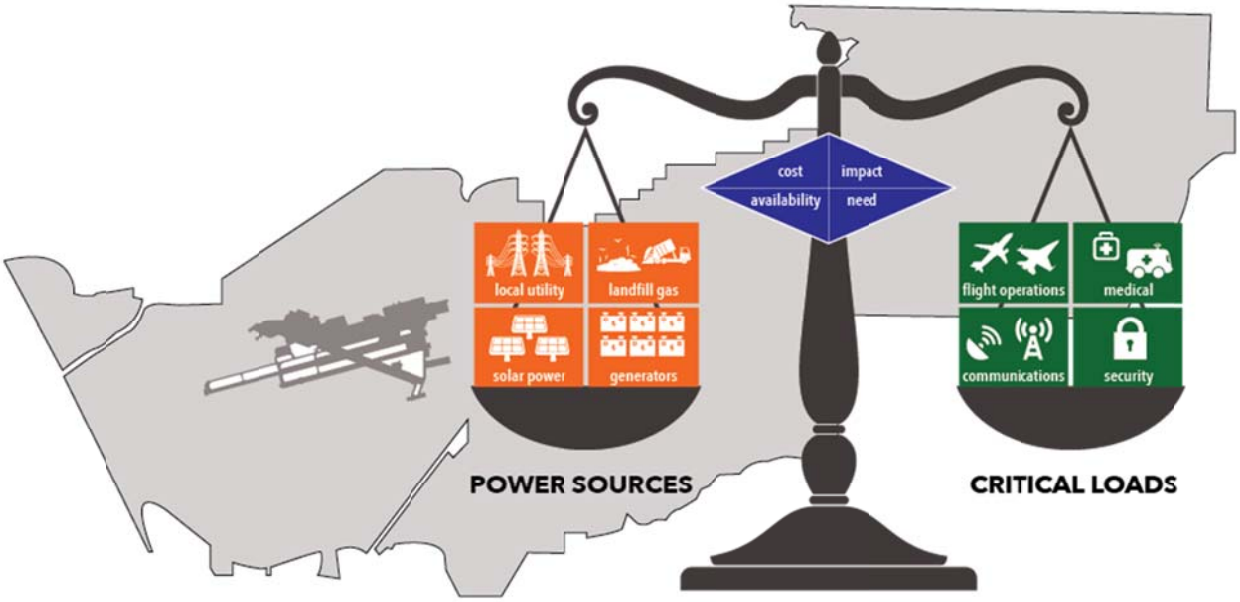
PRE-FINAL DRAFT
ENVIRONMENTAL ASSESSMENT

ENERGY SECURITY MICROGRID FOR CRITICAL FACILITIES PROJECT (P-906)
Marine Corps Air Station Miramar
San Diego County, California



August 13, 2015

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ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
AQIA	Air Quality Impact Analysis
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
dB	Decibel
dBA	A-weighted decibel
DoN	Department of the Navy
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA 2007	Energy Independence and Security Act of 2007
EO	Executive Order
EPAct 2005	Energy Policy Act of 2005
EOC	Energy Operations Center
GHG	Greenhouse Gas
ha	Hectare(s)
I	Interstate
km	Kilometer(s)
kV	Kilovolt
MCAS	Marine Corps Air Station
MCO	Marine Corps order
MT	Metric Tons
MW	Megawatt
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NBSD	Naval Base San Diego
NEPA	National Environmental Policy Act of 1969
NG	Natural Gas
NOA	Notice of Availability
NO_X	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
Pb	Lead
PM_{10}	Particulate Matter Equal to or Less Than 10 Microns In Diameter
$PM_{2.5}$	Particulate Matter Equal to or Less Than 2.5

	Microns In Diameter
PPM	Parts Per Million
ROG	Reactive Organic Gas
ROI	Region of Influence
SDAB	San Diego Air Basin
SDCAPCD	San Diego County Air Pollution Control District
SDG&E	San Diego Gas & Electric
SIL	Significant Impact Level
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_X	Oxides of Sulfur
sq ft	Square Foot (Feet)
SR	State Route
T-BACT	Toxics Best Available Control Technology
tpy	tons per year
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USMC	United States Marine Corps
VOC	Volatile Organic Compound
$\mu g/m^3$	Micrograms Per Cubic Meter

EXECUTIVE SUMMARY

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as implemented by the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations (CFR) parts 1500-1508), the U.S. Marine Corps (USMC) gives notice that an Environmental Assessment (EA) has been drafted and that an Environmental Impact Statement (EIS) is not required for the proposed Energy Security Microgrid for Critical Facilities Project (P-906).

