



Roadmap to Drawdown

Introduction to Key Strategies
of Marin Climate Action Network (MarinCAN)

September 28, 2022
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Overview

Roadmap to 'Drawdown'

How 10 core climate solutions can lead Marin below net zero carbon by 2045 by **sharply reducing greenhouse gas emissions (and capturing any excess)**—with equity, economic vitality, and whole community partnership.



Climate Impacts

Roadmap to 'Drawdown'



Climate Solutions

Roadmap to 'Drawdown'



Global Setting, Global Timing

Roadmap to 'Drawdown'

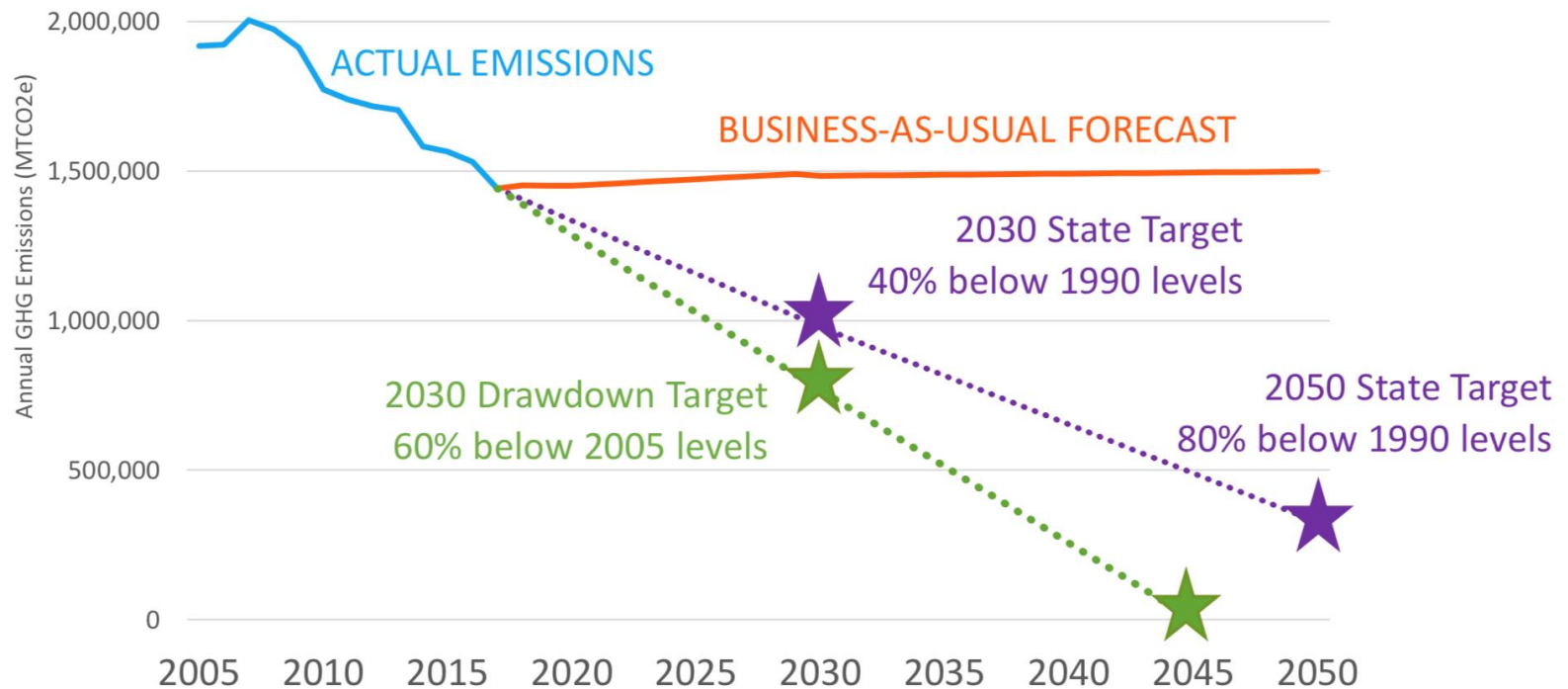


Greenhouse Gas Goals

Roadmap to 'Drawdown'



- **60% reduction of GHG** emissions countywide by 2030.
- 'Drawdown' net GHG emissions **below zero by 2045**.

