Final
Description of Proposed Action and Alternatives

Supplemental Environmental Assessment for Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities at Marine Corps Base Camp Pendleton, California

November 2019

Prepared for:
United States Department of the Navy and United States Marine Corps

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Lead Agency: United States Marine Corps, Department of the Navy

Title of Proposed Action: Construction, Operation and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities

Affected Region: San Diego County, California

Designation: Supplemental Environmental Assessment

Abstract

The U.S. Marine Corps is preparing this Supplemental Environmental Assessment (SEA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); Department of the Navy (DoN) procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order 5090.2, dated 11 June 2018, Environmental Compliance and Protection Program. This SEA analyzes the revised potential environmental impacts resulting from the Proposed Action and No-Action alternatives. This SEA augments the *Final Environmental Assessment for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton* dated 10 December 2015 (DoN 2015). The Proposed Action in this SEA incorporates battery energy storage systems at the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in the 2015 Environmental Assessment (EA) and is incorporated by reference into the SEA. In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant. All aspects of the Proposed Action would occur on Marine Corps Base (MCB) Camp Pendleton, California, and would include the necessary utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. The two energy generating facilities (PV and natural gas) would feed into the regional electrical grid and would also have the capability to feed into MCB Camp Pendleton's electrical grid. This SEA analyzes the potential environmental impacts of two action alternatives to implement the Proposed Action and the No-Action alternative. Potential impacts have been analyzed for Air Quality, Airspace/Air Traffic, Biological Resources, Cultural Resources, Geological Resources, Hazardous Materials and Waste, Noise, Public Health and Safety, Utilities and Infrastructure, and Water Resources.

Prepared By: United States Department of the Navy

Point of Contact: **Department of the Navy**
Naval Facilities Engineering Command Southwest
Attn: Ryan Maynard
937 N. Harbor Drive, Building 1, 3rd Floor
San Diego, California 92132-5190
E-mail: ryan.maynard1@navy.mil

November 2019

EXECUTIVE SUMMARY

Note to reviewer: This document comprises the first two chapters of the Supplemental Environmental Assessment (SEA) and is referred to as the Description of Proposed Action and Alternatives or DOPAA.

In the future SEA, an Executive Summary will be inserted here.

This page intentionally left blank.

Final
Description of Proposed Action and Alternatives
Supplemental Environmental Assessment
Construction, Operation, and Decommissioning of Photovoltaic and Natural Gas Energy Generation Facilities at
Marine Corps Base Camp Pendleton, California
Table of Contents

List of Appendices

List of Photos

List of Figures

List of Tables

Acronyms and Abbreviations

BMP	best management practices
CAISO	California Independent System Operator
CCND	Coastal Consistency Non-Determination
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPR	Camp Pendleton Requirements
CPUC	California Public Utilities Commission
CZMA	Coastal Zone Management Act
DoD	U.S. Department of Defense
DOPAA	Description of the Proposed Action and Alternatives
DoN	U.S. Department of the Navy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ESPO	Energy Security Program Office
FONSI	Finding of No Significant Impact
FY	fiscal year
GHG	greenhouse gas
GW	gigawatt
ha	hectare
HRSG	Heat Recovery Steam Generator
km	kilometer
kV	kilovolt
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCX	Marine Corps Exchange
MS1	Metering Station 1
MW	megawatt(s)
NAVFAC	Naval Facilities Engineering Command
NCTD	North County Transit District
NEPA	National Environmental Policy Act
PA	Programmatic Agreement
PPA	Power Purchase Agreement
PPV	public-private venture
PV	photovoltaic
REPO	Resilient Energy Program Office
SDAPCD	San Diego Air Pollution Control District
SDG&E	San Diego Gas & Electric
SEA	Supplemental Environmental Assessment
SECNAV	Secretary of the Navy
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
UFC	Unified Facilities Criteria
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
USMC	U.S. Marine Corps

CHAPTER 1
PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This document comprises the first two chapters of the Supplemental Environmental Assessment (SEA) and is referred to as the Description of Proposed Action and Alternatives or DOPAA. The DOPAA provides background information, introduces the Proposed Action, and identifies the purpose of and need for the Proposed Action in advance of initiation of the formal National Environmental Policy Act (NEPA) analysis process for Draft SEA.

The United States (U.S.) Department of the Navy (DoN) and the U.S. Marine Corps (USMC) have prepared this SEA in accordance with NEPA of 1969 (42 U.S. Code §§ 4321-4370h); Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); DoN procedures for implementing NEPA (32 CFR Part 775); and Marine Corps Order 5090.2, dated 11 June 2018, Environmental Compliance and Protection Program. This SEA analyzes the revised potential environmental impacts resulting from the Proposed Action and No-Action alternatives. This SEA augments the *Final Environmental Assessment for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton* dated 10 December 2015 (DoN 2015) (see Appendix A) and is hereby incorporated by reference.

The Proposed Action in this SEA incorporates battery energy storage systems at the Stuart Mesa solar photovoltaic (PV) system site that was analyzed in the 2015 Environmental Assessment (EA) (herein referred to as "Stuart Mesa Site") but was never built. In addition, this SEA includes the construction, operation, and decommissioning of a natural gas power plant in either the 24 or 26 Areas[1] on Marine Corps Base (MCB) Camp Pendleton, California, and associated utility infrastructure improvements to support MCB Camp Pendleton's energy resiliency requirements. These two energy generating facilities (PV and natural gas), are both included in the Proposed Action. The DoN and private partner would enter into an agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission the solar PV and battery energy storage systems and the natural gas power plant. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid.

1.2 BACKGROUND

The 2015 EA evaluated potential environmental impacts that would result from the construction, operation, and decommissioning of a solar PV system at MCB Camp Pendleton to support Secretary of the Navy (SECNAV) renewable energy goals established in 2009. A Finding of No Significant Impact (FONSI) was signed on 10 December 2015. The project has not been implemented to date. In 2016, the DoN revised its policies used to meet the 2009 goals, and through its Energy Security Program Office (ESPO) (formerly the Resilient Energy Program Office or REPO as of July 2019) is now pursuing energy projects which consider renewable sources, but also enhance energy resilience to improve national energy security, operational capability, strategic flexibility, and resource availability (DoN 2019). The Proposed Action in

[1] MCB Camp Pendleton is designated into different Land Management Area Boundaries called "Areas".

this SEA would enable MCB Camp Pendleton to meet DoN's requirements by establishing energy resiliency in the event of a regional electrical grid failure. The energy produced and stored by these more resilient facilities would ensure MCB Camp Pendleton has access to available, reliable, and quality power to continuously accomplish the Department of Defense (DoD) missions from military installations and facilities.

1.2.1 Secretary of the Navy Energy Goals and Strategies

1.2.1.1 Goals

In October 2009, the SECNAV established energy goals for the DoN's shore-based installations to meet by 2020. These goals include:

- The DoN will produce or procure at least 50 percent of the total quantity of electric energy consumed by shore-based facilities and activities each fiscal year (FY) from alternative energy sources.
- Fifty percent of DoN installations will be net zero (i.e., over the course of a FY, an installation matches or exceeds the electrical energy it consumes ashore with electrical energy generated from alternative energy sources) (DoN 2019).

In support of this alternative energy goal, SECNAV chartered the 1 Gigawatt (GW) Task Force to enable DoN to procure 1 GW of renewable energy generation capacity by 2020.

1.2.1.2 Strategies

The DoN's energy strategies are centered on energy efficiency, energy security, and sustainability while ensuring the DoN remains the pre-eminent maritime power. Although the DoN's goals were established in 2009, the strategies used to meet these goals are continually updated. The current strategies include the following:

- *Maintain Presence* – Energy efficient operations and diverse energy supplies strengthen our ability to provide the presence necessary to ensure stability, deter potential adversaries, and provide options in times of crisis.
- *Provide Strategic Flexibility* – Diversifying our energy sources helps shield the DoN from volatile energy prices and/or supplies and arms us with operational flexibility.
- *Boost Combat Capability* – Optimizing energy use is a force multiplier that can increase range, endurance, and payload, and is essential for the effective deployment of next-generation weapons including the directed energy weapons and the rail gun.
- *Protect Sailors and Marines* – Using energy efficiently takes fuel convoys off the road and reduces the amount of time our ships are tied to oilers at sea, saving lives, time, and money.
- *Ensure Mission Success* – Our shore installations play a critical role in promoting readiness and generating the force structure necessary for mission success. Improving energy efficiency and increasing the use of alternative energy promotes more secure and resilient installation operations.
- *Promote Sustainability* – Increasing the use of environmentally responsible technologies afloat and ashore reduces greenhouse gas emissions and lessens dependence on fossil fuels, creating a sustainable model for national defense (DoN 2019).

1.2.2 Department of Defense Instruction 4170.11

In December 2009, the DoD issued instructions to specifically include resiliency requirements on military installations. The Instruction has been updated twice since 2009. The 2018 Instruction includes the following:

- *Energy Resilience* – The DoD Components shall take necessary steps to ensure energy resilience on military installations. DoD Components shall plan and have the capability to ensure available, reliable, and quality power to continuously accomplish DoD missions from military installations and facilities (DoD 2018).
- *Energy Generation Systems, Infrastructure, Equipment, Fuel, and Testing* - DoD Components shall identify, design, and install primary power and emergency energy generation systems, infrastructure, and equipment to support their critical energy requirements.
    - Energy resilience solutions are not limited to traditional standby or emergency generators. They can include integrated, distributed, or renewable energy sources; diversified or alternative fuel supplies; and movements to alternative locations, as well as upgrading, replacing, and maintaining current energy generation systems, infrastructure, and equipment on military installations and at facilities. Alternative locations that require a continuous supply of energy in the event of an energy disruption or emergency shall also be subject to energy resilience requirements.
    - When selecting distributed or renewable energy systems and emergency generators for energy resilience, they shall be properly designed to have the ability to prepare for and recover from energy disruptions that impact mission assurance. Their design shall include automatic transfer switching, inverters, and black-start capabilities to minimize energy resilience risks. DoD Components shall also determine fueling or storage requirements for the selected energy generation systems (DoD 2018).