The USMC is preparing an EA to assess the potential impacts of the proposed project. The proposed action is to construct and operate an electrical energy security microgrid, including up to 3 megawatts (MW) of electricity from continuous rated natural gas-fired generation and up to 4 MW of electricity from prime rated diesel-fired generation, networked to an installation-wide electrical control system that provides capability for emergency use, generation based demand response, cost-based prime/continuous use of natural gas generation capability, maintenance, testing, and demonstration. The energy security microgrid would incorporate the existing power sources for the installation into its monitoring and control operations including the power obtained from the existing electrical grid, renewable power generation from on-site landfill gas collection (3.2 MW), and photovoltaic solar power panels (1.3 MW). The energy security microgrid is designed to address current critical energy needs (often referred to as critical electrical loads) for the installation such as flight operations, fire protection, police, security, and communication systems.

Building 4265 is the current location of Marine Corps Air Station (MCAS) Miramar's main electrical service and metering station, and the existing area is already fully developed and has been established as an industrial\commercial area, since the mid 1990's. An additional facility would need to be constructed adjacent to building 4265 to house power generation for the proposed action as well as the primary location for monitoring and controlling the energy security microgrid. All project activities will be located within the same general vicinity.

This EA will evaluate both the potential environmental effects associated with the proposed installation and operation of the energy security microgrid for the critical facilities project and the effects of not developing the project (i.e., a "No Action" alternative). Potential resource impacts to be examined by this EA include: air quality; noise; transportation; infrastructure, utilities and services; and public health and safety.

This proposed microgrid project would be an overall solution to address the installation's energy security needs. In addition, the ability to coordinate and integrate the various sources of electrical power available to MCAS Miramar – solar, landfill gas, regional utility (San Diego Gas and Electric (SDG&E)), and up to 7 MW of new generation capability would enhance MCAS Miramar's energy security posture in accordance with the Energy Policy Act of 2005 (EPAct 2005), Energy Independence and Security Act 2007 (EISA 2007), and the USMC Installation Energy Security Strategy. In addition, efficiencies gained through management of the energy security microgrid would help the Marine Corps meet the energy reduction goals and requirements of Executive Order (EO) 13693.

1.0 PURPOSE AND NEED FOR PROPOSED ACTION

1.1 Introduction/Background

The USMC has prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969, 42 U.S. Code (USC) §§4321-4370f, as implemented by the CEQ Regulations (40 CFR Parts 1500-1508); Department of the Navy (DoN) Procedures for Implementing NEPA (32 CFR 775), and Marine Corps Order (MCO) P5090.2A, Change 3, Chapter 12, Environmental Planning and Review, which establishes procedures for implementing NEPA. NEPA encourages public involvement in the environmental review process. The development of this EA includes the publication of a Notice of Availability (NOA) informing interested parties or agencies of the existence of this report. This assessment considers all relevant Federal, State, and local laws and regulations as part of the evaluation. The detailed analysis sections of the assessment would address the media specific regulations from both the Federal and State agencies as they apply to this project.

The proposed action is to construct and operate an electrical energy security microgrid, including up to 3 MW of electricity from continuous rated natural gas-fired generation and up to 4 MW of electricity from prime rated diesel-fired generation, networked to an installation-wide electrical control system that provides capability for emergency use, generation-based demand response, cost-based prime/continuous use of natural gas generation capability, maintenance, testing, and demonstration. Continuous and prime power generators are very similar as they function as the main source of power and are designed to operate for extended periods of time. The major difference between the two power generators, is that continuous generators are designed to operate continually with a consistent load while prime generators are designed to operate for long durations at variable load. The energy security microgrid would incorporate the existing power sources for the installation into its monitoring and control operations including the power obtained from the existing electrical grid, renewable power generation from on-site landfill gas collection (3.2 MW), and photovoltaic solar power panels (1.3 MW). The energy security microgrid is designed to address current critical energy needs (often referred to as critical electrical loads) for the installation, such as: flight operations, fire protection, police, security, and communication systems.

This EA evaluates the proposed action using two action alternatives and the No Action alternative. The action alternatives involve the same construction and configuration of equipment, but differ in the nature and/or extent of the use of the system due to differences in the number of operational hours.

