PROJECT DESCRIPTION

PROJECT OVERVIEW

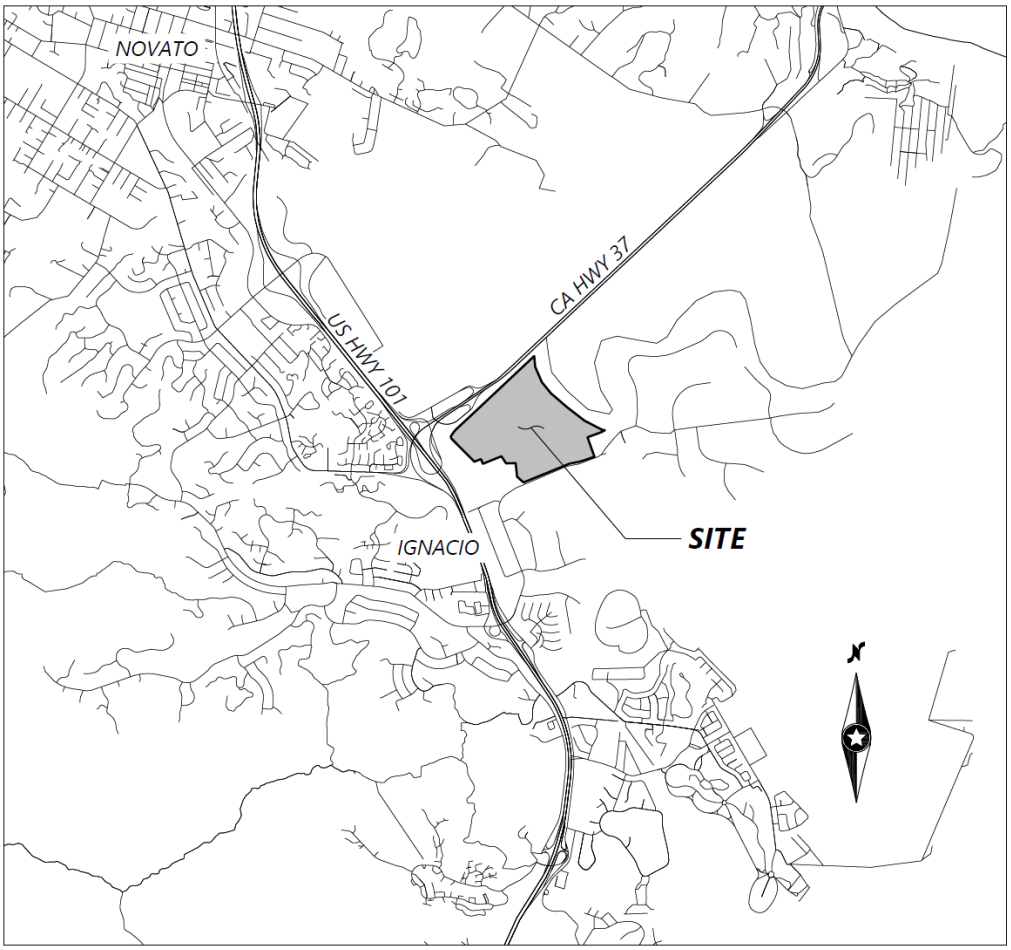
Marin ESS, LLC (Applicant), a wholly-owned subsidiary of Terra-Gen, LLC (Terra-Gen), proposes to construct, own and operate the TAM Energy Storage Project (Project), a lithium-ion battery energy storage facility capable of storing and delivering approximately 300 megawatts (MW) of electric energy and associated ancillary services into the California electric grid. The Project will be comprised of lithium-ion battery modules installed in racks housed in purpose-built outdoor Battery Energy Storage System (BESS) enclosures, associated equipment, a project substation, and an approximately one-quarter-mile generation tie-line (gen-tie) connecting the Project to the adjacent existing PG&E Ignacio Substation. The Project will provide important electric grid reliability services to Marin County and the greater North Bay region and will help mitigate the impacts of Public Safety Power Shutoffs (PSPS) by Pacific Gas & Electric (PG&E) in the local area. Battery storage is an essential element to California's plan for a clean energy future and a zero-carbon electricity supply by 2045.

The Project Site will be located at 495 Bel Marin Keys Boulevard, in unincorporated Marin County, California. The Project's batteries will be charged from the California Independent System Operator (CAISO) grid via the Project's interconnection to the Ignacio Substation. Energy stored in the Project's battery modules will then be discharged back into the grid when the energy is needed, providing important electrical reliability services to the local area and helping integrate renewable energy into the utility grid.

The Project will be monitored and operated remotely 24/7 from an off-site control center with no permanent on-site operations or personnel, no occupied buildings, habitable structures, or parking. Maintenance staff, typically in crews of two to four staff members, will visit the site bi-weekly and as needed for project maintenance. The site will be fully fenced and will not be open to the public. Terra-Gen controls approximately 134 acres (the Property – outlined in Figure 1 below) of which the approximately 20-acre Project Site is a part.

The Project will reserve the remainder of the Property not developed for the Project facilities as open space to be used for agriculture and potentially wetland restoration. In addition to satisfying any Project-specific mitigation needs, the remaining lands are planned to be used as a turn-key wetland mitigation site for other project proponents in the local watershed. Use of the site for wetlands mitigation would occur independently of and after all entitlements are received for the Project.

Figure 1: Project Location



PROJECT PURPOSE AND NEED

The Project purpose is to provide grid reliability and resiliency services to the local region and to help integrate renewable energy into the grid. The Project, with its interconnection to PG&E's 115kV Ignacio Substation, is strategically located at one of the most important substations in Northern California and the single most important substation in Marin County. The Ignacio Substation is a hub for the local electric system that serves as the middle-man between the high voltage transmission lines that bring power supplies from other regions of California and the west and the low voltage distribution lines that deliver energy to our homes and local communities. When you flip a light switch in Marin County and the North Bay, your power is likely coming from the Ignacio Substation. By locating the Project at the Ignacio Substation, the Project can most effectively deliver its reliability services and benefits to our homes.

The Project and the Ignacio Substation are located within what the CAISO defines as the "North Coast-North Bay Local Reliability Area" (NCNB LRA), which encompasses Marin, Sonoma and Humboldt Counties. At this location, the Project will provide services that improve local grid reliability and resiliency for Marin County residences. In doing so, the Project will also contribute to CAISO's efforts to minimize and mitigate the impacts of PSPS events that frequently impact the greater North Bay region. Battery energy storage projects compliment renewable energy supplies and help maximize the efficiency of those renewable energy investments California has already made throughout the State. The Project does this by charging its batteries typically in the middle of the day when solar and wind energy supplies are abundant and often in surplus, and then discharging that energy supply back to

our communities when the renewable energy supply is not available, or in short supply, typically in the evenings, just as our demand for energy spikes as we return home from the workday.

Battery storage projects are essential for California to provide reliable energy supplies and meet its goal of a zero-carbon future by 2045. California's need for additional battery storage and renewable energy supply is immediate. While California has been successful in bringing approximately 3,000 MW of battery storage on-line through 2021, California requires an additional 11,000 MW of new energy resources by 2025 to maintain grid reliability. Of that 11,000 MW, 4,800 MW must come from battery storage. Furthermore, to address California's medium-term needs, in February 2022, the California Public Utilities Commission approved a $49 billion Clean Energy Plan that requires load serving entities to procure approximately 25,000 MW of renewable energy supply and approximately 15,000 MW of new battery storage by 2032 to advance California's grid reliability and zero-carbon future goals[1].

A summary of key Project benefits includes:

- Maximize renewable energy use by storing the energy during off-peak times when renewable energy supply is abundant for re-distribution during peak demand when renewable supplies are off-line
- Support and optimize existing and future renewable energy generation investments and California's goal of a zero-carbon future
- Offset the need for additional electricity generated from fossil fuels, and thereby assist the state in meeting its air quality goals and reducing greenhouse gas emissions
- Provide back-up power during power outages and help mitigate and minimize PSPS events in the North Bay region
- Reduce dependence on costly, high-fire risk transmission infrastructure by placing electric energy supplies close to the communities they serve
- Reduce power bills by lowering peak power demand charges
- Contribute to national security by reducing California's reliance on foreign oil
- Provide Marin County and the local economy significant economic benefits via construction jobs and the ancillary economic stimulus associated with the construction and operations of the Project
- Provide Marin County with additional property tax revenues associated with the Project investment
- Permanently protect up to 114 acres of the Property conserved as open space.