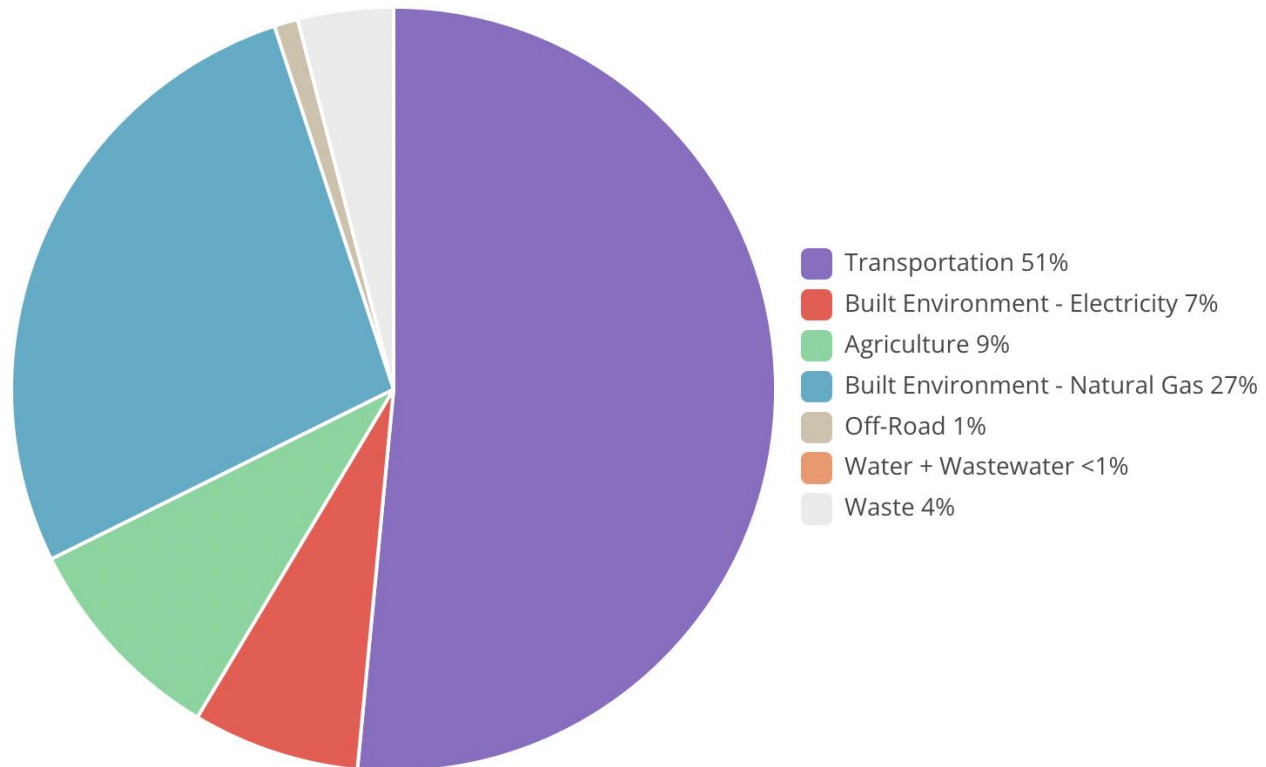


GHG 'Direct Emissions'

Roadmap to 'Drawdown'



Marin County Emissions by Sector, 2019



- Primary targets: **transportation, energy, agriculture, waste.**

Climate Solutions Collaboratives

Roadmap to 'Drawdown'



**Renewable
Energy**



Transportation



**Buildings and
Infrastructure**



**Local Food and
Food Waste**



**Carbon
Sequestration**



**Climate
Resilient
Communities**

- 150 people working in 6 focus areas over 2 years.

Potential Emission Reductions 2020 - 2030 (to 60% of 2005 GHG)



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45,000	tons/yr	Fossil-free electricity (systemwide by 2030 - MCE)
408,000	"	Zero-emission vehicles (2030 goal - R&DC)
149,000	"	Building electrification (40% reduction - Electrify Marin/MCE)
42,000	"	Biomass recovery (2025 SB1383 goal - MBP/ZWM)
7,000	"	Local food & agriculture (5% reduction - AIM)
9,000	"	Climate resilient communities (2030 goal - RN)

660,000 DECREASE in TONS of CO₂e EMITTED YEARLY BY 2030

*Continue to decrease at additional 38,400 tons yearly
to reach 90% of 2005 emissions by 2045 (192,000 tCO₂e)*

Potential Sequestration Reductions 2020 - 2030



Roadmap to 'Drawdown'

9,000 tons/yr Existing Carbon Farm Plans (10,000 ac - RCD, CCI)