1.2 Location

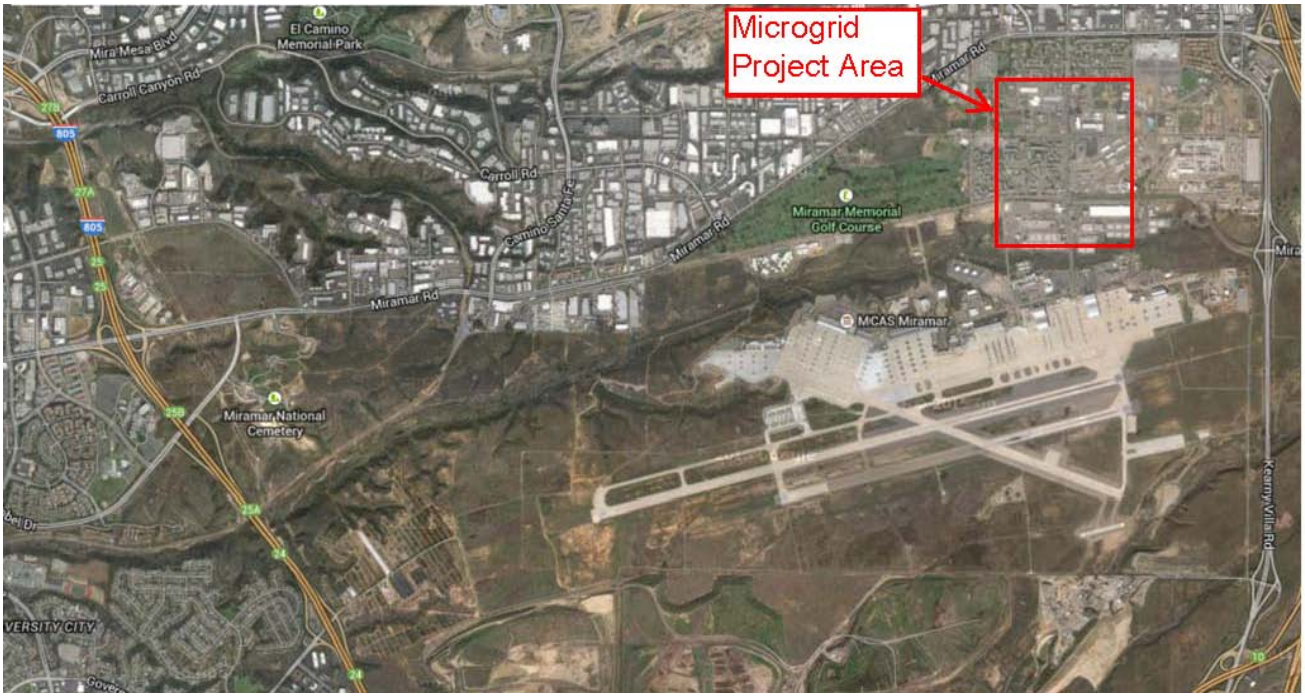
MCAS Miramar is located approximately 13 miles (21 kilometers [km]) north of downtown San Diego (Figure 1-1). The Air Station occupies 23,015 acres (ac) (9,355 hectares [ha]) of land bounded by State Route 52 (SR-52) to the south and Interstate 805 (I-805) to the west. The communities of Mira Mesa and Scripps Ranch have been built up to the northern limits of the Air Station and the eastern boundary of the Air Station abuts the City of Santee and an unincorporated area of San Diego County.

FIGURE 1-1 REGIONAL LOCATION OF MCAS MIRAMAR

MCAS Miramar is bisected by Interstate 15 (I-15), which effectively divides the Air Station into three areas (Figure 1-1). The area west of I-15 is known as Main Station and West Miramar. Main Station contains the airfield as well as commercial, administrative, and industrial uses, aviation support facilities, and housing areas. The City of San Diego operates a municipal landfill within the Air Station, just north of SR-52 in West Miramar. The East Miramar area, located to the east of I-15, is mostly undeveloped and used for training.

Building 4265 is the current location of MCAS Miramar's main electrical service and metering station and the existing site is already industrial in nature. This would also be the primary location for monitoring and controlling the energy security microgrid. All project activities would be located within the Main Station area indicated on Figure 1-2. An additional facility is shown in Figure 1-3 and would need to be constructed adjacent to building 4265 to house power generation for the proposed action and serve as the primary location for monitoring and controlling the energy security microgrid. The surrounding area is already fully developed and has been established as an industrial\commercial area since the mid 1990's. An Energy Operations Center (EOC) located at building 6311 would be the alternate location for monitoring and controlling of the energy security microgrid. A redundant controller would be located off-site at another utility building at Naval Base San Diego (NBSD), approximately 15 miles from MCAS Miramar. The construction impact of the proposed action would be focused at the site of the additional power generating facility located adjacent to building 4265. This would include trenching to connect the power generating facility to the natural gas line located on the other side of building 4265 and the running of fiber optic cabling using existing utility conduits between the facility, the power substations, and the energy security microgrid operations center at building 6311.