1.2.3 Energy Security Program Office

Through the ESPO, the DoN is pursuing energy projects which enhance its energy resilience to improve the nation's energy security, operational capability, strategic flexibility and resource availability. These projects support the warfighter abroad by reinforcing the DoN's foundation at home. The benefits of these projects to the DoN include:

1. Cost-effective, mission-compatible assets which leverage third-party financing
2. Long-term operational cost stability
3. Islanding capabilities using microgrid technology
4. Utility infrastructure upgrades

In support of the SECNAV 1 GW renewable energy generating initiative, the DoN has developed acquisition strategies based on the following three separate models (Figure 1-1) to procure or generate renewable energy (DoN 2019):

<u>Model 1: Off-base generation for on-base consumption:</u>

- DoN purchases new renewable energy generation for on-base load
- Renewable energy generation provides price stability and diversifies energy portfolio
- Acquisition: Power Purchase Agreement (PPA) and utility services contract

Model 2: On-base generation for off-base consumption:

- Third-party produces on DoN property and exports energy to grid (allows for much higher capacity of product vs Model 3)
- DoN to receive energy security via lease terms
- Acquisition: Real estate outgrant

Model 3: On-base generation for on-base consumption:

- DoN consumes all energy generated
- Potential opportunity to increase energy security through microgrid integration
- Acquisition: PPA

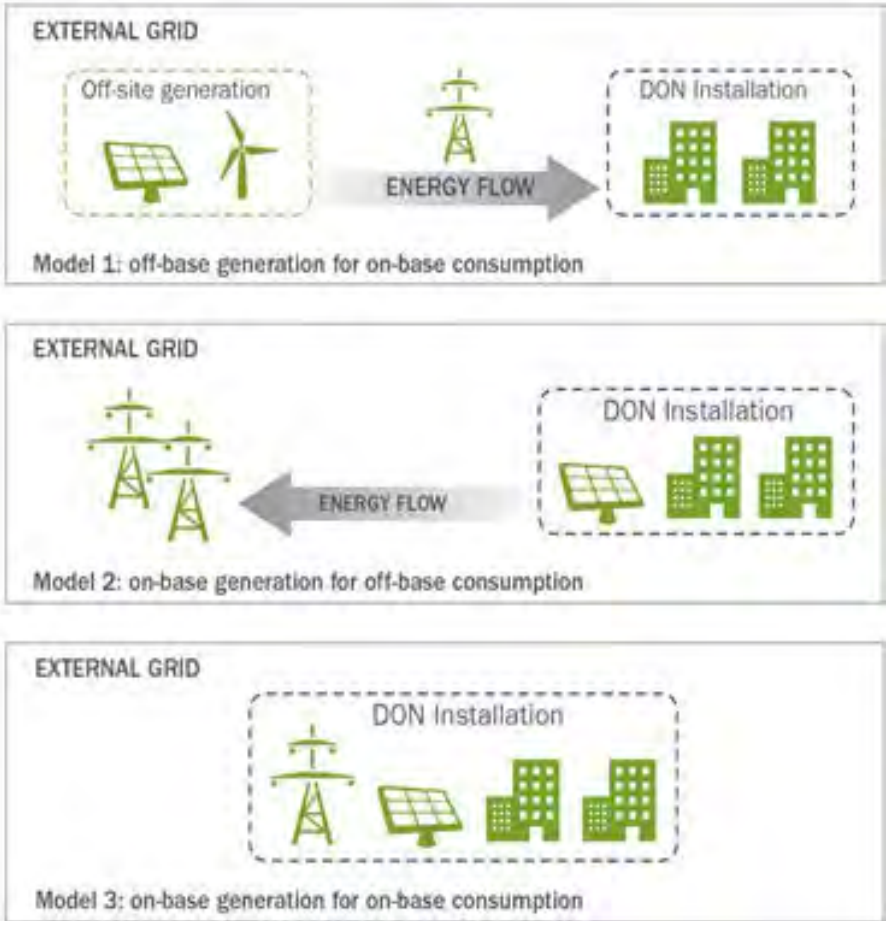


Figure 1-1 Renewable Energy Models

The DoN proposes to implement Model 2 at MCB Camp Pendleton to support achievement of the SECNAV's goals. Under Model 2, the DoN and a private partner would enter into a 37-year agreement to allow the private partner to lease DoN land to construct, operate, own, and eventually decommission battery energy storage systems at the Stuart Mesa Site (a solar PV system at the same site was analyzed in the 2015 EA), and a natural gas power plant at a different location on Base. Once the facilities are operational, the private partner would sell the power to regional customers, but in case of regional grid failure, there would also be the capability to feed the electricity into MCB Camp Pendleton's electrical grid. The private partner

would be responsible for maintenance, operation, and the eventual decommissioning of the battery energy storage systems and natural gas power plant at the end of the lease.

1.3 PROJECT LOCATION

Established in 1942, MCB Camp Pendleton remains the USMC's largest west coast expeditionary training facility. MCB Camp Pendleton's principal mission is to operate a training base that promotes the combat readiness of the Operating Forces and the mission of other tenant commands by providing training opportunities, facilities, services and support responsive to the needs of Marines, Sailors and their families.

MCB Camp Pendleton is a 200-square mile (518-square kilometer [km]) area located 40 miles (64 km) north of the city of San Diego, within the northern portion of San Diego County, California (Figure 1-2). The Orange County line is contiguous with the northwest boundary of MCB Camp Pendleton; Riverside County is north of, but does not abut, the boundary of MCB Camp Pendleton. The city of San Clemente and the Cleveland National Forest border MCB Camp Pendleton to the north and east, with the community of Fallbrook and the Naval Weapons Station Seal Beach Detachment Fallbrook to the east, and the city of Oceanside to the south.

The SEA Proposed Action would occur in three locations on Base. These are generally described below:

- Stuart Mesa Solar PV System and Battery Energy Storage Systems Site: The Stuart Mesa Site is located on the west side of Stuart Mesa Road to the west of Stuart Mesa Housing complex and east of Interstate 5. This vacant land was formerly used for agricultural purposes. A proposed solar PV system at this site was evaluated in the 2015 EA. The Proposed Action in this SEA would include the addition of battery energy storage systems to the previously evaluated solar PV system at the Stuart Mesa Site. The Proposed Action in this SEA would also expand the existing San Diego Gas & Electric (SDG&E) Stuart Mesa Substation, located north of the Stuart Mesa Housing complex and potentially add a new power line[2] or tap into the SDG&E 69 kilovolt (kV) power line (also evaluated in the 2015 EA) to connect the Stuart Mesa Site to the SDG&E Stuart Mesa Substation (Figure 1-3).
- 24 Area or 26 Area Natural Gas Power Plant Sites: A natural gas power plant with a compressor station would be located at one of two alternative locations in either the 24 or 26 Areas. Both sites are located on the south side of Vandegrift Boulevard. One of the sites is located south of Rattlesnake Canyon Road (Haybarn Site), the other is located north of Rattlesnake Canyon Road (Parking Lot Site) (Figure 1-4).
- Rattlesnake Canyon Road and Vandegrift Boulevard Utility Upgrades: A natural gas line would be installed within portions of these roads, replacing a section of an existing line that runs through Rattlesnake Canyon Road. An electrical power line would be constructed along the southeastern shoulder of Vandegrift Boulevard to support one alternative (Parking Lot Site), but is not needed for the other (Haybarn Site) (Figure 1-4).

[2] California Public Utilities Commission General Order 131-D provides the following definitions: a transmission line is a line designed to operate at or above 200 kV; a power line is a line designed to operate between 50 and 200 kV; and a distribution line is a line designed to operate under 50 kV.

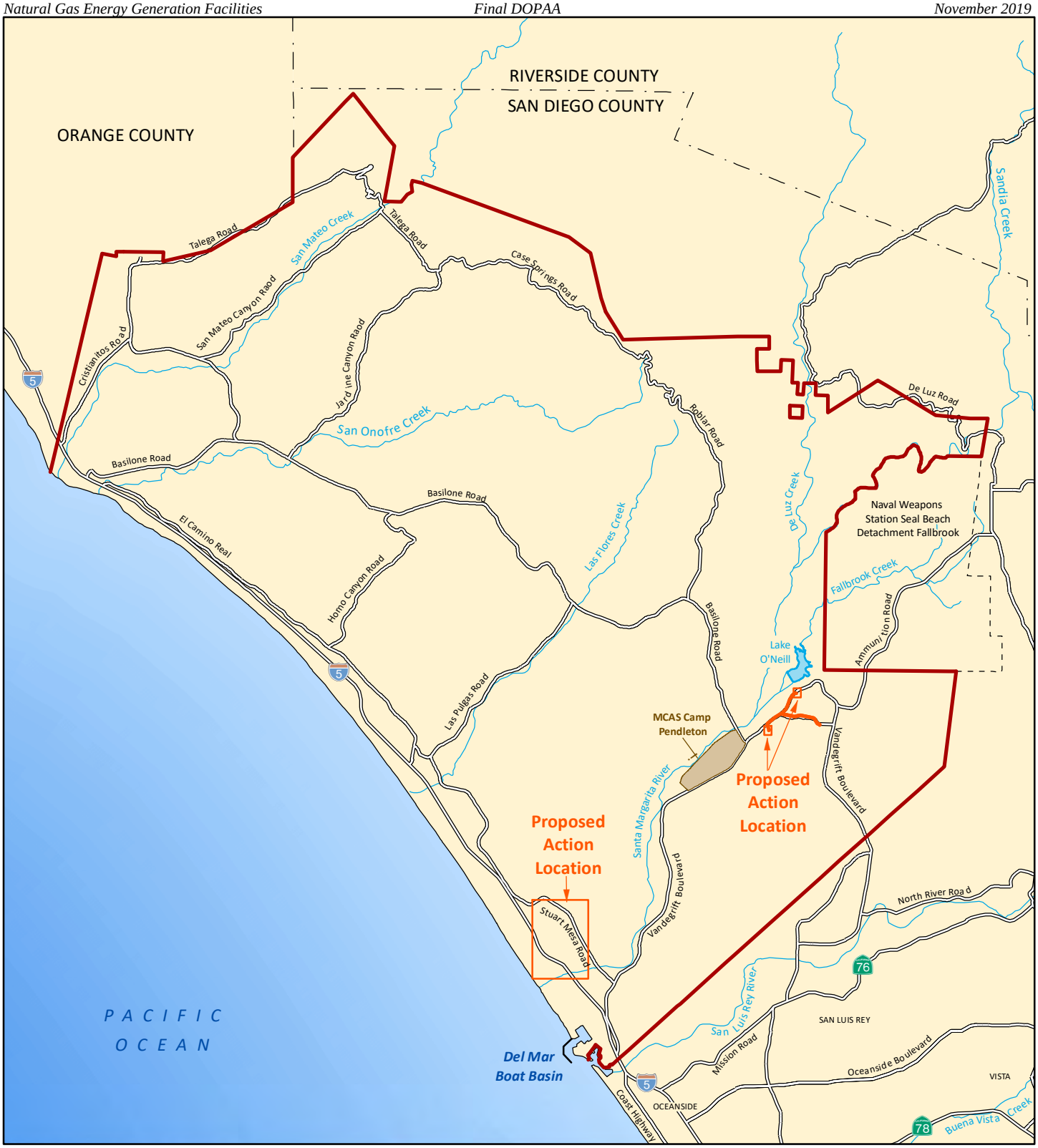
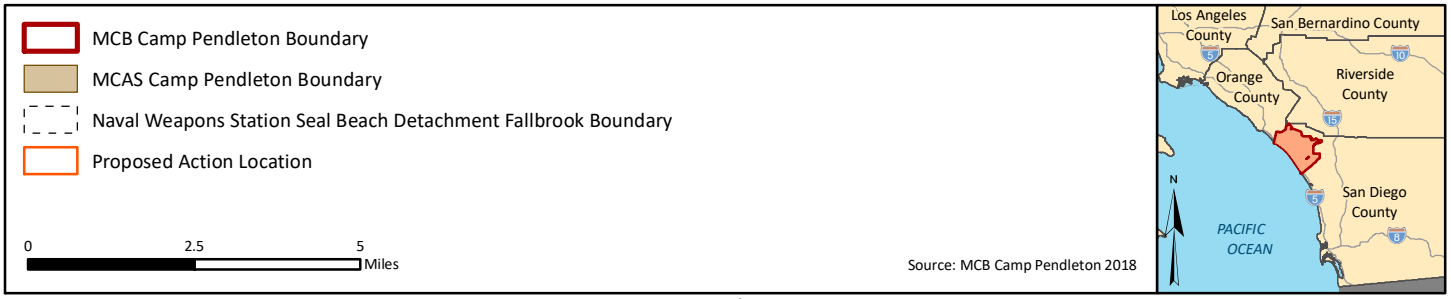