19,000 " New Carbon Farm Plans (20,000 ac - RCD, CCI)

28,000 INCREASE in TONS of CO₂e SEQUESTERED YEARLY BY 2030

395,500 tons/yr Baseline sequestration (sustained by Biomass ESP practices)

423,500 tons/yr 2030 sequestration

*Continue increase at additional 2,800 tons yearly to 2045 (+42,000 tons)
from more carbon farms, growth of vegetation & related efforts*

Projected Timeline (to below net zero GHG)

Roadmap to 'Drawdown'



	<u>2019</u>	<u>2030</u> **	<u>2039</u>	<u>2045</u>
Yearly tons CO2e * Emitted	1,432,351 (26% below 2005 GHG)	771,700 (60% below 2005)	426,100 (78% below 2005)	195,700 (90% below 2005)
Yearly tons CO2e * Sequestered	395,500 (28% of emissions)	423,500 (55% of emissions)	448,700 (105% of emissions)	465,500 (238% of emissions)
Net GHG balance	1,036,851	348,200	-22,600	-269,800

DRAWDOWN !

* 2005 countywide emissions baseline = 1,929,195 tons CO2e, per MCEP

* Current sequestration from countywide vegetation, per 'iTree' (sustained by *Ecologically Sound Practices*)

** Estimated increased sequestration & decreased emissions from MarinCAN Solutions



Additional Sequestration Possibilities

Roadmap to 'Drawdown'

9,000	tons/yr	Existing Carbon Farm Plans (10,000 ac)
19,000	"	New Carbon Farm Plans (20,000 ac)
4,000	"	Public open spaces (1,600 trees/yr + grasses, etc.)
3,000	"	Salt marsh restorations (3,500 acres x 0.8 tons/ac/yr)
2,000	"	Urban forestry (100 trees per town per year)
2,000	"	'Carbon gardening' (trees + bunch grasses, etc.)
1,000	"	Urban creekside restorations (50 trees per town/yr)

40,000 INCREASE in **TONS of CO₂e SEQUESTERED YEARLY BY 2030**

Continue increase at additional 6,000 tons yearly to 2045 from more carbon farms & growth of new vegetation (per iTree)

Climate Solutions: Electrification

Roadmap to 'Drawdown'



Zero-emission vehicles
Ride & Drive Clean



Building electrification
Electrify Marin, MCE Clean Energy
(Current program pending endorsement)



Fossil-free electricity
MCE Clean Energy
(Current goal pending endorsement)



Climate Solutions: Sequestration

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Carbon farming
Carbon Cycle Institute
Marin Resource Conservation District



Local food & agriculture
Agricultural Institute of Marin



Biomass Recovery
Marin Biomass Project, Zero Waste Marin



Climate Solutions: Resilience

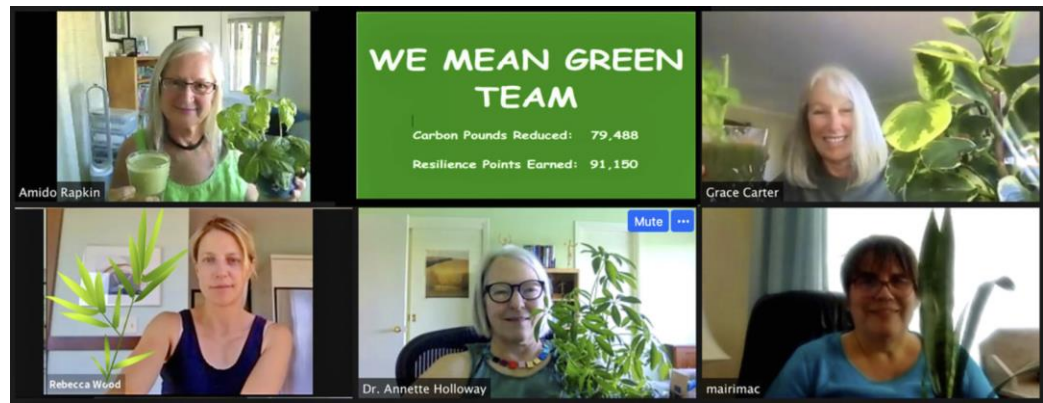
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CPR for the planet
Resilient Neighborhoods

Canal Community Resilience Hubs
City of San Rafael, County of Marin

Fairfax Pavilion Microgrid Pilot
Town of Fairfax



Potential Resources

Roadmap to 'Drawdown'