Figure 1-2 Vicinity Map –Location of Proposed Project Site Area



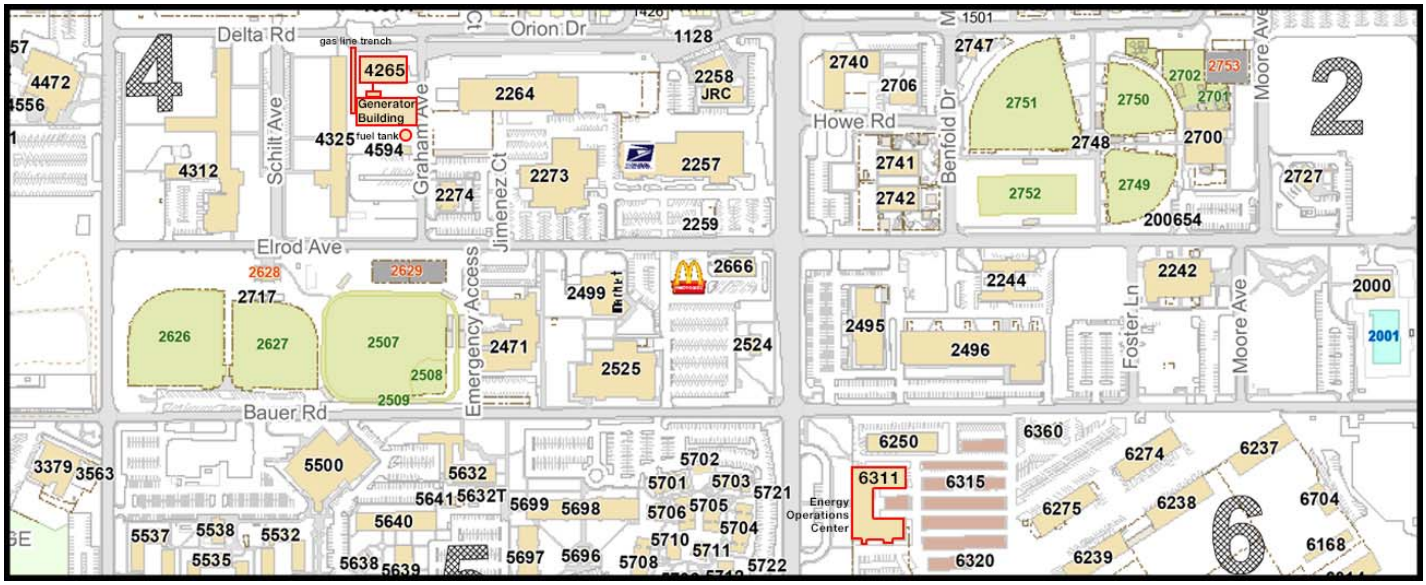
Summary of Existing Land Uses and Onsite Characteristics

Existing onsite use/facility	Energy Security Microgrid Power Generation Facility Footprint		
Existing parcel size	40,000 square feet (sq. ft.)	New structure size	10,000 sq. ft.
Other existing onsite structures	Combination of field, I industrial, and commercial structures	Type of other existing structures	New building would replace part of the existing open space field. A Bachelor Officers Quarters, industrial and electrical support facilities, and industrial shop operations are nearby
Existing Ground Elevation (Feet Above Mean Sea Level)	400		

Relationship to Federally-Regulated Lands (outside of Installation)

Located within or on federal lands administered by:	Yes / No
U.S. Army Corps of Engineers	No
U.S. Bureau of Land Management	No
U.S. Forest Service	No
National Park Service	No
Other federal agency	No

Figure 1-3 Location Map of Project Site



1.3 Purpose and Need

1.3.1 Purpose

The purpose of the proposed action is to provide emergency back-up power to key facilities during a regional power outage; enable use of the existing landfill gas and solar generation capability during such an outage; allow efficient management of electrical loads and demand across MCAS Miramar; facilitate participation in the regional electrical provider's demand response program through self-generation; and, subject to permitting requirements, produce local power for MCAS Miramar use in other conditions when it is more economical to do so. EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management, was signed on January 24, 2007 to strengthen key goals for the Federal Government. It set more challenging goals than the EPAct 2005, Public Law 109-58, and superseded EO 13123 and EO 13149. EO 13423 was recently superseded by EO 13693, Planning for Federal Sustainability in the Next Decade, which expands upon current energy and environmental goals to increase sustainability in government operations and actions. EO 13693 also requires agencies to identify and address projected impacts of climate change on mission critical water, energy, communication, and transportation demands and consider those climate impacts in operational preparedness planning for major agency facilities and operations.

