particularly harmful to human health. NO<sub>x</sub> are also significant contributors to the secondary formation of PM<sub>2.5</sub>.

Petroleum refineries also emit a variety of toxic air pollutants. These air toxics vary by facility and process operation but may include: acetaldehyde, arsenic, antimony, benzene, beryllium, 1,3-butadiene, cadmium compounds, carbonyl sulfide, carbon disulfide, chlorine, dibenzofurans, diesel particulate matter, formaldehyde, hexane, hydrogen chloride, lead compounds, mercury compounds, nickel compounds, phenol, 2,3,7,8 tetrachlorodibenzo-p-dioxin, toluene, and xylenes (mixed) among others. The potential health effects associated with these air toxics can include cancer, respiratory irritation, and damage to the central nervous system, depending on exposure levels.

### Distance Related Findings

Health risk assessments for petroleum refineries have shown risks from toxic air pollutants that have quantifiable health risk values to be around 10 potential cancer cases per million. Routine air monitoring and several air monitoring studies conducted in the San Francisco Bay Area (Crockett) and the South Coast Air Basin (Wilmington) have not identified significant health risks specifically

associated with refineries. However, these studies did not measure diesel PM as no accepted method currently exists, and there are many toxic air pollutants that do not have quantifiable health risk values.

In 2002, ARB published a report on the results of the state and local air district air monitoring done near oil refineries. The purpose of this evaluation was to try to determine how refinery-related emissions might impact nearby communities. This inventory of air monitoring activities included 10 ambient air monitoring stations located near refineries in Crockett and four stations near refineries in Wilmington. These monitoring results did not identify significant increased health risks associated with the petroleum refineries. In 2002-2003, ARB conducted additional monitoring studies in communities downwind of refineries in Crockett and Wilmington. These monitoring results also did not indicate significant increased health risks from the petroleum refineries.

Consequently, there are no air quality modeling or air monitoring data that provides a quantifiable basis for recommending a specific separation between refineries and new sensitive land uses. However, in view of the amount and potentially hazardous nature of many of the pollutants released as part of the refinery process, we believe the siting of new sensitive land uses immediately downwind should be avoided. Land use agencies should consult with the local air district when considering how to define an appropriate separation for refineries within their jurisdiction.

### Recommendations

- Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.

### References

- *Review of Current Ambient Air Monitoring Activities Related to California Bay Area and South Coast Refineries.* ARB (March 2002)  
<http://www.arb.ca.gov/aaqm/qmosqual/special/mldrefinery.pdf>
- *Community Air Quality Monitoring: Special Studies – Crockett.* ARB (September 2004)  
<http://www.arb.ca.gov/ch/communities/studies/crockett/crockett.htm>
- *Wilmington Study - Air Monitoring Results.* ARB (2003)  
<http://www.arb.ca.gov/ch/communities/studies/wilmington/wilmington.htm>

### Chrome Plating Operations

Chrome plating operations rely on the use of the toxic metal hexavalent chromium, and have been subject to ARB and local air district control programs for many years. Regulation of chrome plating operations has reduced statewide emissions substantially. However, due to the nature of chrome plating

operations and the highly toxic nature of hexavalent chromium, the remaining health risk to nearby residents is a continuing concern.

Chrome plating operations convert hexavalent chromium in solution to a chromium metal layer by electroplating, and are categorized based upon the thickness of the chromium metal layer applied. In “decorative plating”, a layer of nickel is first plated over a metal substrate. Following this step, a thin layer of chromium is deposited over the nickel layer to provide a decorative and protective finish, for example, on faucets and automotive wheels. “Hard chrome plating” is a process in which a thicker layer of chromium metal is deposited directly on metal substrates such as engine parts, industrial machinery, and tools to provide greater protection against corrosion and wear.

Hexavalent chromium is emitted into the air when an electric current is applied to the plating bath. Emissions are dependent upon the amount of electroplating done per year and the control requirements. A unit of production referred to as an ampere-hour represents the amount of electroplating produced. Small facilities have an annual production rate of 100,000 – 500,000 ampere-hours, while medium-size facilities may have a production rate of 500,000 to about 3 million ampere-hours. The remaining larger facilities have a range of production rates that can be as high as 80 million ampere-hours.

The control requirements, which reduce emissions from the plating tanks, vary according to the size and type of the operation. Facilities either install add-on pollution control equipment, such as filters and scrubbers, or in-tank controls, such as fume suppressants and polyballs. With this combination of controls, the overall hexavalent chromium emissions have been reduced by over 90 percent. Larger facilities typically have better controls that can achieve efficiencies greater than 99 percent. However, even with stringent controls, the lack of maintenance and good housekeeping practices can lead to problems. And, since the material itself is inherently dangerous, any lapse in compliance poses a significant risk to nearby residents.

A 2002 ARB study in the San Diego community of Barrio Logan measured unexpectedly high concentrations of hexavalent chromium near chrome platers. The facilities were located in a mixed-use area with residences nearby. The study found that fugitive dust laden with hexavalent chromium was an important source of emissions that likely contributed to the elevated cancer risk. Largely as a result of this study, ARB is in the process of updating the current requirements to further reduce the emissions from these facilities.

In December 2004, the ARB adopted an ATCM to reduce emissions of hexavalent chromium and nickel from thermal spraying operations through the installation of best available control technology. The ATCM requires all existing facilities to comply with its requirements by January 1, 2006. New and modified thermal spraying operations must comply upon initial startup. An existing thermal spraying facility may be exempt from the minimum control efficiency

requirements of the ATCM if it is located at least 1,640 feet from the nearest sensitive receptor and emits no more than 0.5 pound per year of hexavalent chromium.<sup>8</sup>

### Key Health Findings

Hexavalent chromium is one of the most toxic air pollutants regulated by the State of California. Hexavalent chromium is a carcinogen and has been identified in worker health studies as causing lung cancer. Exposure to even very low levels of hexavalent chromium should be avoided.

The California Office of Environmental Health Hazard Assessment has found that: 1) many epidemiological studies show a strong association between hexavalent chromium exposure in the work place and respiratory cancer; and 2) all short-term assays reported show that hexavalent chromium compounds can cause damage to human DNA.

Hexavalent chromium when inhaled over a period of many years can cause a variety of non-cancer health effects. These health effects include damage to the nose, blood disorders, lung disease, and kidney damage. The non-cancer health impacts occur with exposures considerably higher than exposures causing significant cancer risks. It is less likely that the public would be exposed to hexavalent chromium at levels high enough to cause these non-cancer health effects. Non-cancer health effects, unlike cancer health effects, have a threshold or exposure level below which non-cancer health effects would not be expected.

### Distance Related Findings

ARB's 2002 Barrio Logan Study measured concentrations of hexavalent chromium in the air near two chrome plating facilities. The study was conducted from December 2001 to May 2002. There were two chrome platers on the street - one decorative and one hard plater. The purpose of the study was to better understand the near source impact of hexavalent chromium emissions. Air monitors were placed at residences next to the platers and at varying distances down the street. The monitors were moved periodically to look at the spatial distribution of the impact. Source testing and facility inspections identified one of the facilities as the likely source.

The first two weeks of monitoring results showed unexpectedly high levels of hexavalent chromium at a number of the monitoring sites. The high concentrations were intermittent. The concentrations ranged from 1 to 22 ng/m<sup>3</sup> compared to the statewide average of 0.1 ng/m<sup>3</sup>. If these levels were to continue for 70 years, the potential cancer risk would be 150 in one million. The highest value was found at an air monitor behind a house adjacent to one of the

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<sup>8</sup> For further information on the ATCM, please refer to:  
<http://www.arb.ca.gov/regact/thermspr/thermalspr.htm>

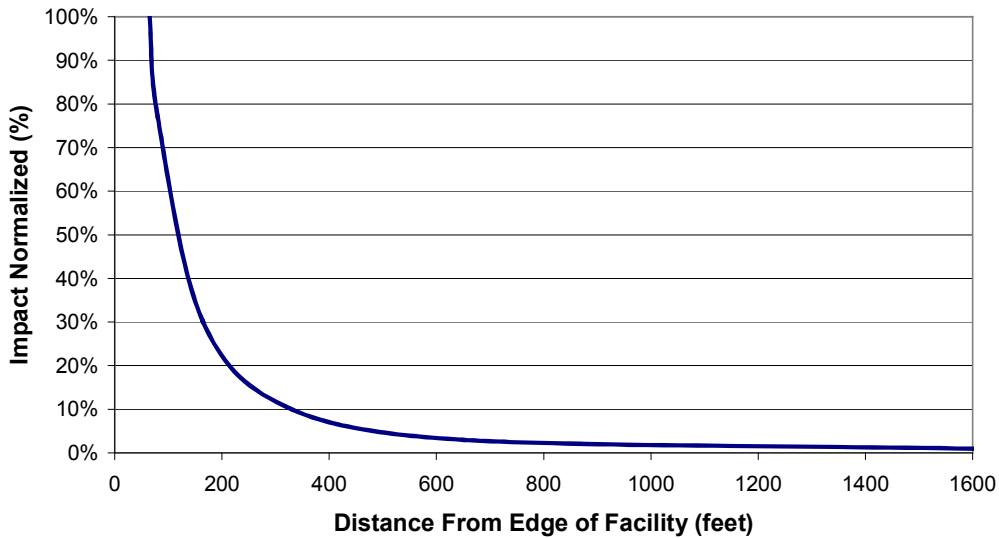


plating facilities—approximately 30 feet from the back entrance. Lower, but significant concentrations were found at an ambient air monitor 250 feet away.

The monitoring covered a period when the facility was not operating its plating tank. During this period, one of the highest concentrations was measured at an adjacent house. It appears that chromium-laden dust was responsible for high concentrations at this location since there was no plating activity at the time. Dust samples from the facility were tested and found to contain high levels of hexavalent chromium. On the day the highest concentration was measured at the house next door, a monitor 350 feet away from the plater's entrance showed very little impact. Similar proximity effects are shown in ARB modeling studies.

Figure 1-5 shows how the relative health risk varies as a function of distance from a chrome plater. This analysis is based on a medium-sized chrome plater with an annual production rate of 3 million ampere-hours. As shown in Figure 1-5, the potential health risk drops off rapidly, with over 90 percent reduction in risk within 300 feet. This modeling was done in 2003 as part of a review of ARB's current air toxic control measure for chrome platers and is based on data from a recent ARB survey of chrome platers in California. The emission

**Figure 1-5**  
**Risk vs. Distance From Chrome Plater**  
**(Based on plating tank emissions)**



rates are only for plating operations. Because there are insufficient data available to directly quantify the impacts, the analysis does not include fugitive emissions, which the Barrio Logan analysis indicated could be significant.

Both the ARB Barrio Logan monitoring results and ARB's 2003 modeling analysis suggests that the localized emissions impact of a chrome plater diminishes significantly at 300 feet. However, in developing our recommendation, we also considered the following factors:

- some chrome platers will have higher volumes of plating activity,
- potential dust impacts were not modeled,
- we have only one monitoring study looking at the impact of distance, and,
- hexavalent chromium is one of the most potent toxic air contaminants ARB has identified.

Given these limitations in the analysis, we recommend a separation of 1,000 feet as a precautionary measure. For large chrome platers, site specific information should be obtained from the local air district.

### Recommendation

- Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.

### References

- *Ambient Air Monitoring for Hexavalent Chromium and Metals in Barrio Logan: May 2001 through May 2002.* ARB, Monitoring and Laboratory Division (October 14, 2003)
- *Draft Barrio Logan Report.* ARB, Planning and Technical Support Division (November 2004)
- *Proposed Amendments to the Hexavalent Chromium Control Measure for Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities.* ARB (April 1998)
- Murchison, Linda; Suer, Carolyn; Cook, Jeff. “*Neighborhood Scale Monitoring in Barrio Logan,*” (AWMA Annual Conference Proceedings, June 2003)

### **Dry Cleaners Using Perchloroethylene (Perc Dry Cleaners)**

Perchloroethylene (perc) is the solvent most commonly used by the dry cleaning industry to clean clothes or other materials. The ARB and other public health agencies have identified perc as a potential cancer-causing compound. Perc persists in the atmosphere long enough to contribute to both regional air pollution and localized exposures. Perc dry cleaners are the major source of perc emissions in California.

Since 1990, the statewide concentrations and health risk from exposure to perc has dropped over 70 percent. This is due to a number of regulatory requirements on perc dry cleaners and other sources, including degreasing operations, brake cleaners, and adhesives. ARB adopted an Airborne Toxic Control Measure (ATCM) for Perc Emissions from Dry Cleaning Operations in 1993. ARB has also prohibited the use of perc in aerosol adhesives and automotive brake cleaners.

Perc dry cleaners statewide are required to comply with ARB and local air district regulations to reduce emissions. However, even with these controls, some emissions continue to occur. Air quality studies indicate that there is still the potential for significant risks even near well-controlled dry cleaners. The South Coast AQMD has adopted a rule requiring that all new dry cleaners use alternatives to perc and that existing dry cleaners phase out the use of perc by December 2020. Over time, transition to non-toxic alternatives should occur. However, while perc continues to be used, a preventative approach should be taken to siting of new sensitive land uses.

### Key Health Findings

Inhalation of perc may result in both cancer and non-cancer health effects. An assessment by California's Office of Environmental Health Hazard Assessment (OEHHA) concluded that perc is a potential human carcinogen and can cause non-cancer health effects. In addition to the potential cancer risk, the effects of long-term exposure include dizziness, impaired judgment and perception, and damage to the liver and kidneys. Workers have shown signs of liver toxicity following chronic exposure to perc, as well as kidney dysfunction and neurological effects. Non-cancer health effects occur with higher exposure levels than those associated with significant cancer risks. The public is more likely to be exposed to perchloroethylene at levels causing significant cancer risks than to levels causing non-cancer health effects. Non-cancer health effects, unlike cancer health effects, have a threshold or exposure level below which non-cancer health effects would not be expected. The ARB formally identified perc as a toxic air contaminant in October 1991.

One study has determined that inhalation of perc is the predominant route of exposure to infants living in apartments co-located in the same building with a business operating perc dry cleaning equipment. Results of air sampling within co-residential buildings indicate that dry cleaners can cause a wide range of exposures depending on the type and maintenance of the equipment. For example, a well-maintained state-of-the-art system may have risks in the range of 10 in one million, whereas a badly maintained machine with major leaks can have potential cancer risks of thousands in one million.

The California Air Pollution Control Officers Association (CAPCOA) is developing Industry-wide Risk Assessment Guidelines for Perchloroethylene Dry Cleaners which, when published, will provide detailed information on public health risk from exposure to emissions from this source.

### Distance Related Findings

Risk created by perc dry cleaning is dependent on the amount of perc emissions, the type of dry cleaning equipment, proximity to the source, and how the emissions are released and dispersed (e.g., type of ventilation system, stack parameters, and local meteorology). Dry cleaners are often located near

residential areas, and near shopping centers, schools, day-care centers, and restaurants.

The vast majority of dry cleaners in California have one dry cleaning machine per facility. The South Coast AQMD estimates that an average well-controlled dry cleaner uses about 30 to 160 gallons of cleaning solvent per year, with an average of about 100 gallons. Based on these estimates, the South Coast AQMD estimates a potential cancer risk between 25 to 140 in one million at residential locations 75 feet or less from the dry cleaner, with an average of about 80 in one million. The estimate could be as high as 270 in one million for older machines.

CAPCOA's draft industry-wide risk assessment of perc dry cleaning operations indicates that the potential cancer risk for many dry cleaners may be in excess of potential cancer risk levels adopted by the local air districts. The draft document also indicates that, in general, the public's exposure can be reduced by at least 75 percent, by providing a separation distance of about 300 feet from the operation. This assessment is based on a single machine with perc use of about 100 gallons per year. At these distances, the potential cancer risk would be less than 10 potential cases per million for most scenarios.

The risk would be proportionately higher for large, industrial size, dry cleaners. These facilities typically have two or more machines and use 200 gallons or more per year of perc. Therefore, separation distances need to be greater for large dry cleaners. At a distance of 500 feet, the remaining risk for a large plant can be reduced by over 85 percent.

In California, a small number of dry cleaners that are co-located (sharing a common wall, floor, or ceiling) with a residence have the potential to expose the inhabitants of the residence to high levels of perc. However, while special requirements have been imposed on these existing facilities, the potential for exposure still exists. Avoiding these siting situations in the future is an important preventative measure.

Local air districts are a source of information regarding specific dry cleaning operations—particularly for large industrial operations with multiple machines. The 300 foot separation recommended below reflects the most common situation – a dry cleaner with only one machine. While we recommend 500 feet when there are two or more machines, site specific information should be obtained from the local air district for some very large industrial operations. Factors that can impact the risk include the number and type of machines, controls used, source configuration, building dimensions, terrain, and meteorological data.

## Recommendation

- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines provide 500 feet. For operations with 3 or more machines, consult with the local air district.
- Do not site new sensitive land uses in the same building with perc dry cleaning operations.

## References

- *Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*, Final Staff Report. South Coast AQMD. (October 2002)
- *Air Toxic Control Measure for Emissions of Perchloroethylene from Dry Cleaning Operations*. ARB (1994)  
(<http://www.arb.ca.gov/toxics/atcm/percatcm.htm>)
- “An Assessment of Tetrachloroethylene in Human Breast Milk”, Judith Schreiber, New York State Department of Health – Bureau of Toxic Substance Assessment, Journal of Exposure Analysis and Environmental Epidemiology, Vol.2, Suppl.2, pp. 15-26, 1992.
- *Draft Air Toxics “Hot Spots” Program Perchloroethylene Dry Cleaner Industry-wide Risk Assessment Guidelines*. (CAPCOA (November 2002)
- *Final Environmental Assessment for Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*. South Coast AQMD. (October 18, 2002)

## Gasoline Dispensing Facilities

Refueling at gasoline dispensing facilities releases benzene into the air. Benzene is a potent carcinogen and is one of the highest risk air pollutants regulated by ARB. Motor vehicles and motor vehicle-related activity account for over 90 percent of benzene emissions in California. While gasoline-dispensing facilities account for a small part of total benzene emissions, near source exposures for large facilities can be significant.

Since 1990, benzene in the air has been reduced by over 75 percent statewide, primarily due to the implementation of emissions controls on motor vehicle vapor recovery equipment at gas stations, and a reduction in benzene levels in gasoline. However, benzene levels are still significant. In urban areas, average benzene exposure is equivalent to about 50 in one million.

Gasoline dispensing facilities tend to be located in areas close to residential and shopping areas. Benzene emissions from the largest gas stations may result in near source health risk beyond the regional background and district health risk thresholds. The emergence of very high gasoline throughput at large retail or

wholesale outlets makes this a concern as these types of outlets are projected to account for an increasing market share in the next few years.

### Key Health Findings

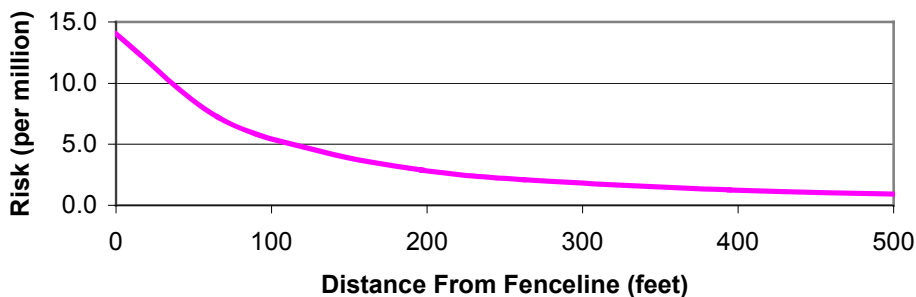
Benzene is a human carcinogen identified by ARB as a toxic air contaminant. Benzene also can cause non-cancer health effects above a certain level of exposure. Brief inhalation exposure to high concentrations can cause central nervous system depression. Acute effects include central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness. It is unlikely that the public would be exposed to levels of benzene from gasoline dispensing facilities high enough to cause these non-cancer health effects.

### Distance Related Findings

A well-maintained vapor recovery system can decrease emissions of benzene by more than 90% compared with an uncontrolled facility. Almost all facilities have emission control systems. Air quality modeling of the health risks from gasoline dispensing facilities indicate that the impact from the facilities decreases rapidly as the distance from the facility increases.

Statistics reported in the ARB's staff reports on Enhanced Vapor Recovery released in 2000 and 2002, indicated that almost 96 percent of the gasoline dispensing facilities had a throughput less than 2.4 million gallons per year. The remaining four percent, or approximately 450 facilities, had throughputs exceeding 2.4 million gallons per year. For these stations, the average gasoline throughput was 3.6 million gallons per year.

**Figure 1-6  
Gasoline Dispensing Facility Health Risk  
for 3,600,000 gal/yr throughput**



As shown in Figure 1-6, the risk levels for a gasoline dispensing facility with a throughput of 3.6 million gallons per year is about 10 in one million at a distance of 50 feet from the fenceline. However, as the throughput increases, the potential risk increases.

As mentioned above, air pollution levels in the immediate vicinity of large gasoline dispensing facilities may be higher than the surrounding area (although tailpipe emissions from motor vehicles dominates the health impacts). Very large gasoline dispensing facilities located at large wholesale and discount centers may dispense nine million gallons of gasoline per year or more. At nine million gallons, the potential risk could be around 25 in one million at 50 feet, dropping to about five in one million at 300 feet. Some facilities have throughputs as high as 19 million gallons.

### Recommendation

- Avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

### References

- *Gasoline Service Station Industry-wide Risk Assessment Guidelines*. California Air Pollution Control Officers Association (December 1997 and revised November 1, 2001)
- *Staff Report on Enhanced Vapor Recovery*. ARB (February 4, 2000)
- *The California Almanac of Emissions and Air Quality*. ARB (2004)
- *Staff Report on Enhanced Vapor Recovery Technology Review*. ARB (October 2002)

### **Other Facility Types that Emit Air Pollutants of Concern**

In addition to source specific recommendations, Table 1-3 includes a list of other industrial sources that could pose a significant health risk to nearby sensitive individuals depending on a number of factors. These factors include the amount of pollutant emitted and its toxicity, the distance to nearby individuals, and the type of emission controls in place. Since these types of facilities are subject to air permits from local air districts, facility specific information should be obtained where there are questions about siting a sensitive land use close to an industrial facility.

### **Potential Sources of Odor and Dust Complaints**

Odors and dust from commercial activities are the most common sources of air pollution complaints and concerns from the public. Land use planning and permitting processes should consider the potential impacts of odor and dust on surrounding land uses, and provide for adequate separation between odor and dust sources. As with other types of air pollution, a number of factors need to be considered when determining an adequate distance or mitigation to avoid odor or

**Table 1-3 – Examples of Other Facility Types That Emit<sup>1</sup> Air Pollutants of Concern**

<u>Categories</u>	<u>Facility Type</u>	<u>Air Pollutants of Concern</u>
Commercial	Autobody Shops Furniture Repair Film Processing Services Distribution Centers Printing Shops Diesel Engines	Metals, Solvents Solvents <sup>2</sup> , Methylene Chloride Solvents, Perchloroethylene Diesel Particulate Matter Solvents Diesel Particulate Matter
Industrial	Construction Manufacturers Metal Platers, Welders, Metal Spray (flame spray) Operations Chemical Producers Furniture Manufacturers Shipbuilding and Repair  Rock Quarries and Cement Manufacturers Hazardous Waste Incinerators Power Plants  Research and Development Facilities	Particulate Matter, Asbestos Solvents, Metals Hexavalent Chromium, Nickel, Metals Solvents, Metals Solvents Hexavalent chromium and other metals, Solvents Particulate Matter, Asbestos  Dioxin, Solvents, Metals Benzene, Formaldehyde, Particulate Matter Solvents, Metals, etc.
Public	Landfills  Waste Water Treatment Plants Medical Waste Incinerators  Recycling, Garbage Transfer Stations Municipal Incinerators	Benzene, Vinyl Chloride, Diesel Particulate Matter Hydrogen Sulfide Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene Diesel Particulate Matter  Dioxin, Benzene, PAH, PCBs, 1,3-Butadiene
Transportation	Truck Stops	Diesel Particulate Matter
Agricultural Operations	Farming Operations  Livestock and Dairy Operations	Diesel Particulate Matter, VOCs, NOx, PM10, CO, SOx, Pesticides Ammonia, VOCs, PM10

<sup>1</sup>Not all facilities will emit pollutants of concern due to process changes or chemical substitution. Consult the local air district regarding specific facilities.

<sup>2</sup>Some solvents may emit toxic air pollutants, but not all solvents are toxic air contaminants.



dust complaints in a specific situation. Local air districts should be consulted for advice when these siting situations arise.

Table 1-4 lists some of the most common sources of odor complaints received by local air districts. Complaints about odors are the responsibility of local air districts and are covered under state law. The types of facilities that can cause odor complaints are varied and can range from small commercial facilities to large industrial facilities, and may include waste disposal and recycling operations. Odors can cause health symptoms such as nausea and headache. Facilities with odors may also be sources of toxic air pollutants (See Table 1-3). Some common sources of odors emitted by facilities are sulfur compounds, organic solvents, and the decomposition/digestion of biological materials. Because of the subjective nature of an individual's sensitivity to a particular type of odor, there is no specific rule for assigning appropriate separations from odor sources. Under the right meteorological conditions, some odors may still be offensive several miles from the source.



Sources of dust are also common sources of air pollution-related complaints. Operations that can result in dust problems are rock crushing, gravel production, stone quarrying, and mining operations. A common source of complaints is the dust and noise associated with blasting that may be part of these operations. Besides the health impacts of dust as particulate matter, thick dust also impairs visibility, aesthetic values, and can soil homes and automobiles. Local air districts typically have rules for regulating dust sources in their jurisdictions, but dust sources can still be a concern. Therefore, separation of these facilities from residential and other new sensitive land uses should be considered.

In some areas of California, asbestos occurs naturally in stone deposits. Asbestos is a potent carcinogenic substance when inhaled. Asbestos-containing dust may be a public health concern in areas where asbestos-containing rock is mined, crushed, processed, or used. Situations where asbestos-containing gravel has been used in road paving materials are also a source of asbestos exposure to the general public. Planners are advised to consult with local air pollution agencies in areas where asbestos-containing gravel or stone products are produced or used.

## 2. Handbook Development

ARB and local air districts share responsibility for improving statewide air quality. As a result of California's air pollution control programs, air quality has improved and health risk has been reduced statewide. However, state and federal air quality standards are still exceeded in many areas of California and the statewide health risk posed by toxic air contaminants (air toxics) remains too high. Also, some communities experience higher pollution exposures than others - making localized impacts, as well regional or statewide impacts, an important consideration. It is for this reason that this Handbook has been produced - to promote better, more informed decision-making by local land use agencies that will improve air quality and public health in their communities.

Land use policies and practices, including planning, zoning, and siting activities, can play a critical role in air quality and public health at the local level. For instance, even with the best available control technology, some projects that are sited very close to homes, schools, and other public places can result in elevated air pollution exposures. The reverse is also true – siting a new school or home too close to an existing source of air pollution can pose a public health risk. The ARB recommendations in section 1 address this issue.

*This Handbook is an informational document that we hope will strengthen the relationship between air quality and land use agencies. It highlights the need for land use agencies to address the potential for new projects to result in localized health risk or contribute to cumulative impacts where air pollution sources are concentrated.*

Avoiding these incompatible land uses is a key to reducing localized air pollution exposures that can result in adverse health impacts, especially to sensitive individuals.

Individual siting decisions that result in incompatible land uses are often the result of locating “sensitive” land uses next to polluting sources. These decisions can be of even greater concern when existing air pollution exposures in a community are considered. In general terms, this is often referred to as the issue of “cumulative impacts.” ARB is working with local air districts to better define these situations and to make information about existing air pollution levels (e.g., from local businesses, motor vehicles, and other areawide sources) more readily available to land use agencies.

In December 2001, the ARB adopted “Policies and Actions for Environmental Justice” (Policies). These Policies were developed in coordination with a group of stakeholders, representing local government agencies, community interest

groups, environmental justice organizations, academia, and business (Environmental Justice Stakeholders Group).

The Policies included a commitment to work with land use planners, transportation agencies, and local air districts to develop ways to identify, consider, and reduce cumulative air pollution emissions, exposure, and health risks associated with land use planning and decision-making. Developed under the auspices of the ARB's Environmental Justice Stakeholders Group, this Handbook is a first step in meeting that commitment.

ARB has produced this Handbook to help achieve several objectives:

- Provide recommendations on situations to avoid when siting new residences, schools, day care centers, playgrounds, and medical-related facilities (sensitive sites or sensitive land uses);
- Identify approaches that land use agencies can use to prevent or reduce potential air pollution impacts associated with general plan policies, new land use development, siting, and permitting decisions;
- Improve and facilitate access to air quality data and evaluation tools for use in the land use decision-making process;
- Encourage stronger collaboration between land use agencies and local air districts to reduce community exposure to source-specific and cumulative air pollution impacts; and
- Emphasize community outreach approaches that promote active public involvement in the air quality/land use decision-making process.

This Handbook builds upon California's 2003 General Plan Guidelines. These Guidelines, developed by the Governor's Office of Planning and Research (OPR), explain the land use planning process and applicable legal requirements. This Handbook also builds upon a 1997 ARB report, "The Land Use-Air Quality Linkage" ("Linkage Report").<sup>9</sup> The Linkage Report was an outgrowth of the California Clean Air Act which, among other things, called upon local air districts to focus particular attention on reducing emissions from sources that indirectly cause air pollution by attracting vehicle trips. Such indirect sources include, but are not limited to, shopping centers, schools and universities, employment centers, warehousing, airport hubs, medical offices, and sports arenas. The Linkage Report summarizes data as of 1997 on the relationships between land use, transportation, and air quality, and highlights strategies that can help to reduce the use of single occupancy automobile use. Such strategies

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<sup>9</sup> To access this report, please refer to ARB's website or click on:  
<http://www.arb.ca.gov/ch/programs/link97.pdf>

complement ARB regulatory programs that continue to reduce motor vehicle emissions.

In this Handbook, we identify types of air quality-related information that we recommend land use agencies consider in the land use decision-making processes such as the development of regional, general, and community plans; zoning ordinances; environmental reviews; project siting; and permit issuance. The Handbook provides recommendations on the siting of new sensitive land uses based on current analyses. It also contains information on approaches and methodologies for evaluating new projects from an air pollution perspective.