PROJECT LOCATION

BESS Facility Site

The Project is proposed to be located approximately 770 feet off of Bel Marin Keys Boulevard in unincorporated Marin County, California on an approximately 20-acre Project Site, part of a larger 116.41-acre parcel (APN 157-171-24). Terra-Gen controls the 133.55-acre Property, which is comprised of two parcels, the approximately 117-acre parcel on which the Project Site is located (APN 157-171-24) and an adjacent 17.17-acre parcel (APN 157-171-23), which will be used for a portion of the generation tie-line route and right of way to the PG&E Ignacio substation.

The Project Site centroid is 38.080°N, 122.535°W on the Novato U.S. Geological Survey (USGS) 7.5-minute quadrangle (Township 03 North, Range 06 West, Sections 20, 21, 28, and 29, Mt. Diablo Meridian). The Project is bounded by PG&E's Ignacio Substation and Novato Sanitary District Wastewater Treatment Plant (WWTP) to the

[1] Source: California Public Utilities Commission approves US$49 billion clean energy plan - Energy Storage News (energy-storage news), https://www.energy-storage.news/california-public-utilities-commission-approves-us49-billion-clean-energy-plan/

west, a railroad and State Route (SR) 37 to the north, Novato Creek to the east, and a channelized slough associated with Arroyo San Jose to the south. U.S. Route 101 is located west of the Project Site and the Bel Marin Keys residential community is located approximately ¾-mile east of the Project Site.

Terra-Gen has executed a purchase and sale agreement for the Property, currently owned by the Leveroni family (Owners). The agreement includes use of a permanent access easement and utility right of way along the levee road connecting the Property to Bel Marin Keys Blvd. The Property, including the Project Site, is vacant land that has been filled, planted and maintained as pasture for cattle grazing by the Owners and previous owners of the Property. The Project Site will be the fenced area that will include the energy storage equipment and structures and approximately 1 acre will be the separately fenced Project substation facilities, with the balance of the acreage used for grading, fill, drainage, access and transmission corridors. Approximately 5 acres of additional area may be used for temporary construction parking and laydown, to be returned to its existing condition upon completion of construction. The Project design will maintain the existing drainage patterns and limit runoff to less than or equal to the existing discharge rate using county-approved best management practices for stormwater control.

The Property, including the Project Site, is not encumbered by any agricultural, open space or conservation easements, Williamson Act contracts, nor any other title limitations that might restrict or prohibit the use of the site for the Project.

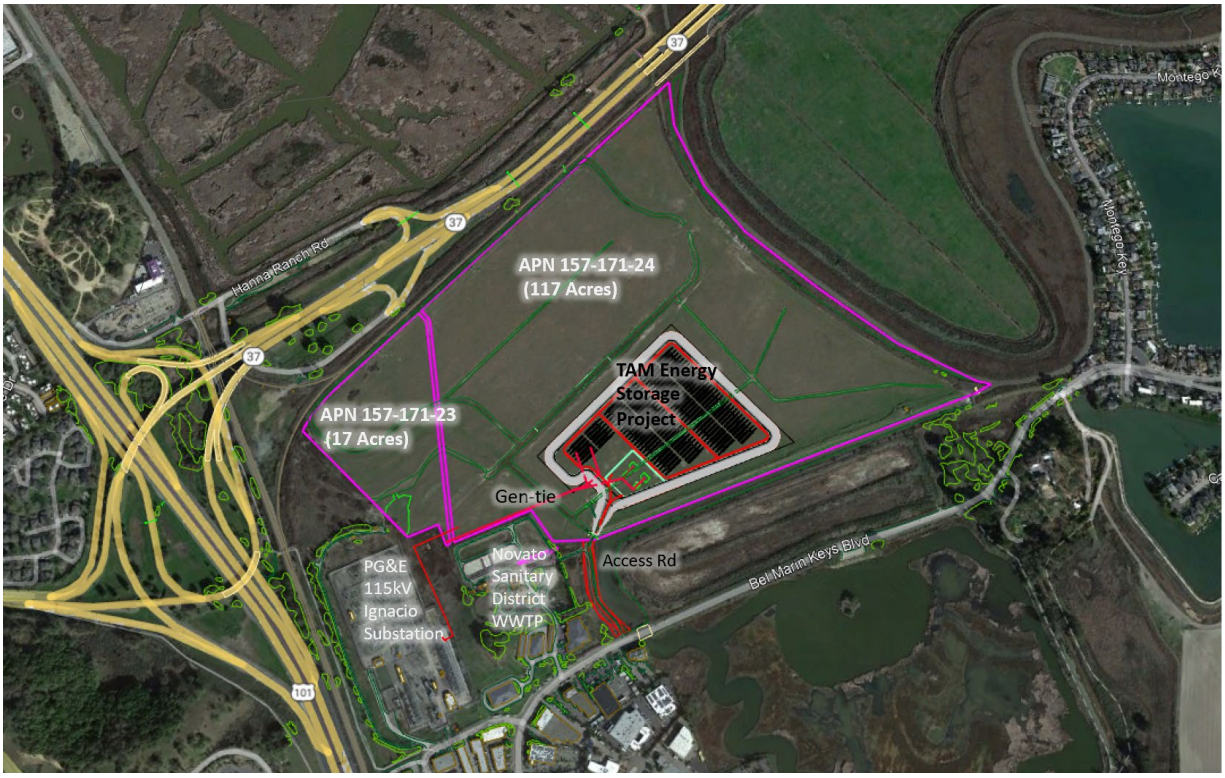
Other Project Features

Site Access and Water Supply Line: A 625-foot segment of existing, gated gravel road from Bel Marin Keys Boulevard to the Property will be used for site access and any necessary underground utilities, including the potential need for a water supply line for the purpose of fire protection. The existing road traverses a permanent access and utility easement across APN 157-171-19, owned by Bel Marin, LLC and where a local U-Haul and Public Storage Facility is located. APN 157-171-19 is located within the City of Novato and is designated LIO (Light Industrial/Office) in the general plan and zoned PD/B/F2 (Planned District/Baylands/Secondary Floodway) use According to City of Novato General Plan[2], the LIO land use applies to areas appropriate for light industrial and manufacturing uses, including warehousing, office, retail, live-work, and utility uses that will not create objectionable noise, smoke, odor, dust and other nuisances. No discretionary permits are anticipated to be required from the City of Novato to improve and use this existing roadway.

Generation Tie-Line and Ignacio Substation Interconnection: The Project's new one-quarter mile 115kV overhead generation tie-line will travel from the Project's on-site substation west from the Project Site approximately 950 feet through the Property and then onto PG&E property where it will continue west for another 400 feet to the Ignacio substation. PG&E has explained that a new bay position may be required to accommodate the Project, which would involve increasing the footprint of the substation area to create adequate spacing between equipment and the existing fence line. The PG&E Ignacio substation is located on APNs 151-171-17 and 157-400-18 within the City of Novato where both parcels are designated Community Facilities, Public Utilities and Civic Uses (CF) and zoned CF/F2 (Community Facilities/Secondary Floodway).

[2] Accessed online at: https://www.novato.org/home/showpublisheddocument/32287/637526315486370000

Figure 2: Terra-Gen's 134-acre Property



CONSISTENCY WITH LOCAL LAND USE AND ZONING POLICIES

The Project Site is located in unincorporated Marin County, outside the sphere of influence of the City of Novato, but within Novato's urban service area. Surrounding areas are characterized by commercial development, open space and agricultural land to the east, commercial and industrial developments to the south and west, and transportation corridors to the west and north, including U.S. Highway 101, State Route 37, the Smart Train and the Northwestern Pacific Railroad.

Marin Countywide Plan Designation

The Property has a Marin Countywide Plan land use category of AGC3 (Agriculture and Conservation 3), and it is inside the Bayland Corridor. The Property is represented on Map 1.6 (Bel Marin Keys Land Use Policy Map) from the 2007 Marin Countywide Plan[3]. Agriculture and Conservation land use categories (AGC 1-3) are established for land with resource values for both agricultural production and wetlands and wildlife habitat. There are no community or area plans that cover the Property and it is not part of the Marin Agricultural Land Trust, and there are no Williamson Act contracts associated with the site.