Figure 1-2. Location of MCB Camp Pendleton and Proposed Action



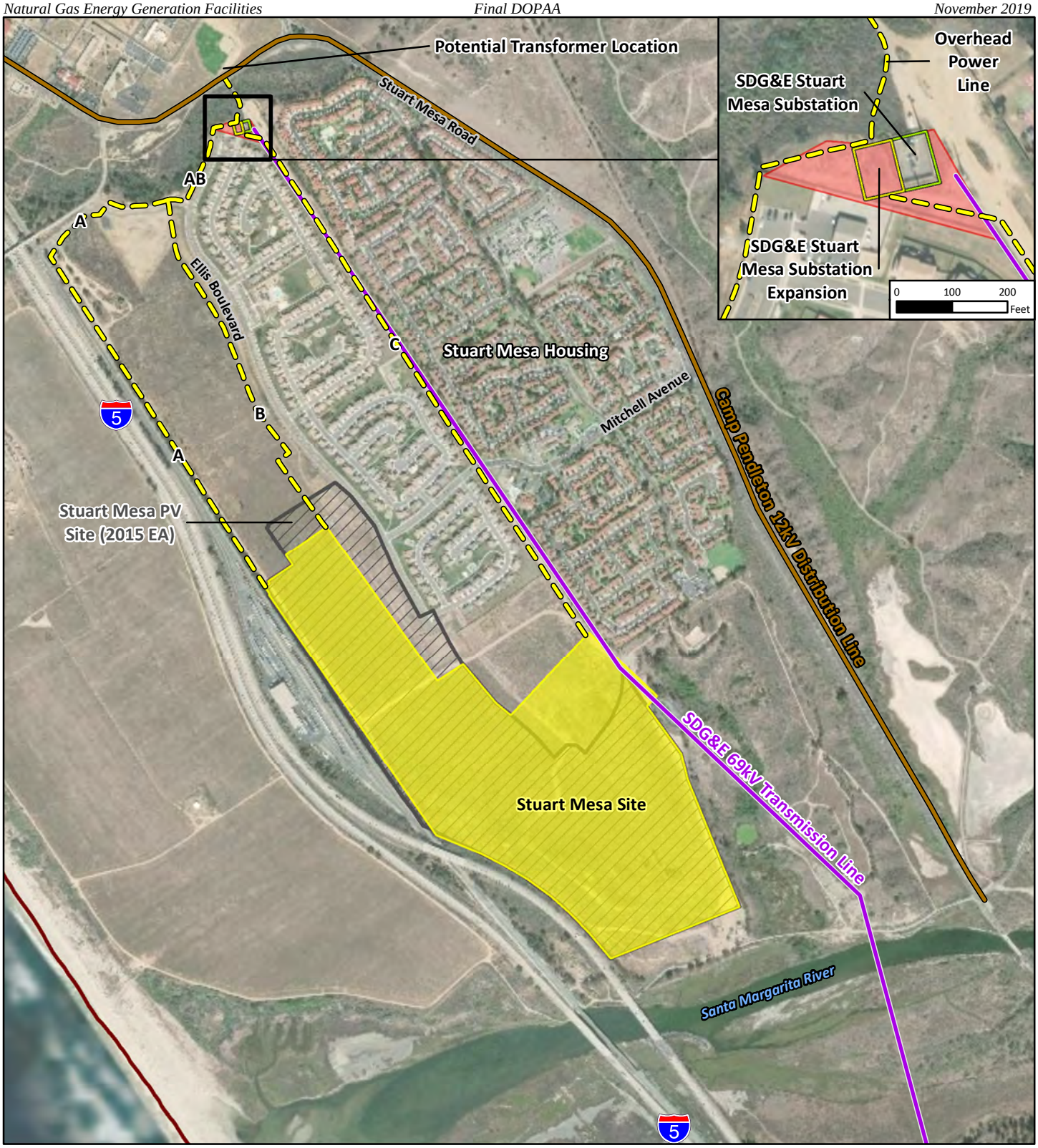
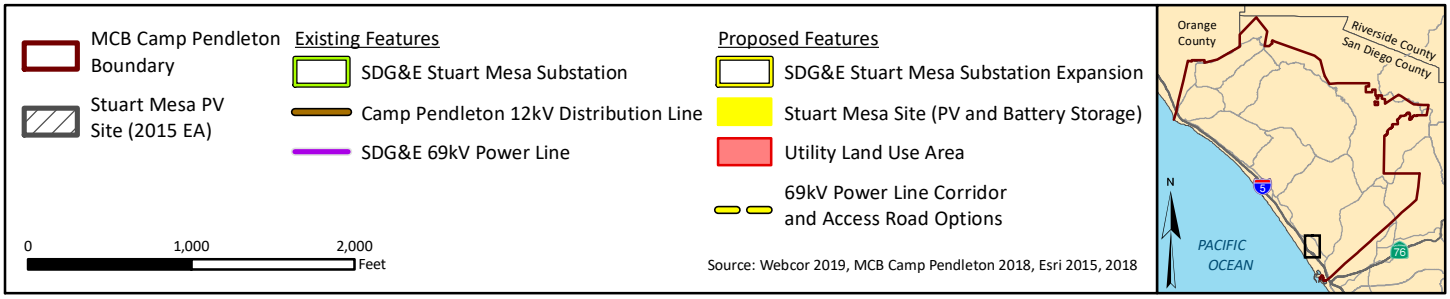


Figure 1-3. Stuart Mesa Site



1.4 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the 2015 EA proposed action was to increase DoN installation energy security, operational capability, strategic flexibility, and resource availability through the development of renewable energy generating assets at DoN installations by the construction and operation of a solar PV system at MCB Camp Pendleton. The purpose of this SEA's Proposed Action is to provide resilient energy facilities to supplement renewable energy facilities analyzed in the 2015 EA to provide MCB Camp Pendleton greater energy security and ensure MCB Camp Pendleton has access to available, reliable, and quality power to continuously accomplish DoD missions from military installations and facilities in accordance with SECNAV Energy Goals, 1 GW Initiative, and DoD Instruction 4170.11. The proposed project supports mission sustainability and helps to ensure that the MCB Camp Pendleton utility systems are compatible with regional utility networks, are flexible, and are capable of sustaining and enhancing MCB Camp Pendleton's operational capabilities.

The need for the 2015 EA proposed action was the requirement to meet the renewable energy standards put forth by the 1 GW Initiative and the SECNAV's Energy Goals. The current Proposed Action continues to meet this need and expands upon it as MCB Camp Pendleton currently lacks the resilient energy infrastructure for energy security in contingency situations/regional electrical grid failure. The Marine Corps needs the energy security, operational capability, and strategic flexibility to support ongoing daily training activities 365 days per year to comply with pre-deployment readiness directives of MCO 3502.6, *Marine Corps Force Generation Process*. The Proposed Action is needed to efficiently and effectively modernize MCB Camp Pendleton's emergency backup generation systems.

The policy requirements for energy resiliency and increased production of energy from alternative sources by 2020 are addressed in part by including, in any potential agreement (or real estate outgrant) entered into by the DoN and a private partner, a requirement that project infrastructure be 'micro-grid-ready', meaning that MCB Camp Pendleton would have the option to use any energy produced on-base in the event of a regional electrical grid failure.

1.5 SCOPE OF ANALYSIS

1.5.1 Resource Areas

1.5.1.1 Resources Analyzed in Detail

This SEA will analyze the following resource areas in detail:

- Air Quality
- Airspace/Air Traffic
- Biological Resources
- Cultural Resources
- Geological Resources
- Hazardous Materials and Waste
- Noise
- Public Health and Safety
- Utilities and Infrastructure
- Water Resources

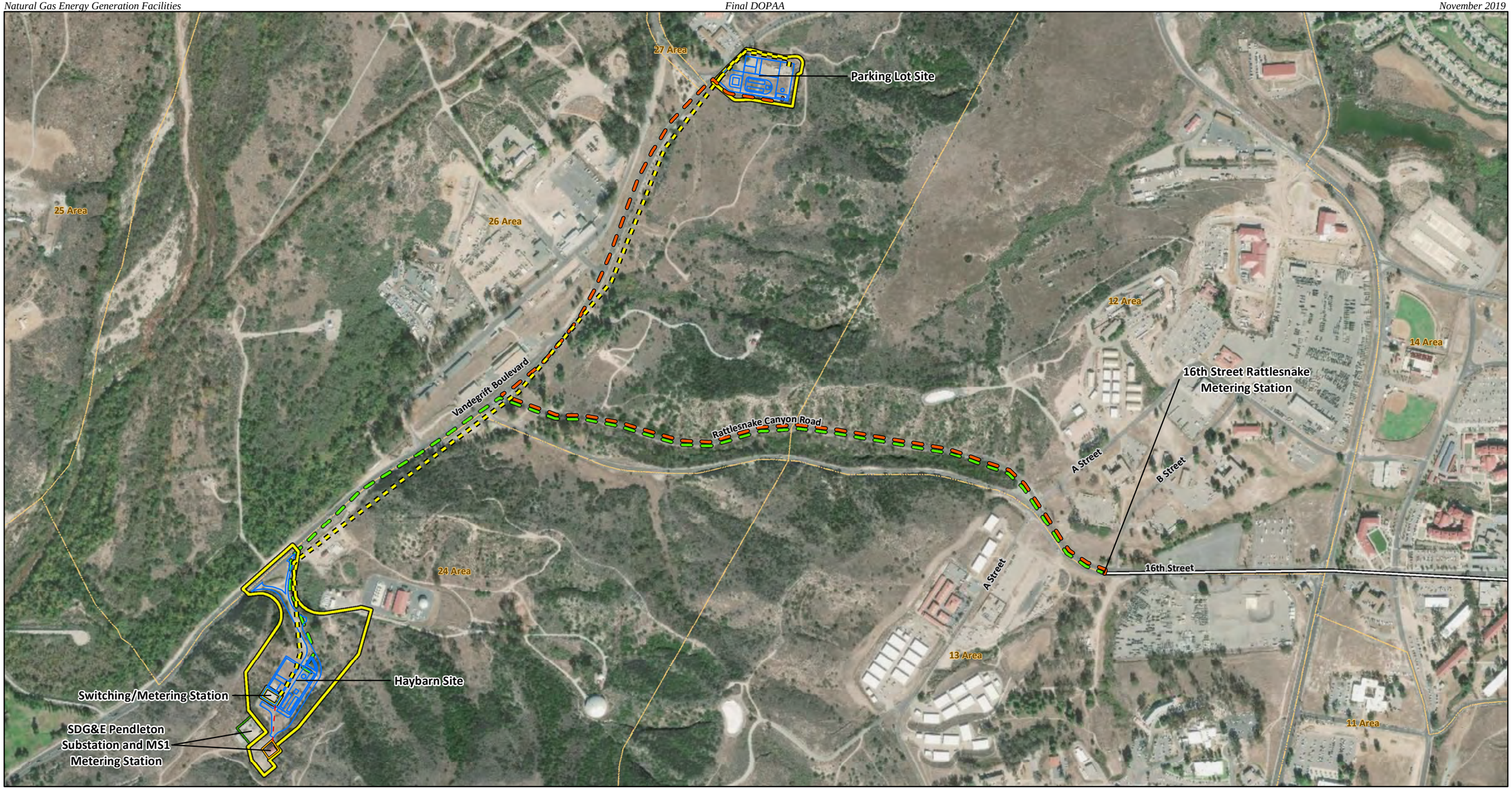


Figure 1-4. Natural Gas Power Plant and Utility Upgrade Locations

Note: Alternative 1 and Alternative 2 cover much of the same path, traveling east along 16th Street and Rattlesnake Canyon Road, then separate when reaching Vandegrift Boulevard. At this point, Alternative 1 travels south to the Haybarn Site and Alternative 2 travels north to the Parking Lot Site. Alternative 2 also includes an electrical power line from the Parking Lot Site to the Haybarn Site.

Source: Webcor 2019, MCB Camp Pendleton 2018, Esri 2015, 2018

This page intentionally left blank.