The Handbook looks at air quality issues associated with emissions from industrial, commercial, and mobile sources of air pollution. Mobile sources continue to be the largest overall contributors to the state's air pollution problems, representing the greatest air pollution health risk to most Californians. Based on current health risk information for air toxics, the most serious pollutants on a statewide basis are diesel PM, benzene, and 1,3-butadiene, all of which are primarily emitted by motor vehicles. From a state perspective, ARB continues to pursue new strategies to further reduce motor vehicle-related emissions in order to meet air quality standards and reduce air toxics risk.

While mobile sources are the largest overall contributors to the state's air pollution problems, industrial and commercial sources can also pose a health risk, particularly to people near the source. For this reason, the issue of incompatible land uses is an important focus of this document.

### **Handbook Audience**

Even though the primary users of the Handbook will likely be agencies responsible for air quality and land use planning, we hope the ideas and technical issues presented in this Handbook will also be useful for:

- public and community organizations and community residents;
- federal, state and regional agencies that fund, review, regulate, oversee, or otherwise influence environmental policies and programs affected by land use policies; and
- private developers.

### 3. Key Community Focused Issues Land Use Agencies Should Consider

Two key air quality issues that land use agencies should consider in their planning, zoning, and permitting processes are:

- 1) **Incompatible Land Uses.** Localized air pollution impacts from incompatible land use can occur when polluting sources, such as a heavily trafficked roadway, warehousing facilities, or industrial or commercial facilities, are located near a land use where sensitive individuals are found such as a school, hospital, or homes.
- 2) **Cumulative Impacts.** Cumulative air pollution impacts can occur from a concentration of multiple sources that individually comply with air pollution control requirements or fall below risk thresholds, but in the aggregate may pose a public health risk to exposed individuals. These sources can be heavy or light-industrial operations, commercial facilities such as autobody shops, large gas dispensing facilities, dry cleaners, and chrome platers, and freeways or other nearby busy transportation corridors.

#### **Incompatible Land Uses**

Land use policies and practices can worsen air pollution exposure and adversely affect public health by mixing incompatible land uses. Examples include locating new sensitive land uses, such as housing or schools, next to small metal plating facilities that use a highly toxic form of chromium, or very near large industrial facilities or freeways. Based on recent monitoring and health-based studies, we now know that air quality impacts from incompatible land uses can contribute to increased risk of illness, missed work and school, a lower quality of life, and higher costs for public health and pollution control.<sup>10</sup>

Avoiding incompatible land uses can be a challenge in the context of mixed-use industrial and residential zoning. For a variety of reasons, government agencies and housing advocates have encouraged the proximity of affordable housing to employment centers, shopping areas, and transportation corridors, partially as a means to reduce vehicle trips and their associated emissions. Generally speaking, typical distances in mixed-use communities between businesses and industries and other land uses such as homes and schools, should be adequate to avoid health risks. However, generalizations do not always hold as we addressed in section 1 of this Handbook.

In terms of siting air pollution sources, the proposed location of a project is a major factor in determining whether it will result in localized air quality impacts. Often, the problem can be avoided by providing an adequate distance or setback

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<sup>10</sup> For more information, the reader should refer to ARB's website on community health: <http://www.arb.ca.gov/ch/ch.htm>

between a source of emissions and nearby sensitive land uses. Sometimes, suggesting project design changes or mitigation measures in the project review phase can also reduce or avoid potential impacts. This underscores the importance of addressing potential incompatible land uses as early as possible in the project review process, ideally in the general plan itself.

### **Cumulative Air Pollution Impacts**

The broad concept of cumulative air pollution impacts reflects the combination of regional air pollution levels and any localized impacts. Many factors contribute to air pollution levels experienced in any location. These include urban background air pollution, historic land use patterns, the prevalence of freeways and other transportation corridors, the concentration of industrial and commercial businesses, and local meteorology and terrain.

When considering the potential air quality impacts of polluting sources on individuals, project location and the concentration of emissions from air pollution sources need to be considered in the land use decision-making process. In section 4, the Handbook offers a series of questions that helps land use agencies determine if a project should undergo a more careful analysis. This holds true regardless of whether the project being sited is a polluting source or a sensitive land use project.

Large industrial areas are not the only land uses that may result in public health concerns in mixed-use communities. Cumulative air pollution impacts can also occur if land uses do not adequately provide setbacks or otherwise protect sensitive individuals from potential air pollution impacts associated with nearby light industrial sources. This can occur with activities such as truck idling and traffic congestion, or from indirect sources such as warehousing facilities that are located in a community or neighborhood.

In October 2004, Cal/EPA published its Environmental Justice Action Plan. In February 2005, the Cal/EPA Interagency Working Group approved a working definition of “cumulative impacts” for purposes of initially guiding the pilot projects that are being conducted pursuant to that plan. Cal/EPA is now in the process of developing a Cumulative Impacts Assessment Guidance document. Cal/EPA will revisit the working definition of “cumulative impacts” as the Agency develops that guidance. The following is the working definition:

*“Cumulative impacts means exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account sensitive populations and socio-economic factors, where applicable, and to the extent data are available.”*

#### **4. Mechanisms for Integrating Localized Air Quality Concerns Into Land Use Processes**

Land use agencies should use each of their existing planning, zoning, and permitting authorities to address the potential health risk associated with new projects. Land use-specific mechanisms can go a long way toward addressing both localized and cumulative impacts from new air pollution sources that are not otherwise addressed by environmental regulations. Likewise, close collaboration and communication between land use agencies and local air districts in both the planning and project approval stages can further reduce these impacts. Local agency partnerships can also result in early identification of potential impacts from proposed activities that might otherwise escape environmental review. When this happens, pollution problems can be prevented or reduced before projects are approved, when it is less complex and expensive to mitigate.

The land use entitlement process requires a series of planning decisions. At the highest level, the General Plan sets the policies and direction for the jurisdiction, and includes a number of mandatory elements dealing with issues such as housing, circulation, and health hazards. Zoning is the primary tool for implementing land use policies. Specific or community plans created in conjunction with a specific project also perform many of the same functions as a zoning ordinance. Zoning can be modified by means of variances and conditional use permits. The latter are frequently used to insure compatibility between otherwise conflicting land uses. Finally, new development usually requires the approval of a parcel or tract map before grading and building permits can be issued. These parcel or tract maps must be consistent with the applicable General Plan, zoning and other standards.

Land use agencies can use their planning authority to separate industrial and residential land uses, or to require mitigation where separation is not feasible. By separating incompatible land uses, land use agencies can prevent or reduce both localized and cumulative air pollution impacts without denying what might otherwise be a desirable project.<sup>11</sup> For instance:

- a dry cleaner could open a storefront operation in a community with actual cleaning operations performed at a remote location away from residential areas;
- gas dispensing facilities with lower fuel throughput could be sited in mixed-use areas;
- enhanced building ventilation or filtering systems in schools or senior care centers can reduce ambient air from nearby busy arterials; or
- landscaping and regular watering can be used to reduce fugitive dust at a building construction site near a school yard.

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<sup>11</sup> It should be noted that such actions should also be considered as part of the General Plan or Plan element process.

The following general and specific land use approaches can help to reduce potential adverse air pollution impacts that projects may have on public health.

### **General Plans**

The primary purpose of planning, and the source of government authority to engage in planning, is to protect public health, safety, and welfare. In its most basic sense, a local government General Plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, forming the basis for most land use decisions. Therefore, the most effective mechanism for dealing with the central land use concept of compatibility and its relationship to cumulative air pollution impacts is the General Plan. Well before projects are proposed within a jurisdiction, the General Plan sets the stage for where projects can be sited, and their compatibility with comprehensive community goals, objectives, and policies.

In 2003, OPR revised its General Plan Guidelines, highlighting the importance of incorporating sustainable development and environmental justice policies in the planning process. The OPR General Plan Guidelines provides an effective and long-term approach to reduce cumulative air pollution impacts at the earliest planning stages. In light of these important additions to the Guidelines, land use agencies should consider updating their General Plans or Plan elements to address these revisions.

The General Plan and related Plan elements can be used to avoid incompatible land uses by incorporating air quality considerations into these documents. For instance, a General Plan safety element with an air quality component could be used to incorporate policies or objectives that are intended to protect the public from the potential for facility breakdowns that may result in a dangerous release of air toxics. Likewise, an air quality component to the transportation circulation element of the General Plan could include policies or standards to prevent or reduce local exposure to diesel exhaust from trucks and other vehicles. For instance, the transportation circulation element could encourage the construction of alternative routes away from residential areas for heavy-duty diesel trucks. By considering the relationship between air quality and transportation, the circulation element could also include air quality policies to prevent or reduce trips and travel, and thus vehicle emissions. Policies in the land use element of the General Plan could identify areas appropriate for future industrial, commercial, and residential uses. Such policies could also introduce design and distance parameters that reduce emissions, exposure, and risk from industrial and some commercial land uses (e.g., dry cleaners) that are in close proximity to residential areas or schools.

Land use agencies should also consider updating or creating an air quality element in the jurisdiction's General Plan. In the air quality element, local decision-makers could develop long-term, effective plans and policies to address



air quality issues, including cumulative impacts. The air quality element can also provide a general reference guide that informs local land use planners about regional and community level air quality, regulatory air pollution control requirements and guidelines, and references emissions and pollution source data bases and assessment and modeling tools. As is further described in Appendix C of the Handbook, new assessment tools that ARB is developing can be included into the air quality element by reference. For instance, ARB's statewide risk maps could be referenced in the air quality element as a resource that could be consulted by developers or land use agencies

## **Zoning**

The purpose of "zoning" is to separate different land uses. Zoning ordinances establish development controls to ensure that private development takes place within a given area in a manner in which:

- All uses are compatible (e.g., an industrial plant is not permitted in a residential area);
- Common development standards are used (e.g., all homes in a given area are set back the same minimum distance from the street); and,
- Each development does not unreasonably impose a burden upon its neighbors (e.g., parking is required on site so as not to create neighborhood parking problems).

To do this, use districts called "zones" are established and standards are developed for these zones. The four basic zones are residential, commercial, industrial and institutional.

Land use agencies may wish to consider how zoning ordinances, particularly those for mixed-use areas, can be used to avoid exacerbating poor land use practices of the past or contributing to localized and cumulative air pollution impacts in the community.

Sometimes, especially in mixed-use zones, there is a potential for certain categories of existing businesses or industrial operations to result in cumulative air pollution impacts to new development projects. For example:

- An assisted living project is proposed for a mixed-use zone adjacent to an existing chrome plating facility, or several dry cleaners;
- Multiple industrial sources regulated by a local air district are located directly upwind of a new apartment complex;
- A new housing development is sited in a mixed-use zone that is downwind or adjacent to a distribution center that attracts diesel-fueled delivery trucks and TRUs; or
- A new housing development or sensitive land use is sited without adequate setbacks from an existing major transportation corridor or rail yard.

As part of the public process for making zoning changes, local land use agencies could work with community planning groups, local businesses, and community residents to determine how best to address existing incompatible land uses.

### **Land Use Permitting Processes**

#### **■ Questions to Consider When Reviewing New Projects**

Very often, just knowing what questions to ask can yield critical information about the potential air pollution impacts of proposed projects – both from the perspective of a specific project as well as in the nature of existing air pollution sources in the same impact area. Available land use information can reveal the proximity of air pollution sources to sensitive individuals, the potential for incompatible land uses, and the location and nature of nearby air pollution sources. Air quality data, available from the ARB and local air districts, can provide information about the types and amounts of air pollution emitted in an area, regional air quality concentrations, and health risk estimates for specific sources.

General Plans and zoning maps are an excellent starting point in reviewing project proposals for their potential air pollution impacts. These documents contain information about existing or proposed land uses for a specific location as well as the surrounding area. Often, just looking at a map of the proposed location for a facility and its surrounding area will help to identify a potential adjacent incompatible land use.

The following pages are a “pull-out” list of questions to consider along with cross-references to pertinent information in the Handbook. These questions are intended to assist land use agencies in evaluating potential air quality-related concerns associated with new project proposals.

The first group of questions contains project-related queries designed to help identify the potential for localized project impacts, particularly associated with incompatible land uses. The second group of questions focuses on the issue of potential cumulative impacts by including questions about existing emissions and air quality in the community, and community feedback. Depending on the answers to these questions, a land use agency may decide a more detailed review of the proposal is warranted.

The California Department of Education has already developed a detailed process for school siting which is outlined in Appendix E. However, school districts may also find this section helpful when evaluating the most appropriate site for new schools in their area. At a minimum, using these questions may encourage school districts to engage throughout their siting process with land use agencies and local air districts. The combined expertise of these entities can be useful in devising relevant design standards and mitigation measures that can

reduce exposure to cumulative emissions, exposure, and health risk to students and school workers.

As indicated throughout the Handbook, we strongly encourage land use agencies to consult early and often with local air districts. Local air districts have the expertise, many of the analytical tools, and a working knowledge of the sources they regulate. It is also critical to fully involve the public and businesses that could be affected by the siting decision. The questions provided in the chart below do not imply any particular action should be taken by land use agencies. Rather the questions are intended to improve the assessment process and facilitate informed decision-making.

■ **Project-Related Questions**

This section includes project-related questions that, in conjunction with the questions in the next section, can be used to tailor the project evaluation. These questions are designed to help identify the potential for incompatible land uses from localized project impacts.

**Questions to Consider When Reviewing New Projects**

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>1. Is the proposed project:</p> <ul style="list-style-type: none"> <li>▲ A business or commercial license renewal</li> <li>▲ A new or modified commercial project</li> <li>▲ A new or modified industrial project</li> <li>▲ A new or modified public facility project</li> <li>▲ A new or modified transportation project</li> <li>▲ A housing or other development in which sensitive individuals may live or play</li> </ul>	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.</p>
<p>2. Does the proposed project:</p> <ul style="list-style-type: none"> <li>▲ Conform to the zoning designation?</li> <li>▲ Require a variance to the zoning designation?</li> <li>▲ Include plans to expand operations over the life of the business such that additional emissions may increase the pollution burden in the community (e.g., from additional truck operations, new industrial operations or process lines, increased hours of operation, build-out to the property line, etc.)?</li> </ul>	<p>See Appendix F for a general explanation of land use processes.</p> <p>In addition, Section 3 contains a discussion of how land use planning, zoning, and permitting practices can result in incompatible land uses or cumulative air pollution impacts.</p>
<p>3. Has the local air district provided comments or information to assist in the analysis?</p>	<p>See Section 5 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>
<p>4. Have public meetings been scheduled with the affected community to solicit their involvement in the decision-making process for the proposed project?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>5. If the proposed project will be subject to local air district regulations:</p> <ul style="list-style-type: none"> <li>▲ Has the project received a permit from the local air district?</li> <li>▲ Would it comply with applicable local air district requirements?</li> <li>▲ Is the local air district contemplating new regulations that would reduce emissions from the source over time?</li> <li>▲ Will potential emissions from the project</li> </ul>	<p>See Appendix C for a description of local air district programs.</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>trigger the local air district's new source review for criteria pollutants or air toxics emissions?</p> <ul style="list-style-type: none"> <li>▲ Is the local air district expected to ask the proposed project to perform a risk assessment?</li> <li>▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project?</li> <li>▲ Are there plans to expand operations over time?</li> <li>▲ Are there land-use based air quality significance thresholds or design standards that could be applied to this project in addition to applicable air district requirements?</li> </ul>	
<p>6. If the proposed project will release air pollution emissions, either directly or indirectly, but is not regulated by the local air district:</p> <ul style="list-style-type: none"> <li>▲ Is the local air district informed of the project?</li> <li>▲ Does the local air district believe that there could be potential air pollution impacts associated with this project category because of the proximity of the project to sensitive individuals?</li> <li>▲ If the project is one in which individuals live or play (e.g., a home, playground, convalescent home, etc.), does the local air district believe that the project's proximity to nearby sources could pose potential air pollution impacts?</li> <li>▲ Are there indirect emissions that could be associated with the project (e.g., truck traffic or idling, transport refrigeration unit operations, stationary diesel engine operations, etc.) that will be in close proximity to sensitive individuals?</li> <li>▲ Will the proposed project increase or serve as a magnet for diesel traffic?</li> <li>▲ Are there land-use based air quality significance thresholds or design standards that could be applied to this project in addition to applicable air district requirements?</li> <li>▲ Is there sufficient new information or public concern to call for a more thorough environmental analysis of the proposed project?</li> <li>▲ Should the site approval process include identification and mitigation of potential</li> </ul>	<p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>

Project-Related Questions	Cross-Reference to Relevant Handbook Sections
<p>direct or indirect emissions associated with the potential project?</p>	
<p>7. Does the local air district or land use agency have pertinent information on the source, such as:</p> <ul style="list-style-type: none"> <li>▲ Available permit and enforcement data, including for the owner or operator of the proposed source that may have other sources in the State.</li> <li>▲ Proximity of the proposed project to sensitive individuals.</li> <li>▲ Number of potentially exposed individuals from the proposed project.</li> <li>▲ Potential for the proposed project to expose sensitive individuals to odor or other air pollution nuisances.</li> <li>▲ Meteorology or the prevailing wind patterns between the proposed project and the nearest receptor, or between the proposed sensitive receptor project and sources that could pose a localized or cumulative air pollution impact.</li> </ul>	<p>See Appendix C for a description of local air district programs.</p> <p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.</p> <p>Also, do not hesitate to contact your local air district regarding answers to any of these questions that might not be available at the land use agency.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>8. Based upon the project application, its location, and the nature of the source, could the proposed project:</p> <ul style="list-style-type: none"> <li>▲ Be a polluting source that is located in proximity to, or otherwise upwind, of a location where sensitive individuals live or play?</li> <li>▲ Attract sensitive individuals and be located in proximity to or otherwise downwind, of a source or multiple sources of pollution, including polluting facilities or transportation-related sources that contribute emissions either directly or indirectly?</li> <li>▲ Result in health risk to the surrounding community?</li> </ul>	<p>See Section 3 for a discussion of what is an incompatible land use and the potential cumulative air pollution impacts.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>9. If a CEQA categorical exemption is proposed, were the following questions considered:</p> <ul style="list-style-type: none"> <li>▲ Is the project site environmentally sensitive as defined by the project's location? (A project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant.)</li> <li>▲ Would the project and successive future projects of the same type in the approximate location potentially result in cumulative impacts?</li> <li>▲ Are there "unusual circumstances" creating the possibility of significant effects?</li> </ul>	<p>See CEQA Guidelines section 15300, and Public Resources Code, section 21084.</p> <p>See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p> <p>See also Section 5 and Appendix C for a description of air quality-related tools that the ARB and local air districts use to provide information on potential air pollution impacts.</p>

■ **Questions Related to Cumulative Impact Assessment**

The following questions can be used to provide the decision-maker with a better understanding of the potential for cumulative air pollution impacts to an affected community. Answers to these questions will help to determine if new projects or activities warrant a more detailed review. It may also help to see potential environmental concerns from the perspective of the affected community. Additionally, responses can provide local decision-makers with information with which to assess the best policy options for addressing neighborhood-scale air pollution concerns.

The questions below can be used to identify whether existing tools and procedures are adequate to address land use-related air pollution issues. This process can also be used to pinpoint project characteristics that may have the greatest impact on community-level emissions, exposure, and risk. Such elements can include: the compliance record of existing sources including those owned or operated by the project proponent; the concentration of emissions from polluting sources within the approximate area of sensitive sites; transportation circulation in proximity to the proposed project; compatibility with the General Plan and General Plan elements; etc.

The local air district can provide useful assistance in the collection and evaluation of air quality-related information for some of the questions and should be consulted early in the process.

**Questions Related to Cumulative Impact Assessment**

Technical Questions	Cross-Reference to Relevant Handbook Sections
1. Is the community home to industrial facilities?	See Appendix A for typical land use classifications and associated project categories that could emit air pollutants.
2. Do one or more major freeways or high-traffic volume surface streets cut through the community?	See transportation circulation element of your general plan. See also Appendix B for useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts.  See Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).
3. Is the area classified for mixed-use zoning?	See your general plan and zoning ordinances.
4. Is there an available list of air pollution sources in the community?	Contact your local air district.
5. Has a walk-through of the community been conducted to gather the following information:	See Appendix B for a listing of useful information that land use agencies

Technical Questions	Cross-Reference to Relevant Handbook Sections
<ul style="list-style-type: none"> <li>▲ Corroborate available information on land use activities in the area (e.g., businesses, housing developments, sensitive individuals, etc.)?</li> <li>▲ Determine the proximity of existing and anticipated future projects to residential areas or sensitive individuals?</li> <li>▲ Determine the concentration of emission sources (including anticipated future projects) to residential areas or sensitive individuals?</li> </ul>	<p>should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district.</p>
<p>6. Has the local air district been contacted to obtain information on sources in the community?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>7. What categories of commercial establishments are currently located in the area and does the local air district have these sources on file as being regulated or permitted?</p>	<p>See Appendix A for typical land use classifications and associated project categories that could emit air pollutants. Also contact your local air district.</p>
<p>8. What categories of indirect sources such as distribution centers or warehouses are currently located in the area?</p>	<p>See Appendix A for typical land use classifications and associated project categories that emit air pollutants.</p>
<p>9. What air quality monitoring data are available?</p>	<p>Contact your local air district.</p>
<p>10. Have any risk assessments been performed on emission sources in the area?</p>	<p>Contact your local air district.</p>
<p>11. Does the land use agency have the capability of applying a GIS spatial mapping tool that can overlay zoning, sub-development information, and other neighborhood characteristics, with air pollution and transportation data?</p>	<p>See Appendix B for a listing of useful information that land use agencies should have on hand or have accessible when reviewing proposed projects for potential air pollution impacts. Also contact your local air district for tools that can be used to supplement available land use agency tools.</p>
<p>12. Based on available information, is it possible to determine if the affected community or neighborhood experiences elevated health risk due to a concentration of air pollution sources in close proximity, and if not, can the necessary information be obtained?</p>	<p>Contact your local air district. Also see Section 1 for recommendations on situations to avoid when siting projects where sensitive individuals would be located (sensitive sites).</p>
<p>13. Does the community have a history of chronic complaints about air quality?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools. Also contact your local air district.</p>
<p>14. Is the affected community included in the public participation process for the agency's decision?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools.</p>
<p>15. Have community leaders or groups been contacted about any pre-existing or chronic community air quality concerns?</p>	<p>See Section 7 for a discussion of public participation, information and outreach tools. Also contact your local air district.</p>



## ■ **Mitigation Approaches**

In addition to considering the suitability of the project location, opportunities for mitigation of air pollution impacts should be considered. Sometimes, a land use agency may find that selection of a different project location to avoid a health risk is not feasible. When that happens, land use agencies should consider design improvements or other strategies that would reduce the risk. Such strategies could include performance or design standards, consultation with local air districts and other agencies on appropriate actions that these agencies should, or plan to, undertake, and consultation and outreach in the affected community. Potential mitigation measures should be feasible, cost-effective solutions within the available resources and authority of implementing agencies to enforce.<sup>12</sup>

## ■ **Conditional Use Permits and Performance Standards**

Some types of land uses are only allowed upon approval of a conditional use permit (also called a CUP or special use permit). A conditional use permit does not re-zone the land but specifies conditions under which a particular land use will be permitted. Such land uses could be those with potentially significant environmental impacts. Local zoning ordinances specify the uses for which a conditional use permit is required, the zones they may be allowed in, and public hearing procedures. The conditional use permit imposes special requirements to ensure that the use will not be detrimental to its surroundings.

In the context of land use planning, performance standards are requirements imposed on projects or project categories through conditional use permits to ensure compliance with general plan policies and local ordinances. These standards could apply to such project categories as distribution centers, very large gas dispensing facilities, autobody shops, dry cleaners, and metal platers. Land use agencies may wish to consider adding land use-based performance standards to zoning ordinances in existing mixed-use communities for certain air pollution project categories. Such standards would provide certainty and equitable treatment to all projects of a similar nature, and reserve the more resource intensive conditional or special use permits to projects that require a more detailed analysis. In developing project design or performance standards, land use agencies should consult with the local air district. Early and regular consultation can avoid duplication or inconsistency with local air district control requirements when considering the site-specific design and operation of a project.

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<sup>12</sup> A land use agency has the authority to condition or deny a project based upon information collected and evaluated through the land use decision-making process. However, any denial would need to be based upon identifiable, generally applicable, articulated standards set forth in the local government's General Plan and zoning codes. One way of averting this is to conduct early and regular outreach to the community and the local air district so that community and environmental concerns can be addressed and accommodated into the project proposal.

Examples of land use-based air quality-specific performance standards include the following:

- Placing a process vent away from the direction of the local playground that is nearby or increasing the stack height so that emissions are dispersed to reduce the emissions impact on surrounding homes or schools.
- Setbacks between the project fence line and the population center.
- Limiting the hours of operation of a facility to avoid excess emissions exposure or foul odors to nearby individuals.
- An ordinance that requires fleet operators to use cleaner vehicles before project approval (if a new business), or when expanding the fleet (if an existing business); and
- Providing alternate routes for truck operations that discourage detours into residential neighborhoods.

### **Outreach to Other Agencies**

When questions arise regarding the air quality impacts of projects, including potential cumulative impacts, land use agencies should consult the local air district. Land use agencies should also consider the following suggestions to avoid creating new incompatible land uses:

- Consult with the local air district to help determine if emissions from a particular project will adversely impact sensitive individuals in the area, if existing or future effective regulations or permit requirements will affect the proposed project or other sources in the vicinity of the proposed project, or if additional inspections should be required.
  - Check with ARB for new information and modeling tools that can help evaluate projects seeking to site within your jurisdiction.
  - Become familiar with ARB's Land Use-Air Quality Linkage Report to determine whether approaches and evaluation tools contained in the Report can be used to reduce transportation-related impacts on communities.
  - Contact and collaborate with other state agencies that play a role in the land use decision-making process, e.g., the State Department of Education, the California Energy Commission, and Caltrans. These agencies have information on mitigation measures and mapping tools that could be useful in addressing local problems.
- **Information Clearinghouse**
- Land use agencies can refer to the ARB statewide electronic information clearinghouse for information on what measures other jurisdictions are using to address comparable issues or sources.<sup>13</sup>

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<sup>13</sup> This information can be accessed from ARB's website by going to:  
<http://www.arb.ca.gov/ch/clearinghouse.htm>

The next section addresses available air quality assessment tools that land use agencies can use to evaluate the potential for localized or cumulative impacts in their communities.

## 5. Available Tools to Evaluate Cumulative Air Pollution Emissions and Risk

Until recently, California has traditionally approached air pollution control from the perspective of assessing whether the pollution was regional, category-specific, or from new or existing sources. This methodology has been generally effective in reducing statewide and regional air pollution impacts and risk levels. However, such an incremental, category-by-category, source-by-source approach may not always address community health impacts from multiple sources - including mobile, industrial, and commercial facilities.

As a result of air toxics and children's health concerns over the past several years, ARB and local air districts have begun to develop new tools to evaluate and inform the public about cumulative air pollution impacts at the community level. One aspect of ARB's programs now underway is to consolidate and make accessible air toxics emissions and monitoring data by region, using modeling tools and other analytical techniques to take a preliminary look at emissions, exposure, and health risk in communities.

ARB has developed multiple tools to assist local air districts perform assessments of cumulative emissions, exposure, and risk on a neighborhood scale. These tools include:

- Regional risk maps that show trends in potential cancer risk from toxic air pollutants in southern and central California between 1990 and 2010. These maps are based on the U.S. EPA's ASPEN model. These maps provide an estimate of background levels of toxic air pollutant risk but are not detailed enough to assess individual neighborhoods or facilities.<sup>14</sup>
- The Community Health Air Pollution Information System (CHAPIS) is a user-friendly, Internet-based system for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicles. When released in 2004, CHAPIS did not contain information on every source of air pollution or every air pollutant. However, ARB continues to work with local air districts to include all of the largest air pollution sources and those with the highest documented air pollution risk. Additional facilities will be added to CHAPIS as more data become available.<sup>15</sup>

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<sup>14</sup> For further information on these maps, please visit ARB's website at:

<http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

<sup>15</sup> For further information on CHAPIS, please click on:

<http://www.arb.ca.gov/ch/chapis1/chapis1.htm>

- The Hot Spots Analysis and Reporting Program (HARP) is a software database package that evaluates emissions from one or more facilities to determine the overall health risk posed by the facility(-ies) on the surrounding community. Proper use of HARP ensures that the risk assessment meets the latest risk assessment guidelines published by the State Office of Environmental Health Hazard Assessment (OEHHA). HARP is designed with air quality professionals in mind and is available from the ARB.
- The Urban Emissions Model (URBEMIS) is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses.

Local air districts, and others can use these tools to assess a new project, or plan revision. For example, these tools can be used to:

- Identify if there are multiple sources of air pollution in the community;
- Identify the major sources of air pollution in the area under consideration;
- Identify the background potential cancer risk from toxic air pollution in the area under consideration;
- Estimate the risk from a new facility and how it adds to the overall risk from other nearby facilities; and
- Provide information to decision-makers and key stakeholders on whether there may be significant issues related to cumulative emissions, exposure, and health risk due to a permitting or land use decision.

If an air agency wishes to perform a cumulative air pollution impact analysis using any of these tools, it should consult with the ARB and/or the local air district to obtain information or assistance on the data inputs and procedures necessary to operate the program. In addition, land use agencies could consult with local air districts to determine the availability of land use and air pollution data for entry into an electronic Geographical Information System (GIS) format. GIS is an easier mapping tool than the more sophisticated models described in Appendix C. GIS mapping makes it possible to superimpose land use with air pollution information so that the spatial relationship between air pollution sources, sensitive receptors, and air quality can be visually represented. Appendix C provides a general description of the impact assessment process and micro-scale, or community level modeling tools that are available to evaluate potential cumulative air pollution impacts. Modeling protocols will be accessible on ARB's website as they become available. The ARB will also provide land use agencies and local air districts with statewide regional modeling results and information regarding micro-scale modeling.

## 6. ARB Programs to Reduce Air Pollution in Communities

ARB's regulatory programs reduce air pollutant emissions through statewide strategies that improve public health in all California communities. ARB's overall program addresses motor vehicles, consumer products, air toxics, air-quality planning, research, education, enforcement, and air monitoring. Community health and environmental justice concerns are a consideration in all these programs. ARB's programs are statewide but recognize that extra efforts may be needed in some communities due to historical mixed land-use patterns, limited participation in public processes in the past, and a greater concentration of air pollution sources in some communities.

ARB's strategies are intended to result in better air quality and reduced health risk to residents throughout California. The ARB's priority is to prevent or reduce the public's exposure to air pollution, including from toxic air contaminants that pose the greatest risk, particularly to infants and children who are more vulnerable to air pollution.