The EPAct 2005, Public Law 109-58, and the EISA 2007 require increased renewable power and energy security be incorporated into Agency planning and operations. This is reflected in the United States Marine Corps "**Installations Energy Strategy,"** which requires Installation Commands to:

- Coordinate with tenant units to conduct annual energy security vulnerability analyses and develop action plans to remove unacceptable energy security risks.
- Ensure that plans address energy emergency preparedness and protection and restoration of mission critical and essential functions.
- Integrate energy information into centrally managed data systems that support near real-time command and control of energy management and building control systems.

The Marine Corps is also under a command mandate to reduce utility costs by 10% before 2020. The mandate is called Utility Demand Reduction (UDR). This microgrid would be able to address options for the installation to lower utility costs using multiple approaches that also support the grid including (demand response and self-generation) and lower the "burden cost" (also known as Peak Shaving).

1.3.2 Need

The need for the proposed action is several-fold. This proposed microgrid project would be an overall solution to address the installation's energy security needs as well as help the installation comply with the mandates and executive orders listed above. In addition, the ability to coordinate and integrate the various sources of electrical power available to MCAS Miramar – solar, landfill gas, regional utility (SDG&E), and up to 7 MW of new generation capability would enhance MCAS Miramar's energy security posture in accordance with the EPAct 2005, the EISA 2007, and the USMC Installation Energy Security Strategy. In addition, efficiencies gained through management of the energy security microgrid would help the Marine Corps meet the energy reduction goals and requirements of EO 13693.

With all the sources of power available, the need to use conventional fuel such as diesel and natural gas may be questioned. MCAS Miramar and the Department of Energy's National Renewable Energy Laboratory (NREL) performed a technical design analysis for the microgrid project which produced the proposed scope of the project. NREL's engineers and researchers showed MCAS Miramar that in order to use its renewable resources such as landfill power and solar, diesel fuel generation would be required to provide the microgrid the power quality necessary to sustain an islanded electrical grid, something rarely done with only renewables. Diesel fuel generation will provide voltage regulation and load following required for the microgrid that otherwise cannot be provided by any other resource available to MCAS Miramar. The natural gas is then required to provide both a redundant electrical source to the landfill power as well as opportunity to provide cleaner generation than the diesel. These conventional generation sources are MCAS Miramar's only economically feasible solution for complete energy security.

The new gas-fired and diesel-fired generators would enable MCAS Miramar to reduce demand on the regional electrical grid when requested by SDG&E as part of its demand response program. This would help enhance grid stability for the region, and also generate cost savings through billing credits against MCAS Miramar's electrical bills from SDG&E. It also is anticipated that the on-base natural gas generation capability may be able to produce power more economically than it would otherwise cost to purchase it from SDG&E in some circumstances such as peak demand periods. Peak power demand periods occurred in San Diego for 78 days during 2014, and its frequency may increase with greater economic activity and constrained power resources. The energy security microgrid is designed to address current critical energy needs (often referred to as critical electrical loads) for the installation; such as: flight operations, fire protection, police, security, and communication systems. The on-site generators provide assurance of a reliable source of power for these critical needs under all anticipated operating conditions.

With the installation of new power generation, MCAS Miramar is insuring that the most clean (air quality) and compliant equipment is used to allow for operation in any future utility situation. The cost of utility power is on the rise and distributed generation could prove to be beneficial for both the community and the installation. By permitting more hours, MCAS Miramar enables mitigation of future utility constraints that will lead to increased utility costs, thus enabling the need for energy security as life cycle cost effective as possible. By posturing MCAS Miramar to accomplish these goals, the installation would in no way ever exceed its air permitting emission requirements by the regulatory agency.

1.4 Scope of Analysis

CEQ regulations, NEPA, DoN, and USMC procedures for implementing NEPA specify that an EA should address only those resource areas potentially subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level of environmental impact. This EA examines the impacts associated with construction and operation of the energy security microgrid to manage MCAS Miramar's electricity usage and generate necessary power during emergencies, enable participation in SDG&E's regional demand response program, provide capability to produce local power for MCAS Miramar use in other conditions when it is more economical to do so, and perform maintenance, testing, and demonstration of the system.

The following resource areas are addressed in this EA: air quality; noise; transportation; infrastructure, utilities and services; and public health and safety. Several other resource areas have been reviewed for potential environmental impacts, but have not been carried forward for detailed analysis in this EA, because potential impacts were determined to be negligible. The following are resources not included for further detailed analysis in this EA:

- Cultural resources. Cultural resources can consist of prehistoric and historic districts, sites, buildings, structures or objects that may be archaeological, architectural, or traditional cultural properties. Historic properties are generally at least 50 years of age or older, although some may achieve historic significance in more recent times. The proposed action and its alternatives would occur on commercial/industrial developed land with no cultural resources based on prior installation studies. Therefore, this resource was eliminated from detailed analysis in this draft EA.