1.5.1.2 Resources Not Analyzed in Detail

Several other resource areas typically assessed in environmental documents were considered but not carried forward for detailed analysis in this SEA. This is because potential impacts to these resource areas from the action alternatives would be either non-existent or considered negligible. The reasons for not analyzing the following resources in detail are presented below:

Environmental Justice. Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider human health and environmental conditions in minority and low-income communities. MCB Camp Pendleton is not in or surrounded by a community populated by census-defined minority and low-income populations. Census-defined minority populations are composed of more than 50 percent minority residents and low-income populations are areas where more than 20 percent of the population is living at or below the poverty line. The construction and operation of the Proposed Action would not result in a permanent change to population ethnicities or age distributions. In addition, the construction, operation and decommission of the energy generation facilities would be contained within MCB Camp Pendleton and would not impact the local community. There would be no human health or adverse environmental conditions placed upon minority and/or low-income populations from the implementation of the alternatives.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, helps ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children. The Proposed Action would be constructed on government property, where access is controlled. The solar PV system and battery energy storage systems area would be fenced and have warning signs surrounding the site to further minimize the possibility of unauthorized access from nearby residents. The natural gas power plant would likewise be fenced with warning signs surround the site. Standard job site safety measures would be implemented, which include securing equipment, materials, and vehicles, as well as neutralizing potential safety hazards, should unauthorized persons visit the site during non-working hours. Therefore, there would be no disproportionate impact to the health and safety of children from the implementation of the alternatives.

Land Use and Military Operations. The Proposed Action would be located on land that has been previously developed with utility uses or previously identified for utility uses. The Proposed Action would not occur on land that is used or designated for military training. Therefore, it would not eliminate or impact future training opportunities nor would it result in a change to general land use patterns. Therefore, impacts to land use and military operations from the implementation of the alternatives would be negligible.

Safety and Security. As the Proposed Action would be located on an active military installation, homeland security is an additional component of Base safety and security. Homeland Security includes incidents requiring a combined security and safety response, such as acts of terrorism; natural disasters, and disease outbreaks. Unified Facilities Criteria (UFC) 4-020-01, *DoD Security Engineering Facilities Planning Manual*, would guide planning, design, and construction criteria related to antiterrorism and force protection for the Proposed Action, including setbacks from nearby easements. The battery energy storage systems would not represent critical infrastructure or utility equipment for performing MCB Camp Pendleton's mission should the battery energy storage systems go offline. The battery energy storage systems and natural gas power plant would be fenced and have warning signs surrounding the site to minimize the possibility of unauthorized access from nearby residents. Standard job site safety measures would be implemented. Therefore, impacts to safety and security from implementation of the alternatives would be negligible.

Transportation. Construction of the Proposed Action would involve a temporary and localized increase in traffic associated with construction worker commuting trips and the transport of construction equipment and materials. Depending on the volume and timing of construction traffic, the project could cause an incremental increase in queues and delays at gates and at intersections lying along the travel route(s). However, traffic associated with construction workers and material deliveries would be temporary, dispersed, and minimal. In addition, a Traffic Management Plan would be prepared by the private partner or their designated construction contractor to mitigate any potential congestion or safety "hot spots." Main roads would remain open during peak periods. Operations-related traffic at the Stuart Mesa Site is expected to be light and infrequent, and therefore would not result in a substantial or recurring increase in traffic. Operations-related traffic at the natural gas power plant is expected to be light as well. It will be manned 24 hours a day, 7 days a week by up to eight personnel during the day shift when operational, and therefore would not result in a substantial increase in long-term traffic. Therefore, impacts to transportation from implementation of the alternatives would be negligible.

Visual Resources. The Proposed Action would occur on an active military installation, and on land that has been previously developed with utility uses or previously identified for utility uses. There would be a visual change from the planned solar PV panels to now include both solar PV panels and battery energy storage systems, and potentially an overhead power line, but they are similarly visually industrial. The natural gas power plant would be surrounded on three sides by natural topography that would shield it from sensitive receptors, however there are no sensitive receptors in the vicinity of the natural gas power plant. The stack from the natural gas power plant might be minimally visible above the hilltop from along Vandergrift Boulevard and there would be minor steam emissions released but they would rapidly disperse into the atmosphere. Therefore, impacts to visual resources from implementation of the alternatives would be negligible.

1.6 INTERGOVERNMENTAL COORDINATION

1.6.1 Agency Consultation

Table 1-2 presents the anticipated agency permits and consultation potentially needed for the Proposed Action. Of note, while approval from the California Public Utilities Commission[3] (CPUC) and the California Independent System Operator[4] (CAISO) is not a requirement for this SEA, ultimately (i.e., after completion of the NEPA process), the private partner would obtain the approvals from these entities for implementation of Model 2.

A Biological Assessment is being developed for the Proposed Action and is intended to support formal consultation between the USMC and the U.S. Fish and Wildlife Service (USFWS) as required by 50 CFR 402.14(c) and Section 7 of the Endangered Species Act regarding the likelihood of an adverse effect ("take") of any listed species. It provides the best available scientific and commercial data for the federally listed threatened or endangered species in the action area. The consultation will conclude either informally with written concurrence from the USFWS or through formal consultation with a biological opinion provided to the USFWS.

[3] The CPUC regulates investor-owned utilities in California, oversees the procurement of renewable energy in the state under the Renewable Portfolio Standard implementation program, and permits electrical transmission.
[4] The CAISO is an independent, non-profit organization that oversees the operation of California's electric power system, transmission lines, and electricity market. Proposed connections from private power producers to investor-owned utilities are subject to the review and approval of the CAISO.

The National Historic Preservation Act (NHPA) mandates guidelines for the protection of historic properties in Sections 106 and 110 of the law. Section 106 of the NHPA requires federal agencies to analyze the effect of an undertaking on cultural resources included in or eligible to the NRHP. Section 110 requires federal agencies to establish programs to locate, evaluate, and nominate all properties that qualify for inclusion in the NRHP. A Programmatic Agreement (*Programmatic Agreement among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton (PA))* signed in December 2014 was developed for MCB Camp Pendleton (USMC 2014). The process defined in the Programmatic Agreement (PA) (Stipulations III.D (1) and IV.D), would be followed for the preferred alternative.

The Coastal Zone Management Act applies to the Stuart Mesa Site. A Coastal Consistency Non-Determination (CCND) was issued in 2009 for two public-private venture (PPV) housing proposals (PPV-6 and PPV-7). The CCND has been updated to address the change from housing to a solar PV system and received concurrence on 13 October 2015.

Permits are required for any operation or equipment capable of emitting air contaminants and therefore a Stationary Source Air Permit will need to be obtained from the San Diego Air Pollution Control District by the private partner for the natural gas power plant prior to construction of the plant.

Agency correspondence can be found in Appendix B.

Table 1-2. Anticipated Permits and Consultation for the Proposed Action

Agency	Permit or Approval	Current Status
USFWS	Section 7 of the ESA	USMC will formally consult with USFWS (on preferred alternative).
SHPO	Section 106 of the NHPA	USMC will comply with SHPO PA (on preferred alternative).
CPUC	Public Utilities Code Section 399.11	CPUC would approve the PPA, if a regulated investor-owned utility (e.g., SDG&E) buys the power from the private partner.
CAISO	Public Utilities Code Sections 2811-2816	The private partner will obtain an Interconnection Agreement from the CAISO.
CZMA	Update CCND to include the battery energy storage systems	CCND was issued for Stuart Mesa Housing projects. Updated CCND for Solar PV EA received concurrence on 13 October 2015.
SDAPCD	Stationary Source Air Permit for Gas Turbines	The private partner will obtain a Stationary Source Air Permit for the natural gas power plant from the SDAPCD.

Legend: CZMA = Coastal Zone Management Act; EA = Environmental Assessment; ESA = Endangered Species Act; SDG&E = San Diego Gas and Electric; SHPO = State Historic Preservation Officer; NHPA = National Historic Preservation Act; PA = Programmatic Agreement; PPA = Power Purchase Agreement; PV = Photovoltaic; SDAPCD = San Diego Air Pollution Control District; USFWS = U.S. Fish and Wildlife Service; USMC = U.S. Marine Corps.

1.7 PUBLIC PARTICIPATION

As part of this SEA, the USMC solicited input from interested parties on the Proposed Action. Upon completion of the DOPAA, the USMC initiated the public participation process with a Notice of Intent to Prepare an SEA/Notice of Availability that was published for three consecutive days in three local newspapers: the San Diego Union Tribune, the Fallbrook Village News and the Orange County Register. The DOPAA was posted on the MCB Camp Pendleton website (https://www.pendleton.marines.mil/Staff-Agencies/Environmental-Security/) for public review and comment. Additional public notifications and stakeholder mailings may also occur. Details of the public involvement are provided in Appendix C.

This page intentionally left blank.

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

2.1 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action in this SEA includes the addition of battery energy storage systems at the Stuart Mesa Site; the construction, operation, and decommissioning of a natural gas energy generation facility (natural gas power plant); and new and upgraded electric and natural gas utility connections to these facilities. These facilities would be primarily grid-facing, meaning they would be designed to provide power to the public power grid, but they would also be designed to provide power to MCB Camp Pendleton in contingency situations, such as during a regional electrical grid failure. The Proposed Action in this SEA would allow a private partner to construct, operate, and eventually decommission the battery energy storage systems and the natural gas power plant at the end of the lease term. The construction, operation, and decommissioning of the solar PV system is still part of the Proposed Action and it was studied in the 2015 EA, therefore, it is not reevaluated in this supplemental analysis and is hereby incorporated by reference.

2.1.1 Battery Energy Storage Systems at Stuart Mesa Site

This SEA evaluates the addition of battery energy storage systems at the Stuart Mesa Site. It does not invalidate the proposed action in the 2015 EA, but instead supplements the 2015 EA to add more features and conducts environmental impact analysis on those features. The general size of the solar PV system site studied in the 2015 EA would not change significantly with the addition of battery energy storage systems. For this SEA, the private partner could install the solar PV system and battery energy storage systems, on a footprint that would utilize a maximum of 135.9 acres (55 hectares [ha]) of 139 acres (56 ha) originally analyzed as Site A during the 2015 EA. *(Note: Since the completion of the 2015 EA, easements have been granted for some of the land that encompassed Site A and so the proposed footprint for the solar PV system and battery energy storage systems has been altered slightly to make up for the land no longer available due to the easements [see Figure 1-3]).* In addition, the proposed megawatt (MW) capacity of the solar PV system at Site A was 20 MW; however, due to technological improvements in PV technology since 2015, the solar PV site could now generate a maximum of up to 50 MW.

The total storage capacity of the battery energy storage systems at the Stuart Mesa Site would be up to 200 MW. This would be accomplished by installing up to 200 1 MW (2 MW hours) battery energy storage systems in approximately 53-foot (16-meter) long and 20-foot (6-meter) high containers with inverters on skids and switchgear/step up megavolt transformers. The total area required for each battery energy storage system, inverter and transformer is approximately 69 feet by 30 feet (21 meters by 9 meters) or 2,070 square feet (192 square meters). The battery energy storage system would use lithium-ion or lithium metal anode cell and/or flow battery chemistries based on vanadium sulfate-chloride, zinc-bromine, zinc-chloride, or other electrolytes. Electrolytes used would be non-hazardous, non-toxic, non-corrosive, and non-flammable with no noxious fumes. Acid-based batteries will not be used.

There would be a parking and staging area (approximately 20 feet by 50 feet [6 meters by 15 meters]) for the panel cleaning equipment which would include a gravel or concrete pad with a canopy or awning. Adjacent to the parking area would be two 5,000-gallon water tanks and a very small portable trailer for staff. Portable toilets and washing areas would be provided next to the personnel trailer as there would be no connections to MCB Camp Pendleton's potable water or sanitary sewer systems at the Stuart Mesa Site. In addition, the 5,000-gallon water tanks would be refilled by water trucks coordinated by the private

partner. The lighting system for the Stuart Mesa Site may consist of pole-mounted (no greater than 25 feet tall) downward facing exterior grade lights that would provide very minor illumination for main project roadways at night. The lighting system would be compliant with the requirements of the 2016 Camp Pendleton Requirements (CPR) (MCB Camp Pendleton 2016).