In October 2003, ARB updated its statewide control strategy to reduce emissions from source categories within its regulatory authority. A primary focus of the strategy is to achieve federal and state air quality standards for ozone and particulate matter throughout California, and to reduce health risk from diesel PM. Along with local air districts, ARB will continue to address air toxics emissions from regulated sources (see Table 6-1 for a summary of ARB activities). As indicated earlier, ARB will also provide analytical tools and information to land use agencies and local air districts to help assess and mitigate cumulative air pollution impacts.

The ARB will continue to consider the adoption of or revisions to needed air toxics control measures as part of the state's ongoing air toxics assessment program.<sup>16</sup>

As part of its effort to reduce particulate matter and air toxics emissions from diesel PM, the ARB has developed a Diesel Risk Reduction Program<sup>17</sup> that lays out several strategies in a three-pronged approach to reduce emissions and their associated risk:

- Stringent emission standards for all new diesel-fueled engines;
- Aggressive reductions from in-use engines; and
- Low sulfur fuel that will reduce PM and still provide the quality of diesel fuel needed to control diesel PM.

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<sup>16</sup> For continuing information and updates on state measures, the reader can refer to ARB's website at <http://www.arb.ca.gov/toxics/toxics.htm>.

<sup>17</sup> For a comprehensive description of the program, please refer to ARB's website at <http://www.arb.ca.gov/diesel/dieselrrp.htm>.

**Table 6-1  
ARB ACTIONS TO ADDRESS  
CUMULATIVE AIR POLLUTION IMPACTS IN COMMUNITIES**

**Information Collection**

- Improve emission inventories, air monitoring data, and analysis tools that can help to identify areas with high cumulative air pollution impacts
- Conduct studies in coordination with OEHHA on the potential for cancer and non-cancer health effects from air pollutants emitted by specific source categories
- Establish web-based clearinghouse for local land use strategies

**Emission Reduction Approaches (2004-2006)\***

- Through a public process, consider development and/or amendment of regulations and related guidance to reduce emissions, exposure, and health risk at a statewide and local level for the following sources:
  - Diesel PM sources such as stationary diesel engines, transport refrigeration units, portable diesel engines, on-road public fleets, off-road public fleets, heavy-duty diesel truck idling, harbor craft vessels, waste haulers
  - Other air toxics sources, such as formaldehyde in composite wood products, hexavalent chromium for chrome plating and chromic acid anodizing, thermal spraying, and perchloroethylene dry cleaning
- Develop technical information for the following:\*
  - Distribution centers
  - Modeling tools such as HARP and CHAPIS
- Adopt rules and pollution prevention initiatives within legal authority to reduce emissions from mobile sources and fuels, and consumer products
- Develop and maintain Air Quality Handbook as a tool for use by land use agencies and local air districts to address cumulative air pollution impacts

**Other Approaches**

- Establish guidelines for use of statewide incentive funding for high priority mobile source emission reduction projects

\*Because ARB will continue to review the need to adopt or revise statewide measures, the information contained in this chart will be updated on an ongoing basis.

A number of ARB's diesel risk reduction strategies have been adopted. These include measures to reduce emissions from refuse haulers, urban buses, transport refrigeration units, stationary and portable diesel engines, and idling trucks and school buses. These sources are all important from a community perspective.<sup>18</sup>

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<sup>18</sup> The reader can refer to ARB's website for information on its mobile source-related programs at: <http://www.arb.ca.gov/msprog/msprog.htm>, as well as regulations adopted and under consideration as part of the Diesel Risk Reduction Program at: <http://www.arb.ca.gov/diesel/dieselrrp.htm>

The ARB will continue to evaluate the health effects of air pollutants while implementing programs with local air districts to reduce air pollution in all California communities.

Local air districts also have ambitious programs to reduce criteria pollutants and air toxics from regulated sources in their region. Many of these programs also benefit air quality in local communities as well as in the broader region. For more information on what is being done in your area to reduce cumulative air pollution impacts through air pollution control programs, you should contact your local air district.<sup>19</sup>

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<sup>19</sup> Local air district contacts can be found on the inside cover to this Handbook.



## **7. Ways to Enhance Meaningful Public Participation**

Community involvement is an important part of the land use process. The public is entitled to the best possible information about the air they breathe and what is being done to prevent or reduce unhealthy air pollution in their communities. In particular, information on how land use decisions can affect air pollution and public health should be made accessible to all communities, including low-income and minority communities.

Effective community participation consistently relies on a two-way flow of information – from public agencies to community members about opportunities, constraints, and impacts, and from community members back to public officials about needs, priorities, and preferences. The outreach process needed to build understanding and local neighborhood involvement requires data, methodologies, and formats tailored to the needs of the specific community. More importantly, it requires the strong collaboration of local government agencies that review and approve projects and land uses to improve the physical and environmental surroundings of the local community.

Many land use agencies, especially those in major metropolitan areas, are familiar with, and have a long-established public review process. Nevertheless, public outreach can often be improved. Active public involvement requires engaging the public in ways that do not require their previous interest in or knowledge of the land use or air pollution control requirements, and a commitment to taking action where appropriate to address the concerns that are raised.

### **■ Direct Community Outreach**

In conjunction with local air districts, land use agencies should consider designing an outreach program for community groups, other stakeholders, and local government agency staffs that address the problem of cumulative air pollution impacts, and the public and government role in reducing them. Such a program could consider analytical tools that assist in the preparation and presentation of information in a way that supports sensible decision-making and public involvement. Table 7-1 contains some general outreach approaches that might be considered.

**Table 7-1  
Public Participation Approaches**

- Staff and community leadership awareness training on environmental justice programs and community-based issues
- Surveys to identify the website information needs of interested community-based organizations and other stakeholders
- Information materials on local land use and air district authorities
- Community-based councils to facilitate and invite resident participation in the planning process
- Neighborhood CEQA scoping sessions that allows for community input prior to technical analysis
- Public information materials on siting issues are under review including materials written for the affected community, and in different media that widens accessibility
- Public meetings
- Identify other opportunities to include community-based organizations in the process

To improve outreach, local land use agencies should consider the following activities:

- Hold meetings in communities affected by agency programs, policies, and projects at times and in places that encourage public participation, such as evenings and weekends at centrally located community meeting rooms, libraries, and schools.
- Assess the need for and provide translation services at public meetings.
- Hold community meetings to update residents on the results of any special air monitoring programs conducted in their neighborhood.
- Hold community meetings to discuss and evaluate the various options to address cumulative impacts in their community.
- In coordination with local air districts, make staff available to attend meetings of community organizations and neighborhood groups to listen to and, where appropriate, act upon community concerns.
- Establish a specific contact person for environmental justice issues.
- Increase student and community awareness of local government land use activities and policies through outreach opportunities.
- Make air quality and land use information available to communities in an easily understood and useful format, including fact sheets, mailings, brochures, public service announcements, and web pages, in English and other languages.
- On the local government web-site, dedicate a page or section to what the land use program is doing regarding environmental justice and cumulative environmental impacts, and, as applicable, activities conducted with local air districts such as neighborhood air monitoring studies, pollution prevention, air pollution sources in neighborhoods, and risk reduction.

- Allow, encourage, and promote community access to land use activities, including public meetings, General Plan or Community Plan updates, zoning changes, special studies, CEQA reviews, variances, etc.
  - Distribute information in multiple languages, as needed, on how to contact the land use agency or local air district to obtain information and assistance regarding environmental justice programs, including how to participate in public processes.
  - Create and distribute a simple, easy-to-read, and understandable public participation handbook, which may be based on the “Public Participation Guidebook” developed by ARB.
- **Other Opportunities for Meaningful Public Outreach**
- Community-Based Planning Committees

Neighborhood-based or community planning advisory councils could be established to invite and facilitate direct resident participation into the planning process. With the right training and technical assistance, such councils can provide valuable input and a forum for the review of proposed amendments to plans, zone changes, land use permits, and suggestions as to how best to prevent or reduce cumulative air pollution impacts in their community.

- Regional Partnerships

Consider creating regional coalitions of key growth-related organizations from both the private and public sectors, with corporations, communities, other jurisdictions, and government agencies. Such partnerships could facilitate agreement on common goals and win-win solutions tailored specifically for the region. With this kind of dialogue, shared vision, and collaboration, barriers can be overcome and locally acceptable sustainable solutions implemented. Over the long term, such strategies will help to bring about clean air in communities as well as regionally.

**LAND USE CLASSIFICATIONS AND ASSOCIATED FACILITY CATEGORIES  
THAT COULD EMIT AIR POLLUTANTS**

<b>(1) Land Use Classifications – by Activity<sup>i</sup></b>	<b>(2) Facility or Project Examples</b>	<b>(3) Key Pollutants<sup>ii,iii</sup></b>	<b>(4) Air Pollution Permits<sup>iv</sup></b>
<b>COMMERCIAL/ LIGHT INDUSTRIAL: SHOPPING, BUSINESS, AND COMMERCIAL</b>			
▲ Primarily retail shops and stores, office, commercial activities, and light industrial or small business	Dry cleaners; drive-through restaurants; gas dispensing facilities; auto body shops; metal plating shops; photographic processing shops; textiles; apparel and furniture upholstery; leather and leather products; appliance repair shops; mechanical assembly cleaning; printing shops	VOCs, air toxics, including diesel PM, NOx, CO, SOx	Limited; Rules for applicable equipment
▲ Goods storage or handling activities, characterized by loading and unloading goods at warehouses, large storage structures, movement of goods, shipping, and trucking.	Warehousing; freight-forwarding centers; drop-off and loading areas; distribution centers	VOCs, air toxics, including diesel PM, NOx, CO, SOx	No <sup>v</sup>
<b>LIGHT INDUSTRIAL: RESEARCH AND DEVELOPMENT</b>			
▲ Medical waste at research hospitals and labs	Incineration; surgical and medical instrument manufacturers, pharmaceutical manufacturing, biotech research facilities	Air toxics, NOx, CO, SOx	Yes
▲ Electronics, electrical apparatus, components, and accessories	Computer manufacturer; integrated circuit board manufacturer; semiconductor production	Air toxics, VOCs	Yes
▲ College or university lab or research center	Medical waste incinerators; lab chemicals handling, storage and disposal	Air toxics, NOx, CO, SOx, PM10	Yes
▲ Research and development labs	Satellite manufacturer; fiber-optics manufacturer; defense contractors; space research and technology; new vehicle and fuel testing labs	Air toxics, VOCs	Yes
▲ Commercial testing labs	Consumer products; chemical handling, storage and disposal	Air toxics, VOCs	Yes

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(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>INDUSTRIAL: NON-ENERGY-RELATED</b>			
▲ Assembly plants, manufacturing facilities, industrial machinery	Adhesives; chemical; textiles; apparel and furniture upholstery; clay, glass, and stone products production; asphalt materials; cement manufacturers, wood products; paperboard containers and boxes; metal plating; metal and canned food product fabrication; auto manufacturing; food processing; printing and publishing; drug, vitamins, and pharmaceuticals; dyes; paints; pesticides; photographic chemicals; polish and wax; consumer products; metal and mineral smelters and foundries; fiberboard; floor tile and cover; wood and metal furniture and fixtures; leather and leather products; general industrial and metalworking machinery; musical instruments; office supplies; rubber products and plastics production; saw mills; solvent recycling; shingle and siding; surface coatings	VOCs, air toxics, including diesel PM, NOx, PM, CO, SOx	Yes
<b>INDUSTRIAL: ENERGY AND UTILITIES</b>			
▲ Water and sewer operations	Pumping stations; air vents; treatment	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
▲ Power generation and distribution	Power plant boilers and heaters; portable diesel engines; gas turbine engines	NOx, diesel PM, NOx, CO, SOx, PM10, VOCs	Yes
▲ Refinery operations	Refinery boilers and heaters; coke cracking units; valves and flanges; flares	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Oil and gas extraction	Oil recovery systems; uncovered wells	NOx, diesel PM, VOCs, CO, SOx, PM10	Yes
▲ Gasoline storage, transmission, and marketing	Above and below ground storage tanks; floating roof tanks; tank farms; pipelines	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Yes
▲ Solid and hazardous waste treatment, storage, and disposal activities.	Landfills; methane digester systems; process recycling facility for concrete and asphalt materials	VOCs, air toxics, NOx, CO, SOx, PM10	Yes
<b>CONSTRUCTION (NON-TRANSPORTATION)</b>			
	Building construction; demolition sites	PM (re-entrained road dust), asbestos, diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; state and federal off-road equipment standards

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(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>DEFENSE</b>			
	Ordnance and explosives demolition; range and testing activities; chemical production; degreasing; surface coatings; vehicle refueling; vehicle and engine operations and maintenance	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	Limited; prescribed burning; equipment and solvent rules
<b>TRANSPORTATION</b>			
▲ Vehicular movement	Residential area circulation systems; parking and idling at parking structures; drive-through establishments; car washes; special events; schools; shopping malls, etc.	VOCs, NOx, PM (re-entrained road dust) air toxics e.g., benzene, diesel PM, formaldehyde, acetaldehyde, 1,3 butadiene, CO, SOx, PM10	No
▲ Road construction and surfacing	Street paving and repair; new highway construction and expansion	VOCs, air toxics, including diesel PM, NOx, CO, SOx, PM10	No
▲ Trains	Railroads; switch yards; maintenance yards		
▲ Marine and port activities	Recreational sailing; commercial marine operations; hotelling operations; loading and un-loading; servicing; shipping operations; port or marina expansion; truck idling	VOCs, NOx, CO, SOx, PM10, air toxics, including diesel PM	Limited; Applicable state and federal MV standards, and possible equipment rules
▲ Aircraft	Takeoff, landing, and taxiing; aircraft maintenance; ground support activities		
▲ Mass transit and school buses	Bus repair and maintenance		
<b>NATURAL RESOURCES</b>			
▲ Farming operations	Agricultural burning; diesel operated engines and heaters; small food processors; pesticide application; agricultural off-road equipment	Diesel PM, VOCs, NOx, PM10, CO, SOx, pesticides	Limited <sup>vi</sup> ; Agricultural burning requirements, applicable state and federal mobile source standards; pesticide rules
▲ Livestock and dairy operations	Dairies and feed lots	Ammonia, VOCs, PM10	Yes <sup>vii</sup>
▲ Logging	Off-road equipment e.g., diesel fueled chippers, brush hackers, etc.	Diesel PM, NOx, CO, SOx, PM10, VOCs	Limited; Applicable state/federal mobile source standards
▲ Mining operations	Quarrying or stone cutting; mining; drilling or dredging	PM10, CO, SOx, VOCs, NOx, and asbestos in some geographical areas	Applicable equipment rules and dust controls

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(1) Land Use Classifications – by Activity <sup>i</sup>	(2) Facility or Project Examples	(3) Key Pollutants <sup>ii,iii</sup>	(4) Air Pollution Permits <sup>iv</sup>
<b>RESIDENTIAL</b>			
Housing	Housing developments; retirement developments; affordable housing	Fireplace emissions (PM10, NOx, VOCs, CO, air toxics); Water heater combustion (NOx, VOCs, CO)	No <sup>vii</sup>
<b>ACADEMIC AND INSTITUTIONAL</b>			
▲ Schools, including school-related recreational activities	Schools; school yards; vocational training labs/classrooms such as auto repair/painting and aviation mechanics	Air toxics	Yes/No <sup>viii</sup>
▲ Medical waste	Incineration	Air toxics, NOx, CO, PM10	Yes
▲ Clinics, hospitals, convalescent homes		Air toxics	Yes

<sup>i</sup> These classifications were adapted from the American Planning Association's "Land Based Classification Standards." The Standards provide a consistent model for classifying land uses based on their characteristics. The model classifies land uses by refining traditional categories into multiple dimensions, such as activities, functions, building types, site development character, and ownership constraints. Each dimension has its own set of categories and subcategories. These multiple dimensions allow users to have precise control over land-use classifications. For more information, the reader should refer to the Association's website at <http://www.planning.org/LBCS/GeneralInfo/>.

<sup>ii</sup> This column includes key criteria pollutants and air toxic contaminants that are most typically associated with the identified source categories.

Additional information on specific air toxics that are attributed to facility categories can be found in ARB's Emission Inventory Criteria and Guidelines Report for the Air Toxics Hot Spots Program (May 15, 1997). This information can be viewed at ARB's web site at <http://www.arb.ca.gov/ab2588/final96/guide96.pdf>.

Criteria air pollutants are those air pollutants for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Criteria pollutants include ozone (formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of sunlight), particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead.

Volatile organic compounds (VOCs) combine with nitrogen oxides to form ozone, as well as particulate matter. VOC emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide VOC emissions. Stationary sources of VOC emissions include processes that use solvents (such as dry-cleaning, degreasing, and coating operations) and petroleum-related processes (such as petroleum refining, gasoline marketing and dispensing, and oil and gas extraction). Areawide VOC sources include consumer products, pesticides, aerosols and paints, asphalt paving and roofing, and other evaporative emissions.

Nitrogen oxides (NOx) are a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone and particulate matter. Most NOx emissions are produced by the combustion of fuels. Mobile sources make up about 80 percent of the total statewide NOx emissions. Mobile sources include on-road vehicles and trucks, aircraft, trains, ships, recreational boats, industrial and construction equipment, farm

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equipment, off-road recreational vehicles, and other equipment. Stationary sources of NO<sub>x</sub> include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Areawide source, which include residential fuel combustion, waste burning, and fires, contribute only a small portion of the total statewide NO<sub>x</sub> emissions, but depending on the community, may contribute to a cumulative air pollution impact.

Particulate matter (PM) refers to particles small enough to be breathed into the lungs (under 10 microns in size). It is not a single substance, but a mixture of a number of highly diverse types of particles and liquid droplets. It can be formed directly, primarily as dust from vehicle travel on paved and unpaved roads, agricultural operations, construction and demolition.

Carbon monoxide (CO) is a colorless and odorless gas that is directly emitted as a by-product of combustion. The highest concentrations are generally associated with cold stagnant weather conditions that occur during winter. CO problems tend to be localized.

An Air Toxic Contaminant (air toxic) is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. Similar to criteria pollutants, air toxics are emitted from stationary, areawide, and mobile sources. They contribute to elevated regional and localized risks near industrial and commercial facilities and busy roadways. The ten compounds that pose the greatest statewide risk are: acetaldehyde; benzene; 1,3-butadiene; carbon tetrachloride; diesel particulate matter (diesel PM); formaldehyde; hexavalent chromium; methylene chloride; para-dichlorobenzene; and perchloroethylene. The risk from diesel PM is by far the largest, representing about 70 percent of the known statewide cancer risk from outdoor air toxics. The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute about 26 percent of statewide diesel PM emissions, with an additional 72 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and other equipment. Stationary engines in shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations contribute about two percent of statewide emissions. However, when this number is disaggregated to a sub-regional scale such as neighborhoods, the risk factor can be far greater.

<sup>iii</sup> The level of pollution emitted is a major determinant of the significance of the impact.

<sup>iv</sup> Indicates whether facility activities listed in column 4 are generally subject to local air district permits to operate. This does not include regulated products such as solvents and degreasers that may be used by sources that may not require an operating permit per se, e.g., a gas station or dry cleaner.

<sup>v</sup> Generally speaking, warehousing or distribution centers are not subject to local air district permits. However, depending on the district, motor vehicle fleet rules may apply to trucks or off-road vehicles operated and maintained by the facility operator. Additionally, emergency generators or internal combustion engines operated on the site may require an operating permit.

<sup>vi</sup> Authorized by recent legislation SB700.

<sup>vii</sup> Local air districts do not require permits for woodburning fireplaces inside private homes. However, some local air districts and land use agencies do have rules or ordinances that require new housing developments or home re-sales to install U.S. EPA –certified stoves. Some local air districts also ban residential woodburning during weather inversions that concentrate smoke in residential areas. Likewise, home water heaters are not subject to permits; however, new heaters could be subject to emission limits that are imposed by federal or local agency regulations.

<sup>viii</sup> Technical training schools that conduct activities normally permitted by a local air district could be subject to an air permit.



**LAND USE-BASED REFERENCE TOOLS TO EVALUATE  
NEW PROJECTS FOR POTENTIAL AIR POLLUTION IMPACTS**

Land use agencies generally have a variety of tools and approaches at hand, or accessible from local air districts that can be useful in performing an analysis of potential air pollution impacts associated with new projects. These tools and approaches include:

- Base map of the city or county planning area and terrain elevations.
- General Plan designations of land use (existing and proposed).
- Zoning maps.
- Land use maps that identify existing land uses, including the location of facilities that are permitted or otherwise regulated by the local air district. Land use agencies should consult with their local air district for information on regulated facilities.
- Demographic data, e.g., population location and density, distribution of population by income, distribution of population by ethnicity, and distribution of population by age. The use of population data is a normal part of the planning process. However, from an air quality perspective, socioeconomic data is useful to identify potential community health and environmental justice issues.
- Emissions, monitoring, and risk-based maps created by the ARB or local air districts that show air pollution-related health risk by community across the state.
- Location of public facilities that enhance community quality of life, including parks, community centers, and open space.
- Location of industrial and commercial facilities and other land uses that use hazardous materials, or emit air pollutants. These include chemical storage facilities, hazardous waste disposal sites, dry cleaners, large gas dispensing facilities, auto body shops, and metal plating and finishing shops.
- Location of sources or facility types that result in diesel on-road and off-road emissions, e.g., stationary diesel power generators, forklifts, cranes, construction equipment, on-road vehicle idling, and operation of transportation refrigeration units. Distribution centers, marine terminals and ports, rail yards, large industrial facilities, and facilities that handle bulk goods are all examples of complex facilities where these types of emission sources are frequently concentrated.<sup>1</sup> Very large facilities, such as ports, marine terminals, and airports, could be analyzed regardless of proximity to a receptor if they are within the modeling area.
- Location and zoning designations for existing and proposed schools, buildings, or outdoor areas where sensitive individuals may live or play.
- Location and density of existing and proposed residential development.
- Zoning requirements, property setbacks, traffic flow requirements, and idling restrictions for trucks, trains, yard hostlers<sup>2</sup>, construction equipment, or school buses.
- Traffic counts (including diesel truck traffic counts), within a community to validate or augment existing regional motor vehicle trip and speed data.

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<sup>1</sup> The ARB is currently evaluating the types of facilities that may act as complex point sources and developing methods to identify them.

<sup>2</sup> Yard hostler means a tractor less than 300 horsepower that is used to transfer semi-truck or tractor-trailer containers in and around storage, transfer, or distribution yards or areas and is often equipped with a hydraulic lifting fifth wheel for connection to trailer containers.

**ARB AND LOCAL AIR DISTRICT INFORMATION AND TOOLS  
CONCERNING CUMULATIVE AIR POLLUTION IMPACTS**

It is the ARB's policy to support research and data collection activities toward the goal of reducing cumulative air pollution impacts. These efforts include updating and improving the air toxics emissions inventory, performing special air monitoring studies in specific communities, and conducting a more complete assessment of non-cancer health effects associated with air toxics and criteria pollutants.<sup>1</sup> This information is important because it helps us better understand links between air pollution and the health of sensitive individuals -- children, the elderly, and those with pre-existing serious health problems affected by air quality.

ARB is working with CAPCOA and OEHHA to improve air pollutant data and evaluation tools to determine when and where cumulative air pollution impacts may be a problem. The following provides additional information on this effort.

**How are emissions assessed?**

Detailed information about the sources of air pollution in an area is collected and maintained by local air districts and the ARB in what is called an emission inventory. Emission inventories contain information about the nature of the business, the location, type and amount of air pollution emitted, the air pollution-producing processes, the type of air pollution control equipment, operating hours, and seasonal variations in activity. Local districts collect emission inventory data for most stationary source categories.

Local air districts collect air pollution emission information directly from facilities and businesses that are required to obtain an air pollution operating permit. Local air districts use this information to compile an emission inventory for areas within their jurisdiction. The ARB compiles a statewide emission inventory based on the information collected by the ARB and local air districts. Local air districts provide most of the stationary source emission data, and ARB provides mobile source emissions as well as some areawide emission sources such as consumer products and paints. ARB is also developing map-based tools that will display information on air pollution sources.

Criteria pollutant data have been collected since the early 1970's, and toxic pollutant inventories began to be developed in the mid-1980's.

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<sup>1</sup> A criteria pollutant is any air pollutant for which EPA has established a National Ambient Air Quality Standard or for which California has established a State Ambient Air Quality Standard, including: carbon monoxide, lead, nitrogen oxides, ozone, particulates and sulfur oxides. Criteria pollutants are measured in each of California's air basins to determine whether the area meets or does not meet specific federal or state air quality standards. Air toxics or air toxic contaminants are listed pollutants recognized by California or EPA as posing a potential risk to health.

**How is the toxic emission inventory developed?**

Emissions data for toxic air pollutants is a high priority for communities because of concerns about potential health effects. Most of ARB's air toxics data is collected through the toxic "Hot Spots" program. Local air districts collect emissions data from industrial and commercial facilities. Facilities that exceed health-based thresholds are required to report their air toxics emissions as part of the toxic "Hot Spots" program and update their emissions data every four years. Facilities are required to report their air toxics emissions data if there is an increase that would trigger the reporting threshold of the hotspots program. Air toxics emissions from motor vehicles and consumer products are estimated by the ARB. These estimates are generally regional in nature, reflecting traffic and population.

The ARB also maintains chemical speciation profiles that can be used to estimate toxics emissions when no toxic emissions data is available.

**What additional toxic emissions information is needed?**

In order to assess cumulative air pollution impacts, updated information from individual facilities is needed. Even for sources where emissions data are available, additional information such as the location of emissions release points is often needed to better model cumulative impacts. In terms of motor vehicles, emissions data are currently based on traffic models that only contain major roads and freeways. Local traffic data are needed so that traffic emissions can be more accurately assigned to specific streets and roads. Local information is also needed for off-road emission sources, such as ships, trains, and construction equipment. In addition, hourly maximum emissions data are needed for assessing acute air pollution impacts.

**What work is underway?**

ARB is working with CAPCOA to improve toxic emissions data, developing a community health air pollution information system to improve access to emission information, conducting neighborhood assessment studies to better understand toxic emission sources, and conducting surveys of sources of toxic pollutants.

**How is air pollution monitored?**

While emissions data identify how much air pollution is going into the air, the state's air quality monitoring network measures air pollutant levels in outdoor air. The statewide air monitoring network is primarily designed to measure regional exposure to air pollutants, and consists of more than 250 air monitoring sites.

The air toxics monitoring network consists of approximately 20 permanent sites. These sites are supplemented by special monitoring studies conducted by ARB and local air districts. These sites measure approximately sixty toxic air pollutants. Diesel PM, which is the major driver of urban air toxic risk, is not monitored directly. Ten of the

60 toxic pollutants, not including diesel, account for most of the remaining potential cancer risk in California urban areas.

**What additional monitoring has been done?**

Recently, additional monitoring has been done to look at air quality at the community level. ARB's community monitoring was conducted in six communities located throughout the state. Most sites were in low-income, minority communities located near major sources of air pollution, such as refineries or freeways. The monitoring took place for a year or more in each community, and included measurements of both criteria and toxic pollutants.

**What is being learned from community monitoring?**

In some cases, the ARB or local air districts have performed air quality monitoring or modeling studies covering a particular region of the state. When available, these studies can give information about regional air pollution exposures.

The preliminary results of ARB's community monitoring are providing insights into air pollution at the community level. Urban background levels are a major contributor to the overall risk from air toxics in urban areas, and this urban background tends to mask the differences between communities. When localized elevated air pollutant levels were measured, they were usually associated with local ground-level sources of toxic pollutants. The most common source of this type was busy streets and freeways. The impact these ground-level sources had on local air quality decreased rapidly with distance from the source. Pollutant levels usually returned to urban background levels within a few hundred meters of the source.

These results indicate that tools to assess cumulative impacts must be able to account for both localized, near-source impacts, as well as regional background air pollution. The tools that ARB is developing for this purpose are air quality models.

**How can air quality modeling be used?**

While air monitoring can directly measure cumulative exposure to air pollution, it is limited because all locations cannot be monitored. To address this, air quality modeling provides the capability to estimate exposure when air monitoring is not feasible. Air quality modeling can be refined to assess local exposure, identify locations of potential hot spots, and identify the relative contribution of emission sources to exposure at specific locations. The ARB has used this type of information to develop regional cumulative risk maps that estimate the cumulative cancer air pollution risk for most of California. While these maps only show one air pollution-related health risk, it does provide a useful starting point.

**What is needed for community modeling?**

Air quality models have been developed to assess near-source impacts, but they have very exacting data requirements. These near-source models estimate the impact of local sources, but do not routinely include the contribution from regional air pollution background. To estimate cumulative air pollution exposure at a neighborhood scale, a modeling approach needs to combine features of both micro-scale and regional models.

In addition, improved methods are needed to assess near-source impacts under light and variable wind conditions, when high local concentrations are more likely to occur. A method for modeling long-term exposure to air pollutants near freeways and other high traffic areas is also needed.

**What modeling work has ARB developed?**

A key component of ARB's Community Health Program is the Neighborhood Assessment Program (NAP). As described later in this section, the NAP studies are being conducted to better understand pollution impacts at the community level. Through two such studies conducted in Barrio Logan (San Diego) and Wilmington (Los Angeles), ARB is refining community-level modeling methodologies. Regional air toxics modeling is also being performed to better understand regional air pollution background levels.

In a parallel effort, ARB is developing modeling protocols for estimating cumulative emissions, exposure, and risk from air pollution. The protocols will cover modeling approaches and uncertainties, procedures for running the models, the development of statewide risk maps, and methods for estimating health risks. The protocols are subject to an extensive peer review process prior to release.

**How are air pollution impacts on community health assessed?**

On a statewide basis, ARB's toxic air contaminant program identifies and reduces public exposure to air toxics. The focus of the program has been on reducing potential cancer risk, because monitoring results show potential urban cancer risk levels are too high. ARB has also looked for potential non-cancer risks based on health reference levels provided by OEHHA. On a regional basis, the pollutants measured in ARB's toxic monitoring network are generally below the OEHHA non-cancer reference exposure levels.

As part of its community health program, the ARB is looking at potential cancer and non-cancer risk. This could include chronic or acute health effects. If the assessment work shows elevated exposures on a localized basis, ARB will work with OEHHA to assess the health impacts.

### **What tools has ARB developed to assess cumulative air pollution impacts?**

ARB has developed the following tools and reports to assist land use agencies and local air districts assess and reduce cumulative emissions, exposure, and risk on a neighborhood scale.