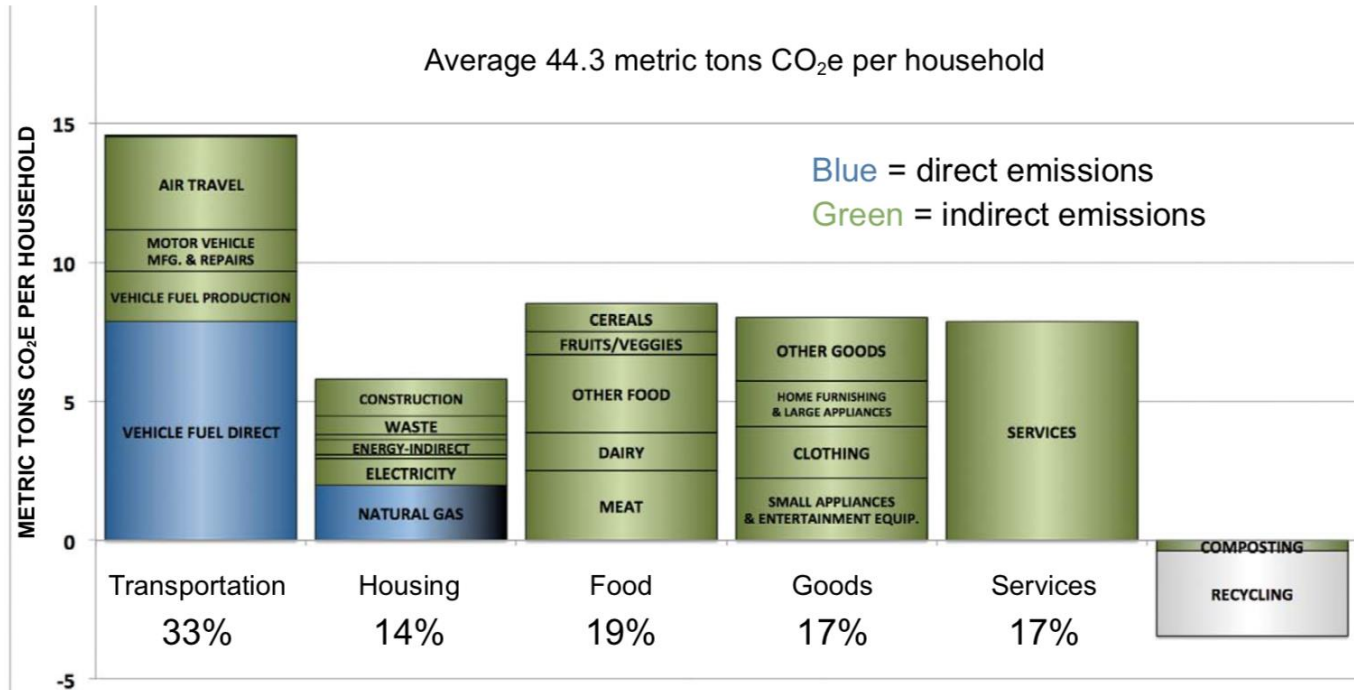
<u>Lead Organizations</u>	<u>Yearly budget*</u>	<u>Funding support</u>	<u>Regulatory & policy support</u>
Fossil-free electricity <i>MCE Clean Energy</i>	—	- MCE/PG&E utility rates - power purchase agreements	- already in MCE strategic plan - include in PG&E plans
Zero-emission vehicles <i>Ride & Drive Clean</i>	\$ 675,000	- TAM Measures A & B - federal, state, regional funds - % of added MCE electric use	- promote & support EVs (CCAPs, rate plans, charging) - CA & countywide EV Strategy
Building electrification <i>Electrify Marin, MCE Energy</i>	300,000	- federal, state, regional funds - PACE financing - % of added MCE electric use	- incentivize switch to electric ('reach' codes, rate plans) - require electric on replacement
Biomass recovery <i>Marin Biomass Project</i> <i>Zero Waste Marin</i>	180,000	- franchise agreement rates - ZWM landfill tipping fees - MWPA Measure C	- franchisees to meet SB1383 - mandatory organics recycling - BAAQMD permitting support
Local food & agriculture <i>Agricultural Institute of Marin</i>	1,000,000	- regional, state, fed. grants	- add local food to CCAPs
Climate resilient communities <i>Resilient Neighborhoods, Resilience Hub, Fairfax Pavilion</i>	200,000	- local, regional & state grants - local carbon offsets	- add resilience to CCAPs
Carbon farming <i>Carbon Cycle Institute</i> <i>Resource Conservation District</i>	2,060,000	- cap & trade/healthy soils \$\$ - % of restaurant tabs	- add sequestration to CCAPs
Organizational support <i>Drawdown Marin</i>	985,000	- County & city core support - 'impact' investment sources - philanthropic support	-align with CCAP implementation
ANNUAL TOTAL:	\$5,400,000	Continue to 2045 with Marin Climate Mobilization tax measure	
* Estimated yearly budgets based on 7/2020 draft MCAN Strategic Plan (p. 18), Appendix E, and individual Solution presentations.			