Zoning

The Property is located within the ARP-2 zoning district (Agricultural, Residential Planned 2-acre minimum lot size) overlayed by the BFC (Bayfront Conservation) combining district within the Diked Bay Marshland and Agriculture subzone. The ARP zoning district is intended to protect agriculture but allows for residential and commercial uses in areas that are transitional between residential and agricultural production areas. Public utility facilities like the

[3] Accessed online at: https://www.marincounty.org/depts/cd/divisions/planning/2007-marin-countywide-plan

proposed Project are allowed in the ARP-2 zone with a use permit (see Section 22.08.020; Table 2-1—Allowed Uses and Permit Requirements for Agricultural and Resource-Related Districts). Section 22.08.040 indicates that ARP is one of the County's planned zoning districts where development standards are determined by master plan and/or design review, as governed by Chapter 22.16 (Discretionary Development Standards). As noted in the Development Code, "the ARP zoning district identifies agricultural areas suitable for residential development, with varied housing types designed *without the confines of specific yard, height, or lot area requirements*, where the amenities resulting from this flexibility in design will benefit the public or other properties in the community (see Section 22.08.020 (*emphasis added*)). The ARP zoning district is consistent with Agriculture land use categories and the Agriculture and Conservation 3 land use category of the Marin Countywide Plan. "Public Utility Facilities" are allowed in the ARP-2 zoning district with a use permit. The Development Code indicates that "**Public Utility Facilities (land use)" . . .** consist of fixed-base structures and facilities serving as junction points for transferring utility services from one transmission voltage to another or to local distribution and service voltages. These uses include . . . Electrical substations and switching stations." (see Section 22.130.030).

Consistency Analysis

The Project will be designed, constructed, and operated consistent with the goals and policies of the Marin Countywide Plan and county zoning regulations, as further detailed below.

- **Land Use Policy - Agriculture and Conservation 3 (AGC-3).** Although a small portion of the 117-acre parcel where the Project Site is located will be developed as a non-agricultural use, consistent with Goal CD-8 (Land Use Categories), the facility footprint is the minimum feasible to accomplish the guiding principles of AGC-3 land use category, including: reducing greenhouse gas emissions that contribute to global warming; preserving our natural assets; protecting our agricultural assets; and fostering businesses that create economic, environmental, and social benefits.
- **Land Use Policy - Baylands Corridor.** The Project parcel will not be subdivided (Policy AG-1.5, Restrict Subdivision of Agricultural Lands Within the Coastal, Inland Rural, and Baylands Corridor). Consistent with Goal CD-1 (Environmental Corridor Land Use Framework), and Policies CD-1.1 (Direct Land Use to Appropriate Areas) and CD-1.8 (Reduce Potential Impacts), the remaining land not developed as a BESS facility will be preserved for habitat conservation compatible with agricultural use.
- **Zoning Code - Agricultural, Residential Planned (ARP).** Section 22.08.030 of the Development Code identifies allowed uses for the ARP district, including Public Utility Facilities that are allowed in the ARP-2 zoning district with a, with a Conditional Use Permit (CUP). A BESS is a "Public Utility Facility" because it is a fixed base structure that stores and distribute electrical energy from the grid and is similar to an electrical substation or switching station in size and characteristics.

  The BESS facility will be sited close to existing roads, here Bel Marin Keys Boulevard. An existing access road will be improved and used as the main entrance to the Project Site, therefore new road construction will not be required. In addition, the facility footprint will be minimized as much as possible to reduce impacts on the natural environment, leaving the remainder of the Property preserved for wetland conservation and agricultural use. Additionally, the BESS facility will not obstruct view corridors to the bayfront.

Section 22.08.040 indicates that nonagricultural development in ARP-2 districts shall be clustered on no more than 5% of the gross acreage, *to the extent feasible*, with the remaining acreage retained in agricultural production and/or open space. Because the Property is located in a planned zoning district, it is subject to Design Review under Chapter 22.16, which contemplates individualized site planning.[4] It is therefore not clear that the 5%

[4] Note that Section 22.08.040(B) states that where there are conflicts between Chapter 22.16 and the development standards for ARP districts in Table 2-2, the standards of Chapter 22.16 shall control, suggesting that development standards in an ARP

clustering requirement applies at all. However, if it applies, the Development Code indicates the 5% clustering requirement is only applicable if feasible. As further explained below, limiting the BESS facilities to only 5% of the 117-acre parcel, or an area off approximately 5.8 acres, is not feasible here because it would not allow the project to efficiently achieve its key function of providing energy storage and would not prudently make use of vacant land immediately adjacent to an existing PG&E electrical substation which has capacity to service a 300 MW storage facility.

As noted, the 5% clustering requirement only applies if it is "feasible." Section 22.130.030 of the code defines "feasible", as, "that which is capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors." This definition is identical to the definition of "feasible" under CEQA, specifically under CEQA Guidelines 15364. The County may reasonably apply a similar interpretation of the term "feasible" in the zoning context as it does in a CEQA context, allowing the interpretation of what is feasible to include considerations of what is "desirable" from the standpoint of achieving policy goals. See, for example *California Native Plant Soc'y v City of Santa Cruz* (2009) 177 CA4th 957, 1001, where the city found alternatives to the proposed project "infeasible" because they would not accomplish its policy goals of promoting transportation alternatives and access for persons with disabilities. The court upheld the city's findings, concluding the statutory language providing that an agency may consider social and other considerations allows the agency to find an alternative infeasible because it is impractical or undesirable as a matter of policy.

The strategic location of the Project maximizes the electric energy reliability and environmental benefits for Marin County and makes a small footprint and capacity for the project "infeasible." As we explain above, the TAM Energy Storage Project, represents a unique opportunity for Marin County to support a significant sustainable energy project that will bring important grid resiliency services to the local area, help prevent future PSPS, support Marin County and California efforts to reduce greenhouse gas emissions, and achieve a zero-carbon future by 2045. This site is unique because it is located immediately adjacent to PG&E's existing Ignacio Substation. The Ignacio Substation is the single most important substation in Marin County and PG&E has determined that the Ignacio Substation can charge and discharge up to 300 MW of battery storage *without the need for significant transmission system upgrades*. Locating a 300 MW battery storage project here will allow for a significant sustainable energy project in Marin County where other renewable energy projects, such as solar fields and wind farms, of similar size and benefit, are not feasible. Building a smaller storage facility at this site would "strand" the existing capacity at this substation and not put it to productive use. Furthermore, battery storage facilities should be sited as close to utility substations as possible to avoid long generation tie lines and inefficient line loss.

A Project limited to 5.8 acres is not economically efficient. A Project limited to the 5% clustering requirement is not economically efficient and likely not economically viable. The parcel proposed for the Project is 117 acres. Applying a 5% clustering requirement, would mean that the BESS could only occupy approximately 5.8 acres and a usable footprint of no more than 3.6 acres which would yield a project of approximately 40 MW.

The Project will require significant capital investments. A significant portion of these capital investments will be fixed costs regardless of the size of the Project. While these fixed costs can be absorbed by the proposed 300 MW Project due to economies of scale that cannot be feasibly absorbed by an alternative project limited to 5.8 acres. First, the cost to purchase the 134-acre Property is significant and fixed regardless of the Project size. Second, because the Project Site is located within the 100-year floodplain, significant civil work will be required to raise and improve the site access route, the on-site substation and the Project Site itself. Much of these costs will be incurred regardless of the size of the Project Site itself. Thirdly, of the 5.8 acres, only 3.6 acres will be available as a usable footprint to place the Project facilities and equipment. This is because the civil fill gradient

district can be highly individualized.

to the fenced area would consume approximately 2.25 acres of the perimeter. Finally, the Project will be required to construct the ¼ mile generation tie-line and direct interconnection facilities within the PG&E substation (a new bus and bay position), which must be incurred regardless of the size. These and other fixed costs, such as development costs, mobilization and operating costs are not scalable and the Project estimates that the life cycle cost of the Project would more than double, and the Project would no longer be efficient and likely not economically viable. Due to the significant capital costs associated with development, Terra Gen will not pursue a significantly smaller Project at this location, and a project of 40 MW project is not feasible.