#### **Statewide Risk Maps**

ARB has produced regional risk maps that show the statewide trends for Southern and Central California in estimated potential cancer risk from air toxics between 1990 and 2010.<sup>2</sup> These maps will supplement U.S. EPA's ASPEN model and are available on the ARB's Internet site. These maps are best used to obtain an estimate of the regional background air pollution health risk and are not detailed enough to estimate the exact risk at a specific location.

ARB also has maps that focus in more detail on smaller areas that fall within the Southern and Central California regions for these same modeled years. The finest visual resolution available in the maps on this web site is two by two kilometers. These maps are not detailed enough to assess individual neighborhoods or facilities.

#### **Community Health Air Pollution Information System (CHAPIS)**

CHAPIS is an Internet-based procedure for displaying information on emissions from sources of air pollution in an easy to use mapping format. CHAPIS uses Geographical Information System (GIS) software to deliver interactive maps over the Internet. CHAPIS relies on emission estimates reported to the ARB's emission inventory database - California Emissions Inventory Development and Reporting System, or CEIDARS.

Through CHAPIS, air district staff can quickly and easily identify pollutant sources and emissions within a specified area. CHAPIS contains information on air pollution emissions from selected large facilities and small businesses that emit criteria and toxic air pollutants. It also contains information on air pollution emissions from motor vehicle and areawide emissions. CHAPIS does not contain information on every source of air pollution or every air pollutant. It is a major long-term objective of CHAPIS to include all of the largest air pollution sources and those with the highest documented air pollution risk. CHAPIS will be updated on a periodic basis and additional facilities will be added to CHAPIS as more data becomes available.

CHAPIS is being developed in stages to assure data quality. The initial release of CHAPIS will include facilities emitting 10 or more tons per year of nitrogen oxides, sulfur dioxide, carbon monoxide, PM10, or reactive organic gases; air toxics from refineries and power plants of 50 megawatts or more; and facilities that conducted health risk

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<sup>2</sup>ARB maintains state trends and local potential cancer risk maps that show statewide trends in potential inhalable cancer risk from air toxics between 1990 and 2010. This information can be viewed at ARB's web site at <http://www.arb.ca.gov/toxics/cti/hlthrisk/hlthrisk.htm>

assessments under the California Air Toxics “Hot Spots” Information and Assessment Program.<sup>3</sup>

CHAPIS can be used to identify the emission contributions from mobile, area, and point sources on that community.

### **“Hot Spots” Analysis and Reporting Program (HARP)**

HARP<sup>4</sup> is a software package available from the ARB and is designed with air quality professionals in mind. It models emissions and release data from one or more facilities to estimate the potential health risk posed by the selected facilities on the neighboring community. HARP uses the latest risk assessment guidelines published by OEHHA.

With HARP, a user can perform the following tasks:

- Create and manage facility databases;
- Perform air dispersion modeling;
- Conduct health risk analyses;
- Output data reports; and
- Output results to GIS mapping software.

HARP can model downwind concentrations of air toxics based on the calculated emissions dispersion at a single facility. HARP also has the capability of assessing the risk from multiple facilities, and for multiple locations of concern near those facilities. While HARP has the capability to assess multiple source impacts, there had been limited application of the multiple facility assessment function in the field at the time of HARP’s debut in 2003. HARP can also evaluate multi-pathway, non-inhalation health risk resulting from air pollution exposure, including skin and soil exposure, and ingestion of meat and vegetables contaminated with air toxics, and other toxics that have accumulated in a mother’s breast milk.

### **Neighborhood Assessment Program (NAP)**

The NAP<sup>5</sup> has been a key component of ARB’s Community Health Program. It includes the development of tools that can be used to perform assessments of cumulative air pollution impacts on a neighborhood scale. The NAP studies have been done to better understand how air pollution affects individuals at the neighborhood level. Thus far, ARB has conducted neighborhood scale assessments in Barrio Logan and Wilmington.

As part of these studies, ARB is collecting data and developing a modeling protocol that can be used to conduct cumulative air pollution impact assessments. Initially these

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<sup>3</sup> California Health & Safety Code section 44300, et seq.

<sup>4</sup> More detailed information can be found on ARB’s website at:  
<http://www.arb.ca.gov/toxics/harp/harp.htm>

<sup>5</sup> For more information on the Program, please refer to: <http://www.arb.ca.gov/ch/programs/nap/nap.htm>

assessments will focus on cumulative inhalation cancer health risk and chronic non-cancer impacts. The major challenge is developing modeling methods that can combine both regional and localized air pollution impacts, and identifying the critical data necessary to support these models. The objective is to develop methods and tools from these studies that can ultimately be applied to other areas of the state. In addition, the ARB plans to use these methods to replace the ASPEN regional risk maps currently posted on the ARB Internet site.

### **Urban Emissions Model (URBEMIS)**

URBEMIS<sup>6</sup> is a computer program that can be used to estimate emissions associated with land development projects in California such as residential neighborhoods, shopping centers, office buildings, and construction projects. URBEMIS uses emission factors available from the ARB to estimate vehicle emissions associated with new land uses. URBEMIS estimates sulfur dioxide emissions from motor vehicles in addition to reactive organic gases, nitrogen oxides, carbon monoxide, and PM10.

### **Land-Use Air Quality Linkage Report<sup>7</sup>**

This report summarizes data currently available on the relationships between land use, transportation and air quality. It also highlights strategies that can help to reduce the use of the private automobile. It also briefly summarizes two ARB-funded research projects. The first project analyzes the travel patterns of residents living in five higher density, mixed use neighborhoods in California, and compares them to travel in more auto-oriented areas. The second study correlates the relationship between travel behavior and community characteristics, such as density, mixed land uses, transit service, and accessibility for pedestrians.

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<sup>6</sup> For more information on this model, please refer to ARB's website at <http://www.arb.ca.gov/html/soft.htm>.

<sup>7</sup>To access this report, please refer to ARB's website or click on: <http://www.arb.ca.gov/ch/programs/link97.pdf>



## LAND USE AND AIR QUALITY AGENCY ROLES IN THE LAND USE PROCESS

A wide variety of federal, state, and local government agencies are responsible for regulatory, planning, and siting decisions that can have an impact on air pollution. They include local land use agencies, regional councils of government, school districts, local air districts, ARB, the California Department of Transportation (Caltrans), and the Governor's Office of Planning and Research (OPR) to name a few. This Section will focus on the roles and responsibilities of local and state agencies. The role of school districts will be discussed in Appendix E.

### Local Land Use Agencies

Under the State Constitution, land use agencies have the primary authority to plan and control land use.<sup>1</sup> Each of California's incorporated cities and counties are required to adopt a comprehensive, long-term General Plan.<sup>2</sup>

The General Plan's long-term goals are implemented through zoning ordinances. These are local laws adopted by counties and cities that describe for specific areas the kinds of development that will be allowed within their boundaries.

Land use agencies are also the lead for doing environmental assessments under CEQA for new projects that may pose a significant environmental impact, or for new or revised General Plans.

### Local Agency Formation Commissions (LAFCOs)

Operating in each of California's 58 counties, LAFCOs are composed of local elected officials and public members who are responsible for coordinating changes in local governmental boundaries, conducting special studies that review ways to reorganize, simplify, and streamline governmental structures, and preparing a sphere of influence for each city and special district within each county. Each Commission's efforts are directed toward seeing that local government services are provided efficiently and economically while agricultural and open-space lands are protected. LAFCO decisions strive to balance the competing needs in California for efficient services, affordable housing, economic opportunity, and conservation of natural resources.

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<sup>1</sup> The legal basis for planning and land use regulation is the "police power" of the city or county to protect the public's health, safety and welfare. The California Constitution gives cities and counties the power to make and enforce all local police, sanitary and other ordinances and regulations not in conflict with general laws. State law reference: California Constitution, Article XI §7.

<sup>2</sup>OPR General Plan Guidelines, 2003:

[http://www.opr.ca.gov/planning/PDFs/General\\_Plan\\_Guidelines\\_2003.pdf](http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf)

## Councils of Government (COG)

COGs are organizations composed of local counties and cities that serve as a focus for the development of sound regional planning, including plans for transportation, growth management, hazardous waste management, and air quality. They can also function as the metropolitan planning organization for coordinating the region's transportation programs. COGs also prepare regional housing need allocations for updates of General Plan housing elements.

## Local Air Districts

Under state law, air pollution control districts or air quality management districts (local air districts) are the local government agencies responsible for improving air quality and are generally the first point of contact for resolving local air pollution issues or complaints. There are 35 local air districts in California<sup>3</sup> that have authority and primary responsibility for regional clean air planning. Local air districts regulate stationary sources of air pollutants within their jurisdiction including but not limited to industrial and commercial facilities, power plants, construction activities, outdoor burning, and other non-mobile sources of air pollution. Some local air districts also regulate public and private motor vehicle fleet operators such as public bus systems, private shuttle and taxi services, and commercial truck depots.

### ■ Regional Clean Air Plans

Local air districts are responsible for the development and adoption of clean air plans that protect the public from the harmful effects of air pollution. These plans incorporate strategies that are necessary to attain ambient air quality standards. Also included in these regional air plans are ARB and local district measures to reduce statewide emissions from mobile sources, consumer products, and industrial sources.

### ■ Facility-Specific Considerations

*Permitting.* In addition to the planning function, local air districts adopt and enforce regulations, issue permits, and evaluate the potential environmental impacts of projects.

Pollution is regulated through permits and technology-based rules that limit emissions from operating units within a facility or set standards that vehicle fleet operators must meet. Permits to construct and permits to operate contain very specific requirements and conditions that tell each regulated source what it must do to limit its air pollution in compliance with local air district rules, regulations, and state law. Prior to receiving a permit, new facilities must go through a New Source Review (NSR) process that establishes air pollution control requirements for the facility. Permit conditions are typically contained in the permit to operate and specify requirements that businesses must follow; these may include limits on the amount of pollution that can be emitted, the

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<sup>3</sup> Contact information for local air districts in California is listed in the front of this Handbook.

type of pollution control equipment that must be installed and maintained, and various record-keeping requirements.

Local air districts also notify the public about new permit applications for major new facilities, or major modifications to existing facilities that seek to locate within 1,000 feet of a school.

Local air districts can also regulate other types of sources to reduce emissions. These include regulations to reduce emissions from the following sources:

- hazardous materials in products used by industry such as paints, solvents, and degreasers;
- agricultural and residential burning;
- leaking gasoline nozzles at service stations;
- public fleet vehicles such as sanitation trucks and school buses; and
- fugitive or uncontrolled dust at construction sites.

However, while emissions from industrial and commercial sources are typically subject to the permit authority of the local air district, sensitive sites such as a day care center, convalescent home, or playground are not ordinarily subject to an air permit. Local air district permits address the air pollutant emissions of a project but not its location.

Under the state's air toxics program, local air districts regulate air toxic emissions by adopting ARB air toxic control measures, or more stringent district-specific requirements, and by requiring individual facilities to perform a health risk assessment if emissions at the source exceed district-specific health risk thresholds<sup>4, 5</sup> (See the section on ARB programs for a more detailed summary of this program).

One approach by which local air districts regulate air toxics emissions is through the "Hot Spots" program.<sup>6</sup> The risk assessments submitted by the facilities under this

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<sup>4</sup> Cal/EPA's Office of Environmental Health Hazard Assessment has published "A Guide to Health Risk Assessment" for lay people involved in environmental health issues, including policymakers, businesspeople, members of community groups, and others with an interest in the potential health effects of toxic chemicals. To access this information, please refer to <http://www.oehha.ca.gov/pdf/HRsguide2001.pdf>

<sup>5</sup> Section 44306 of the California Health & Safety Code defines a health risk assessment as a detailed comprehensive analysis that a polluting facility uses to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

<sup>6</sup> AB-2588 (the Air Toxics "Hot Spots" Information and Assessment Act) requires local air districts to prioritize facilities by high, intermediate, and low priority categories to determine which must perform a health risk assessment. Each district is responsible for establishing the prioritization score threshold at which facilities are required to prepare a health risk assessment. In establishing priorities for each facility, local air districts must consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant risk. All facilities within the highest category must prepare a health risk assessment. In addition, each district may require facilities in the intermediate and low priority categories to also submit a health risk assessment.

**Table D-1  
Local Sources of Air Pollution, Responsible Agencies,  
and Associated Regulatory Programs**

Source	Examples	Primary Agency	Applicable Regulations
Large Stationary	Refineries, power plants, chemical facilities, certain manufacturing plants	Local air districts	Operating permit rules Air Toxics "Hot Spots" Law (AB 2588) Local district rules Air Toxic Control Measures (ATCMs)* New Source Review rules Title V permit rules
Small Stationary	Dry cleaners, auto body shops, welders, chrome plating facilities, service stations, certain manufacturing plants	Local air districts	Operating permit conditions, Air Toxics "Hot Spots" Law (AB 2588) Local district rules ATCMs* New Source Review rules
Mobile (non-fleet)	Cars, trucks, buses	ARB	Emission standards Cleaner-burning fuels (e.g., unleaded gasoline, low-sulfur diesel) Inspection and repair programs (e.g., Smog Check)
Mobile Equipment	Construction equipment	ARB, U.S. EPA	ARB rules U.S. EPA rules
Mobile (fleet)	Truck depots, school buses, taxi services	Local air districts, ARB	Local air district rules ARB urban bus fleet rule
Areawide	Paints and consumer products such as hair spray and spray paint	Local air district, ARB	ARB rules Local air district rules

\*ARB adopts ATCMs, but local air districts have the responsibility to implement and enforce these measures or more stringent ones.

program are reviewed by OEHHA and approved by the local air district. Risk assessments are available by contacting the local air district.

**Enforcement.** Local air districts also take enforcement action to ensure compliance with air quality requirements. They enforce air toxic control measures, agricultural and residential burning programs, gasoline vapor control regulations, laws that prohibit air pollution nuisances, visible emission limits, and many other requirements designed to

clean the air. Local districts use a variety of enforcement tools to ensure compliance. These include notices of violation, monetary penalties, and abatement orders. Under some circumstances, a permit may be revoked.

### ■ Environmental Review

As required by the California Environmental Quality Act (CEQA), local air districts also review and comment on proposed land use plans and development projects that can have a significant effect on the environment or public health.<sup>7</sup>

### California Air Resources Board

The ARB is the air pollution control agency at the state level that is responsible for the preparation of air plans required by state and federal law. In this regard, it coordinates the activities of all local air districts to ensure all statutory requirements are met and to reduce air pollution emissions for sources under its jurisdiction.

Motor vehicles are the single largest emissions source category under ARB's jurisdiction as well as the largest overall emissions source statewide. ARB also regulates emissions from other mobile equipment and engines as well as emissions from consumer products such as hair sprays, perfumes, cleaners, and aerosol paints.

### Air Toxics Program

Under state law, the ARB has a critical role to play in the identification, prioritization, and control of air toxic emissions. The ARB statewide comprehensive air toxics program was established in the early 1980's. The Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics.<sup>8</sup> The Air Toxics "Hot Spots" Information and Assessment Act (Hot Spots program) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria to prioritize the identification and control of air toxics. In selecting substances for review, the ARB must consider criteria relating to emissions, exposure, and health risk, as well as persistence in the atmosphere, and ambient concentrations in the community. AB 1807 also requires the ARB to use available information gathered from the Hot Spots program when prioritizing compounds.

The ARB identifies pollutants as toxic air contaminants and adopts statewide air toxic control measures (ATCMs). Once ARB adopts an ATCM, local air districts must

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<sup>7</sup> Section 4 of this Handbook contains more information on the CEQA process.

<sup>8</sup> For a general background on California's air toxics program, the reader should refer to ARB's website at <http://www.arb.ca.gov/toxics/tac/appendxb.htm>.

implement the measure, or adopt and implement district-specific measures that are at least as stringent as the state standard. Taken in the aggregate, these ARB programs will continue to further reduce emissions, exposure, and health risk statewide.

With regard to the land use decision-making process, ARB, in conjunction with local air districts, plays an advisory role by providing technical information on land use-related air issues.

### **Other Agencies**

#### *Governor's Office of Planning and Research (OPR)*

In addition to serving as the Governor's advisor on land use planning, research, and liaison with local government, OPR develops and implements the state's policy on land use planning and coordinates the state's environmental justice programs. OPR updated its General Plan Guidelines in 2003 to highlight the importance of sustainable development and environmental justice policies in the planning process. OPR also advises project proponents and government agencies on CEQA provisions and operates the State Clearinghouse for environmental and federal grant documents.

#### *California Department of Housing and Community Development*

The Department of Housing and Community Development (HCD) administers a variety of state laws, programs and policies to preserve and expand housing opportunities, including the development of affordable housing. All local jurisdictions must update their housing elements according to a staggered statutory schedule, and are subject to certification by HCD. In their housing elements, cities and counties are required to include a land inventory which identifies and zones sites for future residential development to accommodate a mix of housing types, and to remove barriers to the development of housing.

An objective of state housing element law is to increase the overall supply and affordability of housing. Other fundamental goals include conserving existing affordable housing, improving the condition of the existing housing stock, removing regulatory barriers to housing production, expanding equal housing opportunities, and addressing the special housing needs of the state's most vulnerable residents (frail elderly, disabled, large families with children, farmworkers, and the homeless).

#### *Transportation Agencies*

Transportation agencies can also influence mobile source-related emissions in the land use decision-making process. Local transportation agencies work with land use agencies to develop a transportation (circulation) element for the General Plan. These local government agencies then work with other transportation-related agencies, such as the Congestion Management Agency (CMA), Metropolitan Planning Organization

(MPO), Regional Transportation Planning Agency (RTPA), and Caltrans to develop long and short range transportation plans and projects.

Caltrans is the agency responsible for setting state transportation goals and for state transportation planning, design, construction, operations and maintenance activities. Caltrans is also responsible for delivering California's multibillion-dollar state Transportation Improvement Program, a list of transportation projects that are approved for funding by the California Transportation Commission in a 4-year cycle.

When safety hazards or traffic circulation problems are identified in the existing road system, or when land use changes are proposed such as a new residential subdivision, shopping mall or manufacturing center, Caltrans and/or the local transportation agency ensure the projects meet applicable state, regional, and local goals and objectives.

Caltrans also evaluates transportation-related projects for regional air quality impacts, from the perspective of travel-related emissions as well as road congestion and increases in road capacity (new lanes).

### *California Energy Commission (CEC)*

The CEC is the state's CEQA lead agency for permitting large thermal power plants (50 megawatts or greater). The CEC works closely with local air districts and other federal, state and local agencies to ensure compliance with applicable laws, ordinances, regulations and standards in the permitting, construction, operation and closure of such plants. The CEC uses an open and public review process that provides communities with outreach and multiple opportunities to participate and be heard. In addition to its comprehensive environmental impact and engineering design assessment process, the CEC also conducts an environmental justice evaluation. This evaluation involves an initial demographic screening to determine if a qualifying minority or low-income population exists in the vicinity of the proposed project. If such a population is present, staff considers possible environmental justice impacts including from associated project emissions in its technical assessments.<sup>9</sup>

### *Department of Pesticides Regulation (DPR)*

Pesticides are industrial chemicals produced specifically for their toxicity to a target pest. They must be released into the environment to do their job. Therefore, regulation of pesticides focuses on using toxicity and other information to ensure that when pesticides are used according to their label directions, potential for harm to people and the environment is minimized. DPR imposes strict controls on use, beginning before pesticide products can be sold in California, with an extensive scientific program to ensure they can be used safely. DPR and county enforcement staff tracks the use of pesticides to ensure that pesticides are used properly. DPR collects periodic

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<sup>9</sup> See California Energy Commission, "Environmental Performance Report," July 2001 at [http://www.energy.ca.gov/reports/2001-11-20\\_700-01-001.PDF](http://www.energy.ca.gov/reports/2001-11-20_700-01-001.PDF)

measurements of any remaining amounts of pesticides in water, air, and on fresh produce. If unsafe levels are found, DPR requires changes in how pesticides are used, to reduce the possibility of harm. If this cannot be done - that is, if a pesticide cannot be used safely - use of the pesticide will be banned in California.<sup>10</sup>

### *Federal Agencies*

Federal agencies have permit authority over activities on federal lands and certain resources, which have been the subject of congressional legislation, such as air, water quality, wildlife, and navigable waters. The U.S. Environmental Protection Agency generally oversees implementation of the federal Clean Air Act, and has broad authority for regulating certain activities such as mobile sources, air toxics sources, the disposal of toxic wastes, and the use of pesticides. The responsibility for implementing some federal regulatory programs such as those for air and water quality and toxics is delegated by management to specific state and local agencies. Although federal agencies are not subject to CEQA they must follow their own environmental process established under the National Environmental Policy Act (NEPA).

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<sup>10</sup> For more information, the reader is encouraged to visit the Department of Pesticide Regulation web site at [www.cdpr.ca.gov/docs/empm/pubs/tacmenu.htm](http://www.cdpr.ca.gov/docs/empm/pubs/tacmenu.htm).



**SPECIAL PROCESSES THAT APPLY TO SCHOOL SITING**

The [California Education Code](#) and the [California Public Resources Code](#) place primary authority for siting public schools with the local school district, which is the 'lead agency' for purposes of CEQA. The California Education Code requires public school districts to notify the local planning agency about siting a new public school or expanding an existing school. The planning agency then reports back to the school district regarding a project's conformity with the adopted General Plan. However, school districts can overrule local zoning and land use designations for schools if they follow specified procedures. In addition, all school districts must evaluate new school sites using site selection standards established in Section 14010 of Title 5 of the California Code of Regulations. Districts seeking state funding for school site acquisition must also obtain site approval from the California Department of Education.

Before making a final decision on a school site acquisition, a school district must comply with CEQA and evaluate the proposed site acquisition/new school project for air emissions and health risks by preparing and certifying an environmental impact report or negative declaration. Both the California Education Code section 17213 and the California Public Resources Code section 21151.8 require school districts to consult with administering agencies and local air districts when preparing the environmental assessment. Such consultation is required to identify both permitted and non-permitted "facilities" that might significantly affect health at the new site. These facilities include, but are not limited to, freeways and other busy traffic corridors, large agricultural operations, and rail yards that are within one-quarter mile of the proposed school site, and that might emit hazardous air emissions, or handle hazardous or acutely hazardous materials, substances, or waste.

As part of the CEQA process and before approving a school site, the school district must make a finding that either it found none of the facilities or significant air pollution sources, or alternatively, if the school district finds that there are such facilities or sources, it must determine either that they pose no significant health risks, or that corrective actions by another governmental entity would be taken so that there would be no actual or potential endangerment to students or school workers.

In addition, if the proposed school site boundary is within 500 feet of the edge of the closest traffic lane of a freeway or traffic corridor that has specified minimum average daily traffic counts, the school district is required to determine through specified risk assessment and air dispersion modeling that neither short-term nor long term exposure poses significant health risks to pupils.

State law changes effective January 1, 2004 (SB352, Escutia 2003, amending Education Code section 17213 and Public Resources Code section 21151.8) also provides for cases in which the school district cannot make either of those two findings and cannot find a suitable alternative site. When this occurs, the school district must adopt a statement of over-riding considerations, as part of an environmental impact

report, that the project should be approved based on the ultimate balancing of the merits.

Some school districts use a standardized assessment process to determine the environmental impacts of a proposed school site. In the assessment process, school districts can use maps and other available information to evaluate risk, including a local air district's database of permitted source emissions. School districts can also perform field surveys and record searches to identify and calculate emissions from non-permitted sources within one-quarter mile radius of a proposed site. Traffic count data and vehicular emissions data can also be obtained from Caltrans for major roadways and freeways in proximity to the proposed site to model potential emissions impacts to students and school employees. This information is available from the local COG, Caltrans, or local cities and counties for non-state maintained roads.

## GENERAL PROCESSES USED BY LAND USE AGENCIES TO ADDRESS AIR POLLUTION IMPACTS

There are several separate but related processes for addressing the air pollution impacts of land use projects. One takes place as part of the planning and zoning function. This consists of preparing and implementing goals and policies contained in county or city General Plans, community or area plans, and specific plans governing land uses such as residential, educational, commercial, industrial, and recreational activities. It also includes recommending locations for thoroughfares, parks and other public improvements.

Land use agencies also have a permitting function that includes performing environmental reviews and mitigation when projects may pose a significant environmental impact. They conduct inspections for zoning permits issued, enforce the zoning regulations and issue violations as necessary, issue zoning certificates of compliance, and check compliance when approving certificates of occupancy.

### **Planning**

#### ■ **General Plan<sup>1</sup>**

The General Plan is a local government “blueprint” of existing and future anticipated land uses for long-term future development. It is composed of the goals, policies, and general elements upon which land use decisions are based. Because the General Plan is the foundation for all local planning and development, it is an important tool for implementing policies and programs beneficial to air quality. Local governments may choose to adopt a separate air quality element into their General Plan or to integrate air quality-beneficial objectives, policies, and strategies in other elements of the Plan, such as the land use, circulation, conservation, and community design elements.

More information on General Plan elements is contained in Appendix D.

#### ■ **Community Plans**

Community or area plans are terms for plans that focus on a particular region or community within the overall general plan area. It refines the policies of the general plan as they apply to a smaller geographic area and is implemented by ordinances and other discretionary actions, such as zoning.

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<sup>1</sup> In October 2003, OPR revised its General Plan Guidelines. An entire chapter is now devoted to a discussion of how sustainable development and environmental justice goals can be incorporated into the land use planning process. For further information, the reader is encouraged to obtain a copy of OPR’s General Plan Guidelines, or refer to their website at:  
[http://www.opr.ca.gov/planning/PDFs/General\\_Plan\\_Guidelines\\_2003.pdf](http://www.opr.ca.gov/planning/PDFs/General_Plan_Guidelines_2003.pdf)

■ **Specific Plan**

A specific plan is a hybrid that can combine policies with development regulations or zoning requirements. It is often used to address the development requirements for a single project such as urban infill or a planned community. As a result, its emphasis is on concrete standards and development criteria.

■ **Zoning**

Zoning is the public regulation of the use of land. It involves the adoption of ordinances that divide a community into various districts or zones. For instance, zoning ordinances designate what projects and activities can be sited in particular locations. Each zone designates allowable uses of land within that zone, such as residential, commercial, or industrial. Zoning ordinances can address building development standards, e.g., minimum lot size, maximum building height, minimum building setback, parking, signage, density, and other allowable uses.

**Land Use Permitting**

In addition to the planning and zoning function, land use agencies issue building and business permits, and evaluate the potential environmental impacts of projects. To be approved, projects must be located in a designated zone and comply with applicable ordinances and zoning requirements.

Even if a project is sited properly in a designated zone, a land use agency may require a new source to mitigate potential localized environmental impacts to the surrounding community below what would be required by the local air district. In this case, the land use agency could condition the permit by limiting or prescribing allowable uses including operating hour restrictions, building standards and codes, property setbacks between the business property and the street or other structures, vehicle idling restrictions, or traffic diversion.

Land use agencies also evaluate the environmental impacts of proposed land use projects or activities. If a project or activity falls under CEQA, the land use agency requires an environmental review before issuing a permit to determine if there is the potential for a significant impact, and if so, to mitigate the impact or possibly deny the project.

■ **Land Use Permitting Process**

In California, the authority to regulate land use is delegated to city and county governments. The local land use planning agency is the local government administrative body that typically provides information and coordinates the review of development project applications. Conditional Use Permits (CUP) typically fall within a land use agency's discretionary authority and therefore are subject to CEQA. CUPs are

intended to provide an opportunity to review the location, design, and manner of development of land uses prior to project approval. A traditional purpose of the CUP is to enable a municipality to control certain uses that could have detrimental environmental effects on the community.

The process for permitting new discretionary projects is quite elaborate, but can be broken down into five fundamental components:

- Project application
- Environmental assessment
- Consultation
- Public comment
- Public hearing and decision

Project Application

The permit process begins when the land use agency receives a project application, with a detailed project description, and support documentation. During this phase, the agency reviews the submitted application for completeness. When the agency deems the application to be complete, the permit process moves into the environmental review phase.

Environmental Assessment

If the project is discretionary and the application is accepted as complete, the project proposal or activity must undergo an environmental clearance process under CEQA and the CEQA Guidelines adopted by the California Resources Agency.<sup>2</sup> The purpose of the CEQA process is to inform decision-makers and the public of the potential significant environmental impacts of a project or activity, to identify measures to minimize or eliminate those impacts to the point they are no longer significant, and to discuss alternatives that will accomplish the project goals and objectives in a less environmentally harmful manner.

**What is a “Lead Agency”?**

A lead agency is the public agency that has the principal responsibility for carrying out or approving a project that is subject to CEQA. In general, the land use agency is the preferred public agency serving as lead agency because it has jurisdiction over general land uses. The lead agency is responsible for determining the appropriate environmental document, as well as its preparation.

**What is a “Responsible Agency”?**

A responsible agency is a public agency with discretionary approval authority over a portion of a CEQA project (e.g., projects requiring a permit). As a responsible agency, the agency is available to the lead agency and project proponent for early consultation on a project to apprise them of applicable rules and regulations, potential adverse impacts, alternatives, and mitigation measures, and provide guidance as needed on applicable methodologies or other related issues.

**What is a “Commenting Agency”?**

A commenting agency is any public agency that comments on a CEQA document, but is neither a lead agency nor a responsible agency. For example, a local air district, as the agency with the responsibility for comprehensive air pollution control, could review and comment on an air quality analysis in a CEQA document for a proposed distribution center, even though the project was not subject to a permit or other pollution control requirements.

<sup>2</sup> Projects and activities that may have a significant adverse impact on the environment are evaluated under CEQA Guidelines set forth in title 14 of the California Code of Regulations, sections 15000 et seq.

To assist the lead agency in determining whether the project or activity may have a significant effect that would require the preparation of an EIR, the land use agency may consider criteria, or thresholds of significance, to assess the potential impacts of the project, including its air quality impacts. The land use agency must consider any credible evidence in addition to the thresholds, however, in determining whether the project or activity may have a significant effect that would trigger the preparation of an EIR.

The screening criteria to determine significance is based on a variety of factors, including local, state, and federal regulations, administrative practices of other public agencies, and commonly accepted professional standards. However, the final determination of significance for individual projects is the responsibility of the lead agency. In the case of land use projects, the lead agency would be the City Council or County Board of Supervisors.

A new land use plan or project can also trigger an environmental assessment under CEQA if, among other things, it will expose sensitive sites such as schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences to substantial pollutant concentrations.<sup>3</sup>

CEQA only applies to “discretionary projects.” Discretionary means the public agency must exercise judgment and deliberation when deciding to approve or disapprove a particular project or activity, and may append specific conditions to its approval. Examples of discretionary projects include the issuance of a CUP, re-zoning a property, or widening of a public road. Projects that are not subject to the exercise of agency discretion, and can therefore be approved administratively through the application of set standards are referred to as ministerial projects. CEQA does not apply to ministerial projects.<sup>4</sup> Examples of typical ministerial projects include the issuance of most building permits or a business license.