Addressing ‘Indirect Emissions’

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Figure 3-14. Bay Area Average Household GHG Footprint (Based on Consumption), 2013



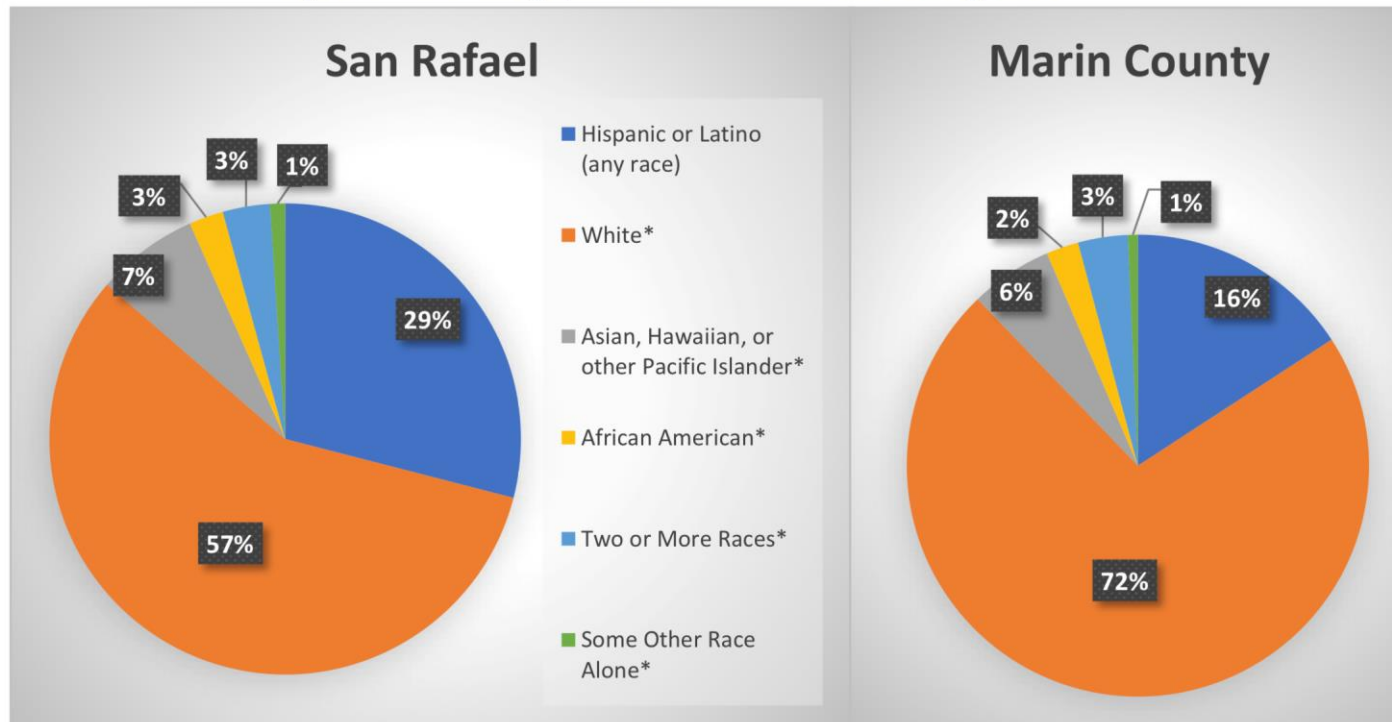
- Add a ‘**Beyond Marin**’ Solution to lobby for effective ‘**producer responsibility**’ laws, **carbon pricing**, and widespread use of MCAN models.
- Prioritize **local food & local purchasing** Solutions.
- Offset remaining emissions with additional **sequestration**.