All electrical equipment related to battery energy storage systems, including inverters and transformers would be constructed on concrete pads. The batteries would be mounted using secondary containment capable of containing the maximum storage volume of hazardous material/liquid contained within the electrical equipment and rated for fire, electrical, and chemical spill safety through international certification programs (e.g., International Electrotechnical Commission Standards, UL Standards, Institute of Electrical and Electronics Engineers Standards). The battery containers will be painted "earth-tone" colors to blend in with the surrounding environment. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the Stuart Mesa Site to minimize the potential for unauthorized individuals to enter the area.

A construction staging area would be delineated within the Stuart Mesa Site and all work would be accomplished on-site. Materials would be transported to the project area by truck where they would be staged, assembled, and moved into place. Equipment used to construct the foundations and place the battery containers would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. In compliance with the Construction General Permit, the contractor would prepare and implement a project-specific construction Stormwater Pollution Prevention Plan (SWPPP) and all applicable best management practices (BMPs) for each location, from initiation through completion of construction activities. Implementation of a project-specific construction SWPPP and these BMPs would minimize the potential for pollutants to enter receiving waters and reduce the potential for soil erosion throughout the duration of the project. The construction duration would be approximately 2 to 3 years.

Photo 1 shows an example of flow battery energy storage systems as part of an SDG&E pilot project located in Folsom, California and connected to the wholesale power market. The flow battery energy storage system will provide 2 MW and 8 MW hours of energy, enough to power the equivalent of about 1,000 homes for up to four hours. The pilot project is part of a demonstration by SDG&E, Sumitomo Electric, California Governor's Office of Business and Economic Development and Japan's New Energy and Industrial Technology Development Organization (SDG&E 2019).

Photo 1: SDG&E Battery Energy Storage System Pilot Project (SDG&E 2019)

2.1.2 69 Kilovolt Power Line from Stuart Mesa Site to Expanded Substation

The energy generated from the PV system and stored in the battery energy storage systems would potentially connect to a switchyard located within the Stuart Mesa Site that would aggregate all the inverter alternating current 12.4 kV output, step up to 69 kV, and feed through the existing SDG&E 69 kV overhead power line or through a new overhead or underground power line constructed by the private partner to the SDG&E Stuart Mesa Substation. The existing SDG&E 69 kV overhead power line that connects to the

SDG&E Stuart Mesa Substation was analyzed in the 2015 EA and therefore will not be further analyzed in this SEA.

The new power line would run either along the western edge of the Stuart Mesa Site north to a paved access road that joins Ellis Boulevard from the west, along Ellis Boulevard, or parallel to the existing SDG&E transmission line to the SDG&E Stuart Mesa Substation located immediately north of the Stuart Mesa Housing (see power lines options A, B, and C, respectively in Figure 1-3). The power line would consist of approximately 55-foot (17-meter) tall (maximum) galvanized steel poles spaced between 100 to 200 feet apart with conductors running from the generation transformer/substation at the Stuart Mesa Site to the SDG&E Stuart Mesa Substation. The power line would be constructed in accordance with SDG&E Standards, SDG&E Section 1600 for Avian Protection (MCB Camp Pendleton 2016). The power line would be located within a 15-foot corridor that would include an unpaved access road. During construction, the corridor would extend an additional 15 feet to allow for space to place the poles and the hang of the power line. Any vegetation disturbed during construction in the extended corridor would be replaced in compliance with the 2016 CPR (MCB Camp Pendleton 2016). If the power line runs north along the unpaved road and along the northern portions of Ellis Boulevard (see Figure 1-3 power line options A and B), the corridor during construction would be extended to 100 feet to provide the flexibility avoid impacts to sensitive natural resources.

The following example provides an overview of how a natural gas power plant works to produce electricity and captures waste heat from the gas turbine to increase efficiency and electrical output (GE 2019).

- ***Gas turbine burns fuel.*** The gas turbine compresses air and mixes it with fuel that is heated to a very high temperature. The hot air-fuel mixture moves through the gas turbine blades, making them spin. The fast-spinning turbine drives a generator that converts a portion of the spinning energy into electricity.
- ***Heat recovery system captures exhaust***. A HRSG captures exhaust heat from the gas turbine that would otherwise escape through the exhaust stack. The HRSG creates steam from the gas turbine exhaust heat and delivers it to the steam turbine.
- ***Steam turbine delivers additional electricity (optional)***. The steam turbine sends its energy to the generator drive shaft, where it is converted into additional electricity.

2.1.3 Substation Expansion North of Stuart Mesa Site

The existing SDG&E Stuart Mesa Substation located to the north of Stuart Mesa Housing would be upgraded to include a new bay to accommodate the additional load from the solar PV system and/or battery energy storage systems. The new bay would be approximately 70 feet by 90 feet (21 meters by 27 meters) or 0.15 acres (0.06 ha) and located to the west of the existing substation (Photo 2). An additional 0.73 acres (0.30 ha) surrounding both the existing substation and proposed expansion, and encompassing additional land to the west, south, and east would be cleared and used as a laydown area for the project during substation construction and provide access to the substation during operations (see Figure 1-3).

Photo 2: Stuart Mesa Substation Expansion Area (looking west)

2.1.4 Natural Gas Power Plant

As part of the Proposed Action, a natural gas power plant would be constructed, operated, maintained, and decommissioned (Photo 3). A natural gas power plant could use both a gas and a steam turbine together to produce up to 50 percent more electricity from the same fuel than a traditional simple-cycle natural gas power plant (either option is viable for the site). The waste heat from the gas turbine would be routed to the nearby steam turbine, which is used to generate additional power and increase the overall efficiency of the system.

Photo 3: Conceptual Graphic of a Natural Gas Power Plant

The proposed natural gas-based energy generation facility requires a footprint of approximately 1.87 acres (0.76 ha), although the overall site development footprint would be larger (see description of alternatives in Section 2.3). Site features would include:

- up to two gas turbines with up to 100-foot (30.5-meter) tall heat recovery steam generator (HRSG) stacks (one HRSG stack for a minimum of 24 MW of generation and an additional stack for a maximum of 49.9 MW)
- up to two steam turbines as needed for efficiency and flexibility *(Note: Depending on the type of natural gas power plant selected, steam turbines might not be used.)*
- a building to house the control room, administration, maintenance, storage, electrical, and mechanical functions
- electrical equipment located next to the existing metering station
- underground and/or pole-mounted electrical infrastructure
- area lighting
- access road
- concrete foundations, and concrete masonry units for inverters, transformers, switch boards, combiner boxes, and electrical switchgear
- potable water line and sewer line connections
- stormwater basin
- exterior lighting system
- electrical wiring, and equipment to support the natural gas power plant

The natural gas power plant would be connected to the existing SDG&E Pendleton Substation via an overhead power line or directly to the main distribution buss for the base located in the MCB Camp Pendleton metering station (MS1) next to the existing SDG&E Pendleton Substation via a 12-kV switching/metering station and an underground power line. The switching/metering station would be located within the Haybarn Site. The switching/metering station would cover approximately 2,000 square feet (185 square meters) and would meter the power generated by the natural gas power plant. A graveled buffer area would be developed around the switching/metering station and a fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would be constructed to restrict access to the site.

All electrical equipment, including inverters and transformers would be constructed on concrete pads. Wiring would be routed overhead or underground and in cable trays. The existing access road to the SDG&E Pendleton Substation would be improved and would border the site perimeter for maintenance access. A chain link fence with barbed-wire outriggers in accordance with force protection standards, including safety signage, would enclose the natural gas power plant to minimize the potential for unauthorized individuals to enter the area.

A construction staging area would either be delineated within the overall project area and all work would be done on-site or depending on which site is chosen for the location of the natural gas power plant, the alternate site potentially could be used as the construction staging area. Materials would be transported to the project area by truck where they would be staged, assembled, and moved into place. Equipment used to construct the natural gas power plant and gas connection would likely include bulldozers, loaders, scrapers, backhoes, pile drivers, water trucks, trenchers, forklifts, and truck-mounted mobile cranes. In compliance with the Construction General Permit, the contractor would prepare and implement a project-specific construction SWPPP and all applicable BMPs for each location, from initiation through completion of construction activities. Implementation of a project-specific construction SWPPP and these BMPs would minimize the potential for pollutants to enter receiving waters and reduce the potential for soil erosion throughout the duration of the project. The construction duration would be approximately 2 to 3 years.

Water for the facility would be provided through a MCB Camp Pendleton water supply already on the site and a portion would be demineralized[5] for use. The connection to the MCB Camp Pendleton potable water supply system would be in compliance with the requirements stipulated in the 2016 CPR (MCB Camp Pendleton 2016). Water consumption, for evaporative cooling of the turbines inlet air would be a maximum of approximately 3,285,000 gallons per year and during peak summer temperatures, would be a maximum of approximately 375 gallons per hour. This water consumption would only be approximately 0.16 percent of total annual use in the southern portion of the Base. Any return water would be discharged into the MCB Camp Pendleton wastewater system in compliance with the discharge requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016).

Wastewater from natural gas power plant processes would be routed to the MCB Camp Pendleton sanitary sewer system once approval has been obtained from the MCB Camp Pendleton Water Source Control and Pretreatment Program that is administered by the Water Resource Division. This would consist primarily of boiler blowdown, demineralization waste, and residual water from the evaporative inlet cooling system. On-site drains from potentially oil-contaminated areas would be routed to an oil water separator. The oil collected from this process would be hauled offsite and properly disposed of at an appropriate facility. Water from the oil water separator and washwater from equipment washdown would be routed to the MCB Camp Pendleton sanitary sewer system. Disposal of any industrial wastewater that was not approved by the Water Resource Division and/or did not meet the requirements set forth in the 2016 CPR would be collected by tanker truck for offsite treatment. Stormwater would be collected on-site in compliance with Low Impact Development and other requirements set forth in the 2016 CPR (MCB Camp Pendleton 2016). The facility would be manned 24 hours a day, 7 days a week with up to eight personnel on the day shift when operating. Restroom facilities would connect to the MCB Camp Pendleton sanitary sewer system.

The exterior lighting system for the natural gas power plant would be compliant with the requirements of the 2016 CPR (MCB Camp Pendleton 2016) and any lighting specifications that may be included in the formal Section 7 consultation with USFWS.

[5] The process of removing mineral matter or salts (as from water).

The natural gas power plant requires connection to the SDG&E Pendleton Substation and would also have a connection directly to the MCB Camp Pendleton MS1 metering station, both existing stations are located adjacent to the Haybarn Site. The energy generation system would usually provide power to the SDG&E regional electrical grid, however, it would also be designed and built to provide MCB Camp Pendleton a reliable source of energy "behind the meter" during a regional grid outage. The natural gas power plant and the local MCB Camp Pendleton grid would be capable of autonomously "islanding" during this event supplying critical loads up to 49.9 MW at a 12.47 kV energy supply to a set of predetermined loads determined by MCB Camp Pendleton.

2.1.5 Natural Gas Line Improvements

Natural gas to power the natural gas power plant would be provided through the existing 6-inch diameter SDG&E Line 49-102 gas line by connecting a new (up to) 10-inch diameter steel high pressure gas tap line to the existing SDG&E gas line at the 16th Street Rattlesnake Metering Station. The 6-inch SDG&E Line 49-102 gas line enters the base from Fallbrook on Engineer Hill Road and runs west until the existing 16th Street Rattlesnake Metering Station. The new gas line would connect at the existing 16th Street Rattlesnake Metering Station, then extend west along Rattlesnake Canyon Road to Vandegrift Boulevard. The new gas line would then run along Vandegrift Boulevard to the natural gas power plant site (see Figure 1-4). The natural gas system construction shall conform to the most recent edition of the standards, and design and construction requirements listed in the 2016 CPR (MCB Camp Pendleton 2016).