- Biological resources. The current site location is situated within an area of commercial/industrial developed land and would take part of an area that is currently a grass field. No biological resources are known to be located in this area based on a visual inspection of the area. Therefore, biological resource impacts associated with the proposed action are not analyzed in this EA.

- Geologic resources (including topography, seismicity and soils). The current site location is situated within an area of commercial/industrial developed land and there would be no change in the land use and no significant changes in terms of major construction, changes to transportation patterns, or levels of usage. Therefore, geological resource impacts associated with the proposed action are not analyzed in this EA.

- Hydrology, wetland, and floodplain resources. The current site location is situated within an area of commercial/industrial developed land and has no water features, wetlands, or significant storm water potential. There would be no change in the overall land use and no significant changes in terms of major construction, changes to transportation patterns, or levels of usage. There would be a connecting trench dug for the gas main and the area would be re-graded as before and no major impact is planned or anticipated. Therefore, hydrology, wetland, and floodplain resources impacts associated with the proposed action are not analyzed in this EA.

- Climate and Meteorological resources. The current site location is situated within an area of commercial/industrial developed land and there would be no change in the overall land use and no significant changes in terms of major construction, changes to transportation patterns, or levels of usage. Therefore, Climate and Meteorological resource impacts associated with the proposed action are not analyzed in this EA.

- Environmental Justice. The proposed action would comply with EO 12898, Federal Actions to Address Environmental Justice in Minority and Low-income Populations and EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. No low-income communities or minority communities exist at the project location. Therefore, no low-income or minority communities would be disproportionately susceptible to adverse socioeconomic or environmental impacts. In addition, children would not be newly or disproportionately exposed to increased health or safety risks due to the access-controlled nature of the site. Therefore, Environmental Justice impacts associated with the proposed action are not analyzed in this EA.

- Visual Resources and Aesthetics. Implementation of the proposed action would not adversely affect visual resources. The proposed action results in construction consistent with that of the Air Station and the surrounding area. The proposed action would not result in an alteration of the current visual setting. Therefore, Visual Resources and Aesthetics resource impacts associated with the proposed action are not analyzed in this EA.

- Land Use. The building construction resulting from the proposed action would be sited in accordance with established land use development guidelines addressing safety, functionality, and environmental protection zones. The current site location is developed land and there would be no change in the land use and no changes to transportation patterns or levels of usage. Therefore, Land Use resource impacts associated with the proposed action are not analyzed in this EA.

- Socioeconomics. The proposed action would not have an effect on socioeconomics. The site is located in an industrial area located entirely within MCAS Miramar. Construction and operation of these facilities would not have a noticeable effect on local population, employment, or income levels. The construction activities would be small and of short duration and the continued operation would be part of the existing facility operations. Therefore, socioeconomic resource impacts associated with the proposed action are not analyzed in this EA.

1.5 Public Involvement

MCAS Miramar published a NOA of the Draft EA for three consecutive days in the *San Diego Union Tribune* (Dates TBD). The notice described the proposed action and action alternatives, solicited public comments on the Draft EA, provided dates of the public comment period, instructions for providing comments, and announced that copies of the Draft EA would be available for public review on the MCAS Miramar website (TBD). The Draft EA is available for review for 30 days. All applicable public comments will be considered in the development of the Final EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

As discussed in Chapter 1, the proposed action is to construct and operate an electrical energy security microgrid including up to 3 MW of electricity from natural gas-fired generators and up to 4 MW of electricity from diesel-fired generators networked to an installation-wide electrical microgrid control system that provides capability for emergency use, participation in generation based demand response, peak shaving, cost-based prime/continuous use of the natural gas generation capability, maintenance, testing, and demonstration. This energy security microgrid would also incorporate other sources of power available to the installation, including the currently existing 3.2 MW of renewable power from the landfill gas power generation facility and the 1.3 MW of renewable power generated from the photovoltaic cells for a total of approximately 11 MW of power generation.

The operational details of construction are the same for both alternatives and involve essentially the same physical facility and equipment. Both action alternatives would include the construction of a new building to house generators. These generators would provide back-up power generation in support of critical mission activities and could operate additional hours for demand response, peak shaving, maintenance, testing, and system demonstration. The building is projected to be between 6,000 and 10,000 sq. ft. of concrete block construction with a height of 20 feet and exhaust and noise abatement equipment on the roof up to an additional six feet in height. There would be a 200 square foot excavated subsurface vault (eight to ten feet deep) adjacent to the building for electrical system connections and equipment. Additional activities would include trenching to connect the gas main located to the north of the adjacent building 4265 and the installation of upgraded electrical equipment at various locations around the installation. Fiber optic cable would be run through existing utility conduits to connect various monitoring and communication elements of the system. There would also be a 10,000 gallon above-ground storage tank or two 5,000 gallon tanks installed adjacent to the new building to hold the diesel fuel for operating the diesel generators.