Once a potential environmental impact associated with a project is identified through an environmental assessment, mitigation must be considered. A land use agency should incorporate mitigation measures that are suggested by the local air district as part of the project review process.

### Consultation

Application materials are provided to various departments and agencies that may have an interest in the project (e.g., air pollution, building, police, fire, water agency, Fish and Game, etc.) for consultation and input.

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<sup>3</sup> Readers interested in learning more about CEQA should contact OPR or visit their website at <http://www.opr.ca.gov/>.

<sup>4</sup> See California Public Resources Code section 21080(b)(1).

Public Comment

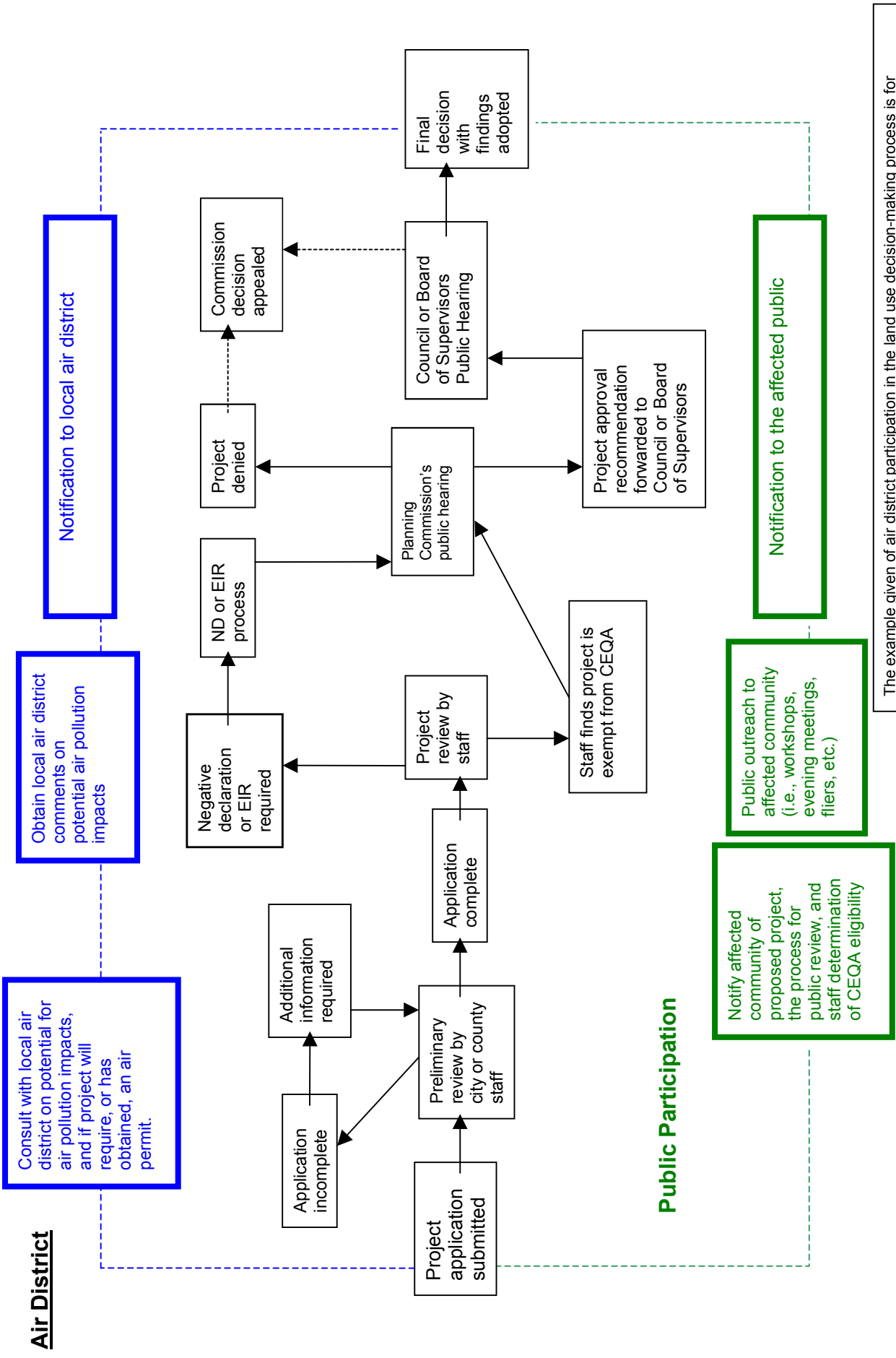
Following the environmental review process, the Planning Commission reviews application along with the staff's report on the project assessment and a public comment period is set and input is solicited.

Public Hearing and Decision

Permit rules vary depending on the particular permit authority in question, but the process generally involves comparing the proposed project with the land use agency standards or policies. The procedure usually leads to a public hearing, which is followed by a written decision by the agency or its designated officer. Typically, a project is approved, denied, or approved subject to specified conditions.

APPENDIX F

**USE PERMIT (DISCRETIONARY ACTION) REVIEW PROCESS\***



The example given of air district participation in the land use decision-making process is for illustrative purposes only. In reality, the land use siting process involves the ongoing participation of multiple affected agencies and stakeholders throughout the process.



**GLOSSARY OF KEY AIR POLLUTION TERMS**

**Air Pollution Control Board or Air Quality Management Board:** Serves as the governing board for local air districts. It consists of appointed or elected members from the public or private sector. It conducts public hearings to adopt local air pollution regulations.

**Air Pollution Control Districts or Air Quality Management Districts (local air district):** A county or regional agency with authority to regulate stationary and area sources of air pollution within a given county or region. Governed by a district air pollution control board.

**Air Pollution Control Officer (APCO):** Head of a local air pollution control or air quality management district.

**Air Toxic Control Measures (ATCM):** A control measure adopted by the ARB (Health and Safety Code section 39666 et seq.), which reduces emissions of toxic air contaminants.

**Ambient Air Quality Standards:** An air quality standard defines the maximum amount of a pollutant that can be present in the outdoor air during a specific time period without harming the public's health. Only U.S. EPA and the ARB may establish air quality standards. No other state has this authority. Air quality standards are a measure of clean air. More specifically, an air quality standard establishes the concentration at which a pollutant is known to cause adverse health effects to sensitive groups within the population, such as children and the elderly. Federal standards are referred to as National Ambient Air Quality Standards (NAAQS); state standards are referred to as California ambient air quality standards (CAAQS).

**Area-wide Sources:** Sources of air pollution that individually emit small amounts of pollution, but together add up to significant quantities of pollution. Examples include consumer products, fireplaces, road dust, and farming operations.

**Attainment vs. Nonattainment Area:** An attainment area is a geographic area that meets the National Ambient Air Quality Standards for the criteria pollutants and a non-attainment area is a geographic area that doesn't meet the NAAQS for criteria pollutants.

**Attainment Plan:** Attainment plans lay out measures and strategies to attain one or more air quality standards by a specified date.

**California Clean Air Act (CCAA):** A California law passed in 1988, which provides the basis for air quality planning and regulation independent of federal regulations. A major element of the Act is the requirement that local air districts in violation of the CAAQS

must prepare attainment plans which identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

**California Environmental Quality Act (CEQA):** A California law that sets forth a process for public agencies to make informed decisions on discretionary project approvals. The process helps decision-makers determine whether any potential, significant, adverse environmental impacts are associated with a proposed project and to identify alternatives and mitigation measures that will eliminate or reduce such adverse impacts.<sup>1</sup>

**California Health and Safety Code:** A compilation of California laws, including state air pollution laws, enacted by the Legislature to protect the health and safety of people in California. Government agencies adopt regulations to implement specific provisions of the California Health and Safety Code.

**Clean Air Act (CAA):** The federal Clean Air Act was adopted by the United States Congress and sets forth standards, procedures, and requirements to be implemented by the U.S. Environmental Protection Agency (U.S. EPA) to protect air quality in the United States.

**Councils of Government (COGs):** There are 25 COGs in California made up of city and county elected officials. COGs are regional agencies concerned primarily with transportation planning and housing; they do not directly regulate land use.

**Criteria Air Pollutant:** An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and PM10 and PM2.5. The term "criteria air pollutants" derives from the requirement that the U.S. EPA and ARB must describe the characteristics and potential health and welfare effects of these pollutants. The U.S. EPA and ARB periodically review new scientific data and may propose revisions to the standards as a result.

**District Hearing Board:** Hears local air district permit appeals and issues variances and abatement orders. The local air district board appoints the members of the hearing board.

**Emission Inventory:** An estimate of the amount of pollutants emitted into the atmosphere from mobile, stationary, area-wide, and natural source categories over a specific period of time such as a day or a year.

**Environmental Impact Report (EIR):** The public document used by a governmental agency to analyze the significant environmental effects of a proposed project, to identify

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<sup>1</sup> To track the submittal of CEQA documents to the State Clearinghouse within the Office of Planning and Research, the reader can refer to CEQAnet at <http://www.ceqanet.ca.gov>.

alternatives, and to disclose possible ways to reduce or avoid the possible negative environmental impacts.

**Environmental Justice:** California law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (California Government Code sec.65040.12(c)).

**General Plans:** A statement of policies developed by local governments, including text and diagrams setting forth objectives, principles, standards, and plan proposals for the future physical development of the city or county.

**Hazardous Air Pollutants (HAPs):** An air pollutant listed under section 112 (b) of the federal Clean Air Act as particularly hazardous to health. U.S. EPA identifies emission sources of hazardous air pollutants, and emission standards are set accordingly. In California, HAPs are referred to as toxic air contaminants.

**Land Use Agency:** Local government agency that performs functions associated with the review, approval, and enforcement of general plans and plan elements, zoning, and land use permitting. For purposes of this Handbook, a land use agency is typically a local planning department.

**Mobile Source:** Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats, and airplanes.

**National Ambient Air Quality Standard (NAAQS):** A limit on the level of an outdoor air pollutant established by the US EPA pursuant to the Clean Air Act. There are two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare.

**Negative Declaration (ND):** When the lead agency (the agency responsible for preparing the EIR or ND) under CEQA, finds that there is no substantial evidence that a project may have a significant environmental effect, the agency will prepare a "negative declaration" instead of an EIR.

**New Source Review (NSR):** A federal Clean Air Act requirement that state implementation plans must include a permit review process, which applies to the construction and operation of new or modified stationary sources in nonattainment areas. Two major elements of NSR to reduce emissions are best available control technology requirements and emission offsets.

**Office of Planning and Research (OPR):** OPR is part of the Governor's office. OPR has a variety of functions related to local land-use planning and environmental programs. It provides General Plan Guidelines for city and county planners, and coordinates the state clearinghouse for Environmental Impact Reports.

**Ordinance:** A law adopted by a City Council or County Board of Supervisors. Ordinances usually amend, repeal or supplement the municipal code; provide zoning specifications; or appropriate money for specific purposes.

**Overriding Considerations:** A ruling made by the lead agency in the CEQA process when the lead agency finds the importance of the project to the community outweighs potential adverse environmental impacts.

**Public Comment:** An opportunity for the general public to comment on regulations and other proposals made by government agencies. You can submit written or oral comments at the public meeting or send your written comments to the agency.

**Public Hearing:** A public hearing is an opportunity to testify on a proposed action by a governing board at a public meeting. The public and the media are welcome to attend the hearing and listen to, or participate in, the proceedings.

**Public Notice:** A public notice identifies the person, business, or local government seeking approval of a specific course of action (such as a regulation). It describes the activity for which approval is being sought, and describes the location where the proposed activity or public meeting will take place.

**Public Nuisance:** A public nuisance, for the purposes of air pollution regulations, is defined as a discharge from any source whatsoever of such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. (Health and Safety Code section 41700).

**Property Setback:** In zoning parlance, a setback is the minimum amount of space required between a lot line and a building line.

**Risk:** For cancer health effects, risk is expressed as an estimate of the increased chances of getting cancer due to facility emissions over a 70-year lifetime. This increase in risk is expressed as chances in a million (e.g., 10 chances in a million).

**Sensitive Individuals:** Refers to those segments of the population most susceptible to poor air quality (i.e., children, the elderly, and those with pre-existing serious health problems affected by air quality).

**Sensitive Sites or Sensitive Land Uses:** Land uses where sensitive individuals are most likely to spend time, including schools and schoolyards, parks and playgrounds, day care centers, nursing homes, hospitals, and residential communities.

**Setback:** An area of land separating one parcel of land from another that acts to soften or mitigate the effects of one land use on the other.

**State Implementation Plan (SIP):** A plan prepared by state and local agencies and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical information about emission inventories, air quality monitoring, control measures and strategies, and enforcement mechanisms. A SIP is composed of local air quality management plans and state air quality regulations.

**Stationary Sources:** Non-mobile sources such as power plants, refineries, and manufacturing facilities.

**Toxic Air Contaminant (TAC):** An air pollutant, identified in regulation by the ARB, which may cause or contribute to an increase in deaths or in serious illness, or which may pose a present or potential hazard to human health. TACs are considered under a different regulatory process (California Health and Safety Code section 39650 et seq.) than pollutants subject to State Ambient Air Quality Standards. Health effects associated with TACs may occur at extremely low levels. It is often difficult to identify safe levels of exposure, which produce no adverse health effects.

**Urban Background:** The term is used in this Handbook to represent the ubiquitous, elevated, regional air pollution levels observed in large urban areas in California.

**Zoning ordinances:** City councils and county boards of supervisors adopts zoning ordinances that set forth land use classifications, divides the county or city into land use zones as delineated on the official zoning, maps, and set enforceable standards for future develop

## Immanuel Bereket

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**From:** AR <ixelemo@gmail.com>  
**Sent:** Wednesday, January 31, 2024 4:01 PM  
**To:** Immanuel Bereket; Dennis Rodoni; Maurice Armstrong  
**Subject:** Gas Station Expansion comment

You don't often get email from ixelemo@gmail.com. [Learn why this is important](#)

To Whom It May Concern:

I respectfully request this letter be part of the record for consideration regarding the gas station expansion project in Point Reyes Station.

I am a full-time resident living on Mesa Road in Pt. Reyes Station. I'm concerned that the impact on traffic and safety for this expansion has not been studied well enough to allow the project to go forward at this time.

I experience first-hand, many times a week, how congested this intersection is with all its multiple uses: heavy traffic on Highway One coming into town, the gas station, pedestrian and school children crossing, pick up spot for weekly grocery distribution, Thrift Store, radio station and more.

My car was hit once by a driver unexpectedly and quickly exiting a parking space (by the grocery pick up area) as I was rounding the corner, off Highway One onto Mesa Road. The view for me of the car that hit mine was obstructed by another, double-parked vehicle. Double parking is not unusual in that area. It's difficult to imagine how the increased traffic of the residents and convenience store customers can safely be accommodated without further study of ways to minimize the impact.

While others have voiced concerns (ones that I might share) about design and safety elements related to the proposed building itself, if those issues are within the County, State and Coastal Commission guidelines, there is nothing to be done.

I support efforts to create more housing, especially low-income housing where appropriate and possible. Community and visitor safety is also an important priority.

I hope you will consider the proposed expansion only when the appropriate studies are done concerning traffic and safety, and the recommendations are incorporated into the design of the project.

Thank you.

## Immanuel Bereket

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**From:** Kathy Runnion <plannedferalhood@gmail.com>  
**Sent:** Wednesday, January 31, 2024 1:38 PM  
**To:** Immanuel Bereket  
**Subject:** Proposed Expansion of Point Reyes Gas Station

You don't often get email from plannedferalhood@gmail.com. [Learn why this is important](#)

To Immanuel Bereket:

I have been living in Point Reyes Station/Inverness Park for forty years, and have seen many changes in our town throughout this timeframe. One thing that has held true, though, is the character and integrity of our town.

Visitors come here to enjoy the historic quaintness of our old cow town, as well as Point Reyes National Seashore. A Redwood Oil chain type gas station/mini mart has no place here.

There are no signal lights at any of the intersections in Point Reyes, and tourists are always confused and halt the traffic flow as it is now. The business section of our town is integrated with residential sections, and Highway 1, where the gas station sits on the north side corner of downtown, goes right through the center of town.

The gas station sits at the most major intersection of residential and business at the heart of downtown. The expansion that includes a 2000' mini mart and the gutting of a historic building is completely out of line with our town's historic characteristics, and it decimates a historic building.

This is not the place for a chain Redwood Oil gas station/mini mart. Adding housing does not hide this fact. How safe is housing anyway, on top of gas pumps? And adding a 1000 gal propane tank for refills on A street equals more safety and traffic concerns.

A mini mart with all its single use plastics will cause even more discarded trash problems for our town, roadways, and seashore. We are already overloaded from the tourist traffic with garbage as it is already, and we already have established businesses that take care of tourist's needs. We don't need the mini mart or the proposed propane tank. These needs are already taken care of by already established businesses.

Although affordable housing is always lacking, this proposal only offers one affordable unit, and it sits within very close range to gas pumps. How safe is this? How safe is this entire project, sitting on top of what is already polluted ground. And what about septic issues?

There are far too many issues and questions that need to be answered before these plans are approved on the back of the premise of offering additional housing.

:Please pause and take time to research all these issues before approving the permit as it stands.

Thank you,

***Kathy Runnion***  
***Founder & Director***



## Immanuel Bereket

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**From:** Cynthia East Skovlin <cskovlin@gmail.com>  
**Sent:** Wednesday, January 31, 2024 3:35 PM  
**To:** Immanuel Bereket  
**Cc:** Cynthia E. Skovlin  
**Subject:** Proposed Redwood Oil Gas Station Expansion

[You don't often get email from cskovlin@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Dear Immanuel Bereket,

Please vote to stop the proposed gas station expansion in Point Reyes Station until it has been redesigned to address the devastating impacts of the current scheme, including disregard of historic character of the town, convenience store garbage in a rural unincorporated township, dangerous traffic impacts near a children's school, and mini-mart food sales in competition with locally owned food businesses and grocery.

The revenue from mini-mart food sales will exit the community, while competing needlessly with local owned food sellers whose revenue stays in the community and strengthens it. A strong local economy is key to the health of a town.

The tourists this plan is hoping to sell to come to Point Reyes because of its historic character and natural areas.

Mini-Marts are a reality of many American cities and suburbs, but Point Reyes is special in part for not having chain stores or this type of retail, particularly in its historic center.

Please do the right thing and vote to halt this current plan. The property rights and profit driven plans of one company should not be allowed to override that of an entire community. Growth is not a bad thing, change is part of life. But growth and change should be "smart", thoughtful and serve communities, not steamroll over them.

Many thanks,

Cynthia East Skovlin

MLA '99 Harvard University School of Design, Landscape Architecture and Urban Planning



## Immanuel Bereket

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**From:** victoria vswift.net <victoria@vswift.net>  
**Sent:** Wednesday, January 31, 2024 12:23 PM  
**To:** Immanuel Bereket  
**Subject:** Proposed Gas Staion Development

You don't often get email from victoria@vswift.net. [Learn why this is important](#)

Please take note of my opposition to the proposed Gas Station Store and Apartment Complex Development as presented

I feel that the development of these buildings to the scale specified is out of character for the town which is mandatory to maintain in view of its historic value and the proximity to the parklands.

. The creation of a mini-mart and conversion of the gas station, at the sharp turn in the highway is already confusing and somewhat dangerous, especially on weekends, holidays and summer season. the proposed development would back up traffic on the highway in the midst of town as well as cause accidents. It is difficult to believe that an onsite review of the traffic flow in town and specifically at the corner of the gas station would not make this issue very clear.

The propane tank use would be dangerous to neighbors as well as a further traffic issue.

I fully endorse the statements made below and I am hopeful that the proper steps will be taken to truly evaluate the benefits and problems of this project.

Best regards

Victoria Swift  
Resident and business owner  
P O Box 397  
Point Reyes, CA 94956

Design Review

Presentation 01/18/2024

Gas station project

1. We fully support our existing gas station as an important and valued service for West Marin
2. We support adding rental units in our downtown village. We would hope more than 1 of the 5 units could be affordable, but are aware the project only requires 1 affordable unit, and 4 market rate
3. We are relying on Marin County and California codes, regulations and health standards to approve the front apartment which is 6' from the pumping station, and directly on the gas station car line up pad. Many have questioned the health issues, but we defer to the guidance from the County.

4. We are requesting a circulation/traffic study to demonstrate the safety and access to the gas pumps for horse trailers, landscaping trucks, trailers, boats and larger vehicles.
5. We are asking for removal of the 1000g commercial propane tank which project owner is expecting to fill removable 5 g propane tanks as well as RV propane tanks. There is not adequate parking for class A motorhomes (25-45 ft) to park while being filled. The tank is directly across from one of the historic homes, and A street is one of the historic neighborhoods w/o any commercial heavy use. Double parking on A street is not acceptable. Olema campground has offered this service for over 30 years, is open 7 days a week with more than adequate access and w/o encroaching on traffic or our neighborhoods.
6. We are asking the project owner to demonstrate how residents of the apartments (as well as pedestrians) will access the pathways to their home while on foot, there are no pedestrian crosswalks to either side of the apartments or market.
7. The perpendicular parking on Mesa Road will create some traffic hazards as the food pantry (a valuable resource in our community) is directly across the street. The cars getting in and out with pedestrians attempting to access the market has not been studied.
8. The 2 parallel parking spots in front of the market and gas pumps do not have any logical entry to actually park and /or leave. There is only 24' from the pump to the wall.
9. The expansion of the cashier room of 215 sqft to a convenience store of 1,930 sqft will constitute much higher use and traffic. We disagree with the county assessment that there will be less usage, therefore the county is not requiring a traffic/circulation study.
10. We believe CalTrans should be involved due to the anticipated logjam/ backup on highway 1 since the turning radius is greatly decreased.
11. We are asking the county to review any regulations of selling tobacco products, cigarettes, oral products, zyn, chew and vape products, within 1000 ft from West Marin School and in the zoning C-VCR-B2.
12. We are asking for a workable trash/garbage plan for the increased single use plastic food containers, adequate trash bins on site and compliance with the new Marin County food container ordinance if possible.

## Immanuel Bereket

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**From:** Patricia Thomas <patricia@patriciathomas.net>  
**Sent:** Wednesday, January 31, 2024 3:21 PM  
**To:** Immanuel Bereket  
**Cc:** prsva94956@gmail.com  
**Subject:** Point Reyes Gas Station Remodel

[You don't often get email from patricia@patriciathomas.net. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Dear Mr. Bereket:

As a resident of Point Reyes Station, I am concerned about the proposed plans to add 5 new apartments to the existing Point Reyes Station Gas Station property. I'm concerned about increased traffic entering and exiting this already confusing corner. Drivers on Highway One, who don't realize they have the right of way, often stop in front of Wells Fargo Bank to yield to vehicles entering the highway from 4th Street. This causes confusion to drivers going the other directions. I've seen some potential collisions barely avoided. Doesn't there need to be a traffic study prior to approval of these plans?

Second, is there toxic material remaining in the previous garage workshop space that needs to be removed before it could be replaced by an apartment? Additionally, is it healthy for a tenant to live in close proximity to gas pumps?

Third, in a rush to increase housing supply, should two local businesses be evicted?

Sincerely,

Patricia Thomas  
P.O. Box 189  
Point Reyes Station, CA 94956

## Immanuel Bereket

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**From:** Scoby Zook <scoby@scobyzook.com>  
**Sent:** Wednesday, January 31, 2024 12:01 PM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station Gas Station remodel

[You don't often get email from scoby@scobyzook.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Hello,

I am a longtime resident of Inverness and visit Point Reyes station often.

I am writing to protest the proposed convenience store for this remodel. We don't need a convenience store; there are several other options in the close vicinity. Another issue is the complicated corner where Route One curves into town. The gas station is at that corner and already produces quite a bit of confused traffic. We don't need another "attraction" at that already difficult intersection, and we also don't need the additional trash that a convenience store will produce.

So, long story short, keep the housing, get rid of the convenience store.

Sincerely,

Scoby Zook

SZ @ iPhone 📱  
(c) 415-261-7792  
(h) 415-669-7313

## Immanuel Bereket

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**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Tuesday, January 23, 2024 5:44 PM  
**To:** Immanuel Bereket  
**Subject:** Fwd: gas station point reyes

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

here is my initial contact.

my concern is that the fast track housing element we will not have time to check safety of the housing.

I have emailed her contacts.

thank you

pamela

Begin forwarded message:

**From:** Air Toxics <airtoxics@arb.ca.gov>  
**Date:** January 23, 2024 at 5:00:24 PM PST  
**To:** pamela bridges <p.bridges@mac.com>, Air Toxics <airtoxics@arb.ca.gov>  
**Subject:** RE: gas station point reyes

Hello Pamela,

Thank you again for your questions. I was able to find some information for you. Please see below. If you have any more questions please do not hesitate to reach out.

Some background information:

Gas station emissions can be a large contributor to community air pollution and may lead to adverse health impacts for people living or working near gas stations. Localized health risks from gas stations are typically higher in areas where large amounts of gas are dispensed and where multiple gas stations are located near each other. Emissions of toxic air contaminants from gas stations may adversely impact people and the environment the following ways.

- Short (acute) and long-term (chronic) exposures to people working, living and recreating near gas stations.
- Long-term (chronic) exposure to gas-related air pollutants (e.g., ozone) which are formed in the atmosphere.

More information regarding the health effects of the air toxic substances in gasoline can be found in the Gasoline Service Station Industrywide Risk Assessment Technical Guidance here:

[https://ww2.arb.ca.gov/sites/default/files/2022-03/Draft%202022%20Gas%20Station%20IWG%20-%20Technical%20Guidance\\_ADA%20Compliant.pdf](https://ww2.arb.ca.gov/sites/default/files/2022-03/Draft%202022%20Gas%20Station%20IWG%20-%20Technical%20Guidance_ADA%20Compliant.pdf)

The Technical Guidance referenced above provides a health risk assessment screening methodology using default inputs and assumptions. A health risk assessment or HRA is a tool used to estimate the adverse health effects caused by exposure to environmental pollutants in a variety of media such as air, water, and soil. A site-specific health risk assessment should be conducted in order to determine the health risks associated with living near the gas station mentioned. Air Districts may use different methodologies specific to the different cities/locations in the state to conduct health risk assessments.

Marin County is under the jurisdiction of Bay Area Air Quality Management District (<https://www.baaqmd.gov/contact-us/contacts-by-program>) which has permitting authority over gas stations, so I would defer to them regarding gas station emissions and health risk specific to Marin County/Point Reyes. For questions regarding health risk, contact Carol Allen at 415.749.4702 or [callen@baaqmd.gov](mailto:callen@baaqmd.gov). For questions regarding air toxics, contact Daphne Chong at 415.749.4687 or [dchong@baaqmd.gov](mailto:dchong@baaqmd.gov).

For any questions regarding the Gasoline Service Station Industrywide Risk Assessment Technical Guidance mentioned above, please contact Michaela Dastoum at [Michaela.Dastoum@arb.ca.gov](mailto:Michaela.Dastoum@arb.ca.gov).

The California Environmental Quality Act (CEQA):

We suggest that you ask your county whether the project undergoing an environmental analysis under CEQA? You can submit a written/verbal comment for this project during the county meeting or the public review period if there is one. You can also contact the County's planning department to learn more about the project and voice your concerns. The County's planning department contact information is in the link below.

<https://www.marincounty.org/depts/cd/divisions/planning>

I hope this information is helpful,  
La'Shaye

## Immanuel Bereket

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**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Saturday, January 27, 2024 5:41 PM  
**To:** Immanuel Bereket  
**Subject:** Fwd: traffic survey

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

**From:** Robert Johnston <rajohnston@ucdavis.edu>  
**Date:** January 25, 2024 at 5:45:28 PM PST  
**To:** pamela bridges <p.bridges@mac.com>  
**Cc:** "Dennis Rodoni (DRodoni@marincounty.org)" <DRodoni@marincounty.org>, Morgan\_Patten@marincounty.org  
**Subject:** RE: traffic survey

Pamela,

Traffic Study

This is a typical inexpensive traffic study where traffic counts are not being done.

1. The Existing Conv. Store trip deduction is too high. It does not have as much traffic as the ITE Manual shows, because it is old and small and messy. It is not similar to a national average, at all.
2. The New Conv. Store trips are about right, as it will be a typical new small gas station conv. store. The Pass-by should be lower, though.
3. The New Conv. Store will generate new VMT, as it will be our first conv. store in PRS. Some of the VMT will be local, as some drivers will be attracted to it from nearby. That is, there will be more short shopping trips, especially when the Palace Mkt is closed. Some of the VMT will be regional, that is trips from out of town but from nearby communities.

The Real Issue

The major drawback of this proposed land use in this location, however, is turning conflicts in this cramped and asymmetrical intersection. Such a project should put the Planning Dept. and Transportation Dept. on alert, because of the poor intersection geometry, lack of a four-way stop system, high percent of tourists who are lost and driving erratically, and unclear lanes due to the narrow gas station open area next to the highway. This being the only gas station in W. Marin, we get lots of heavy trucks, trailers, and other difficult vehicles. This gas station already has regularly experienced congestion at peak hours and very often on weekends all afternoon. Not noted by the traffic analysis that I read is the fact that this gas station has an older layout with minimal spaces for vehicles fueling and for entering and exiting.

Furthermore, there is clearly not enough parking nearby and the small number of spaces will be taken up by this new retail store activity center. This parking competition will damage several small businesses nearby, including our pharmacy that is known to be having financial problems. It is an essential land use in PRS as older people use more medicines and can't travel very well. We do not need a convenience store, but we do need our pharmacy. A retail competition study should be done. A parking study should also be done.

This is not a good project for this location or for this town.

Bob



## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Saturday, January 27, 2024 4:42 PM  
**To:** Immanuel Bereket  
**Subject:** Re: copy of my letter to Dennis, BOS

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

thank you!