2.1.6 Natural Gas Compressor Station

A natural gas compressor station is necessary to compress the existing natural gas supply provided by SDG&E to MCB Camp Pendleton to a volume and pressure adequate to run the natural gas power plant. A natural gas compressor station including custody transfer metering, pressure regulation and any necessary filtration, knockout drums (or vapor-liquid separators), etc. would be located at the natural gas power plant.

2.2 REASONABLE ALTERNATIVE SCREENING FACTORS

Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA establish a number of policies for federal agencies, including "using the NEPA process to identify and assess the reasonable alternatives to the Proposed Action that will avoid or minimize adverse effects of these actions on the quality of the human environment" (40 CFR 1500.2 [e]). This SEA only carries forward for detailed analysis those alternatives that could meet the purpose of and need for the project as defined in Section 1.3, *Purpose of and Need for the Proposed Action* and the below-listed reasonable alternative screening factors.

The screening factors used to develop the reasonable range of alternatives are as follows:

1. Must not interfere with installation mission activities and operations or create unsafe conditions.
2. Should contribute to the SECNAV's goal of ensuring energy resilience on military installations and align with the requirements to DoD Instructions 4170, by providing a resilient source of energy that could be diverted to MCB Camp Pendleton during grid outages, allowing the Base to achieve energy self-sufficiency during energy "islanding."
3. Should provide a location for a parcel (or parcels) of land to accommodate an up to 49.9 MW natural gas power plant design capable of providing electricity at or below the current cost of traditional power.

4. Should have access to adequate gas supply and pressure to support up to 49.9 MW of natural gas power plant energy generation facility.

2.3 ALTERNATIVES TO IMPLEMENT THE PROPOSED ACTION

The DoN has identified two action alternatives (Alternatives 1 and 2) as meeting the reasonable screening factors. The following sections provide descriptions of these two alternatives. In addition, Section 2.3.3 describes the No-Action Alternative, and Section 2.3.4 compares each of the action alternatives.

2.3.1 Alternative 1: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Haybarn Site

Under Alternative 1, a battery energy storage systems, a power line, and substation expansion would be constructed at the Stuart Mesa Site as described in Section 2.1. In addition, a natural gas power plant would be constructed at the Haybarn Site and related utility connections would be installed or upgraded to support the natural gas power plant. Alternative 1 includes construction, operation, and decommissioning of these facilities at the end of the lease period, or as agreed to by the DoN and the private partner.

The natural gas power plant would be located at the Haybarn Site, located south of Vandegrift Boulevard at the end of Haybarn Road, in the 24 Area, and immediately to the east of the SDG&E Pendleton Substation and MS1 (Figures 2-1, 2-2a and 2-2b, and Photo 4). Under Alternative 1, approximately 14.66 acres (5.93 ha) at the Haybarn Site would potentially be disturbed during construction due to the potential need to grade and construct retaining walls, move existing power lines crossing the property, improve the access road, etc. Approximately 1.87 acres (0.76 ha) of the disturbed area would be developed to support the creation of up to 49.9 MW of natural gas power generation (Figure 2-2b). The natural gas power plant, gas line improvements, and gas compressor station are described in Section 2.1

Photo 4: Haybarn Site (looking south towards Vandegrift Boulevard)

2.3.1.1 Acquisition Strategies

Under Alternative 1, modifications to the Stuart Mesa Site to include battery energy storage systems would be made, and a natural gas power plant would be developed to generate resilient energy at MCB Camp Pendleton under the Model 2 acquisition strategy (refer to Section 1.3.2). Under a Model 2 acquisition strategy, the DoN and private partner would enter into a lease agreement (or real estate outgrant) to allow the partner to use DoN land to construct, operate, and own the facilities at the Stuart Mesa Site and the natural gas power plant at the Haybarn Site. Some DoN infrastructure (power/distribution lines, substation, etc.) would be accessed by the partner to connect the facility to the gas supply, electrical grid, and base distribution. The DoN would receive compensation for the lease, but would not directly receive the power generated by the natural gas power plant, except in the case of a regional grid outage or other circumstance defined by the agreement. During a grid outage, the power generated by the natural gas power plant would be switched over to the MS1 metering station to be distributed to the Base network. During normal

operation, the partner would sell the generated power to regional customers outside the DoN. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. The approximate contract duration would be 37 years. The 37-year agreement would consist of 2 to 3 years for construction, followed by an initial 25-year operating term and two, 5-year operating extensions (10 years). This acquisition strategy maximizes the total capacity (size) of the system based on available land, and MCB Camp Pendleton's electrical demand.

2.3.1.2 Construction

The Haybarn Site topography is uneven and would require grading and the construction of retaining walls on the west and east sides of the site (see Figures 2-2a and 2-2b). Other site preparation activities would include relocation of overhead electrical power/distribution lines, trenching for underground electrical lines and circuitry if required (up to 3 feet deep per UFC codes), and gas lines (up to 4.5 feet deep per UFC codes). Electric infrastructure features are also required to transmit the power to the SDG&E Pendleton Substation, and to switch the power supply from SDG&E Pendleton Substation to the MS1 metering station and allow for distribution to the Base network during grid power outage. Water and sewer laterals would be relocated as part of road improvements to Haybarn Road. The Parking Lot Site potentially could be used as the laydown area for the equipment and material needed during construction of the natural gas power plant as it is already disturbed land.

All construction would be conducted in compliance with all applicable rules and regulations including the 2016 CPR. Construction would create a minimal amount of construction debris that would be removed and disposed of in accordance with applicable regulations at an appropriately accredited facility.

2.3.1.3 Operation and Maintenance

Post-construction site operations would include, but would not be limited to, use of existing access roads; electrical and mechanical systems; and maintenance and repair. Quarterly inspections of the battery energy storage systems area and all associated electrical systems would be conducted to ensure infrastructure is in good operating condition. The partner or their designated contractor would ensure all required permits to operate the systems have been obtain including but not limited to the Stationary Source Air Permit and operation and maintenance requirements implemented. In addition, the partner or their designated contractor would conduct any repairs or regular service. The natural gas power plant would be manned 24 hours a day, 7 days a week when operating, and maintenance and repair would occur as needed. Noise generated through operation of the natural gas power plant and compressor station at the Haybarn Site is anticipated to reach 85 decibels at 100 feet from the source, with protective shrouding in place to minimize noise. There are no sensitive receptors in the power plant area, but impacts to wildlife are assessed in Chapter 3 of this SEA.

All maintenance of the battery energy storage systems area at the Stuart Mesa Site and the natural gas power plant at the Haybarn Site would be done in accordance with BMPs. Although unmanned, water, if needed at the battery energy storage systems area would be trucked in from an off-base source and water procurement for this activity would be the responsibility of the private partner. Water needed for the operation of the natural gas power plant would be derived from the Base's potable water system. In addition, industrial wastewater and restroom facilities required for the 24 hours a day, 7 days a week manned operations at the natural gas power plant would be connected to the Base's sanitary sewer system. Access roads would be maintained as needed, and ground cover and other vegetation would be trimmed periodically. Vegetation near the battery energy storage systems area and the natural gas power plant could also be controlled with herbicides to ensure that it does not obstruct the safety, function or operation of the facility (State Water Resources Control Board [SWRCB] 2014).

Figure 2-1. Alternative 1: Overview of Natural Gas Power Plant at Haybarn Site and Stuart Mesa Site

MCB Camp Pendleton Boundary
MCB Camp Pendleton Land Management Area Boundary
Stuart Mesa PV Site (2015 EA)

Existing Features
SDG&E Pendleton Substation
SDG&E Stuart Mesa Substation
MS1 Metering Station (Camp Pendleton owned)
Existing SDG&E Gas Line (Line 49-102)
Camp Pendleton 12kV Distribution Line
SDG&E 69kV Power Line

Proposed Features
Haybarn Site
Natural Gas Power Plant Footprint
SDG&E Stuart Mesa Substation Expansion
Stuart Mesa Site (PV and Battery Storage)
Gas Line
69kV Power Line Corridor and Access Road Options
Underground 12kV Distribution Line

0 500 1,000 Feet

N

Source: Webcor 2019, MCB Camp Pendleton 2018, Esri 2015, 2018

This page intentionally left blank.