Moreover, limiting the Project improvements to 5% of the property would not be feasible because it would not achieve many of Marin County's policy goals of increasing the use of renewable resources, decreasing greenhouse gases and improving energy efficiency to the same extent as a 300 MW project. Please refer to the Project Purpose and Need Section above for a description of how the Project will benefit Marin County and help Marin County meet its policy goals. The Marin County policy goals include the following, found in the Marin Countywide Plan:

- **Guiding Principle # 4**. "Reduce greenhouse gas emissions that contribute to global warming. We will join other communities addressing climate change by lowering our greenhouse gas emissions. We will increase the use of renewable resources which do not have a negative impact on the earth's climate." (p. 1.3-1)
- **Countywide Goals**: "Marin residents and businesses will increasingly use renewable energy…." (p. 1.3-12)
- **Goal Air-4**: "Adopt practices that promote improved efficiency and energy management technologies; shift to low-carbon and renewable fuels and zero emissions technologies." (p. 2.7-12)
- **Implementing Program AIR-4a:** "Implement energy efficiency programs and use of renewable energy". (p. 2.7-13)
- **Increase reliability of energy supply** (p. 3.6-2)
- **Prioritize renewable resources** (p. 3.6-2)
- **"Investment in renewables will keep millions of dollars in the local economy."** (p. 3.6-3)
- **Goal EN-1**: "Reduce . . . nonrenewable energy waste and peak electricity demand through energy efficiency and conservation." (p. 3.6-7)
- **Goal EN-2**: "Increase Renewable Resource Use. Utilize local renewable energy resources and shift imported energy to renewable resources." (p. 3.6-10)
- **EN-2.3**: "Promote Renewable Energy. Facilitate renewable technologies through streamlined planning and development rules, codes, processing and other incentives." (p. 3.6-10)
- **EN-2.c**: "Protect Renewable Resources: Identify possible sites for production of energy …. Adopt measures to protect those resources such as utility easement, right of way and land set-asides." (p, 3.6-12)
- **EN-2d**: Facilitate Renewable Energy Technologies and Design: … remove regulatory barriers or procedural barriers to producing renewable energy . . . Work with related agencies such as fire, water and health that may impact the use of alternative technologies. Develop protocols for alternative energy storage such as biodiesel, hydrogen and/or compressed air." (p. 3-6-13)

- **Zoning Code – Bayfront Conservation (BFC).** Consistent with the design guidelines of Section 22.14.060 of the Development Code, construction of the Project facility will not encroach into sensitive wildlife habitats including the marshlands associated with Novato Creek and Arroyo San Jose located nearby. The Project is remote from neighboring uses, will be screened from most viewpoints due to its remote location, and will not obstruct the views of shoreline areas. The Property is not subject to tidal action, so therefore the prohibitions of diking, filling, or dredging within the BFC district are not applicable. The Project will be designed, constructed, and

operated pursuant to the current California and local building code and California Fire Code requirements; therefore, the new facility will be protected from geologic, flooding, seismic, and other hazards. The Project will preserve and protect as much of the surrounding parcel area as practicable for wetland conservation compatible with agricultural use.

Compliance with Development Standards of ARP District—Table 2-2, Section 22.08.040

Minimum Setback Requirements	Required (Proposed) Height Limit		Maximum Floor Area Ratio
	Primary[1]	Accessory[2]	
Not Applicable	30 feet (approx. 30')	16 feet (n/a, all facility structures are integral to the primary use of the facility site)	Not Applicable

Notes:
[1] A structure in which the primary use of the site is conducted (see Section 22.130.030).
[2] A detached accessory structure may be constructed to the height allowed for primary structures, by the applicable zoning district, if the accessory structure is located at least 40 feet from all property lines (see Section 22.20.060).

FACILITIES DESCRIPTION

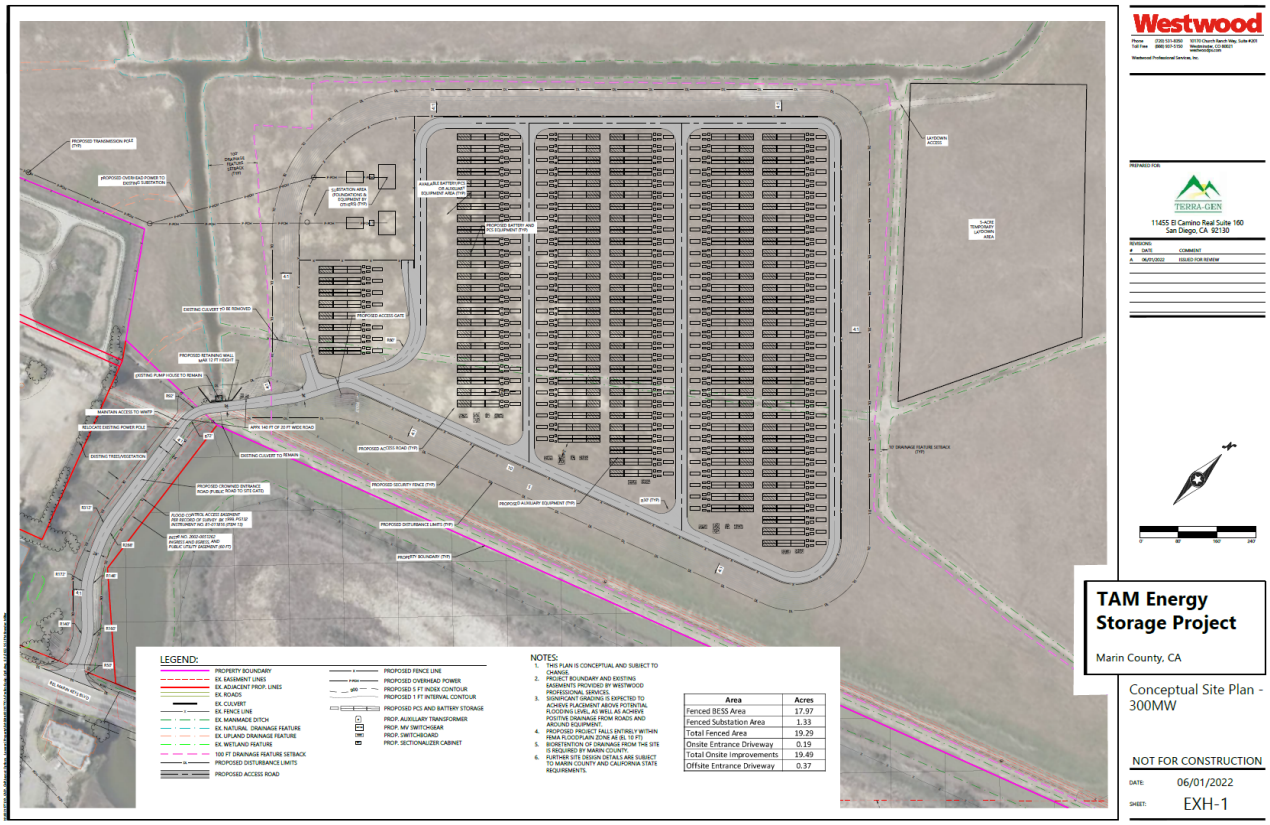
The Project will be capable of charging and discharging approximately 300 MW of electricity supply and grid ancillary services[5] for a 4-hour duration or longer. The major components of the Project are described below with additional detail provided in Table 1. Project battery and equipment suppliers will not be selected until after the Project is entitled and the Project equipment's exact dimensions, specifications and site layout will depend on the technology selected. As such, the Project design assumptions provided herein are intended to establish the maximum Project site footprint and environmental impacts which will allow for flexibility in final Project manufacturer selection, design, specifications, and equipment layout. Project equipment, design and the layout selected will be permitted, constructed and operated pursuant to applicable federal, state and local codes and regulations.