Advancing Equity and Economy

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Figure 9: Racial Demographics in San Rafael and Marin County, 2016



- Pursue **green jobs & economic development** in all MarinCAN Solutions.
- Continue to develop **local housing, health & transit** Solutions.
- Support **environmental justice & vulnerable communities** in all Solutions.
- Structure **incentives** so people of all incomes can afford clean technologies.

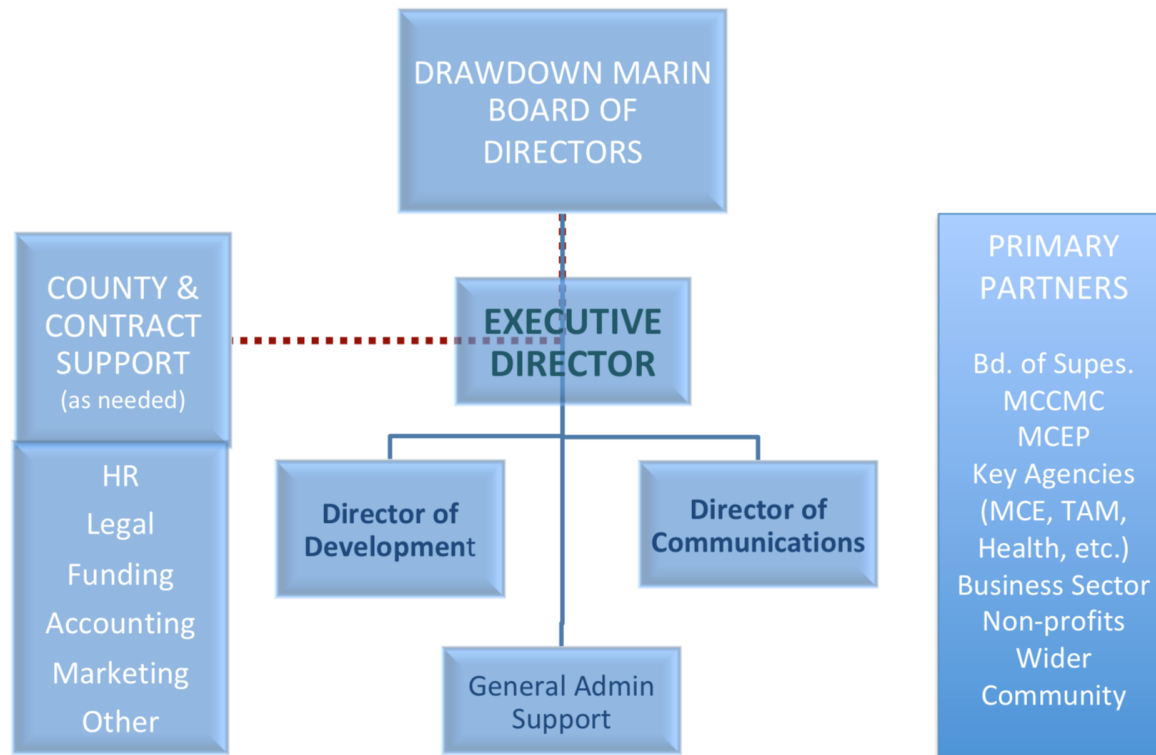
Engaging the Whole Community

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Broad-based Governance

Roadmap to 'Drawdown'



- Coordinates & supports DDM **Strategies, Development, Outreach.**
- **Oversight** by 10 Community Members, 2 County Supervisors, 2 City Council Members, 2 Municipal Staff Members, 3 Climate-related Agency Directors.

Comprehensive Approach

Roadmap to 'Drawdown'



1. Hold the vision.
2. Support the solutions.
 - ❑ *Funding*
 - ❑ *Policy*
 - ❑ *Messaging*
3. Build community-wide engagement.



A Few Next Steps

Roadmap to 'Drawdown'



- Refine & integrate this **'Roadmap'** into MarinCAN Strategic Plan.
- Endorse 'MCE Fossil Free' & 'Electrify Marin' as **additional Solutions**.
- Develop & endorse a **'Beyond Marin'** Solution, including producer responsibility, carbon pricing, and widespread use of MCAN models.
- Pursue all 10 endorsed Solutions to show **immediate impact**.
- **Fund MarinCAN core** support tasks, including development & outreach.
- Assure ongoing success of **MarinCAN public/private partnership**.



In Summary

Roadmap to 'Drawdown'



MARIN CAN cut most of the GHG it emits.

MARIN CAN store any excess GHG in a healthy landscape.

MARIN CAN manage this transition to grow equity, a green economy, and a vibrant community.

Drawdown is the goal. Time is of essence.