The alternatives vary in the number of hours of power generation being considered and the resulting impacts from the operation of the equipment. The action alternatives could vary in their economic benefits and their permitting requirements for new source air emissions. The inclusion of additional on-site generators is directly tied to the energy security requirement that backup systems be consistently available and reliable. The use of renewable energy sources is preferred in the microgrid and the existing installation renewable energy systems would be incorporated, but the addition of new on-site generation is necessary for the microgrid to consistently be available under all critical conditions and to maintain power quality. The natural gas generators were selected to provide a cleaner consistent power source for self-generation but they are not responsive enough to assure power quality and resilience of the system in critical situations

Diesel generators are needed to support the microgrid when the installation must function as an independent island, when the external power grid is not available, and when necessary to respond to shifting load requirements within critical timeframes while maintaining the quality of power being provided. The natural gas and diesel powered generators shall be permitted as new stationary sources and shall operate within the limits of their permit conditions

2.2 Alternatives Development

2.2.1 Alternatives Screening Criteria

As required by NEPA and MCO P5090.2A, this EA considers a reasonable range of alternatives to accomplish

the proposed action, as well as the No Action alternative. Only those alternatives determined to be reasonable relative to their ability to fulfill the purpose and need for the action were carried forward for detailed analysis. Efforts were made to identify and evaluate feasible alternatives that could satisfy the purpose and need for the proposed action.

The following screening criteria were used to evaluate reasonable alternatives:

1. Alternative scenarios should reasonably support MCAS Miramar's energy needs by maximizing the use of existing facilities and capabilities while maintaining the installation's carrying capacity;
2. Alternative scenarios should maintain proximity to existing utilities and infrastructure when existing facilities are not available for use;
3. Alternative scenarios should not cause unnecessary temporary delays or disruptions in current installation mission or function; and
4. Alternative scenarios must not hinder the sustainability of the installation and its mission.

2.2.2 Alternatives Considered, But Not Carried Forward for Detailed Analysis

- Alternative Energy/Renewable/Storage. Other technologies for energy generation were researched, such as fuel cells, Photovoltaic, and energy storage. MCAS Miramar has already incorporated solar energy and reclaimed landfill gas emissions into the installation's energy sources and continues to look for other options. Windmills are not an option for West Miramar due to airspace problems and East Miramar does not have an existing infrastructure to support that consideration. Solutions for this project were either not technically feasible or drastically cost prohibitive. Ultimately, this alternative was considered, but not carried forward for analysis because this solution could not accomplish the mission given the project budget and timetable.

- Full time annual continuous operation of all engines. This alternative would not be consistent with the objectives of this project, is likely to not be allowable for a permit under state regulations, and would significantly increase the scope and cost of the project as originally designed. Ultimately, this alternative was considered, but not carried forward for analysis because this solution could not accomplish the mission given the project budget.

- Permitted Generation for Emergency Use Only. This alternative would ensure power to key facilities during emergency outages, but would not serve the entire purpose and need because it would not enable MCAS Miramar to assist the local community by participating in SDG&E's demand response program, and would not enable MCAS Miramar to experience the associated cost savings. Ultimately, this alternative was considered, but not carried forward for analysis because use would be limited to emergencies and the new microgrid technology would not be permitted for testing and evaluation of the system to yield data for application of the technology elsewhere within the Department of Defense.

2.2.3 Alternatives Carried forward for Consideration

- **Alternative 1 (Preferred Alternative): Prime use for emergencies, demand response, maintenance, testing, and demonstration operations; and cost-based prime/continuous use within permit limits.** This alternative is the same as alternative 2, but diesel generation would be permitted for up to 1,500 hours per year per engine and natural gas generation up to 8,760 hours per year per engine. This alternative would allow for greater participation in the demand response program, while ensuring sufficient operating hours are available for maintenance, testing, and demonstration of this

new technology. With the installation of new power generation, MCAS Miramar is insuring that the most clean and compliant equipment is used in order to allow for operation in any future utility situation. The cost of utility power is on the rise and distributed generation could prove to be beneficial for both the community and the installation. By permitting more hours, MCAS Miramar enables mitigation of future utility constraints that will lead to increased utility costs, thus making the need for energy security as life cycle cost effective as possible. By posturing MCAS Miramar to accomplish these goals, MCAS Miramar would not exceed its air emissions permitting requirements by the regulatory agency. These operating hours are the maximum targeted operating permit levels being considered. The actual operating hours would be determined by the data collected and analyzed by the energy security microgrid and would vary over time and operating conditions, but would not exceed the permitted level approved for their operation. These generators would be fully permitted as new sources with the San Diego Air Pollution Control District (SDCAPCD). The larger number of operating hours would allow for consideration of a wider range of operating scenarios as the energy security microgrid capabilities are demonstrated.