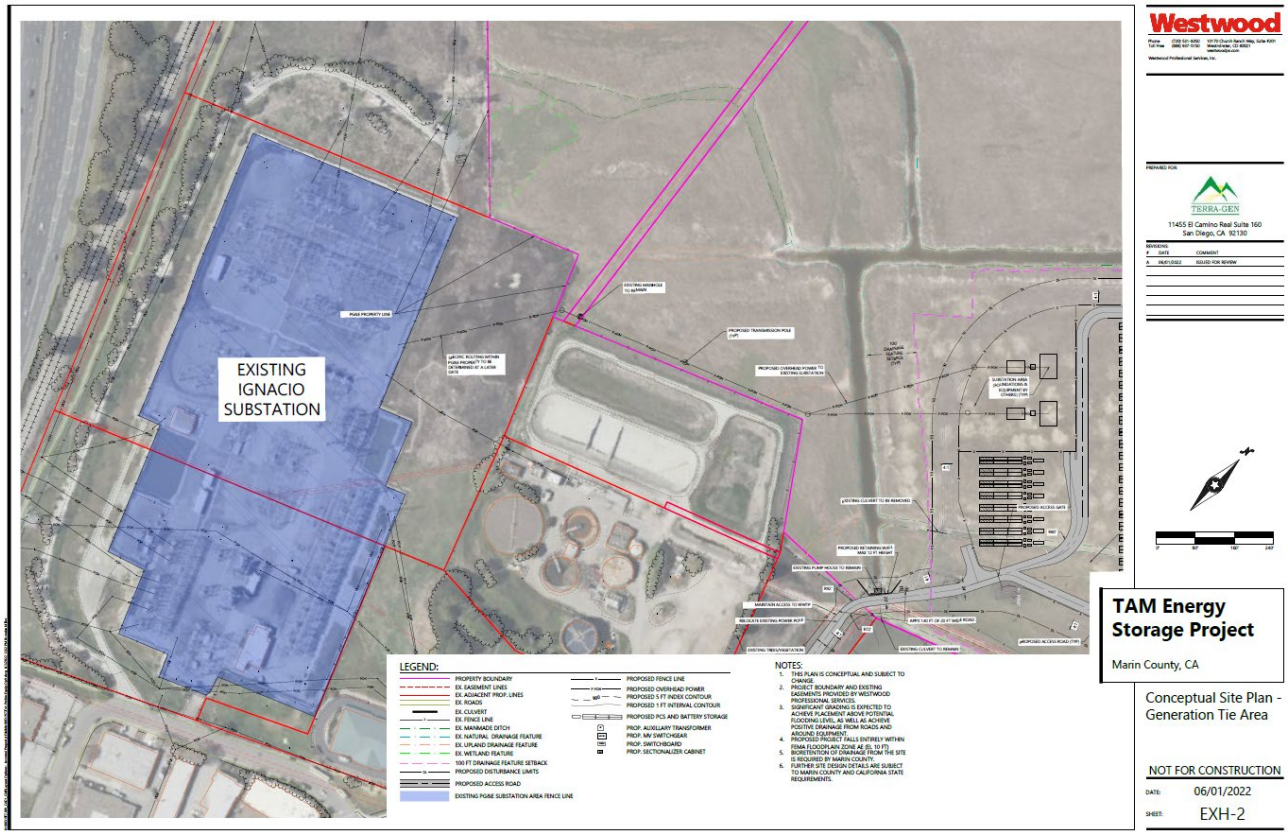
[5] Ancillary services refer to specific functions that help grid operators like the CAISO maintain a reliable electricity system. Ancillary services maintain the proper flow and direction of electricity, address imbalances between supply and demand, and help the system recover after a power system event. Storage facilities provide two particularly important Ancillary Services in Regulation Reserves and Spinning Reserves.

1) **Regulation Reserves**: Reserved capacity provided by storage facilities or generating resources that are running and synchronized with the CAISO controlled grid, so that the operating levels can be increased (incremented) or decreased (decremented) instantly to allow continuous balance between electricity supplies and demand.

2) **Spinning Reserves:** Reserved capacity provided by storage facilities and generating resources that are running (i.e., "spinning") with additional capacity that is capable of ramping over a specified range within 10 minutes and running for at least two hours. The CAISO needs Spinning Reserve to maintain system frequency stability during emergency operating conditions and unanticipated variations in load.

Figure 3: TAM Energy Storage Project Preliminary Site Plan





Battery Enclosures: The Project will be comprised of lithium-based battery modules installed in racks and housed within purpose-built outdoor enclosures. A typical battery enclosure will house hundreds of battery modules where each enclosure is typically capable of storing between 0.4 to 5 megawatt hours (MWh) of energy.

Each individual module within an enclosure is monitored and controlled to ensure safe and efficient operations, and every enclosure is equipped with integrated operational management systems and fire and safety systems such as heating ventilation and cooling (HVAC), gas, heat and smoke detection and alarms to ensure safe and efficient operations. The Project and its systems will be designed, constructed, and operated pursuant to the current California and local building code and California Fire Code requirements. The modules within each enclosure are accessed for maintenance from the outside via cabinet doors.

The dimensions of a typical BESS enclosure vary between manufacturers and are arranged in repeated "blocks" across the site. System blocks may consist of a single enclosure, or several smaller enclosures set side-by-side to create banks of batteries with similar overall dimensions. Smaller enclosures are typically closely spaced or physically attached at the time to construction, and larger enclosures are placed in smaller groupings or individually. An enclosure grouping typically consist of 4 to 12 enclosures measuring approximately 30 feet long by 6 feet wide with a height of 10 feet. Smaller enclosures may be as small as 3.5 feet long by 5 feet wide by 8 feet tall while larger enclosures may measure over 50 feet long by 12 feet wide. Certain BESS manufacturers are now offering stacked enclosure solutions where one enclosure may be stacked on the other, with heights not exceeding 30 feet. The number, size, layout, and capabilities of each enclosure will vary depending on the battery, enclosure manufacturer design, and BESS system manufacturer(s) selected for the Project. Regardless of the system manufacturer, the Project's developed footprint and overall capability will remain substantially the same. In some instances, the battery enclosures may contain inverters which convert low voltage direct current (DC) to alternating current (AC) (and vice-versa when charging).

Power Conversion System (PCS): Low voltage DC cables will connect the battery enclosures to low profile, pad-mounted PCS inverter-transformers located adjacent to each enclosure. Inverters within the PCS convert electricity from low voltage DC to low voltage AC when power is being taken (discharged) from the battery into the grid. The opposite occurs when charging the battery from the grid. A medium voltage transformer within the PCS is used to convert the low voltage AC current to medium voltage AC current and vice versa.

Medium Voltage (MV) Transformers: As stated above, in some instances the inverter is contained within the battery enclosures and a stand-alone transformer is used instead of a PCS. In this instance, the MV Transformer equipment is connected directly to the battery enclosures via low-voltage AC wiring.

Outdoor Electrical Equipment: MV transformers and other additional electrical equipment such as electrical cabinets and panels will be installed outside the BESS enclosures within the site area. This equipment is smaller in size than the equipment listed above and is distributed through the site as needed based on the design parameters of the battery and power conversion equipment chosen. In addition, buried cable will be placed throughout the site to connect power and communications to individual components and to the Project Substation. All outside electrical equipment will be housed in the appropriate National Electrical Manufacturers Association (NEMA) rated enclosures.

Project Substation: The Project's onsite substation will be a secure, separately fenced (chain link security fencing) area where high voltage electrical equipment, switchgear cabinets, auxiliary transformers, meters and communications equipment are located, including the Power Distribution Center (PDC) (see below), and one or two Main Step Up Transformers (also referred to as the Battery Step Up Transformer (BSU) or Generator Step Up Transformer (GSU)) which step up the medium voltage from the inverter-transformer to the high voltage level of the transmission system, where it is then interconnected with the CAISO electric grid at the Point of Interconnect (POI) via the Project generation tie-line. The Project POI is a bay position at the PG&E 115-kV Ignacio substation.

Power Distribution Center: The Project will include one or more PDC enclosures house and protect critical low and medium voltage electrical, life-safety, communications, and command equipment. Typically, the PDC is located near the Main Step-Up Transformer within the on-site substation area.

Generation Tie-Line: An approximately one-quarter mile, above ground high-voltage (115kV) generation tie line and fiber optic cables will be constructed from the Project Substation, located on the Project Site, and head west for approximately 950 feet on the Property and then continue southwest for an additional 350 to 450 feet on PG&E Property, where the generation tie-line will enter the PG&E Ignacio Substation eastern fence line. Once within the substation the generation tie-line will be routed within the substation to the location of a new bay position as part of the utility substation upgrades that will be required to accommodate the Project. PG&E has indicated that the new bay position may necessitate the relocation of certain substation equipment and a minor expansion of the substation fence line. Only the work outside the substation fence line and the potential expansion of the fence line, would be included with the Project's CUP application.