On Jan 27, 2024, at 4:40 PM, pamela bridges <p.bridges@mac.com> wrote:

Begin forwarded message:

**From:** Myn Adess <mynedit@gmail.com>  
**Date:** January 27, 2024 at 4:27:06 PM PST  
**To:** pamela bridges <p.bridges@mac.com>  
**Subject:** **Fwd: copy of my letter to Dennis, BOS**

Hi Pamela, I typed in your email wrong the first time. Here's what I wrote.  
Myn

----- Forwarded message -----

**From:** Myn Adess <[mynedit@gmail.com](mailto:mynedit@gmail.com)>  
**To:** "Rodoni, Dennis" <[DRodoni@marincounty.org](mailto:DRodoni@marincounty.org)>, [bos@marincounty.org](mailto:bos@marincounty.org)  
**Cc:** p.bridges@mac.ocm  
**Bcc:**  
**Date:** Sat, 27 Jan 2024 16:23:28 -0800  
**Subject:** Proposed Point Reyes Gas Station Development  
Dear Dennis and other Board Members,

I'm writing about the plans that the gas station in Point Reyes has put forward. I'm in favor of additional housing, especially affordable housing, in the community, and I believe having a gas station in town is a huge benefit to both locals and tourists alike.

But I question the location of the affordable unit so close to the gas pumps and the proposed store—that does not sound like a healthy living space.

I am not in favor of the proposed mini-mart "convenience store," which will pull business away from the existing food outlets in town and offer largely unhealthy food and snacks, especially to kids coming down the hill from school. In addition, it will greatly increase the presence of plastic trash that the food and drink items will be sold in.

I'm concerned about the lack of safe pedestrian access to the site, additional traffic at the site jamming up Mesa Rd and Hwy 1, and the presence of a proposed large propane tank on A Street.

As well as considering the suitability of the project for our community, I hope you will see the need for a traffic and pedestrian safety study.

I hope you will delay approval of the project so that these issues can be considered and resolved.

Thank you,

Myn Adess  
Point Reyes Station  
[mynedit@gmail.com](mailto:mynedit@gmail.com)  
415.246.0784

## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Saturday, January 27, 2024 4:41 PM  
**To:** Immanuel Bereket  
**Subject:** Fwd: copy of my letter to Dennis, BOS

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

Begin forwarded message:

**From:** Myn Adess <mynedit@gmail.com>  
**Date:** January 27, 2024 at 4:27:06 PM PST  
**To:** pamela bridges <p.bridges@mac.com>  
**Subject:** Fwd: copy of my letter to Dennis, BOS

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Myn

----- Forwarded message -----

**From:** Myn Adess <[mynedit@gmail.com](mailto:mynedit@gmail.com)>  
**To:** "Rodoni, Dennis" <[DRodoni@marincounty.org](mailto:DRodoni@marincounty.org)>, [bos@marincounty.org](mailto:bos@marincounty.org)  
**Cc:** p.bridges@mac.ocm  
**Bcc:**  
**Date:** Sat, 27 Jan 2024 16:23:28 -0800  
**Subject:** Proposed Point Reyes Gas Station Development  
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But I question the location of the affordable unit so close to the gas pumps and the proposed store—that does not sound like a healthy living space.

I am not in favor of the proposed mini-mart "convenience store," which will pull business away from the existing food outlets in town and offer largely unhealthy food and snacks, especially to kids coming down the hill from school. In addition, it will greatly increase the presence of plastic trash that the food and drink items will be sold in.

I'm concerned about the lack of safe pedestrian access to the site, additional traffic at the site jamming up Mesa Rd and Hwy 1, and the presence of a proposed large propane tank on A Street.

As well as considering the suitability of the project for our community, I hope you will see the need for a traffic and pedestrian safety study.

I hope you will delay approval of the project so that these issues can be considered and resolved.

-----Original Message-----

From: pamela bridges <[p.bridges@mac.com](mailto:p.bridges@mac.com)>

Sent: Monday, January 29, 2024 8:27 AM

To: Immanuel Bereket <[Immanuel.Bereket@MarinCounty.gov](mailto:Immanuel.Bereket@MarinCounty.gov)>

Cc: Maurice Armstrong <[Maurice.Armstrong@MarinCounty.gov](mailto:Maurice.Armstrong@MarinCounty.gov)>; Dennis Rodoni <[Dennis.Rodoni@MarinCounty.gov](mailto:Dennis.Rodoni@MarinCounty.gov)>

Subject: gas station project

[You don't often get email from [p.bridges@mac.com](mailto:p.bridges@mac.com). Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

hello manny,

do the housing element laws prohibit decoupling the housing part of the development , which we support, from the propane refill station and the minimart projects?

we have many questions re: those 2 projects and are unclear why these developments cannot be separated and are not subject to more scrutiny?

( historic components of porch, parking and safety of refill station on residential street, and traffic/circulation issues of increased usage of minimart) if you could steer us to the code and rules of bundling developments within housing element that would help us out.

thank you

p

## Immanuel Bereket

---

**Subject:** FW: A question and Happy New Year!

---

**From:** Heather Furmidge <[heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com)>

**Sent:** Sunday, December 31, 2023 10:17 AM

**To:** Morgan Patton <[Morgan.Patton@MarinCounty.gov](mailto:Morgan.Patton@MarinCounty.gov)>; Heather Furmidge <[heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com)>

**Subject:** A question and Happy New Year!

You don't often get email from [heatherfurmidge1@gmail.com](mailto:heatherfurmidge1@gmail.com). [Learn why this is important](#)

Hi Morgan,

Happy Almost New Year!! I hope you're settling into your new job well and I imagine that you're finding it challenging and super-interesting!

I have a question for you that I'm hoping you can help me with. The Point Reyes Village Assn has been following the plans submitted by the Point Reyes Gas Station owner to add/modify 5 housing units (yay!) and a convenience food store (slightly less yay) to the existing footprint of the station. I'm a Village Assn member, so that's where I've heard some about this project.

What I could use your help with is understanding what kinds of permits and approvals are needed for this project and what the process and timeline are. Also, where could I find information or anything about it on Marin County's website?

Specifically, one of my concerns about the project (shared by others) is the pedestrian and vehicle impacts of the increased density of retail use. We are all aware that the corner of Hwy 1 and Mesa Rd is one of the busiest in town - and that the intersection of A and 4th Sts where Hwy 1 turns left confuses tourists and pretty much everyone else. In addition, gas station egress and ingress is dangerous and confusing as it stands now.

One of the things I'm hoping for, which I haven't seen any evidence of (so if it exists, great!) is a congestion and/or circulation study so we can all understand how pedestrians and the residents of the new housing units can safely navigate the new layout (including the kids from the school who will no doubt be eager visitors), where cars will be parked, and how large vehicles towing things like chippers will get in and out of the pumping bays. Will there be crosswalks and sidewalks along that side of the street, which don't exist currently?

Your guidance would be much appreciated - including pointing me to someone who can help with my questions.

Hoping that you and your family are planning warm, safe, joy-filled holidays and here's to 2024!

Thanks,

Heather

415-971-5471

## Immanuel Bereket

---

**From:** Gil Sanchez  
**Sent:** Tuesday, January 23, 2024 11:41 AM  
**To:** Immanuel Bereket  
**Subject:** RE: presently at gas station

Just received the complaint too.

Gil

---

**From:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>  
**Sent:** Tuesday, January 23, 2024 11:06 AM  
**To:** Gil Sanchez <Gil.Sanchez@MarinCounty.gov>  
**Subject:** FW: presently at gas station

---

**From:** pamela bridges <[p.bridges@mac.com](mailto:p.bridges@mac.com)>  
**Sent:** Tuesday, January 23, 2024 10:55 AM  
**To:** Immanuel Bereket <[Immanuel.Bereket@MarinCounty.gov](mailto:Immanuel.Bereket@MarinCounty.gov)>  
**Cc:** Stephen Antonaros <[santonaros@gmail.com](mailto:santonaros@gmail.com)>; laura arndt <[laura.l.arndt@att.net](mailto:laura.l.arndt@att.net)>; [klevin13@gmail.com](mailto:klevin13@gmail.com); mark switzer <[markswitzer@hotmail.com](mailto:markswitzer@hotmail.com)>; heather furnidge <[heatherfurnidge1@gmail.com](mailto:heatherfurnidge1@gmail.com)>  
**Subject:** presently at gas station

[You don't often get email from [p.bridges@mac.com](mailto:p.bridges@mac.com). Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

here you go!  
all cigarettes, all oral chew, all vape, all ZYN ( the worst!)



## Immanuel Bereket

---

**From:** Morgan Patton  
**Sent:** Wednesday, January 24, 2024 9:29 AM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni; Fernando Barreto  
**Subject:** FW: Point Reyes Gas Station

FWD

Morgan Patton  
Aide to Supervisor Dennis Rodoni  
she/her  
Marin County Board of Supervisors  
3501 Civic Center Drive, Suite 329  
San Rafael CA 94903  
415-473-3246

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>

-----Original Message-----

From: Gini Griffin <gjava1@me.com>  
Sent: Wednesday, January 24, 2024 9:09 AM  
To: Morgan Patton <Morgan.Patton@MarinCounty.gov>  
Subject: Point Reyes Gas Station

[You don't often get email from gjava1@me.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Re: Truck & Trailer Access

This is to urge to NOT limit access to trucks and trailers in any way as the gas station at Point Reyes is being modified.

Hundreds of trailers and trucks come in with literally no other option for fuel. This is criminal to deny them access to a fuel pump.

Please consider our desperate pleas to be heard.

Thank you.

Gini Griffin  
Mill Valley



## Immanuel Bereket

---

**From:** Robert Johnston <rajohnston@ucdavis.edu>  
**Sent:** Thursday, January 25, 2024 3:35 PM  
**To:** Immanuel Bereket  
**Subject:** RE: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

You don't often get email from rajohnston@ucdavis.edu. [Learn why this is important](#)

two of the links are dead. Bob

---

**From:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>  
**Sent:** Thursday, January 25, 2024 1:54 PM  
**To:** Robert Johnston <rajohnston@ucdavis.edu>  
**Subject:** RE: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

Here is the project webpage:

[https://www.marincounty.org/depts/cd/divisions/planning/projects/west-marin/sydriel\\_cp\\_up\\_p4258\\_pr](https://www.marincounty.org/depts/cd/divisions/planning/projects/west-marin/sydriel_cp_up_p4258_pr)

It includes the latest site plan and traffic memo

---

**From:** Robert Johnston <rajohnston@ucdavis.edu>  
**Sent:** Thursday, January 25, 2024 1:06 PM  
**To:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>  
**Subject:** Re: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

You don't often get email from rajohnston@ucdavis.edu. [Learn why this is important](#)

...Projects web site. I guess it's not a "project."

Bob

Robert A. Johnston, Prof. UC Davis  
Talk: 415 663-8305 (landline)  
Text Messages: 530 559-0032  
Best to email and call landline, both

---

**From:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>  
**Sent:** Thursday, January 25, 2024 12:37:30 PM  
**To:** Robert Johnston <rajohnston@ucdavis.edu>  
**Subject:** RE: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

Will do.  
Thank you,  
Manny

**From:** Robert Johnston <[rajohnston@ucdavis.edu](mailto:rajohnston@ucdavis.edu)>

**Sent:** Thursday, January 25, 2024 12:21 PM

**To:** Immanuel Bereket <[Immanuel.Bereket@MarinCounty.gov](mailto:Immanuel.Bereket@MarinCounty.gov)>

**Subject:** FW: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

You don't often get email from [rajohnston@ucdavis.edu](mailto:rajohnston@ucdavis.edu). [Learn why this is important](#)

Immanuel,

Pls place this email below into the docket for the Pt. Reyes Gas Stn. Project.

I see that I missed the Zoning hearing. What happened?

I taught land use planning at UC Davis for 34 years and was a planning commissioner for two terms in Truckee. I have lived in Inverness for 13 years. This project needs a traffic study. Whatever policy you have that exempts small projects needs to be modified to override in sensitive locations, such as intersections, and require a traffic study.

Thanks,

Bob

**From:** Robert Johnston

**Sent:** Saturday, January 13, 2024 2:08 PM

**To:** PRSVA <[prsva94956@gmail.com](mailto:prsva94956@gmail.com)>

**Subject:** RE: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

Pamela and Steve,

I agree that permitting an apt. very near to a gas pump seems dangerous, due to the small chance of explosions and the significant chance of VOC fumes. The fuel storage tanks are over at the E. end of the pavement, but still close enough to be dangerous.

It will certainly hurt the Pharmacy to have competition for soft drinks right next door. They are struggling financially and have said so in the Light. We need our pharmacy for older people who can't drive to the CVS's and other pharmacies over the hill. We must protect it.

The grill and store at this location will certainly cause traffic congestion. This is one of our two most-dangerous intersections, due to its unusual traffic signage and resulting visitor confusion about whether to stop and the more-general "Where the hell did Hwy 1 go?" problem, which causes drivers to stop in the travel lane, all day long, on weekends. Many tourist communities do not allow retail outlets that generate significant traffic to locate near to busy intersections, in general, due to turning movements being blocked by the parkers coming and going. Most cities in the U.S. do not allow retail entrances at all near to intersections. It's already here, but let's not make it worse. A truly poor idea in terms of traffic flow and safety. We need an EIR because of this safety issue. I'm a CEQA expert, being published in that area for decades and having been an

expert in NEPA lawsuits in Calif. and other states. I taught the EIA class at UC Davis for many years. So, you can use this statement in your communications.

And we don't want a franchise fast food business in Pt. Reyes Stn. at all. With no sit-down eating, it will cause a spillover of eaters to The Commons nearby and the Old Tree lot next to the bank, the three benches on 4th St., the tables at Toby's, and other spots. We will see more food wrappers in the street, too. A bad idea. A retail competition analysis is a common step in retail permitting in recreation communities, because many businesses are on the edge financially, due to low demand on weekdays.

Bob

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>



## Immanuel Bereket

---

**From:** Robert Johnston <rajohnston@ucdavis.edu>  
**Sent:** Thursday, January 25, 2024 12:21 PM  
**To:** Immanuel Bereket  
**Subject:** FW: Point Reyes Station gas station Deputy Zoning Administrator Hearing 1/18/2024 @ 10:am at Marin County Civic Center

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Thanks,

Bob

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**Sent:** Saturday, January 13, 2024 2:08 PM  
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Bob

## Immanuel Bereket

---

**From:** Robert Johnston <rajohnston@ucdavis.edu>  
**Sent:** Sunday, January 28, 2024 5:21 PM  
**To:** Immanuel Bereket  
**Subject:** Pls Review This Letter to Editor

You don't often get email from rajohnston@ucdavis.edu. [Learn why this is important](#)

Manny,

Pls review this letter I recently sent to the Light. It is tentatively slotted for Feb. 2. I assert that several County land use codes need to be revised. Am I correct or are some of these in existence but don't apply for reasons I don't understand?

Thanks,

Bob

Robert A. Johnston, Prof. UC Davis  
Talk: 415 663-8305 (landline)  
Phone & text messages: 530 559-0032  
Email and landline best.

---

**From:** Robert Johnston  
**Sent:** Friday, January 26, 2024 10:33 AM  
**To:** Tess Elliott <tessevenstar@gmail.com>  
**Subject:** LTE

Editor:

The recent Light article about the proposal to redevelop the gas station reveals several weaknesses in our County land use codes. First, now that State laws override local ones on housing projects we need to eliminate Mixed Use plan and zoning types (Residential & Commercial). Mixed Use planning is a nice idea, but not if it subjects commercial activities to these state housing mandates that interfere with our rules.

Second, the County needs to require a retail competition analysis for all retail projects in small towns. For example, the fast food service proposed will compete with existing relatively inexpensive food stores such as the Whale of a Deli and the Palace Market. In a small village with very few retailers, one new business will impact them.

Third, in addition we could prohibit chain stores of various kinds, or all kinds, to preserve our homey rural feel. San Francisco does this in certain neighborhoods and those laws have been upheld in court. This not only retains our funky character, but also keeps small local businesses alive.

Fourth, a parking analysis should be required for any new business in small towns. Again, this is because there are very few businesses and often parking is difficult to find. One reason people come out to West Marin to shop is they can park nearby. Imagine the parking being taken up for two blocks around the fast food store. Would that reduce customers at the pharmacy, the Creamery building, or Tomales Bay Foods? Older people with poor walking strength frequent the pharmacy and the physical therapy clinic.

Fifth, any new business on or near to an intersection of a major arterial street or State highway should require a traffic analysis that includes turning movements. This is certainly required for congested or irregular intersections and this one has both of these characteristics. With two stop signs and two free-flow directions, this intersection is confusing to visitors. The gas pumps makes this area worse due to heavy trucks, trailers, and lots of U-turns.

We need the gas station and the housing is a good idea. We probably don't need a fast food venue, but I would need a lot more information than I see in the record to determine that. More important though is how this project reveals the weaknesses in our County land use laws. There will be a lot more new and redevelopment projects proposed here in the future. We are not prepared for this with our rural planning codes.

Bob Johnston, Retired Professor of land use planning, UC Davis. Past planning commissioner, Davis and Truckee

Robert A. Johnston, Prof. UC Davis  
Talk: 415 663-8305 (landline)  
Text Messages: 530 559-0032  
Best to email and call landline, both



## Immanuel Bereket

---

**From:** Robert Johnston <rajohnston@ucdavis.edu>  
**Sent:** Sunday, January 28, 2024 6:43 PM  
**To:** Immanuel Bereket  
**Subject:** FW: traffic survey

[You don't often get email from rajohnston@ucdavis.edu. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Manny,

Pls put this into the record.

It is a great mystery to me how Planning and Public Works could let a new convenience store on a major intersection slide by with no traffic and parking studies. This land use type (convenience shopping) has a high trips per sq. ft. of floorspace impact. This intersection is irregular (two stop signs, two free directions; the main State route turns; gas station at intersection open-access with no entrance lanes marked), congested on weekends, and clogged with visitors stopping in traffic to figure it out, etc. This is obvious to someone who watches it on a weekend from 11-6 for example. Pls ask Pub Wks to do a quick traffic analysis on a weekend afternoon.

You may share this with Pub Wks and other depts.

Thanks,

Bob

-----Original Message-----

From: Robert Johnston  
Sent: Thursday, January 25, 2024 5:45 PM  
To: pamela bridges <p.bridges@mac.com>  
Cc: Dennis Rodoni (DRodoni@marincounty.org) <DRodoni@marincounty.org>; Morgan\_Patten@marincounty.org  
Subject: RE: traffic survey

Pamela,

Traffic Study

This is a typical inexpensive traffic study where traffic counts are not being done.

1. The Existing Conv. Store trip deduction is too high. It does not have as much traffic as the ITE Manual shows, because it is old and small and messy. It is not similar to a national average, at all.
2. The New Conv. Store trips are about right, as it will be a typical new small gas station conv. store. The Pass-by should be lower, though.
3. The New Conv. Store will generate new VMT, as it will be our first conv. store in PRS. Some of the VMT will be local, as some drivers will be attracted to it from nearby. That is, there will be more short shopping trips, especially when the Palace Mkt is closed. Some of the VMT will be regional, that is trips from out of town but from nearby communities.

## The Real Issue

The major drawback of this proposed land use in this location, however, is turning conflicts in this cramped and asymmetrical intersection. Such a project should put the Planning Dept. and Transportation Dept. on alert, because of the poor intersection geometry, lack of a four-way stop system, high percent of tourists who are lost and driving erratically, and unclear lanes due to the narrow gas station open area next to the highway. This being the only gas station in W. Marin, we get lots of heavy trucks, trailers, and other difficult vehicles. This gas station already has regularly experienced congestion at peak hours and very often on weekends all afternoon. Not noted by the traffic analysis that I read is the fact that this gas station has an older layout with minimal spaces for vehicles fueling and for entering and exiting.

Furthermore, there is clearly not enough parking nearby and the small number of spaces will be taken up by this new retail store activity center. This parking competition will damage several small businesses nearby, including our pharmacy that is known to be having financial problems. It is an essential land use in PRS as older people use more medicines and can't travel very well. We do not need a convenience store, but we do need our pharmacy. A retail competition study should be done. A parking study should also be done.

This is not a good project for this location or for this town.

Bob

-----Original Message-----

From: pamela bridges <p.bridges@mac.com>

Sent: Thursday, January 25, 2024 4:35 PM

To: Robert Johnston <rajohnston@ucdavis.edu>

Subject: traffic survey

i sent you the traffic survey owner paid to have done can you send comments to me by 3 pm monday?

## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Monday, January 29, 2024 7:36 PM  
**To:** Dona Larkin  
**Cc:** Immanuel Bereket  
**Subject:** Re: Meeting Location for Feb. 1st ?

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

YES

thursday feb 1st @ 10:00 am

civic center room #328-330

important meeting at county where they will approve or deny the minimart.

please come. you can be a silent witness or speak up.

and if you can send a short email voicing your concerns please do!

send to

[ibereket@marincounty.org](mailto:ibereket@marincounty.org)

cc me!

xoxox

On Jan 29, 2024, at 6:42 PM, Dona Larkin <[donalarkin@yahoo.com](mailto:donalarkin@yahoo.com)> wrote:

Hi Pam, trying to catch up on this Gas Station issue.

Is there still a meeting Feb.1st & if so where please?

Look forward to your reply, Thanks Dona

## Immanuel Bereket

---

**From:** pamela bridges <p.bridges@mac.com>  
**Sent:** Tuesday, January 30, 2024 6:54 AM  
**To:** Immanuel Bereket  
**Subject:** Fwd: Gas station

You don't often get email from p.bridges@mac.com. [Learn why this is important](#)

Begin forwarded message:

**From:** Kathryn Lino <kathlino@gmail.com>  
**Date:** January 30, 2024 at 5:58:03 AM PST  
**To:** pamela bridges <p.bridges@mac.com>  
**Subject:** Gas station

Hi Pam,

I am out of town and unable to make it to the county meeting regarding the gas station. Do you know if there is a way I can share my thoughts with the county?

I haven't seen the design but I do support added housing if the apartments are modest in size. I adamantly do not support a convenience store or another restaurant. We have enough locations for snacks and meals, palace market, the drug store, whale of a deli, station house, bovine, brick maiden, old cowgirl creamery, the road house, and Inverness Park Market, all nearby.

If they ask for comments at the meeting, I give you permission to read my statement above.

Thank you!  
Kathryn Lino

**From:** David Morris <dmorris@ilsr.org>  
**Sent:** Monday, January 29, 2024 10:58 AM  
**To:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>  
**Subject:** Point Reyes Station Gas Station Application

You don't often get email from [dmorris@ilsr.org](mailto:dmorris@ilsr.org). [Learn why this is important](#)

Immanuel Bereket

Marin County

Principal Planner

Re: Point Reyes Station Gas Station Proposal

January 29, 2024

Dear Mr. Bereket

As a resident of Point Reyes Station and a former urban planner I am writing to urge you not to approve the application from the Redwood Oil Company for changes in the existing gas station property that will have a major impact on public health and safety.

Others have or will submit comments related to the huge increase in traffic plus the dangers from the lack of space for smoothly facilitating the movement of that traffic, including that of the larger vehicles that will use the new propane filling service are evident. Certainly a traffic and circulation study, at a minimum, should be required before the application is approved.

However, I want to focus not on the reasons the public impacts of this application demand serious scrutiny but on the reasons you might not do so.

From some of your recent responses to comments, I surmise that you might offer two reasons to justify approval without further study.

One is that the applicant has not changed the fundamental character of the site since it has been zoned commercial and will continue to be commercial. But certainly what could easily be a 100 fold increase in visits to the site when two very infrequently visited business sites are replaced by a six-fold increase in the size of a convenience/food store will have a major impact on traffic patterns and public health and safety. This is especially true because of the location of the gas station, just before a major curve in the highway that is already a junction of major public concern and major investigation by several state agencies. As I understand, these agencies have not been part of the evaluation process of this application.

Your second justification, which you offered in the *Point Reyes Light* this week, is that state housing legislation requires you to expedite the process. It is true that one out of five units of housing will, by state definition, be "affordable." But justifying the expediting of an entire application, the vast majority of whose impact on public health and safety will come from the non-residential changes in the property, is inappropriate.

The state has been clear that it does not want public health and safety impacts to be ignored or compromised in evaluating new proposals for affordable housing even when housing is the main purpose and many units of affordable housing will be created.

Sincerely,

David Morris  
Point Reyes Station  
718-208-3981

## Immanuel Bereket

---

**From:** Eileen Connery <econnerydesign@yahoo.com>  
**Sent:** Wednesday, January 31, 2024 11:49 AM  
**To:** Immanuel Bereket  
**Cc:** Dennis Rodoni  
**Subject:** Point Reyes Station Gas Station - Open during Construction and Safety & Health Concerns

You don't often get email from econnerydesign@yahoo.com. [Learn why this is important](#)

Dear Mr. Bereket,

I am writing to ask your intervention in the approval process for the Point Reyes Station Gas Station regarding health, safety, traffic and Dark Sky features.

**But FIRST: Will your review include a *Phase Plan showing how the operator will keep the pumps open during construction?***

This is the only gas station for many miles and serves the HWY 1 Coast. An operating gas station is critical for our area.

### 1. SAFETY & TRAFFIC

Please complete a detailed **TRAFFIC STUDY** on the intersections of Mesa Road at Hwy 1 and A Street at Hwy1/4th Street. The Proposed design Plans shows Handicap parking in the access driveway on A Street - this cannot be approved as is because it is an access point to the pump area. All access points need to be closely studied to avoid chaos. Increased pedestrian use should be planned. Where are the sidewalks and pedestrian pathways defined?

**ENTRY Point to the cashier** and convenience store should stay **FACING Highway 1** (Not be moved to Mesa Road as recent discussions suggested) - to keep visibility and quick access to the pumps in an emergency. To Protect from Pedestrians loitering on Mesa Road. To Allow No "Light Spill" onto Mesa Road at Night through plate glass windows. **KEEP IT DARKER ON the MESA ROAD SIDE like it is currently.**

**HOURS of Operation** should stay the **SAME AS THE CURRENT HOURS**: Closing time 8 PM in Winter months and CLOSE at 9 PM in Summer Months - this will *avoid a hang-out for potential crime* after the Palace Market is also closed at those same hours.

**LIGHTING: Use all Dark Sky approved fixtures**, lower than 2600Kelvin light scale, warm color. After closing, all lights to be on motion detectors is recommended.

### 2. HEALTH:

**No Alcohol** should be allowed to be sold at the convenience store to prevent potential increases in MVA's and crime (theft) and hang out drinking area.

The proposed giant **PROPANE TANK** on A Street should *be removed from the plan*. There is an increased danger to residences w/in the property and across the street. There is NO ROOM for RV PARKING to fill up on propane, or to wait, idle, and line up for filling either.

**PROVIDE Plantings/landscaping** between all back property neighbors. This will provide Visual health and some mitigation of fumes. The Existing vegetation does provide a buffer, please **maintain a TALL/HIGH 6'-0" + landscaped Buffer** after construction.

Thank you for acting on behalf of the residents in Point Reyes Station.

*Eileen Connery*

Eileen Connery  
Mesa Road resident for 15 years within 1 block of PR Gas Station  
PO Box 1268  
Point Reyes Station CA 94956

## Immanuel Bereket

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**From:** j desser <jdesser@gmail.com>  
**Sent:** Wednesday, January 31, 2024 11:40 AM  
**To:** Immanuel Bereket  
**Subject:** PRS Gas Station Expansion

You don't often get email from jdesser@gmail.com. [Learn why this is important](#)

Mr. Immanuel Bereket

Please reconsider the planned renovation of the gas station in Point Reyes Station.

Here are the issues I think need reevaluation:

**Traffic Patterns** at this, the busiest intersection in our village, near to the school and at the intersection of Hwy 1 providing access to downtown and the Mesa, the Dance Palace, etc. The parking is very limited and the roads are not configured for large vehicles to enter and exit the facility without causing **dangerous** situations and traffic jams.

**Bathrooms and Trash** both underserved in our village. Currently the gas station only occasionally provides paid access to a single bathroom.

**Out of Character with the Historic Buildings** of the village and surrounding area.

**Business Hours and Flow** are likely to create a disturbance to the community. The proposal is simply out of scale with the village.

Please do not destroy our village.

Thank you for your consideration.

James Desser & Margaret Orr

Point Reyes Station, CA



## Immanuel Bereket

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**From:** Deborah Jones <debbyjones@aol.com>  
**Sent:** Wednesday, January 31, 2024 10:53 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station gas station remodel/expansion project

You don't often get email from debbyjones@aol.com. [Learn why this is important](#)

Dear Immanuel,

I would like to submit a comment on the PRS gas station project. I hope this is the correct email address for my comment. (I saw another email address as follows: Immanuel.Bereket@marincounty.org, but I thought that the .gov address is probably the correct address).

Please let me know if I need to submit to you at the .org address. Thanks!

My comment on the project is that I believe that the project as proposed presents a significant safety issue at a complicated intersection that is not addressed by the W-Trans Trip Generation Study provided by the owner, Julie VanAlyea.

The intersection of Route One and Mesa Road is one I use most days when I travel from my home at 70 Overlook Rd in PRS.

On the weekends the traffic traveling into town from Point Reyes Petaluma Road frequently comes to a stop. Visitors see ahead that Route One makes a sharp left turn through town. There is a second intersection at A Street that feeds into Route one just as it turns left. There's a lot of confusion and backed up cars as the cars that have made it into town park, stopping the traffic flow.

Additionally, there is a lot of congestion on Mesa when large semi trucks deliver food to the Food Pantry. And there is also congestion when the Food Pantry customers arrive to pick up food. It can be challenging at those times to navigate through on my home route up Mesa Road.

The W-Trans Trip Generation Study does not reference any of these conditions. It does say that "the project would be expected to generate 450 new trips per day! The report states total trips per day would be 696. From that I did the math and I believe that current trips per day is 246. That's more than two times (almost 3 times, actually) more trips than currently.

School children coming from the Elementary school will not have a crosswalk directly to the store as there is no sidewalk, either on Mesa adjacent to the store or on Route One in front of the gas pumps and the entrance to the store.

This all seems very dangerous to me!. I would expect there to be injuries to pedestrians and auto accidents as well.

I believe that a traffic engineering study of the two intersections should be made by the County to more accurately assess the impact of the proposed project and to identify improvements to the intersections that would enhance pedestrian and vehicular safety.

I do believe that increased housing would be great, but I wonder how safe it would be to live next to the pumps with the fumes that are present.

Please consider turning down this permit or at least modifying it to create safe passage for school children, pedestrians, and automobiles that use the store.