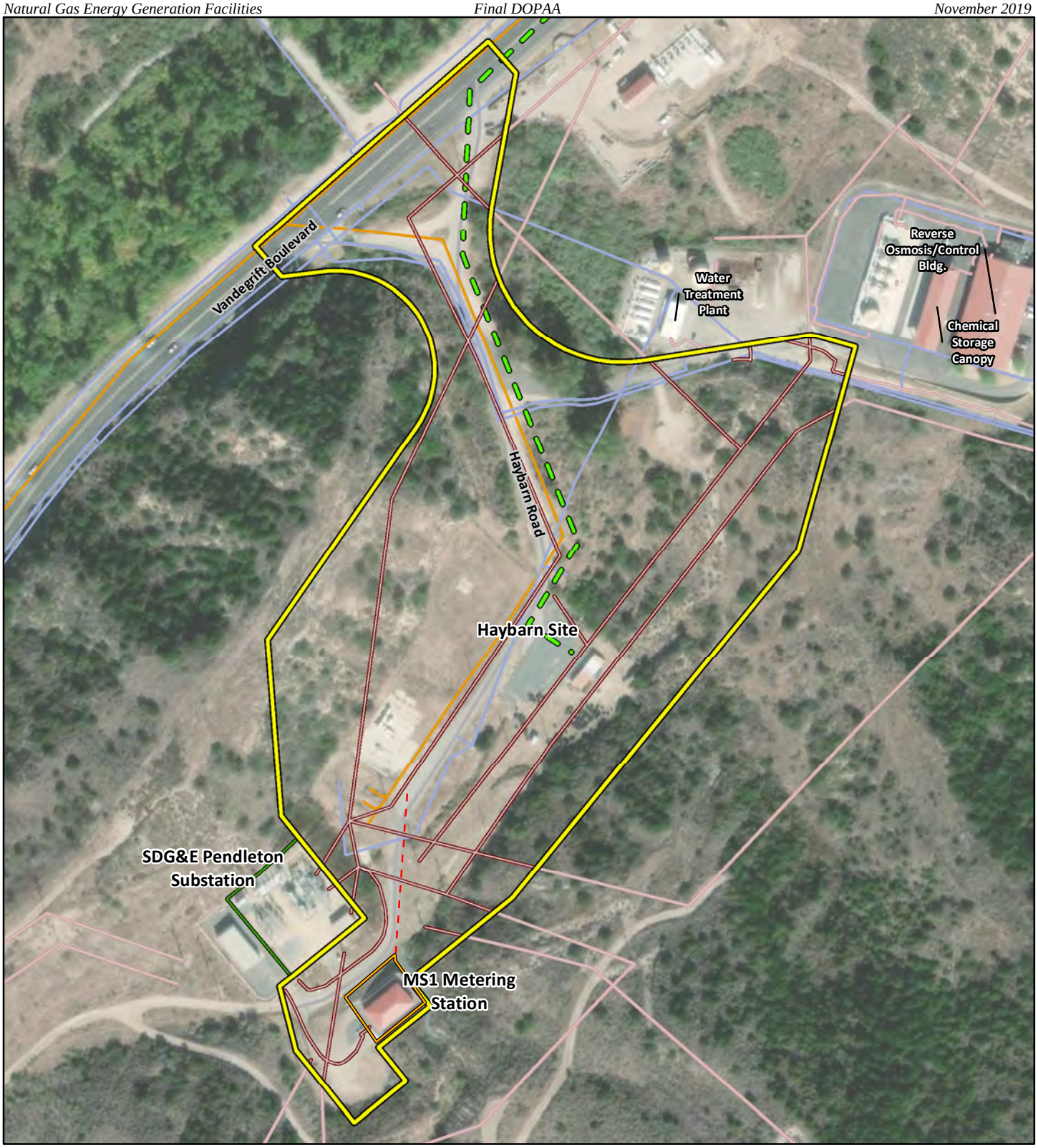


Figure 2-2a. Alternative 1: Detail of Existing Haybarn Site

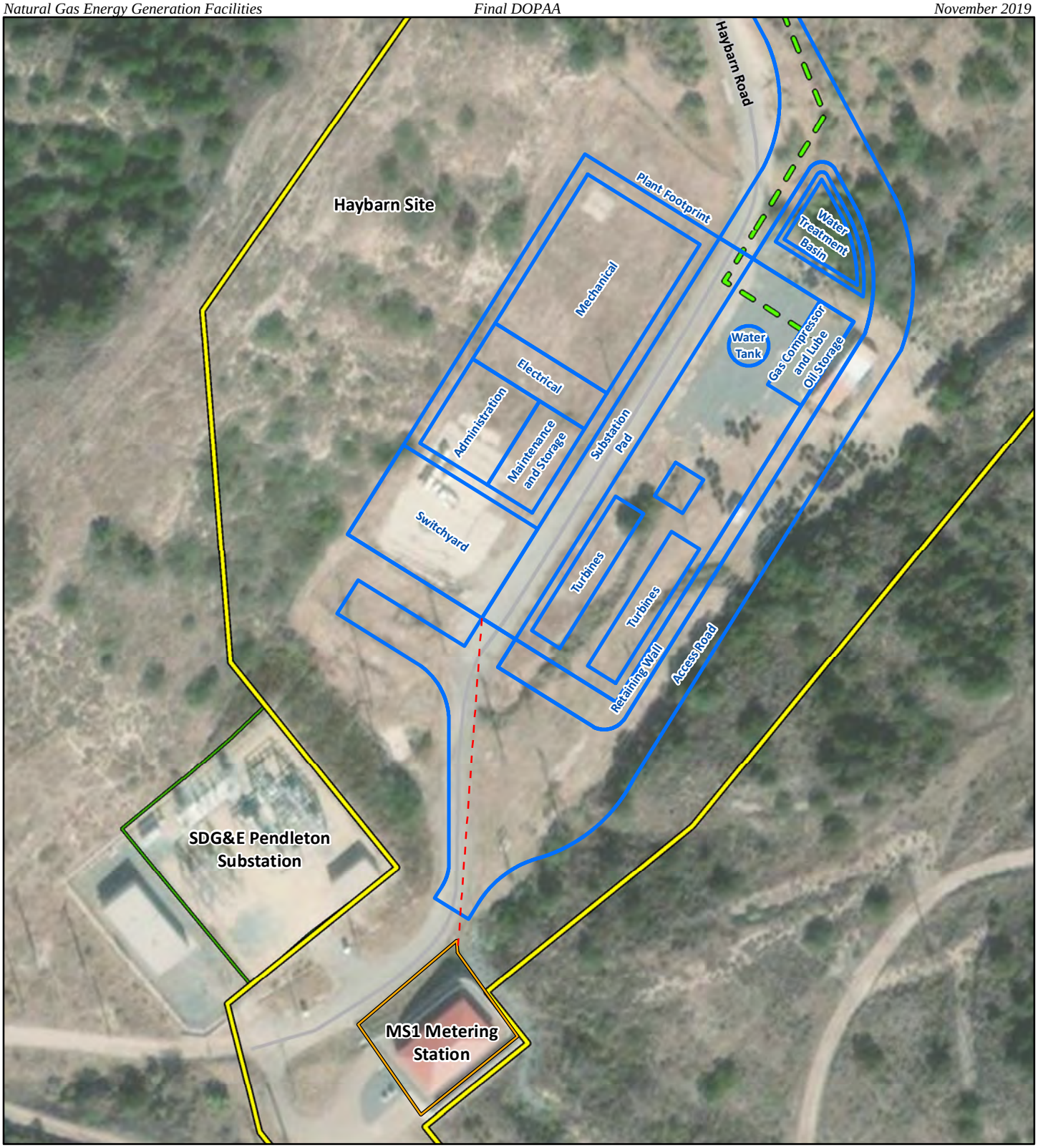


Figure 2-2b. Alternative 1: Notional Footprint of Natural Gas Power Plant at Haybarn Site

All operations and maintenance would be conducted in compliance with all DoN and USMC regulations applicable to conducting work activities on MCB Camp Pendleton, and adherence to the avoidance/minimization measures presented in Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

(Note to reviewer: Table 3-1, Summary and Potential Impacts and Avoidance/Minimization Measures will be provided with the Draft SEA.)

2.3.1.4 Decommissioning

Two years prior to the conclusion of the agreement (37 years total), the batteries at the Stuart Mesa Site and natural gas power plant and associated systems would be decommissioned and the sites returned to their pre-project condition or as required by agreement between the DoN and the developer. A decommissioning plan would be prepared in accordance with DoN's requirements. The plan would ensure that the project facilities would be decommissioned and removed, and the Stuart Mesa and Haybarn Sites would be restored to pre-construction conditions. Soils and impacted areas would be reclaimed to a level that would, at a minimum, support uses for the land consistent with pre-construction activities. The decommissioning and restoration process would likely involve the removal of aboveground structures, restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be used during the decommissioning phase of the project.

Anticipated decommissioning activities would use a mix of equipment and vehicles, likely to include bulldozers, scrapers, backhoes, water trucks, and truck-mounted mobile cranes. The decommissioning activities would likely occur over a period of approximately 6 months. Debris would be removed and disposed of in compliance with the DoN's Sustainability and Environmental Management Policy Statement (dated 16 September 2009) and sustainability goals (e.g., recycling approximately 50 percent of municipal trash and 40 percent of construction and demolition waste), or any new documentation that might replace the DoN's 2009 statement in the future.

All hazardous materials would be disposed of in accordance with applicable regulations at an appropriately accredited facility for hazardous material(s). A decommissioning staging area would be delineated within the overall project area and all work would be done on-site. Following decommissioning activities, the DoN would certify that the land condition was returned to its pre-project condition. All decommissioning activities would be done in compliance with all DoN regulations applicable to conducting work activities on MCB Camp Pendleton and the 2016 CPR, and with adherence to Table 3-1, *Summary and Potential Impacts and Avoidance/Minimization Measures*.

2.3.2 Alternative 2: Modifications at the Stuart Mesa Site and Construction, Operation, and Decommissioning of an up to 49.9 MW Natural Gas Power Plant at the Parking Lot Site

Under Alternative 2, battery energy storage systems, a power line, and substation expansion would be constructed at the Stuart Mesa Site as described in Section 2.1. Also a natural gas power plant would be constructed at the Parking Lot Site and related utility connections would be installed or upgraded to support the natural gas power plant. Alternative 2 includes construction, operation, and decommissioning of these facilities at the end of the lease period, or as agreed to by the DoN and the private partner. The same natural gas power plant acquisition, and similar construction, operation, and decommissioning activities as described under Alternative 1 would also occur as described in Section 2.3.1. However, under Alternative 2, an up to 49.9 MW natural gas power plant would be constructed and operated at the Parking Lot Site instead of the Haybarn Site (Figure 2-3).

The Parking Lot Site is previously disturbed land located off a dirt driveway on the east side of Vandegrift Boulevard in the 26 Area across the street from the Marine Corps Exchange Property Maintenance Building, Plumber and Welding Shops, and General Storage Building (Figures 2-3 and 2-4a and Photo 5). Under Alternative 2, approximately 3.98 acres (1.61 ha) at the Parking Lot Site would be disturbed during construction and approximately 2.09 acres (0.85 ha) of that disturbed area would be developed to support the creation of up to 49.9 MW of natural gas power generation. The features would be similar to those described in Section 2.1 (Figure 2-4b).

Photo 5: Parking Lot Site
(looking north towards Vandegrift Boulevard)

2.3.2.1 Acquisition Strategy

Alternative 2 would rely upon the same Model 2 acquisition strategy described under Alternative 1. The land impact, function of the facility, conservation and construction measures would be nearly identical to Alternative 1. The notable differences would be the extent of construction, placement of the natural gas power plant at the Parking Lot Site, and routing of electrical distribution corridors (i.e., placement and point of connection of the natural gas power plant system). Alternatives 1 and 2 would serve the regional public grid or the MCB Camp Pendleton grid during a power outage. The partner would be responsible for all maintenance and service of the system; no federal tax dollars would be used for maintenance/service. At the conclusion of the agreement, the private partner would decommission the battery energy storage systems area and the natural gas power plant and return the site to pre-project conditions.

2.3.2.2 Construction

The Parking Lot Site is relatively flat and would require minimal grading. The area where the natural gas power plant would be located is bound by hillsides to the northeast and east, the Vandegrift Boulevard to the northwest and west; and open, undeveloped land to the south. In order to accommodate the natural gas power plant footprint, the hillsides to the northeast and east would be partially graded and retaining walls installed.

Under Alternative 2, similar natural gas power plant construction activities as described under Alternative 1 would occur at the Parking Lot Site (Figure 2-4b). Other site preparation activities would be the same as Alternative 1 with the exception of the construction of a 69 kV overhead or underground power line from the Parking Lot Site to the SDG&E Pendleton Substation. A 69 kV switching/metering station would also be constructed at the Haybarn Site that could divert power to the MS1 metering station during an outage. The switching/metering station would be the same as described for Alternative 1.

This alternative is similar to Alternative 1 but the up to 10-inch gas line that would tap into the existing SDG&E Line 49-102 gas line at the 16th Street Rattlesnake Metering Station, would take a different route. The project would install an up to 10-inch steel gas line that would run south on Vandegrift Boulevard from the Parking Lot Site and the compressor station, then turn left down the north side of Rattlesnake Canyon Road to the metering station at 16th Street.

Figure 2-3. Alternative 2: Overview of Natural Gas Power Plant at Parking Lot Site and Stuart Mesa Site

MCB Camp Pendleton Boundary
MCB Camp Pendleton Land Management Area Boundary
Stuart Mesa PV Site (2015 EA)

Existing Features
SDG&E Pendleton Substation
SDG&E Stuart Mesa Substation
MS1 Metering Station (Camp Pendleton owned)

Existing SDG&E Gas Line (Line 49-102)
Camp Pendleton 12kV Distribution Line
SDG&E 69kV Power Line

Proposed Features
Parking Lot Site
Natural Gas Power Plant Footprint
Switching/Meter Station
SDG&E Stuart Mesa Substation Expansion
Stuart Mesa Site (PV and Battery Storage)

Gas Line
69kV Power Line
69kV Power Line Corridor and Access Road Options
Underground 12kV Distribution Line

0 1,000 2,000 Feet

N

Source: Webcor 2019, MCB Camp Pendleton 2018, Esri 2015, 2018

This page intentionally left blank.

Figure 2-4a. Alternative 2: Detail of Existing Parking Lot Site

MCB Camp Pendleton Boundary

Existing Features
- Water Line
- Wastewater Line

Proposed Features
- Parking Lot Site
- Gas Line
- 69kV Power Line

0 100 200 Feet

Source: Webcor 2019, MCB Camp Pendleton 2018, SANDAG 2018, Esri 2015, 2018

Figure 2-4b. Alternative 2: Notional Footprint of Natural Gas Power Plant at Parking Lot Site

MCB Camp Pendleton Boundary

Proposed Features

- Parking Lot Site
- Power Plant Structures
- Gas Line
- 69kV Power Line

0 60 120 Feet

Source: Webcor 2019, MCB Camp Pendleton 2018, SANDAG 2018, Esri 2015, 2018

A construction staging area would be delineated within the overall project area at the Parking Lot Site and all work would be done on-site. The Haybarn Site potentially could be used as the laydown area for the equipment and material needed during construction of the natural gas power plant as it is already disturbed land. Material staging and equipment used would be the same as Alternative 1. The construction duration would also be approximately 2 to 3 years.