Fire and Thermal Runaway Safety Equipment and Design Features: The facility will be designed and equipped with UL-compliant operation energy and safety management equipment, and integrated fire protection systems designed to manage and prevent the risk of fire or thermal runaway events. In the unlikely situation that a fire event does occur, the facility equipment, systems and operational procedures are designed so that such an event does not propagate to surrounding batteries, cabinets or neighboring areas.

The Project will comply with all county and State codes and regulations related to health, fire and safety. Specifically, the Project will be required to comply with Chapter 1206 of the 2020 California Fire Code. Chapter 1206 of the Fire Code applies to Stationary Electric Energy Storage Systems (ESS) and addresses development standards for design, installation, commission, operation, maintenance and decommissioning of these systems, including fire and safety equipment requirements to be approved by the fire code officials having jurisdiction over the Project with established performance standards for approval; equipment and system fire testing in accordance with nationally-adopted UL standards, stringent standards for commissioning, operation and maintenance, on-going inspection and testing, decommissioning, seismic and structural design, signage, security installations, fire detection and suppression systems, vegetation control and minimum setbacks from lot lines, roads, and adjacent buildings. Compliance with these advanced, nationally adopted standards are designed to ensure the site installation and operation of battery storage systems for operators, first responders and neighboring community are safe. As a result of the implementation of these advanced standards, today BESS projects operate safely and efficiently throughout the state.

The Project has initiated contact with Marin County Fire and the Novato Fire Protection District (NFD) and determined that the Property and the proposed Project fall under the jurisdiction of the Novato Fire Protection District (NFD), the fire authority having jurisdiction. NFD has multiple fire stations within 5 miles of the Project site, with the closest station being NFD Fire Station 64 located 1.1 mile away from the Project site.

Site Security: The Project site will also include an interior perimeter access route within the interior of the Project facilities. The site access route, interior roads, gates and other security features will be fully compliant with all local and state building codes for fire and emergency response.

Site Perimeter Fencing: The Project will install perimeter fencing consistent with local codes and standards in order to ensure that the Project site is secure and not accessible to the public or unauthorized personnel. Consistent with California utility standards the on-site substations will be separately fenced within the Project site with chain-link fencing and barbed wire.

Other Site Design Features: The Project will include other design features to ensure safety and efficiency as well as compliance with all building, fire, and health and safety regulations, including above- and below-ground electrical

duct banks; electrical systems, meters, communications systems, and security systems; yard lighting; fencing; and fire-operations and maintenance access roads within the interior of the facility. Appropriate set-backs and separation between equipment and other features will be accounted for in the overall Project design.

Civil Design Features – Fill: The Project Site currently sits at approximately 1 foot above mean sea level and within the Federal Emergency Management Agency's (FEMA) Zone AE (the 100-year flood zone with a 1% annual chance of flood occurrence). Base Flood Elevations (BFE) for the Project Site vary between 11 and 12 feet above mean sea level. This condition makes applicable portions of the Code of Federal Regulations (44 CFR Parts 59, 60, 65, and 70) and Marin County Municipal Code (Natural Resources Section 23.09) relevant to the development of Special Flood Hazard Areas. In order to address this issue, the Project Site will be sufficiently elevated, using fill brought from off-site, to or above the BFE, based on hydrologic and floodplain modeling performed by a registered civil engineer. The modeling will be used to support the application and issuance of a Conditional Letter of Map Revision (CLOMR) by FEMA prior to issuance of a grading permit by Marin County. A final Letter of Map Revision (LOMR) will be obtained through FEMA within 6 months of completion of construction activity. In addition to demonstrating compliance with site elevation standards, the CLOMR and LOMR will quantify impacts created by the use of fill within the Special Flood Hazard Area and show that the project is within tolerance of administratively permissible increase to 1% annual chance base flood elevation allowable under 44 CFR Section 60.3.(c)(10) and Marin County Municipal Code 23.09.033(d)(3).

In addition, the fill area proposed for the Project includes areas currently identified as jurisdictional waters of the United States. The Project proposes to disturb less than 0.50 acres of these areas under a Nationwide Permit from the United States Army Corps of Engineers (USACE).

Civil Design Features - Stormwater Drainage: An engineered stormwater drainage system will be constructed on the Project site to route flows to the remainder of the Property at the existing lower elevation. The stormwater drainage system will include elements as required to comply with county best practices for site drainage design. A majority of the site currently has no natural outfall and is drained by an existing pump that is proposed to remain or be upgraded as part of the Project. The existing discharge rate is proposed to remain as in the existing condition or be reduced as a result of the Project.

Lighting: Security and safety lighting will be incorporated into the Project Site Plan. On-site lighting will only be turned on for security, emergency and maintenance purposes and the Project site will not be lighted during normal operations. The lights will be shielded and directed downward per local building code requirements. Should nighttime maintenance activities be required, maintenance personnel will bring temporary, portable maintenance lighting as needed to the specific area under maintenance.

Sewer Service: The Project will not require sewer service as there will be no occupied buildings, habitable structures or permanent staff on site.

Water Service. The Project will secure municipal, domestic water supply services for the purpose of fire protection from the North Marin Water District. The North Marin Water District has an adjacent water line in Bel Marin Keys Blvd and an existing hydrant along Bel Marin Keys Blvd approximately 300 feet from intersection of the entrance driveway and Bel Marin Keys Blvd. The Project has initiated outreach with both the North Marin Water District and the Novato Fire Protection District to determine needs and design requirements to serve the Project.

Site Access and Traffic: Site access will be provided from Bel Marin Keys Blvd via improvements to an existing 650-foot site access road along the levee between the Property and the Bel Marin Keys Boulevard. The access road will comply with applicable local and county regulations in order to provide all-weather access to operational, fire department, and emergency vehicles. Project utilities, such as water service, may be located within the proposed access road. The existing access road will be raised above the FEMA flood hazard elevation and also improved and

widened to comply with local building, fire & safety access requirements.

Construction of the Project will generate additional traffic in the surrounding area. Construction traffic relates to the traffic generated from construction vehicles, which consist primarily of heavy-duty trucks, smaller vendor trucks, and worker vehicles. Construction activities will include clearing and grubbing, grading, earthwork, trenching and facility equipment installation.

Once construction has been completed, the Project will operate 24 hours per day/seven days per week. It will be un-staffed during operations, with no buildings or parking areas. It is estimated that maintenance will include two to four staff performing maintenance visits bi-weekly and as needed. During maintenance, crews will circulate amongst the equipment within the site and will not require specific parking locations since there are no occupied structures on the site. As such, the Project will generate minimal traffic upon construction completion.

Temporary Staging and Parking Area: One temporary staging area will be located on the Property, consisting of approximately 5 acres adjacent to the site access road, for construction-management facilities, materials and equipment storage, and worker parking. Vehicle parking would be clearly marked and limited to areas away from sensitive cultural resources and/or habitat. Upon completion of construction, the staging area will be removed and restored to pre-project conditions.

Table 1: Approximate Project Equipment Details

Equipment	Description	Number of Units/Size of Footprint in Acres	Expected Height
Battery Containers	Integrated battery, battery controls and ancillary equipment with HVAC.	Contained within the approximately 20-acre BESS site subject to Chapter 22.16 Design Review for setback, height and lot coverage standards	Up to 20 feet
PCS Equipment (Inverters and Transformers)	PCS inverters and LV-MV Transformer skid	Contained within the approximately 20-acre BESS site subject to Chapter 22.16 Design Review for setback, height and lot coverage standards	Up to 10 feet
PDC	Power Distribution Center - substation controls building	1 to 2; contained within the approximately 1-acre project substation area	Up to 30 feet
MPT (aka GSU)	Main power high voltage transformer	2 MPT; contained within the approximately 1-acre project substation area	MPT up to 30 feet; up to 6 static masts (lightning protection) of up to 100 feet
Auxiliary Transformers	MV-LV Auxiliary Transformers for equipment back-feed power	Up to 15; contained within the approximately 20-acre BESS site	10 feet
Transmission Towers/Poles	Steel monopole or wood pole electrical transmission towers/poles	Up to 10, depending on interconnection conditions	Approximately 100 feet depending on interconnection and line crossing conditions
Other lighting, electrical, safety, communications, and security equipment	Various		Switchgear cabinets and power distribution panels up to 10 feet; junction boxes and telephony equipment up to 8

Equipment	Description	Number of Units/Size of Footprint in Acres	Expected Height
			feet
Perimeter Site Fence	An 8-foot chain link fence	Approximately 3,500 linear feet	8-12 Feet

PROJECT SCHEDULE

The proposed construction schedule is 36 months, and this duration is required to conduct earthwork activities, install facility equipment, and interconnect to the Ignacio Substation. Seasonal constraints are not anticipated to preclude construction from occurring in accordance with this schedule (see Table 2).