Thank you,

Deborah Jones  
70 Overlook Rd  
Point Reyes Station

## Immanuel Bereket

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**From:** Rhonda Kutter <rlkutter@gmail.com>  
**Sent:** Wednesday, January 31, 2024 8:31 AM  
**To:** Immanuel Bereket  
**Cc:** Adam Jennings; pday; klevin13@gmail.com; wendi@marinbike.org; hope.madeline@gmail.com; Morgan Patton; Daniel@DOT; arid.javandel@marincounty.gov; rajesh.oberoi@dot.ca.gov; george.gin@dot.ca.gov  
**Subject:** Fwd: SR2S DRAFT LETTER  
**Attachments:** Pages from 04-1J9604plans.pdf; SR2S letter.pdf; Walk Audit Notes West Marin School.docx; West Marin Elementary School SR2S April 26.pdf

You don't often get email from rlkutter@gmail.com. [Learn why this is important](#)

Dear Manny,

Please provide this letter to the DZA hearing officer re: the Greenbridge gas station project scheduled for the DZA hearing this Thursday as the **SYDRIEL COASTAL PERMIT AND USE PERMIT** on behalf of members of the Point Reyes Safe Routes to School (SR2S) team.

Kindly include with the attached as well: the most recent PRS SR2S walk through note and the SR2S. Additionally the CAPM map is attached showing plans the area in question (see sheets pages 1 and 2).

Please contact me if you have any questions. Thanks again for your assistance.

Thank you,

Rhonda

☺

--

Rhonda Lynn Kutter, CMT  
CAMTC #15625  
415-250-1699--cell/work

*"Strive for excellence, not perfection." ~ H. Jackson Brown Jr.*

To: Deputy Zoning Administrator Ms. Megan Alton

From: Members of the Point Reyes Station Safe Route to School (SR2S) Committee

Date: January 30, 2024

Subject: Concerns Regarding Pedestrian and Bicycle Safety at Greenbridge Gas Station Expansion

Dear Deputy Zoning Administrator,

We, the undersigned members of the Point Reyes Station Safe Route to School committee, are writing to express our concerns regarding the planned expansion of the mini-mart into a 1,900+ square foot business at the Greenbridge gas station. Although we support increasing affordable housing for our and the continuation of a local gas station, we strongly object to the lack of safe pedestrian and bicycle access and crossings in the current proposal.

While we acknowledge the parking relocation improvements made to the latest plans, we believe the absence of a safe access and along SR-1 for both pedestrians and cyclists presents a significant risk to the safety of our community. This is a of particular concern for our children who may live at the site and need to use this route on their way to or from West Marin School, or for any youth to access the expanded store (we expect more youth will be attracted to the low-cost foods, candies, and snacks that will be served in the new more visible location).

This project site spans between two unsafe intersections: SR-1 & Mesa, and the more complex intersection: the SR-1 turn from Fourth Street onto 1<sup>st</sup> Street. These intersections, including the “informal pedestrian walk-way area” in the Caltrans right of way, are areas that were identified in our Safe Routes to Schools walks/audits as needing improvements, and is noted on the most current SR2S maps with a “warning”. (See Safe Routes to School Walk-through notes and path attachments.)

Please take in consideration the SR2S improvements Caltrans will be constructing as part of the SR-1 CAPM that will begin this March (2024). In addition to pathway improvements from West Marin School toward downtown (and the Dance Palace), Caltrans will install ADA curbs and a Rectangular Rapid Flashing Beacon (RRFB) for pedestrians on the north side of Mesa Rd. on SR-1 to allow for safe access from the school to the Point Reyes County library. Therefore, these new SR2S improvements will place children just feet away from the new front door of the new expanded market. Under current plans where there is no crosswalk planned at this location to the project

site so children will have to make their way to, and through, the project site. (See Caltrans CAPM maps attached, pages 1&2).

Therefore, we strongly urge you to make conditions of approval for this project to require that the applicant, in collaboration with the County's Department of Public Works (DPW) and Caltrans traffic teams, develop and implement a viable plan to address the lack of safe pedestrian and bicycle access.

This plan should include, but not be limited to:

- Installation of crosswalks and other safe walkway infrastructure specifically designed for bicycles and pedestrians at suitable locations from the adjacent intersections to, **and through**, the site.
- Implementation of traffic calming measures including infrastructure, striping and signage to increase safety and help direct traffic.
- Installation of a bike rack in an appropriate location; continued access to the free air and water station.
- Ensuring ADA compliance for all pedestrian and bicycle access points.

We believe that these or comparable measures are essential to mitigate the negative impacts of this project on pedestrian and bicycle safety and accessibility. We urge you to prioritize the safety of our community's residents, especially our children and vulnerable individuals, by holding the applicant accountable for addressing this critical issue before granting final approval for the project.

Thank you for your time and consideration. We offer our local expertise to work with planning staff, DPW, Caltrans, and the applicant, to find a solution that ensures the safety and well-being of all members of our community.

Sincerely,

Members of the Point Reyes Station Safe Routes to School Committee

- Peggy Day, Point Reyes Station Village Association; Safe Routes to School, West Marin Rep.
- Ken Levin – Point Reyes Station Village Association (PRSVA)
- Adam Jennings - Superintendent, Shoreline Unified School District
- Rhonda Kutter – West Marin Lion Lions Club member, former District 4 aide
- Madeline Hope - Tomales Bay Youth Center co-founder, West Marin Lions Club member

# DRAFT

Walk Audit Notes West Marin School 9-18-18

(ADDITIONAL NOTE: added from previous observations)

Intersection of Pt. Reyes-Petaluma Road and Hwy 1-East side of Hwy 1:

This intersection has some visual blockages when turning onto Hwy 1 due to the Caltrans destination sign on the east side of the road which seems to be blocking oncoming cars more than usual. Consider moving sign further from intersections.

Pathway on west side of Highway 1

Caltrans mows twice a year. Ask if community could get notice when Caltrans plans to mow. Would like to know 2 weeks ahead of time. Was originally an asphalt path. Suggested an adopt-a-highway program for robust local maintenance. Needs substantial improvements (*can this be part of grant or Caltrans work?*) to remove deferred vegetation maintenance issues.

Cross walk at school

To change to a high visibility ladder crosswalk, needs a landing to make ADA compliant on school side with as many improvements as practical on the (north)east side. Change out light to a pedestrian activated Rapid Flashing Beacon. Lost crossing guard. Caltrans could make changes through its SHOPP program (State Highway Operations and Protections Program).

School Pathway High priority.

Uneven pavement – especially in front of the school Tree/ tree-root removal may need to be done. This gets the most pedestrians and bikes as opposed to the west side and is more accessible. There is also a casual path through the field to the EAH housing that is used by students.

Ditch work and cleaning may need to be done as part of or prior to path improvement to prevent further erosion; not typically included as part of the SHOPP program and homeowners may share some of the responsibility for clean out of culverts to driveways, etc.

Mesa Road intersection High priority.

Needs signage at crosswalk. Convert to a high visibility ladder crosswalk and possible rapid flashing beacon (safety needs to be evaluated against community concerns: nearby neighbor might not like it if it's flashing into their house. Can it be directed away from house? Concern about sign pollution. Needs to be vetted by PRVA.)

Noted that new signs have metal posts as opposed to wooden posts. Could also be implemented with SHOP.

# DRAFT

May also need to move streetlight from Wells Fargo Bank side to crosswalk side to illuminate crosswalk better.

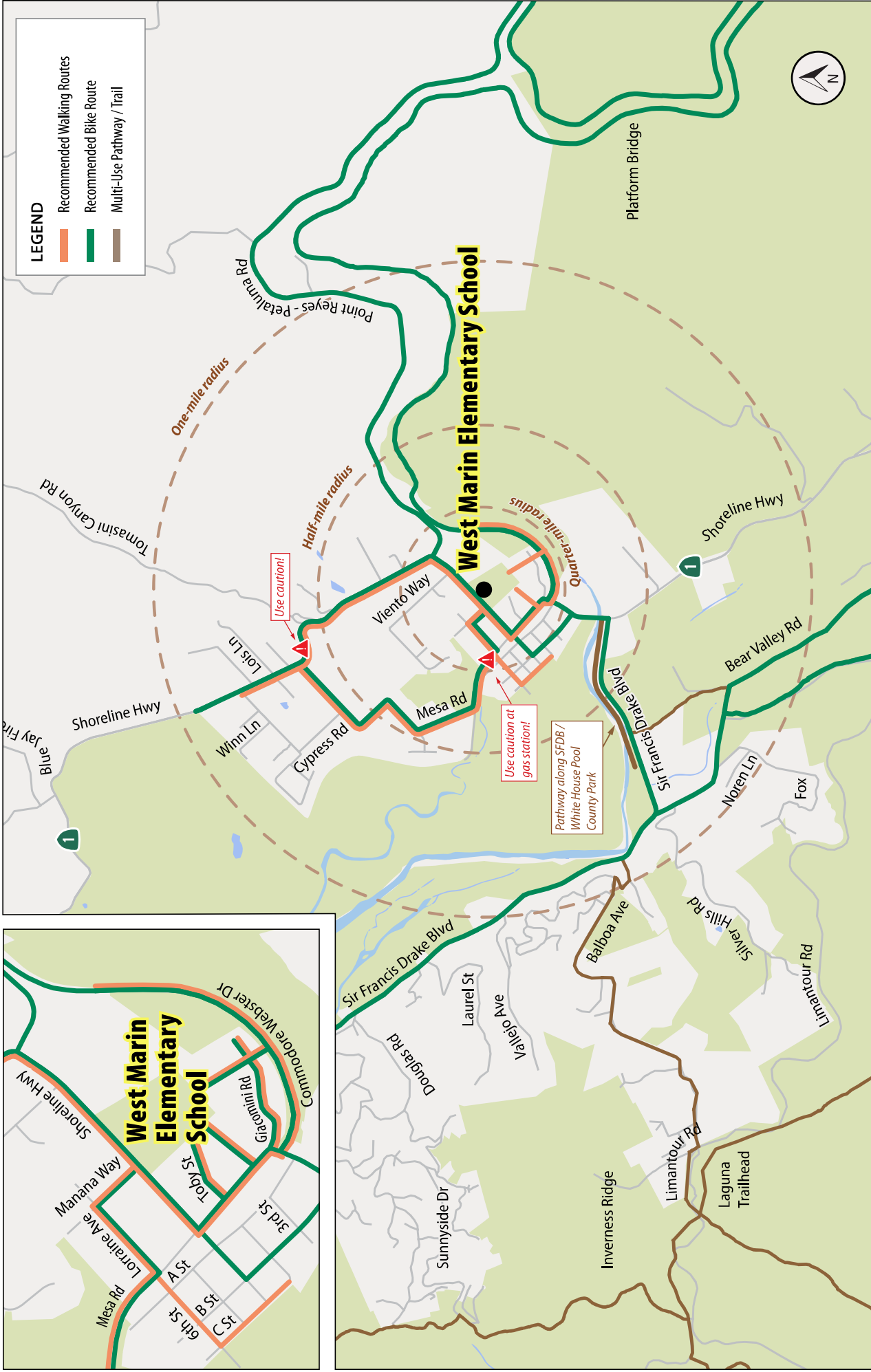
Area in front of gas station Medium priority.

Discussion of options. Could be a red line rather than a red curb. Have some kind of delineation to prevent random entry and exist—possible re-create historically stripped white painted area to designate walking area. Will suggested raised thermoplastic.

Bike route Low (or medium?) priority

Create signage and pavement marking to delineate school bike route. Lots of parking with cars backing out in the segment from highway 1 to B street. Also would like bike route around Mesa road. Needs a detailed plan before implementation. Could create route map and start education to use it before infrastructure is installed. Also include walkway to Toby's bus stop and Dance Palace.

Other notes:

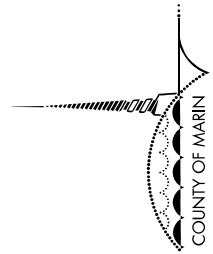


DRAFT APRIL 26, 2022

DRAFT

**Suggested Routes to School**  
**WEST MARIN ELEMENTARY SCHOOL**

Shoreline Unified School District





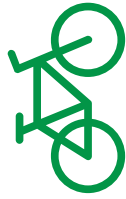
# Safe Routes Safety Tips

## WALK SAFELY



- Be alert. Look left, right and left again before crossing the street. At a four-way intersection, also look over your shoulder for cars that may be turning.
- Cross at corners or at a marked crosswalk. This is where drivers expect you.
- Don't assume drivers see you! Use eye contact and hand signals to communicate before crossing.
- Walk with a parent, other students or a buddy.

## BIKE SAFELY



- Always wear your helmet and buckle it every time; it's the law!
- To best protect your head, your helmet must fit properly: snug and level on your head, just above your eyebrows.
- Be predictable. Follow the same rules of the road as drivers when riding your bike. This includes obeying ALL stop signs and traffic signals, as well as yielding to pedestrians.
- When riding on the street, ride on the right hand side of the road, in the same direction as traffic. Watch out for turning cars and cars coming out of driveways.
- Make eye contact and use hand signals to communicate with drivers and pedestrians.

## DRIVE AND CARPOOL SAFELY



- Slow down in school zones or when students are nearby. The safest speed may be below 25 mph; students may struggle to accurately judge speed or distance.
- Do not use your cell phone while driving, even hands-free.
- Yield to pedestrians and bicyclists crossing the street and always follow the directions of crossing guards.
- Make sure students enter and exit the vehicle on the side next to the sidewalk.
- Avoid making U-turns, double-parking, blocking crosswalks and other unsafe movements.
- Consider parking a few blocks away and walking your student the rest of the way.
- Stop for school buses with red flashing lights on both sides of the street.

**SAFE ROUTES TO SCHOOL PROGRAMS promote walking and biking to school to decrease traffic and pollution and increase the health of students and the community.**

## WHETHER YOU WALK, BIKE, DRIVE OR RIDE THE BUS REMEMBER TO ALWAYS:

- **BE PREDICTABLE** – follow the rules of the road.
- **BE ALERT** – Expect the unexpected.
- **BE VISIBLE** – The more other road users can see you, the safer you will be.

## PARENTS:

- Teach your student how to share the road safely.
- Help your student choose the best walking or cycling route – it may not be the same way you would drive in a car!
- Students who regularly practice safe walking and biking skills when young are more likely to make safer choices as teenagers.
- **Obey adult crossing guards. They are there to help you cross congested intersections safely.**

## RESOURCES:

Safe Routes to Schools: [saferoutestoschools.org](http://saferoutestoschools.org)

Street Smarts Marin: [streetmartsmarin.org](http://streetmartsmarin.org)

## TRANSIT LINKS:

Public Transit: [marintransit.org](http://marintransit.org)



**SAFE ROUTES  
TO SCHOOLS**  
MARIN COUNTY

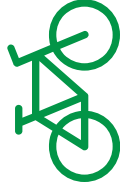
# Consejos de Seguridad para Rutas Seguras

## CAMINA CON SEGURIDAD



- Esten alerta. Mire a la izquierda, a la derecha y otra vez a la izquierda antes de cruzar la calle. En una intersección de cuatro vías, mire también por encima del hombro para ver si hay vehículos que estén girando.
- Cruzan en las esquinas o en un cruce de peatones marcado. Aquí es donde los conductores lo esperan.
- ¡No asumen que los conductores lo pueden ver! Use el contacto visual y las señales de manos para comunicarse antes de cruzar.
- Camine con un padre, otros estudiantes o un amigo.

## MONTA EN BICICLETA DE FORMA SEGURA



- Siempre use un casco bien abrochado ¡Es la ley!
- Para proteger mejor su cabeza, su casco debe ajustarse correctamente: cómodamente ajustado y nivelado en su cabeza, justo por encima de sus cejas.
- Sea predecible. Siga las mismas reglas de tránsito que los conductores de autos al andar en bicicleta. Esto incluye obedecer TODAS las señales de «pare» y semáforos, incluyendo ceder el paso a los peatones.
- Cuando montando la bicicleta por la calle, hágalo por el lado derecho de la carretera, en la misma dirección que el tráfico. Tenga cuidado con los vehículos que giran y los vehículos que salen de los caminos de entrada.
- Haga contacto visual y use señales de manos para comunicarse con los conductores y peatones.

## MANEJA Y CARPOOL CON SEGURIDAD



- Reduzca la velocidad en las zonas escolares o cuando haya estudiantes cerca. La velocidad más segura puede ser debajo de 25 mph; los estudiantes pueden tener dificultades para juzgar con precisión la velocidad o la distancia.
- No use su teléfono celular mientras maneja, ni siquiera con las manos libres.
- Ceda el paso a los peatones y ciclistas que cruzan la calle y siempre siga las instrucciones de los guardias de cruce.
- Asegúrese de que los estudiantes entren y salgan del vehículo por el lado de la banqueta.
- Evite hacer vueltas en U, estacionarse en doble fila, bloquear cruces peatonales y otros movimientos inseguros.
- Considere estacionarse a unas cuerdas de distancia y caminar con su estudiante el resto del camino.
- Pare para los autobuses escolares con luces rojas intermitentes a ambos lados de la calle.

**LOS PROGRAMAS DE RUTAS SEGURAS A LA ESCUELA promueve caminar y andar en bicicleta yendo a la escuela para disminuir el tráfico y la contaminación y aumentar la salud de los estudiantes y la comunidad.**

**Ya sea que camine, ande en bicicleta, maneje o viaje en autobús, recuerde siempre:**

- **SEA PREVISIBLE** - siga las reglas de la carretera.
- **ESTÉ ALERTA** - Espere lo inesperado.
- **SEA VISIBLE** - cuanto más otros usuarios de la carretera puedan verlo, más seguro estará.

## PADRES:

- Enséñele a su estudiante cómo compartir el camino de manera segura.
- Ayude a su estudiante a elegir la mejor ruta para caminar o andar en bicicleta - ¡puede que no sea de la misma manera que manejaría en un automóvil!
- Los estudiantes que practican con regularidad habilidades seguras para caminar y andar en bicicleta cuando son jóvenes tienen más probabilidades de tomar decisiones más seguras en la adolescencia.
- **Obedezca a los guardias de cruce. Están ahí para ayudar en cruzar intersecciones congestionadas de manera segura.**

## RECURSOS:

Rutas seguras a las escuelas: [saferoutestoschools.org](http://saferoutestoschools.org)

Street Smarts Marin: [streetmartsmarin.org](http://streetmartsmarin.org)

## ENLACES DE TRÁNSITO:

Transporte público: [marintransit.org](http://marintransit.org)



**SAFE ROUTES TO SCHOOLS**  
MARIN COUNTY

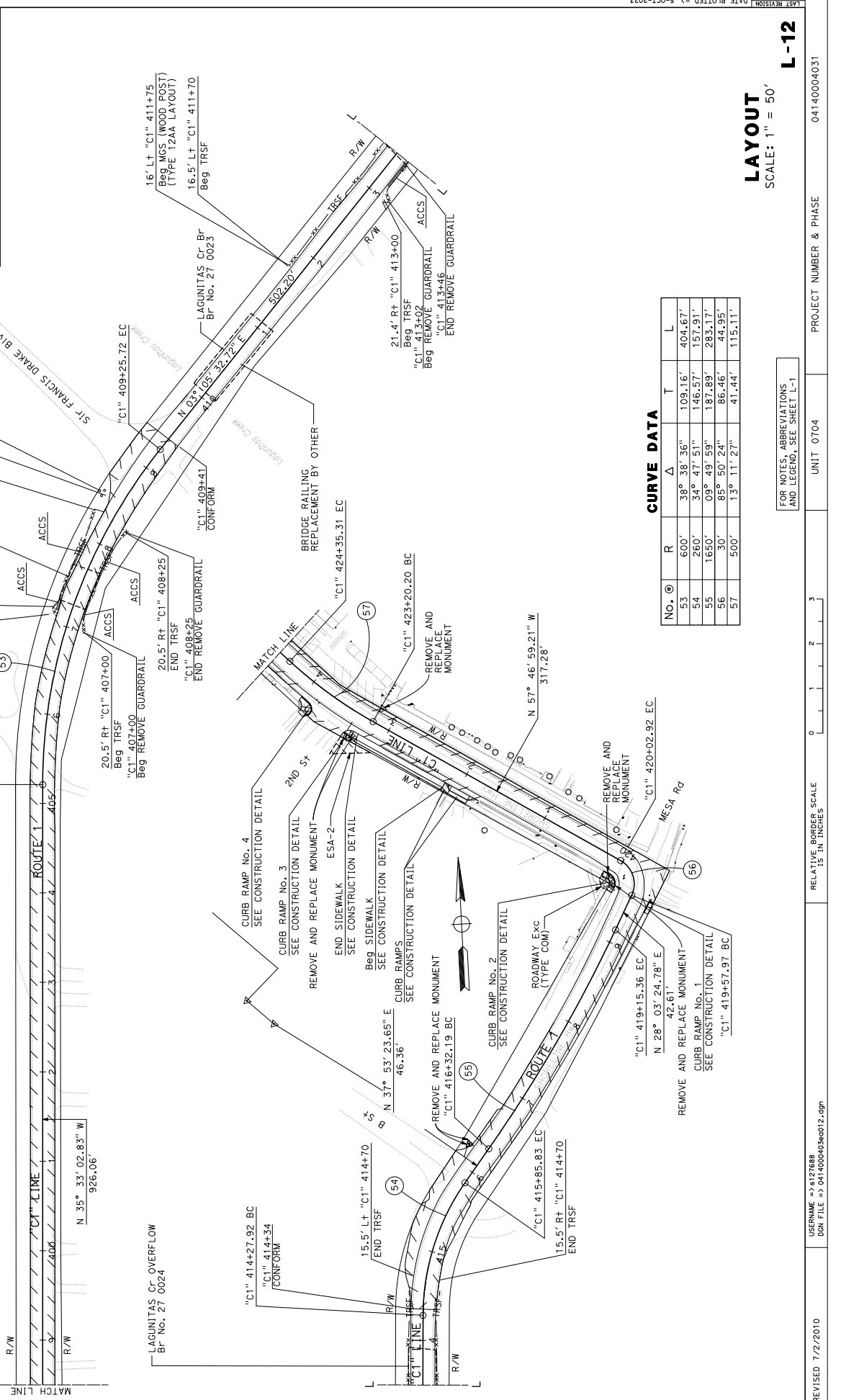


Transportation Authority of Marin

04	Mrn	1	45.0/50.0	16	307
COUNTY		ROUTE	POST MILES	TOTAL PROJECT	SHEET TOTAL
04		Mrn	1	45.0/50.0	16
DATE		DATE	DATE	DATE	DATE
10-21-22		10-21-22	10-21-22	10-21-22	10-21-22

NOTE:  
FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CS	REVISD BY	CLINTON SUEN	DATE REVISD	10-21-22
	CHECKED BY	HIMABINDU SAMUDRALA		



DESIGNED BY	CLINTON SUEN
CHECKED BY	HIMABINDU SAMUDRALA
DATE REVISD	10-21-22

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	MAGA ADIBHATLA
DESIGN		

**CURVE DATA**

NO. @	R	Δ	T	L
53	600'	38° 38' 36"	109.16'	404.67'
54	260'	34° 47' 51"	146.57'	157.91'
55	1650'	09° 49' 59"	187.89'	283.17'
56	30'	85° 50' 24"	86.46'	44.95'
57	500'	13° 11' 27"	41.44'	115.11'

FOR NOTES, ABBREVIATIONS  
AND LEGEND, SEE SHEET L-1

**LAYOUT**  
SCALE: 1" = 50'

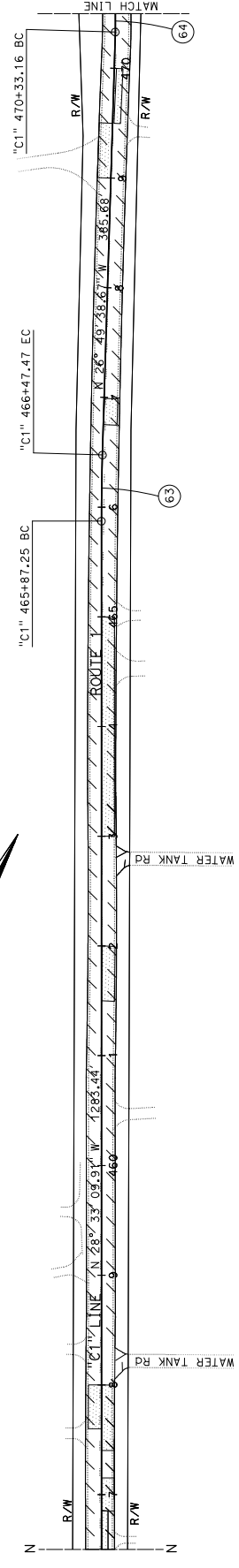
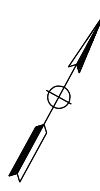
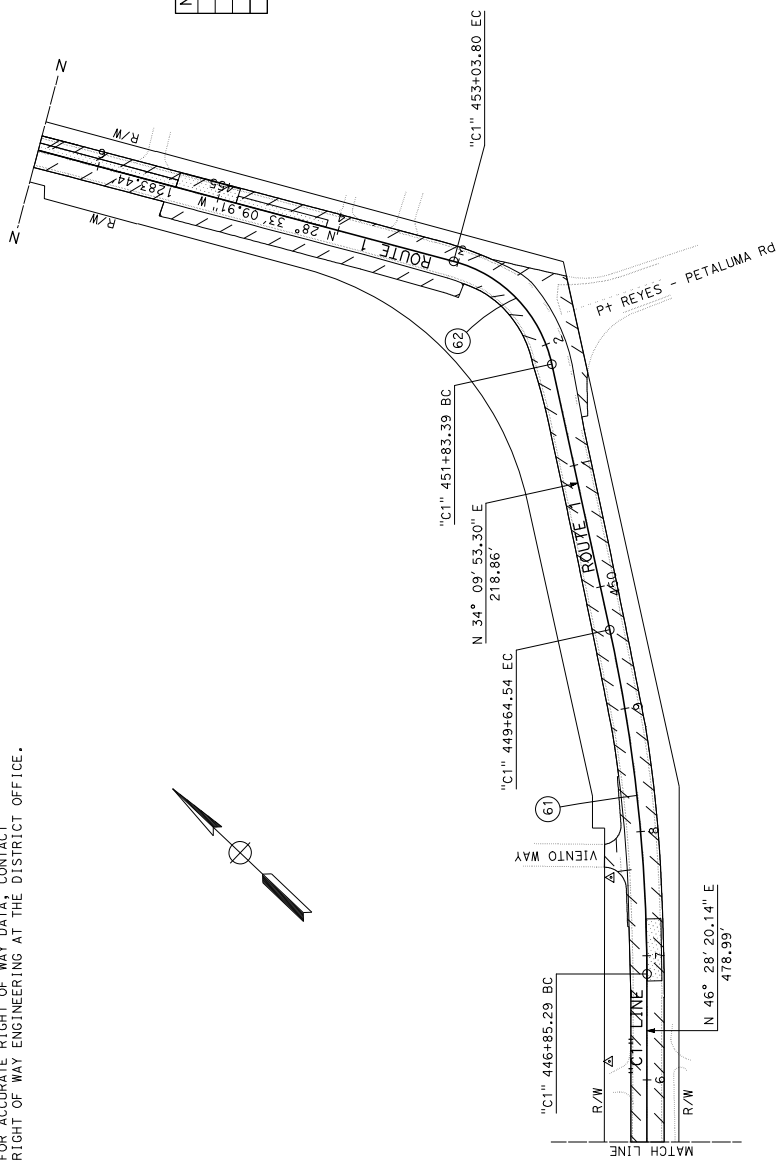


Dist	COUNTY	ROUTE	POST MILES	SHEET TOTAL
04	Mtn	1	45.0/50.5	18 / 307
PROJECT TOTAL SHEETS 45.0/50.5 18 / 307				
REGISTERED CIVIL ENGINEER DATE 10-21-22 REGISTERED CIVIL ENGINEER DATE 10-21-22 REGISTERED CIVIL ENGINEER DATE 10-21-22				
REGISTERED CIVIL ENGINEER DATE 10-21-22 REGISTERED CIVIL ENGINEER DATE 10-21-22 REGISTERED CIVIL ENGINEER DATE 10-21-22				

### CURVE DATA

No. @	R	Δ	T	L
61	1300'	12° 18' 27"	140.16'	279.25'
62	110'	62° 43' 03"	67.04'	120.41'
63	2000'	01° 43' 31"	30.12'	60.23'
64	550'	17° 35' 05"	85.07'	168.80'

**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



## LAYOUT

SCALE: 1" = 50'

FOR NOTES, ABBREVIATIONS  
 AND LEGEND, SEE SHEET L-1

DESIGNED BY	CLINTON SUEN	REVISOR	CS
CHECKED BY	HIMABINDU SAMUDRALA	DATE REVISOR	10-21-22
FUNCTIONAL SUPERVISOR	NAGA ADIBHATLA	DESIGNED BY	CLINTON SUEN
DESIGN	CS	CHECKED BY	HIMABINDU SAMUDRALA
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	DESIGNED BY	CLINTON SUEN	REVISOR
DESIGNED BY	CLINTON SUEN	REVISOR	CS

## Immanuel Bereket

---

**From:** Trinka Marris <trinkamarris@gmail.com>  
**Sent:** Wednesday, January 31, 2024 9:10 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station Gas Station

You don't often get email from trinkamarris@gmail.com. [Learn why this is important](#)

Dear Mr. Bereket,

Point Reyes Station is currently a representation of a world gone by. A place thousands of people from around the world flock to each weekend throughout the year to experience its old world charms without the glaring neon signs, corporate influence and traffic lights of modern cities. Preserving the character of our town has been the focus of many hard working individuals who appreciate the value we serve in nourishing the souls of residents and visitors alike. The creation of a mini-mart and conversion of the gas station at the entrance of our village will destroy the historic charm that has for so long been BY DESIGN.

Our existing gas station perfectly accommodates the large working trucks & recreational vehicles it currently serves, in fact it's the only facility around for miles. Reconfiguring the station with housing in close proximity to the pumps seems an unhealthy solution to the towns housing needs and a disservice to the businesses which would be displaced. Lastly a mini-mart will generate more trash on our streets, when already our recycling & trash cans are regularly heaping over from excessive waste.

I urge you to deny these changes to the gas station property which will so irreversibly change the historic nature of our town.

Sincerely,

Trinka Marris

Point Reyes Station resident of 31 years

## Immanuel Bereket

---

**From:** Kay McMahon <kay.mcmahon6@gmail.com>  
**Sent:** Wednesday, January 31, 2024 10:08 AM  
**To:** Immanuel Bereket  
**Subject:** PRS Redwood Oil Proposal to County

You don't often get email from kay.mcmahon6@gmail.com. [Learn why this is important](#)

Immanuel Bereket:

The changes proposed by the Redwood Oil Corporation to the entire north end of our small town will severely deteriorate the quality of life of locals and visitors unless crucial controls and limitations are required by County Planning. This isn't just another proposed renovation and expansion; the preservation and safety of our town, residents and visitors, depends upon the rigorous review and control of the County, now.