New Electrical Power Lines from Parking Lot Site to Haybarn Site

Under Alternative 2, the natural gas power plant would connect to the existing SDG&E Pendleton Substation located adjacent to the northern boundary of the Haybarn Site. Energy generated at the Parking Lot Site natural gas power plant would be transmitted via a new 69 kV overhead or underground power line from the Parking Lot Site to a 69 kV switching/metering station located at the Haybarn Site. Power would be delivered via new power/distribution lines to the SDG&E Pendleton Substation (69 kV power line) and MS1 (12 kV distribution line). The switchgear would be installed in order to divert power via a 12 kV distribution line connecting to MS1 during grid outage.

Alternative 2 would require construction of a new power line and a new distribution line. The new 69 kV power line would connect the Parking Lot Site to the switching/metering station at Haybarn Site. If overhead, it would be an approximately 55-foot (17-meter) tall (maximum) galvanized steel pole supported power line. The new 12 kV distribution line would connect MS1 to the switchgear at the switching/metering station. It would be an underground distribution line.

2.3.2.3 Operations and Maintenance

Operations and maintenance would be similar to Alternative 1, but the natural gas power plant would be located at the Parking Lot Site.

2.3.2.4 Decommissioning

Decommissioning would be similar to Alternative 1, but the natural gas power plant would be located at Parking Lot Site.

2.3.3 No-Action Alternative

Under the No-Action Alternative, the DoN would not enter into an agreement with a private partner to install batteries for energy storage or construct and operate a natural gas power plant at MCB Camp Pendleton. The No-Action Alternative in this case would be Alternative 1 from the 2015 EA. The No-Action Alternative does not meet the purpose and need with regard to meeting DoN resilient energy goals as the energy generated from the solar PV system at the Stuart Mesa Site would only be sold to regional customers outside the DoN and not be made available to MCB Camp Pendleton. However, the DoN has analyzed the No-Action Alternative in this SEA in accordance with statutory requirements and to provide a baseline against which to measure environmental consequences of the action alternatives. The affected environment section of Chapter 3 describes the No-Action Alternative (existing conditions) for each resource area. The analysis of the No-Action Alternative in Chapter 3 assumes that the DoN would only implement the 2015 EA Alternative 1, and there would be no installation of batteries for energy storage and no new natural gas power plant to ensure MCB Camp Pendleton's energy resilience.

2.3.4 Comparison of Alternatives

Table 2-1 summarizes and compares the features associated with the two action alternatives and the No-Action Alternative.

Table 2-1. Summary and Comparison of Alternatives

Model	System Size	Site(s)	Power/Distribution Line Type	Power User
Alternative 1 *(see Figures 2-1 and 2-2a)*				
Model 2	Up to 200 MW battery energy storage systems / Up to a 49.9 MW natural gas power plant	Stuart Mesa / Haybarn	• New 69 kV power line between Stuart Mesa Site and SDG&E Stuart Mesa Substation. • New 69 kV power line between Haybarn Site and SDG&E Pendleton Substation. • New 12/69 kV switching/ metering station at Haybarn Site. • New underground 12 kV distribution line between switching/ metering station and MS1 Metering Station.	Regional grid and MCB Camp Pendleton
Alternative 2 (*see Figures 2-3 and 2-4a)*				
Model 2	Up to 200 MW battery energy storage systems / Up to a 49.9 MW natural gas power plant	Stuart Mesa / Parking Lot	• New 69 kV power line between Stuart Mesa Site and SDG&E Stuart Mesa Substation. • New 69 kV power line between Parking Lot Site and SDG&E Pendleton Substation along Vandegrift Boulevard and Haybarn Road. • New 12/69 kV switching/ metering station at Haybarn Site. • New underground 12 kV distribution line between switching/ metering station and MS1 Metering Station.	Regional grid and MCB Camp Pendleton
No-Action Alternative				
Model 2	Up to a 28 MW[1] solar PV system	Stuart Mesa Sites A and B	No new power/distribution lines.	Regional grid

Notes: [1]The potential capacity of the solar PV system is the 28 MW analyzed in the 2015 EA.
Legend: kV = kilovolt; MCB = Marine Corps Base; MW = megawatts(s); SDG&E = San Diego Gas and Electric.

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR DETAILED ANALYSIS

The DoN initially considered other sites and other resilient energy sources. Once natural gas was determined to best meet the project purpose and need, the DoN considered several sites as options for the placement of a natural gas power plant as well as several different pipeline alignments for gas supply to fuel the project. Each was evaluated for its potential implementation of the Proposed Action to fulfill the project purpose and need.

2.4.1 Other Resilient Energy Sources

Other resilient energy sources were considered, including diesel generated power, and solar PV generated power. However, given MCB Camp Pendleton's location and associated available resources, the DoN has determined that natural gas energy generation represents the best resilient energy option for MCB Camp Pendleton when compared with other resilient energy options. Metrics used for comparison were cost, land area required, and potential to satisfy the purpose and need of the project. The DoN has eliminated other resilient energy sources from detailed analysis in this SEA.

2.4.2 Mechanical Museum Lot

The Mechanical Museum Lot was considered for the natural gas power plant. It is located along the west side of Vandegrift Boulevard. This site is located within a flood zone, according to Federal Emergency Management Agency. The Mechanical Museum Lot is also directly in the flight path which could pose a problem with the height of the natural gas power plant HRSG stacks (100 feet [30.5 meters] high).

Construction and operation of a natural gas power plant at this location would potentially be unsafe and pose hazards to military missions. Therefore, the Mechanical Museum Lot was removed from consideration and detailed analysis of this site is not included in the SEA.

2.4.3 12 Area Site

The 12 Area Site was considered for the natural gas power plant. It is located along the east side of Vandegrift Boulevard. The 12 Area Site is located on a steep hillside that would require considerable earthwork and retaining walls to create a level area for construction. It was also found to be within the view shed of base housing. Therefore, the DoN has eliminated the 12 Area Site from further consideration and detailed analysis in this SEA.

2.4.4 New 6-inch Natural Gas Line Extending from the 10-inch SDG&E Line 1026 Transition Pipeline to the Power Plant

The DoN considered the possibility of constructing a new 6-inch gas line to connect the natural gas power plant to the 10-inch SDG&E Line 1026 transition pipeline that runs along the coast, in order to provide enough natural gas to generate 25 MW. Coordination with SDG&E indicated that the line is old and they would prefer in the future to be lowering the pressure of Line 1026. The SDG&E Line 1026 would require significant work and upgrades to support the proposed project. Therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

2.4.5 New 8-inch Natural Gas Line Extending from the 30-inch SDG&E Line 3010 Transition Pipeline along SDG&E Line 49-102 Route to the Power Plant

The DoN considered the possibility of constructing a new 8-inch gas line from the existing 30-inch SDG&E Line 3010 transition pipeline to replace the existing 6-inch SDG&E Line 49-102 gas line that enters MCB Camp Pendleton along Engineering Road, through Juliette Training Area, the 16th Street Rattlesnake Canyon Metering Station, along Rattlesnake Canyon Road to Vandegrift Boulevard and the selected location of the natural gas power plant, in order to provide enough natural gas to generate 25 MW. Coordination with SDG&E indicated that for safety purposes, a minimum of 42-inches of cover is required over any gas line that runs through in the Juliette Training Area. Currently, the cover is continuously being removed by grading and training activities occurring within the Juliette Training Area, potentially posing a safety hazard. For this reason, the Base and SDG&E would ideally like to remove all gas lines from the training course. Therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

2.4.6 New 10-inch Natural Gas Line Extending from the 30-inch SDG&E Line 3010 Transition Pipeline along SDG&E Line 49-103-B Route to the Power Plant

The DoN, in coordination with SDG&E, considered the possibility of constructing a new 10-inch gas line from the existing 30-inch SDG&E Line 3010 transition pipeline to replace the existing various sized SDG&E Line 49-103-B gas line that enters MCB Camp Pendleton through the San Luis Rey Gate, along Vandegrift Boulevard to the 16th Street Rattlesnake Canyon Metering Station, along Rattlesnake Canyon Road to another segment of Vandegrift Boulevard and the selected location of the natural gas power plant, in order to provide enough natural gas to generate 49.9 MW. SDG&E would be responsible for the construction of the gas line and because a portion of the new gas line extends outside the boundaries of the base, a California Environmental Quality Act document might need to be developed and the California Public Utilities Commission involved which would significantly impact the proposed project's timeline. In addition, MCB Camp Pendleton Command expressed concern with creating more ground disturbance along

Vandegrift Boulevard where it runs from San Luis Rey Gate to 16th Street and did not endorse this alternative. Therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

2.4.7 Connect Three New 6-inch Gas Lines to Supply the Power Plant

The DoN considered drawing natural gas fuel supply from all three existing SDG&E gas lines (Lines 49-103, 49-102, and 1026) to supply the Proposed Action to 49.9 MW capacity. However, it has been determined that the 10-inch SDG&E Line 1026 transition pipeline on the coast cannot supply the project. In order to supply the Proposed Action, SDG&E Line 1026 would require significant work and upgrades. Additionally, the DoN and SDG&E would like to remove all pipelines from under the Juliette Training Area. In addition, connecting to all three gas lines represents significant difficulties (i.e., more cost and new gas lines and ground disturbance). For these reasons, the DoN removed from consideration the concept of connecting to all three gas supply lines to supply the Proposed Action.

2.4.8 Construct a Natural Gas-fueled Reciprocating Engine for Power Generation

The DoN considered constructing a Natural Gas-fueled Reciprocating Engine (rather than the Combined Cycle Gas Turbine Facility), but determined it to be costly and inefficient; therefore, the DoN has eliminated this alternative from detailed analysis in this SEA.

CHAPTER 3
REFERENCES

DoD. 2018. Department of Defense Instruction 4170.11, Installation Energy Management, 11 December 2009, Incorporating Change 2. 31 August.

DoN. 2012. Strategy for Renewable Energy. Published by the 1 Gigawatt Task Force. October.

DoN. 2015. Final Environmental Assessment (EA) for the Proposed Construction, Operation, and Decommissioning of a Solar Photovoltaic System at Marine Corps Base Camp Pendleton and Finding of No Significant Impact. 10 December.

DoN. 2019. Energy, Environment and Climate Change. https://navysustainability.dodlinve.mil/energy/. Accessed on 9 May 2019.

GE. 2019. Inner Workings of a Combined-Cycle Power Plant. https://www.ge.com/power/gas/gas-turbines. Accessed on 18 June 2019.

MCB Camp Pendleton. 2016. Camp Pendleton Requirements. Available at: https://www.pendleton.marines.mil/Portals/98/Docs/Facilities/Camp_Pendleton_Requirements (CPR)_2016.pdf?ver=2016-09-16-110845-030. Accessed on 22 August 2019.

SDG&E. 2019. Innovative Battery Storage Technology Connected to the California Grid. http://www.sdgenews.com/article/innovative-battery-storage-technology-connected-california-grid. Accessed on 27 August 2019.

SWRCB. 2014. General Permit for Biological and Residual Pesticide Discharges from Vector Control Applications. 2014. http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0106_dwq_redline.pdf. 2 July. Accessed on 16 June 2019.

USMC. 2014. Programmatic Agreement Among the United States Marine Corps, The Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on Marine Corps Base Joseph H. Pendleton. Final.

This page intentionally left blank.