Table 2. Construction Schedule

Timeframe	Construction Activity
Months 1-24	Civil Earthwork Activities
Months 25-35	BESS Equipment Construction (trenching, foundations, etc.)
Months 26-35	Installation of Equipment and Commercial Delivery
Month 36	Reclamation Complete

Construction activities will occur in a manner consistent with county requirements for workdays and hours.

PROJECT CONSTRUCTION

Project construction includes site preparation, laydown, and grading; installation of drainage swales and a drainage detention basin; installation of concrete foundations/supports and/or driven pile foundations; setting battery enclosures; underground trenching for electrical cable and telecommunications, wiring and electrical system installation including grounding; assembly of the accessory components including inverter transformers and generation step-up transformers; installation of HVAC equipment; and substation and gen-tie installation for connection to utility substation. Municipal water service may be extended to the Project for fire protection.

The Project is expected to require approximately 300,000 cubic yards (cy) of fill material, plus an additional approximately 20,000 cy of imported aggregate top material to be added near the conclusion of construction. Required fill will be trucked to the site from a source determined by the construction contractor and it is expected to be located within 50 miles of the Project.

Raw materials required for construction will include gravel for onsite roads; concrete, sand, and cement for foundations; and water for concrete, dust control, and erosion controls. The anticipated work force and heavy equipment listed in Table 3 will be used during construction activities; the equipment listed primarily runs on diesel fuel.

Table 3: Construction Workforce and Equipment Required for a Typical Battery Storage Facility

Construction Activity	Workforce	Typical Construction Equipment
Office Staff / Management	10	Pickup trucks and small vehicles

Grading, foundations, and/or driven piles and underground electrical work	50	Dozer, grader, excavator or drill rig, crane, concrete pump trucks, concrete trucks, pickup trucks with trailers, all terrain forklifts, water trucks, dump trucks, compactors, generators, welders, pile drivers
Fence and Wall Construction	10	Forklift, backhoe, pickup trucks
Roads/Pad Construction	12	Dozer, grader, front end loaders, compactor, roller, pickup trucks, water trucks, dump trucks, compactors, scrapers
Battery Placement	20	Crane, forklift, pickup trucks
Laborers	30	Pickup trucks
Owner Representatives	5	Pickup trucks
Battery Supplier	30	Pickup trucks
Total Number of Workers*	167	
*It should be noted that the total number of workers provided is through project construction. It is expected that on average there will be 40-50 workers on site with a peak daily work force of approximately 80-100.		

The sequence of construction activities for the BESS facility will generally occur as follows:

1. Installation of Best Management Practices (BMP's)
2. Civil earthworks equipment staging and mobilization
3. Site preparation and mass grading and compaction
4. Additional equipment staging and mobilization
5. Trenching for electrical cables, wires and conduits
6. Install below-ground conduit banks and conduit and backfill of trenching
7. Earthwork preparation of equipment foundations
8. Pour-in-place concrete footings, pad foundations, and/or piers and install driven pilings
9. Foundation backfill and site compaction (as necessary)
10. Install PCS, power distribution systems, BESS, and pad-mounted transformers
11. Pull cables and connect equipment
12. Install above-ground utilities
13. Placement of finished surface material
14. Install safety features, permanent fencing and security lighting
15. Commissioning
16. Restoration of disturbed areas and removal of BMP's

In addition, the installation of a project substation and gen-tie to the adjacent utility substation will occur and overlap with the above activities. This activity will include installation of power poles and stringing of electrical wire/cable, installation of main power transformer, circuit breakers, lightning protection static mast, grounding, and installation of control house.

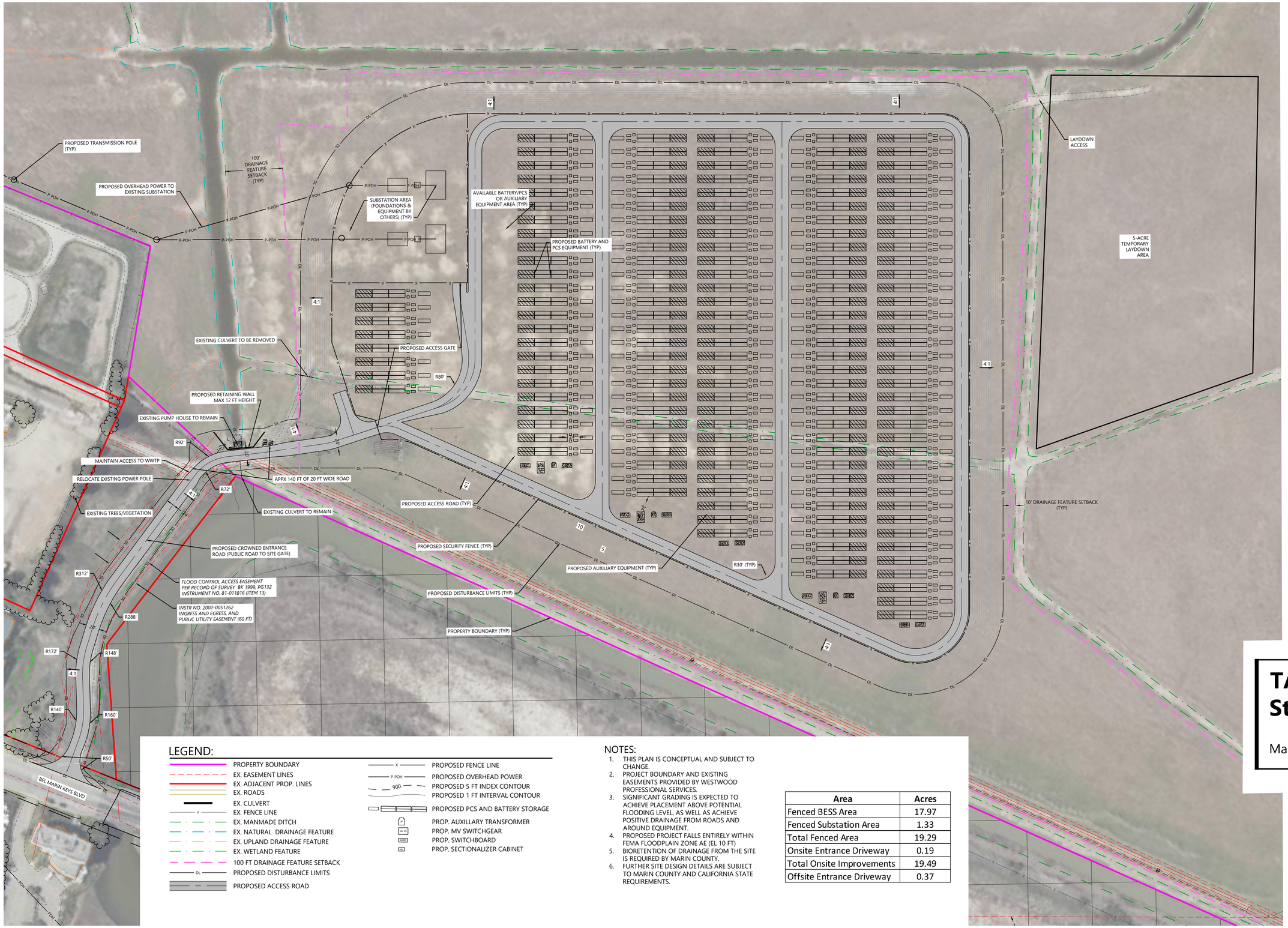
OPERATIONS AND MAINTENANCE

The Project will be operated and monitored 24 hours per day/seven days per week from an offsite control center. Operating staff, typically in crews of two to four staff members, are expected to visit the site bi-weekly and as needed for project maintenance. During maintenance, crews will circulate amongst the equipment within the site and will not require specific parking locations since there are no occupied structures on the site.