Anyone closely familiar with the town, on a day-to-day, weather and seasonal basis, experiences the reality of traffic congestion and the related safety risks to drivers and pedestrians.

Serving the needs of visitors is necessary, within limits. Putting business and profit over the safety and sustainability of community is shortsighted and one-sided.

The Redwood Oil proposal, fast-tracked due to its inclusion of housing units, may seemingly help with one urgent issue. However, it creates in tandem other serious and potentially irreversible impacts.

The impact on traffic patterns at the intersection of Highway 1 and the main street through town requires a comprehensive study, one that is not part of a rushed county permitting process and one that takes into urgent consideration parking requirements, fueling access, real time congestion and traffic flow of vehicles, people, cyclists. This point is the vehicular artery for all Mesa residents. Children walking to town or after school activities held at the Dance Palace will be vulnerable to increased numbers of drivers unfamiliar with the pattern of traffic and pedestrians.

A point in case is attempting to get gas on a busy summer day, holiday, weekend or good weather weekday, or whale watching weekday, when traffic on Highway 1 is constant, a large group of motorcyclists pulls in adjacent to the gas station to gather before the next stage of their journey, folks wander around cars to use the bathroom, ask for directions and the line-up of cars wanting gas exceeds beyond the Redwood oil property onto adjacent streets in both directions. I am perplexed about even a quick study by an expert missing such visible congestion and safety hazards.

Another serious concern is the increase in trash. The town is already overwhelmed by its visitors' garbage. The County's admirable program for recycling and curbing the generation of trash does not address the single use trash generated by a large convenience store: i.e., the packaging of snack items such as chips, candy, cookies, drinks, ice cream bars, etc. Who will be responsible for picking up this garbage discarded by the annual two million strolling visitors? And what does it say about the town and county commitment, including the commitment of our county planners and supervisors, to a sustainable environment and future.

Point Reyes, as with other gateway and rural towns is both unique and vulnerable. This along with the national seashore and parks is what draws millions of visitors a year.

Millions.

Please do not approve the Redwood Oils creation of a minimart that fits into the owner's model and profit plan, yet deteriorates a town's character and creates avoidable safety and congestion hazards.

Kay McMahon  
Inverness, California

## Immanuel Bereket

---

**From:** no-reply@marincounty.org  
**Sent:** Wednesday, January 31, 2024 11:03 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Gas Station Expansion Plan

You don't often get email from no-reply@marincounty.org. [Learn why this is important](#)

Dan Morse with email address [dbrockmorse@mac.com](mailto:dbrockmorse@mac.com) would like information about:

The expansion and development plan for the gas station in Point Reyes Station has some major problem areas. The addition of a 1900 sq ft convenience store is completely inappropriate for character of the town. There needs to be a parking and access study completed as well. Placing a housing unit so close to the gas pumps seems a potential health hazard. Please look closely at this proposed project to assess the compatibility with the character of the town of Point Reyes Station.



## Immanuel Bereket

---

**From:** no-reply@marincounty.org  
**Sent:** Wednesday, January 31, 2024 10:00 AM  
**To:** Immanuel Bereket  
**Subject:** Aztec Grill Point Reyes Station

You don't often get email from no-reply@marincounty.org. [Learn why this is important](#)

Connie Morse with email address [cmorse08@gmail.com](mailto:cmorse08@gmail.com) would like information about:

Please take a drive out here - stand in front of the Redwood Gas Station...for an hour...on a Saturday...and see if truly in your heart you think the proposed Aztec Grill proposal is appropriate for the permanent residents of our community. the need for housing, yes...so get on the path of the "Coast Guard" project that the county has been sitting on for about 10 years! I appreciate your time. Connie Morse

Point Reyes Station Village Association  
February 1, 2024  
Sydriel Coastal Permit  
DZA Hearing

The Point Reyes Station Village Association supports the present gas station and recognizes it as an important service in West Marin. We also encourage safe, affordable, and equitable housing in our village.

We do not see a demonstrated need for a minimart in town, while we do recognize the negative impacts on an already congested and confusing corner, traffic logjams, pedestrian safety issues, the first franchise in our town, and the partial demolition of an historic building. We support our local businesses on Main Street, and we work diligently to maintain the historic and authentic character of Point Reyes Station.

The following objections to the proposed project, along with previous correspondence you have received from the community, are respectfully presented to the DZA, which would serve as the bases of any future appeal.

1. We are requesting to decouple the project into 3 separate permits: housing, minimart, and commercial propane refill station
2. We are requesting Marin County apply relevant codes, regulations and health standards to the front apartment, presently on the plans 12' from the gas pumps and directly on the gas station car line up pad.
3. We are requesting the county to determine a need for a thorough assessment of the environmental conditions of the property (soil and groundwater) prior to a change to residential use.
4. We are requesting the historical building checklist pertaining to the demolition of the front porch be re-evaluated and resubmitted for the record.
5. We are requesting a DPW circulation/traffic study to demonstrate the safety and access to the gas pumps for horse trailers, landscaping trucks, trailers, boats and larger vehicles, which will be affected by increased traffic. Because Highway 1 will be severely impacted we request CalTrans to be aware and consulted on the traffic study,
6. We object to the 1000gallon commercial refill propane tank (10' from the corner apartment) which will require the commercial activity on a residential street since there is no onsite area for RV's or vans.
7. We are requesting owner demonstrate how residents of the apartments, and patrons of the minimart, safely access the building. There are no proper crosswalks either side A Street or Mesa Road.
8. We are asking the county to review regulations of the sale of tobacco and alcohol in the C-VCR zone. The gas station is less than 1000 ft from West Marin School, the Youth Center, 2 playgrounds, and a library. Parents and community members are concerned that whatever regulations control the sales of tobacco and alcohol are strictly applied to this project.
9. We are asking for a workable trash/garbage plan for the increased single use plastic food containers, adequate trash bins on site and compliance with the new Marin County food container ordinance.

10. We are requesting no action on the minimart permit until the lighting (dark sky compliance for interior scatter and exterior lighting) , signage, and hours of operation are presented to the county.

Draft Historic Structure Report  
10401 State Route 1  
Point Reyes Station, California

**circa 1948**



**2024**



**D. S. "Dewey" Livingston**

Cultural Resources Consultant  
P.O.Box 296  
Inverness, CA 94937  
415-669-7706  
dewey@deweylivingston.com  
January 22, 2024

Note: this information was requested by a community member and was not produced in coordination with the owners of the building and property. The author was not paid, and makes no judgements beyond those evaluating the historical integrity and significance of the building.

## A Brief History and Evaluation of 11401 State Route 1, Point Reyes Station

The subject building, located at Fourth and A Streets in Point Reyes Station, has served as a gas dispensing station and auto repair shop, with non-associated businesses in the majority floor space of the building, for at least the past 82 years (auto repair ended approximately ten years ago). The core of the building is older, constructed in 1932 and moved to the current site before June 1942. This is the only gas station in the Point Reyes Station vicinity, and the only one on coastal Highway 1 (Shoreline Highway) between Tamalpais Valley in Marin County and Valley Ford in Sonoma County, a distance of 52 miles.

**Description:** The 5,650-square-foot building is a former barn/vegetable shed with a short office/repair bay extension on the west part of the façade facing Highway 1. It is clad in corrugated steel, with the exception of the gas station office extension, which is a combination of newer stucco and wood siding. The west façade is roughly half original corrugated steel siding and half stucco. Windows and doors are original wood frame double hung sash on the older section, while the gas station section, representing about 20% of the façade, has been updated with wood cove siding, modern doors and windows, and garage bay doors. A series of simple wood brackets support the eaves on the east and west sides.

**Narrative History:** Point Reyes Station was founded in 1874-75 with construction of the narrow gauge North Pacific Coast Railroad, which connected San Francisco with the redwood timber country of Sonoma County to the north. The railroad company established a depot called Olema Station, which originally served the residents of Olema (two miles distant to the south) and the Point Reyes Peninsula and Tomales Bay shore, all of which was a major California dairying region. The town grew in the 1880s to feature a mercantile, hotel, post office, school, blacksmith shop, and a small number of residences. In 1892 the name was changed to Point Reyes Station. The town continued to grow in the twentieth century, to include a large cooperative creamery, expanded mercantiles and hotels, saloons, a public hall, railroad infrastructure, livery stable, and more residences in new neighborhoods.

In the 1920s, hundreds of acres on the Point Reyes Peninsula were converted from dairy grazing to truck farms operated by newly arrived Italian and Japanese immigrants. The Italians tended to grow artichokes, and the Japanese grew peas. Prominent Point Reyes landowner Leland S. Murphy, who oversaw the farming operations on his

land, constructed a barn in 1932 next to the Northwestern Pacific Railroad tracks in Point Reyes Station as a storage and loading point for produce from his 10,000-acre ranch and farm. Murphy's ranch was formerly the historic Home Ranch owned by James McMillan Shafter. Rail service ended in 1933, so the barn was used for storage and also as a dance hall known as the "Pea Shed." The tracks were removed from the rail yards, opening up five blocks of town to commercial development.



*At far right, Leland S. Murphy's "pea shed" in situ in the former railyards of Point Reyes Station, 1930s. Jack Mason Museum of West Marin History.*

In December 1941 the United States declared war on Japan and Italy. The Issei and Nisei farmers were removed and interned, never to return. The Italian farmers were banned from traveling west of Highway 1, thus ending the artichoke and pea farming on Point Reyes.

Before June of 1942, the entire trackside barn was moved to its current location, across Mesa Road from the 1914 Point Reyes Cooperative Creamery, and, after interior walls were installed, began operating as M. Vonsen Company, a feed and hardware store, supplying Point Reyes ranchers and farmers. A gas station component was added at that time, originally an Associated “Flying A” station. It was the first modern gas station in the area; prior to that, local stores had gas pumps in front of their buildings on the main street. When the Flying A station opened, most of those pumps were removed.

The feed store closed in the 1960s and the building had a variety of tenants since then, with few physical changes. The gas station section was remodeled over the years, although the footprint remained the same.



*Two views, taken on the same day circa 1948. The service station section has been remodeled, but most of the remaining building possesses a high level of integrity. Seth Wood photos, Jack Mason Museum of West Marin History.*

**Historical Integrity:** Approximately 80% of the building's exterior possesses excellent integrity. It retains the original corrugated steel siding, windows, porch structure, roofline, and footprint. The west end of the building has been remodeled a number of times, but the footprint and general layout has not changed; only the surface fabric, and windows and doors of that section have been altered. It is this evaluator's opinion that the building possesses integrity despite the alterations of 20% of the building's exterior on the west side.



*Property viewed to north, January 21, 2024.*



*Property viewed to northwest, January 21, 2024.*



*Historic window fabric and placement, January 21, 2024.*

*West end of building, showing stuccoed portion of exterior wall, January 21, 2024.*



**Statement of Historical Significance:** The building is a rare intact example of an agricultural building that reflects the unique crop farming (not dairy) history of Point Reyes: the artichoke and pea farms out on the Point, operated by immigrant Issei and Nisei Japanese and Italians. At the start of World War II, the Japanese were interned and the Italians classified as enemy aliens and prohibited from traveling west of Highway 1. The cultural importance of these immigrant farmers has not been acknowledged to date, and this is the last extant building in the area associated with that theme.

The building is also locally significant as the first and only modern gas station in Point Reyes Station, established circa 1941.

In the context of its setting, the building is a fine example of vernacular architecture in a rural agriculture-based coastal town, with its corrugated steel siding and barn-based form and footprint. The building's design mirrors that of the Point Reyes Cooperative Creamery across Mesa Road, lending cohesiveness to the north end of town. While its architectural significance might not stand on its own, it is an important part of the cultural landscape of Point Reyes Station. The gas station falls within the boundaries of the historic district designated by the Board of Supervisors in 2001.

**Discussion:** From a district point of view, the Point Reyes Station gas station barn is certainly part of the historic fabric of the town, as much as the nearby Point Reyes Cooperative Creamery, Point Reyes Emporium, or the Grandi building. It retains its historic integrity, especially the open porch and corrugated metal exterior. Its core barn structure is 93 years old and the gas station version is about 82 years old, placing it among the older buildings in town.

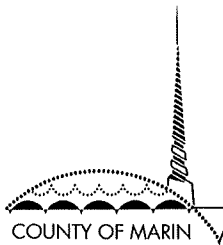
In this evaluator's opinion, the building could qualify with local historical significance on the National Register of Historic Places as a component of a Point Reyes Station Historic District. Such a district would include all of the buildings on the west side of A Street, the gas station, and those facing Mesa Road north of Highway 1 including the former Point Reyes Cooperative Creamery. It is already part of the county-designated Point Reyes Station Historic District.

**Character Defining Features:** The building's historical integrity depends upon the following extant features:

1. Open porch on south façade;
2. Corrugated metal cladding;
3. Window placement and style (double hung wood sash);
4. Footprint;
5. Roof angle and eave brackets;
6. Loading dock and floor elevation;
7. Open garage bay.

**Evaluator Qualifications:** Dewey Livingston has been a professional cultural resources consultant for the past 25 years, specializing in rural buildings, agricultural structures, landscape features, and historic districts in the West. Before that, for ten years he was a National Park Service (NPS) historical technician, evaluating historic buildings and structures all over the Western Region of NPS. He has successfully listed more than 40 buildings and sites in California to the National Register of Historic Places. Dewey is the co-founder, archivist and chairman of the Jack Mason Museum of West Marin History in Inverness, and a map archivist with the Anne T. California Room at Marin County Free Library.





**LOCAL COASTAL PROGRAM HISTORIC REVIEW CHECKLIST**

This checklist must be completed for all new construction, alterations, and additions in historic areas designated in the Local Coastal Program and for individual pre-1930 structures located in the coastal zone but outside of the boundaries of the historic areas. The checklist applies to all structures, including signs. For more information, please consult the Marin County Local Coastal Program Historic Study.

Please check the appropriate box in applicable categories.

**YES   NO   N/A**

**A. NEW CONSTRUCTION, ALTERATIONS AND ADDITIONS**

- Does the Project:
- 1. Preserve distinguishing original qualities or character of the structure or site and its environment?  YES    NO    N/A
  - 2. Retain or preserve any previous modifications that evidence the history and development of the structure or site?  YES    NO    N/A
  - 3. Retain or preserve distinctive stylistic features or examples of skilled craftsmanship which characterize the building's structure or site?  YES    NO    N/A
  - 4. Has every reasonable effort been made to provide a compatible use for the property in this community?  YES    NO    N/A
  - 5. Give consideration to harmonizing street furniture and signs?  YES    NO    N/A

**B. NEW CONSTRUCTION**

- 1. Is the roof shape similar to adjacent structures?  YES    NO    N/A
- 2. Is the building height consistent with surrounding structures?  YES    NO    N/A
- 3. Do the front facades give similar directional expressions (vertical or horizontal)?  YES    NO    N/A
- 4. Are building setbacks similar to adjacent structures?  YES    NO    N/A
- 5. Will new landscape features (including parks, gardens, fencing, benches, walkways and signs), be compatible with the character of the neighborhood?  YES    NO    N/A
- 6. Is the design compatible in scale, design, materials and texture with surrounding structures?  YES    NO    N/A

YES   NO   N/A

- |                          |                          |                                     |   |
|--------------------------|--------------------------|-------------------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 7. Will a contemporary design that is compatible with the mood and character of the surrounding neighborhood be used? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 8. Will mechanical equipment such as air conditioners and television antennae be placed in conspicuous locations?     |

**C. ALTERATIONS, RESTORATIONS**

- |                                     |                                     |                                     |  |
|-------------------------------------|-------------------------------------|-------------------------------------|--|
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 1. Has the applicant applied for designation of a historic structure?  |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 2. Does the State Historic Building Code apply?<br><br>Will the proposed project:  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 3. Retain the front of the building to preserve the architectural and historic character of the building?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 4. Retain distinctive features such as the size, scale, mass and building materials, including roofs, porches and stairways that give the community its character? |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 5. Retain landscape features (including parks, gardens, fencing, benches, signs, walkways), that reflect the structure's development and history?                  |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 6. Place new additions without destroying local view points?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 7. Preserve or duplicate original details (such as cornices, brackets, windows, doors, shutters, siding, railing) of architectural significance)?                  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 8. Repair or stabilize weakened structural members and systems?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 9. Retain original materials where possible?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 10. Preserve the original roof shape and material?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 11. Retain or replace, where necessary, architectural features in the roof such as dormer windows, chimneys, cornices and brackets?                                |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 12. Improve the thermal performance of the building through weather-stripping without damaging window and door frames?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 13. Improve or repair drainage to prevent damage to the structure or foundation where necessary?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 14. Retain any previous modifications that evidence the history and development of the structure?  |

YES   NO   N/A

15.   Make alterations and new additions in such manner that they can be removed in the future without impairing the essential form and integrity of the structure?

**D.   RESTORATION**

1.   Are any deteriorated architectural features being repaired rather than replaced, where possible?

2.   Where replacement of deteriorated architectural features is necessary, do new materials match the material being replaced in color, texture, composition and design?

3.   Will cleaning methods undertaken damage the historic building materials?

**E.   DEMOLITION**

1.   Is the building or structure of such architectural or historic interest that its removal would be to the detriment of public interests?

2.   Is the building or structure of such interest or significance that it could be designated as a National, State or local historic landmark?

3.   Is the building of such old and unusual or uncommon design, texture and/or material that it could not be reproduced or be reproduced only with great difficulty and/or expense?

4.   Would retention of the building or structure help preserve and protect an historic place or area of historic interest in the County?

5.   Would retention of the building or structure promote the general welfare of the community by encouraging study of local history, architecture and design or by developing an understanding of the importance and value of the local culture and heritage?

6.   Can the structure be converted to another use?

7.   Is the structure in a state of major disrepair?

8.   Has the local historical group or society been contacted?

9.   Has the State Historic Preservation Office been contacted?

10.   Has an attempt been made to locate a purchaser for the property?

11.   Has an alternative site for the structure been researched?

## Immanuel Bereket

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**From:** Susan Rangitsch <susan.rangitsch@gmail.com>  
**Sent:** Wednesday, January 31, 2024 11:32 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station Gas Station

You don't often get email from susan.rangitsch@gmail.com. [Learn why this is important](#)

Dear Mr. Bereket,

The proposed changes to this historic property threaten both the safety and the character of a small town. This must not go forward as currently scheduled. Your hands are not tied on this...stand up for something important. Come and visit the site, meet the people who live here. For you this may be just a project on paper that meets certain requirements. But this project is the "gateway" to our village...a village that is rich in history. A village that doesn't deserve to have a convenience store, all for the sake of ONE affordable unit of housing. Please find a way to reject this plan.

Best Regards,  
Susan Rangitsch  
Local Resident

## Immanuel Bereket

---

**From:** Shirley Salzman <shirley\_salzman@yahoo.com>  
**Sent:** Wednesday, January 31, 2024 11:50 AM  
**To:** Immanuel Bereket  
**Subject:** mini mart in Point Reyes?

[You don't often get email from shirley\_salzman@yahoo.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Dear Mr Bereket,

Please come and take a look at the proposed site of five apartments and a mini mart. The site is already a traffic jam with limited parking. The description on the proposal does not do the situation justice. This is so far a village with a history that has not been obliterated by thoughtless development. I have lived here since 1989 and each year I see more tourists. I welcome them, after all this is next to a National Park...their National Park. I have noticed that they are glorying in the town as a a reminder of California as it might have been.

As a long time resident I know it is impossible to buy (or rent) a place to live. I applaud the gas station owner's move to add housing but a mini mart seems totally a profit motive with no concern for the input of the people who live here.

Thanks for your attention. I'll be at the 10 AM meeting February first, Shirley Salzman

## Immanuel Bereket

---

**From:** Katharina Sandizell-Smith <katharinasandizellsmith@hotmail.com>  
**Sent:** Tuesday, January 30, 2024 10:48 AM  
**To:** Immanuel Bereket  
**Subject:** Opposition to Gas Station Point Reyes Station

Hi Manny,

We oppose the gas station plans in point reyes station. They do not fit the size or traditional beauty of our town. Visitors flock here because of this beauty and charm, not for huge 2000 sq foot mini-marts.

The configuration of this project would be a passionately unwanted blight to our community.

The large propane tank is an obvious fire hazard as well as contribute to the gridlock that this project in general already will create.

I realize there are four (unsafe) housing units attached to this project, but this should not be a reason to approve it.

Please deny this application.

Thank you,  
Katharina Sandizell, Point Reyes Station

## Immanuel Bereket

---

**From:** Barry Smith <barryandrew1071@gmail.com>  
**Sent:** Tuesday, January 30, 2024 12:34 PM  
**To:** Immanuel Bereket  
**Subject:** Gas Station expansion

You don't often get email from barryandrew1071@gmail.com. [Learn why this is important](#)

I oppose the gas station plans in Point Reyes Station.  
It does not fit the size, scale, and character of our town in any way.

One affordable unit in 4 should not be a reason to expedite this project.

The project will create gridlock, unsafe living conditions, and a potential fire hazard with the huge propane tank.

The huge almost 2000sq. foot convenience mart will be an unwanted blight in our community.

Please deny this application.

Thank you,

Bary Smith, Point Reyes Station

## Immanuel Bereket

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**From:** Timothy Stanton <tkeelst@aol.com>  
**Sent:** Wednesday, January 31, 2024 11:30 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes gas station

[You don't often get email from tkeelst@aol.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Dear Mr. Bereket,

Thank you for accepting and reviewing comments from citizens of the Point Reyes area regarding the proposed remodel of the Redwood fuel gas station. I am working overseas this month, so cannot attend the meeting tomorrow at the Civic Center. But if I was home, I would attend as I am very concerned about this proposal and what it may inflict on our village. As you must know Point Reyes Station is a very small commercial area that already contains a pharmacy selling food and other items in addition to pharmaceutical products. The Palace Market is a full service grocery store which well serves the snack needs of tourists and day trip visitors to our area not to mention local people. The deli at the south end of town also provides fast food and snack items. We have four restaurants. This little village does not need, nor does it desire yet one more vendor of these food products. To my knowledge no one has requested it.

I understand the desire of the current gas station property owner to leverage more earnings from the site in addition to fuel sales. But at what cost does this come to his neighbors? What precedent will approval of his proposal set for the next property owner who wishes to turn more commercial and tourism focused? A fast food franchise?

Might there be a way to grant the gas station owner a permit to remodel and offer low income housing thereby earning income from building space that currently earns little or none without the expansion of the grocery offerings? Might something be done to mitigate traffic jams his proposal will create, reduction of space for truck refueling, etc.? Marin County should be proactive and creative in addressing this situation. As a tax payer I expect nothing less. Please do not let this proposal pass through without rigorous analysis and review of alternative more sustainable ways to proceed that fit our community's values and principles.

Thank you very much for listening,

Timothy K. Stanton, PhD  
P.O. Box 344  
Point Reyes Station, CA 94956



## Immanuel Bereket

---

**From:** victoria vswift.net <victoria@vswift.net>  
**Sent:** Wednesday, January 31, 2024 12:23 PM  
**To:** Immanuel Bereket  
**Subject:** Proposed Gas Staion Development

You don't often get email from victoria@vswift.net. [Learn why this is important](#)

Please take note of my opposition to the proposed Gas Station Store and Apartment Complex Development as presented

I feel that the development of these buildings to the scale specified is out of character for the town which is mandatory to maintain in view of its historic value and the proximity to the parklands.

. The creation of a mini-mart and conversion of the gas station, at the sharp turn in the highway is already confusing and somewhat dangerous, especially on weekends, holidays and summer season. the proposed development would back up traffic on the highway in the midst of town as well as cause accidents. It is difficult to believe that an onsite review of the traffic flow in town and specifically at the corner of the gas station would not make this issue very clear.

The propane tank use would be dangerous to neighbors as well as a further traffic issue.

I fully endorse the statements made below and I am hopeful that the proper steps will be taken to truly evaluate the benefits and problems of this project.

Best regards

Victoria Swift  
Resident and business owner  
P O Box 397  
Point Reyes, CA 94956

Design Review

Presentation 01/18/2024

Gas station project

1. We fully support our existing gas station as an important and valued service for West Marin
2. We support adding rental units in our downtown village. We would hope more than 1 of the 5 units could be affordable, but are aware the project only requires 1 affordable unit, and 4 market rate
3. We are relying on Marin County and California codes, regulations and health standards to approve the front apartment which is 6' from the pumping station, and directly on the gas station car line up pad. Many have questioned the health issues, but we defer to the guidance from the County.

4. We are requesting a circulation/traffic study to demonstrate the safety and access to the gas pumps for horse trailers, landscaping trucks, trailers, boats and larger vehicles.
5. We are asking for removal of the 1000g commercial propane tank which project owner is expecting to fill removable 5 g propane tanks as well as RV propane tanks. There is not adequate parking for class A motorhomes (25-45 ft) to park while being filled. The tank is directly across from one of the historic homes, and A street is one of the historic neighborhoods w/o any commercial heavy use. Double parking on A street is not acceptable. Olema campground has offered this service for over 30 years, is open 7 days a week with more than adequate access and w/o encroaching on traffic or our neighborhoods.
6. We are asking the project owner to demonstrate how residents of the apartments (as well as pedestrians) will access the pathways to their home while on foot, there are no pedestrian crosswalks to either side of the apartments or market.
7. The perpendicular parking on Mesa Road will create some traffic hazards as the food pantry (a valuable resource in our community) is directly across the street. The cars getting in and out with pedestrians attempting to access the market has not been studied.
8. The 2 parallel parking spots in front of the market and gas pumps do not have any logical entry to actually park and /or leave. There is only 24' from the pump to the wall.
9. The expansion of the cashier room of 215 sqft to a convenience store of 1,930 sqft will constitute much higher use and traffic. We disagree with the county assessment that there will be less usage, therefore the county is not requiring a traffic/circulation study.
10. We believe CalTrans should be involved due to the anticipated logjam/ backup on highway 1 since the turning radius is greatly decreased.
11. We are asking the county to review any regulations of selling tobacco products, cigarettes, oral products, zyn, chew and vape products, within 1000 ft from West Marin School and in the zoning C-VCR-B2.
12. We are asking for a workable trash/garbage plan for the increased single use plastic food containers, adequate trash bins on site and compliance with the new Marin County food container ordinance if possible.

## Immanuel Bereket

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**From:** Julie VanAlyea <julie@redwoodoil.net>  
**Sent:** Tuesday, January 30, 2024 9:13 AM  
**To:** Immanuel Bereket; Matt Donohue  
**Subject:** RE: Request for final plans

Manny

Thank you for all your help getting us to this point. I am looking forward to Thursday.

Julie

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**From:** Immanuel Bereket <Immanuel.Bereket@MarinCounty.gov>  
**Sent:** Tuesday, January 30, 2024 7:51 AM  
**To:** Julie VanAlyea <julie@redwoodoil.net>; Matt Donohue <mtonohue@transtechconsultants.com>  
**Subject:** Request for final plans

Matt and Julie,

To make the record clean, I'd like to have one final set of plans that reflect the revised site plan and floor plans that are internally consistent. You can submit it via email.

Also, please note that the hearing will begin at 10:00 am on Thursday. I will shortly send a supplemental memorandum for the hearing.

Manny

Email Disclaimer: <https://www.marincounty.org/main/disclaimers>

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## Immanuel Bereket

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**From:** Claudia Vieira <cvgardendesign@gmail.com>  
**Sent:** Wednesday, January 31, 2024 8:25 AM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station gas station

You don't often get email from cvgardendesign@gmail.com. [Learn why this is important](#)

Hello,

I am a homeowner in Inverness Park outside of Point Reyes Station. I am writing to express my concern about the proposed changes to the gas station in town.

There is certainly in need for more housing on our area. I don't know whether housing at a gas station could be safe for those living in it. In any case, I believe it is critical that this project preserve the historical integrity of the building. I don't think the addition of a mini mart, if it requires rebuilding the facade, is a plus for our community. There are other places nearby where people passing through can buy snacks.

The quaintness of this town is what attracts people to it. Why take a step towards making this town look just like every other town across America?

Thank you for your consideration,  
Claudia Vieira  
12255 Sir Francis Drake Blvd.  
Inverness, Ca  
94937

## Immanuel Bereket

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**From:** ilene wolff <i.wolf@comcast.net>  
**Sent:** Wednesday, January 31, 2024 11:39 AM  
**To:** Immanuel Bereket  
**Subject:** PT Reyes Gas Station

You don't often get email from i.wolf@comcast.net. [Learn why this is important](#)

RE: Preserving the feel of downtown PT Reyes;

Addressing possibility of urban Sprawl and Blight in an historically for the most part intact slow community

Dear Immanuel:

I am glad you are assigned to this project.

We are a family of 4 who has lived in West Marin for 25 years.

Thank you for considering the communities concerns about the viability of this proposed expansion by a corporation who has little investment in this historical community.

There is no place for a huge convenience store, in a tiny town like this.

Thank you for all you do and respecting why this is a tourist destination for so many in the Bay Area and internationally,

Dave Eifler

Ilene Wolf, MFT, RDT

415.420.3619

ilene@ileneWolf.com

## Immanuel Bereket

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**From:** Mamie Yee <mbyee@sbcglobal.net>  
**Sent:** Wednesday, January 31, 2024 10:14 AM  
**To:** Immanuel Bereket  
**Subject:** Proposed Remodel of Point Reyes Gas Station

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Dear Mr. Bereket,

I oppose the proposed remodel of the Point Reyes Gas Station without first doing a traffic/circulation study. This site does not have sidewalks and is on a corner with lots of traffic. I worry about the safety of school children who may shop at the proposed snack station.

Best,  
Mamie Yee  
Point Reyes Station

## Immanuel Bereket

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**From:** Scoby Zook <scoby@scobyzook.com>  
**Sent:** Wednesday, January 31, 2024 12:01 PM  
**To:** Immanuel Bereket  
**Subject:** Point Reyes Station Gas Station remodel

[You don't often get email from scoby@scobyzook.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Hello,

I am a longtime resident of Inverness and visit Point Reyes station often.

I am writing to protest the proposed convenience store for this remodel. We don't need a convenience store; there are several other options in the close vicinity. Another issue is the complicated corner where Route One curves into town. The gas station is at that corner and already produces quite a bit of confused traffic. We don't need another "attraction" at that already difficult intersection, and we also don't need the additional trash that a convenience store will produce.

So, long story short, keep the housing, get rid of the convenience store.

Sincerely,

Scoby Zook

SZ @ iPhone 📱  
(c) 415-261-7792  
(h) 415-669-7313