In addition to regularly scheduled maintenance and as part of Project operations, augmentation of batteries and battery enclosures will be required during the life of the Project. Depending on technology selection, augmentation could include replacement of batteries within enclosures and/or the phased installation of additional BESS enclosures throughout the life of the Project, beyond what will be installed during initial construction (or the "beginning of life"). In this sense, the CUP would be recognized as having a phased component. In order to fully analyze potential impacts from the Project, all possible battery enclosures that would be constructed and operated through the life of the BESS facility will included in Project's planning and impact assessments.

DECOMISSIONING

At the end of the Project's useful life, it will either be replaced with a new energy storage technology or decommissioned. Decommissioning will involve the removal and recycling of facility equipment from the site and restoration to pre-Project conditions with the exception of the elevated area to remain and be seeded with native plants for stabilization.



LEGEND:

- PROPERTY BOUNDARY
- EX. EASEMENT LINES
- EX. ADJACENT PROP. LINES
- EX. ROADS
- EX. CULVERT
- EX. FENCE LINE
- EX. MANMADE DITCH
- EX. NATURAL DRAINAGE FEATURE
- EX. UPLAND DRAINAGE FEATURE
- EX. WETLAND FEATURE
- 100 FT DRAINAGE FEATURE SETBACK
- PROPOSED DISTURBANCE LIMITS
- PROPOSED ACCESS ROAD
- PROPOSED FENCE LINE
- PROPOSED OVERHEAD POWER
- PROPOSED 5 FT INDEX CONTOUR
- PROPOSED 1 FT INTERVAL CONTOUR
- PROPOSED PCS AND BATTERY STORAGE
- PROP. AUXILLARY TRANSFORMER
- PROP. MV SWITCHGEAR
- PROP. SWITCHBOARD
- PROP. SECTIONALIZER CABINET

NOTES:

1. THIS PLAN IS CONCEPTUAL AND SUBJECT TO CHANGE.
2. PROJECT BOUNDARY AND EXISTING EASEMENTS PROVIDED BY WESTWOOD PROFESSIONAL SERVICES.
3. SIGNIFICANT GRADING IS EXPECTED TO ACHIEVE PLACEMENT ABOVE POTENTIAL FLOODING LEVEL, AS WELL AS ACHIEVE POSITIVE DRAINAGE FROM ROADS AND AROUND EQUIPMENT.
4. PROPOSED PROJECT FALLS ENTIRELY WITHIN FEMA FLOODPLAIN ZONE AE (EL 10 FT)
5. BIORETENTION OF DRAINAGE FROM THE SITE IS REQUIRED BY MARIN COUNTY.
6. FURTHER SITE DESIGN DETAILS ARE SUBJECT TO MARIN COUNTY AND CALIFORNIA STATE REQUIREMENTS.

Area	Acres
Fenced BESS Area	17.97
Fenced Substation Area	1.33
Total Fenced Area	19.29
Onsite Entrance Driveway	0.19
Total Onsite Improvements	19.49
Offsite Entrance Driveway	0.37

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REVISIONS:

#	DATE	COMMENT
A	06/01/2022	ISSUED FOR REVIEW

TAM Energy Storage Project

Marin County, CA

Conceptual Site Plan - 300MW

NOT FOR CONSTRUCTION

DATE: 06/01/2022

SHEET: EXH-1

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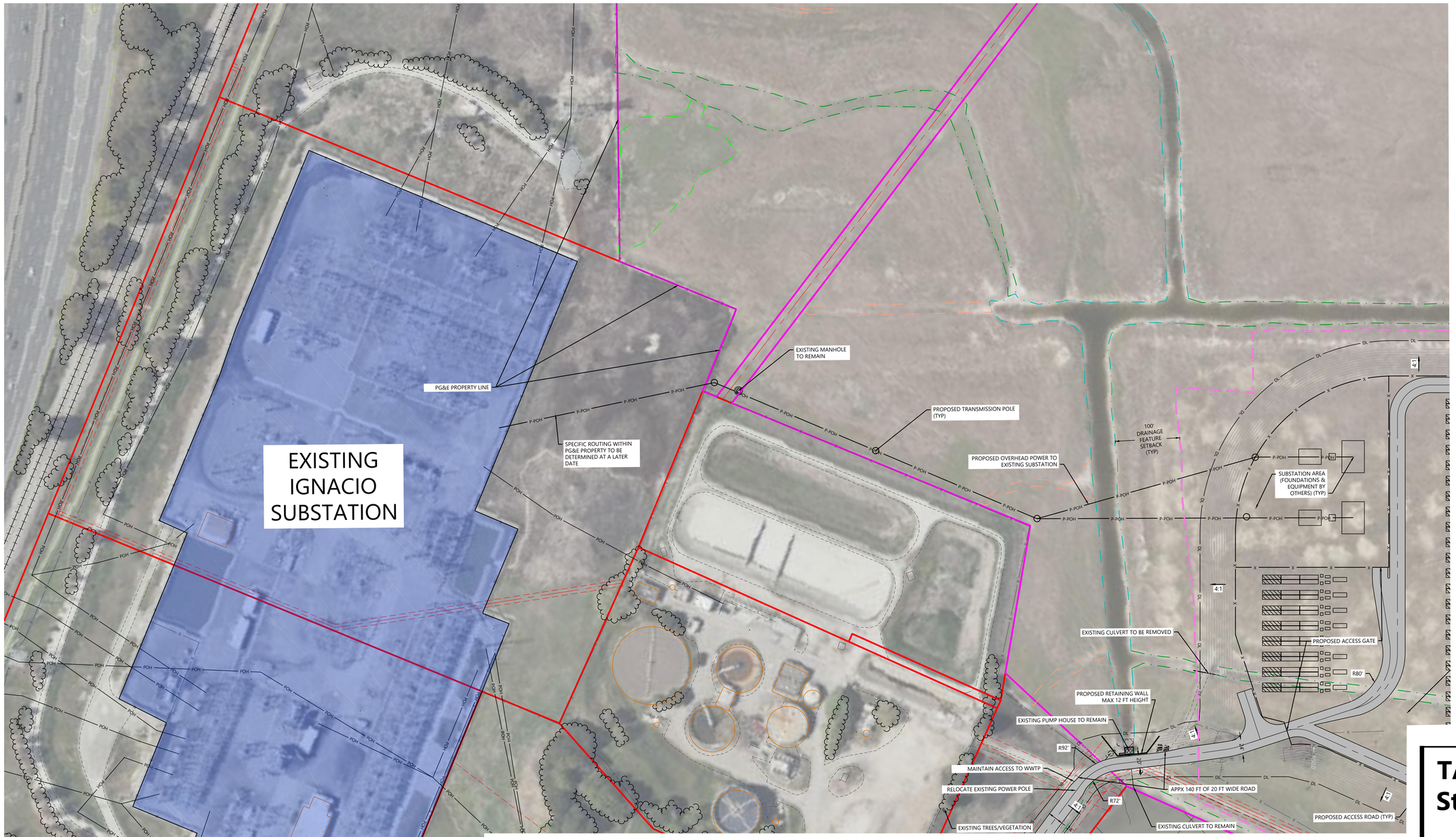

LEGEND:

- PROPERTY BOUNDARY
- EX. EASEMENT LINES
- EX. ADJACENT PROP. LINES
- EX. ROADS
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- EX. MANMADE DITCH
- EX. NATURAL DRAINAGE FEATURE
- EX. UPLAND DRAINAGE FEATURE
- EX. WETLAND FEATURE
- 100 FT DRAINAGE FEATURE SETBACK
- PROPOSED DISTURBANCE LIMITS
- PROPOSED ACCESS ROAD
- EXISTING PG&E SUBSTATION AREA FENCE LINE
- PROPOSED FENCE LINE
- PROPOSED OVERHEAD POWER
- PROPOSED 5 FT INDEX CONTOUR
- PROPOSED 1 FT INTERVAL CONTOUR
- PROPOSED PCS AND BATTERY STORAGE
- PROP. AUXILLARY TRANSFORMER
- PROP. MV SWITCHGEAR
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TERRA-GEN

11455 El Camino Real Suite 160
San Diego, CA 92130

REVISIONS:

#	DATE	COMMENT
A	06/01/2022	ISSUED FOR REVIEW

TAM Energy Storage Project

Marin County, CA

Conceptual Site Plan - Generation Tie Area

NOT FOR CONSTRUCTION

DATE: 06/01/2022

SHEET: EXH-2

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