- **Alternative 2: Prime Use Permitted Operation of Certified Tier 4, Final Diesel for Emergencies, Demand Response, Cost-based prime/continuous use of natural gas generation capability, Maintenance, Testing, Demonstration Operations.** This alternative would allow for operation of the microgrid during emergencies and participation in SDG&E's demand response program. Diesel-fired generators would be permitted to 300 hours of operation per year per engine, and natural gas-fired generators would be permitted to 2,000 hours of operation per year per engine. These operating hours would be for maintenance, testing, and limited participation in SDG&E's demand response program. These generators would be fully permitted as new sources and would only operate within the limits of their permits from the SDCAPCD. This is a reduced level of operation from the Preferred Alternative.

- **No Action Alternative.** Under the No Action Alternative, MCAS Miramar would continue with the existing electrical system and would not construct an energy security microgrid. The No Action Alternative would therefore fail to satisfy the purpose and need for the proposed action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in this EA.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes existing environmental conditions and the possible environmental consequences for resources potentially affected by implementation of the Action Alternatives and the No Action Alternative. Information presented in this chapter includes baseline conditions against which the two alternatives are evaluated to identify direct and indirect potential impacts. A region of influence (ROI) is defined for each resource analyzed. The ROI is a geographic area in which potential environmental effects or impacts to a particular resource would occur. In compliance with NEPA, CEQ regulations, and DoN and USMC procedures for implementing NEPA, the description of the affected environment and the analysis of impacts focus only on those resources potentially subject to impacts. Accordingly, the discussion of the affected environment and associated environmental analyses focus on: air quality; noise; transportation; infrastructure, utilities and services; and public health and safety.

3.1 Air Quality

3.1.1 Definition of Resource

Air quality in a given location is defined by pollutant concentrations in the atmosphere and is generally expressed in units of parts per million (ppm) or micrograms per cubic meter (µg/m3). One aspect of significance is a pollutant's concentration in comparison to a national ambient air quality standard. Such standards represent the maximum allowable atmospheric concentrations that may occur while still protecting public health and welfare with a reasonable margin of safety. The Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS). The NAAQS represent maximum acceptable concentrations that generally may not be exceeded more than once per year, except annual standards, which may never be exceeded. The NAAQS and CAAQS are shown in Table 3-1.

This section addresses baseline air quality conditions for MCAS Miramar and includes a description of air quality terminology, regulatory requirements applicable to Alternative 1 and Alternative 2, and current air quality conditions.

The main pollutants of concern considered in this air quality analysis include volatile organic compounds (VOCs), carbon monoxide (CO), oxides of nitrogen (NOx), particulate matter less than or equal to10 microns in diameter (PM10), and particulate matter less than or equal to 2.5 microns in diameter (PM2.5). Although VOCs and NOx (other than nitrogen dioxide) have no established ambient standards, they are important as precursors to ozone (O3) formation.

Toxic air contaminants (TACs) include air pollutants that can cause serious illnesses or increased mortality, even in low concentrations. TACs are compounds that generally have no established ambient standards, but are known or suspected to cause short-term (acute) and/or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects. The ARB designates diesel particulate matter (DPM) from the combustion of diesel fuel as a TAC. Hazardous air pollutants (HAPs) are the term used by the federal Clean Air Act (CAA) for a set of air pollutants that are similar to TACs. The CAA identifies 187 substances as HAPs, such as benzene, formaldehyde, mercury, and toluene. In addition to the criteria pollutants listed above, anthropogenic (caused by human activities) greenhouse gases (GHGs) have been identified as contributors to global climate change. GHGs include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and other trace gases that are present in trace amounts in the atmosphere. This is a developing area of scientific study with no established thresholds to determine significance of impacts under NEPA. The potential effects of proposed GHG emissions are by nature global and cumulative impacts, as individual sources of GHG emissions are not large enough on their own to have an appreciable effect on climate change. Therefore, the

impact of proposed GHG emissions to climate change is discussed in the context of cumulative impacts in Chapter 4.

Table 3-1. State and National Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS [µg/m^3 (ppm)]	NAAQS [µg/m^3 (ppm)]	
			Primary	Secondary
Ozone (O_3)	1-hour	180 (0.09)	--	--
	8-hour	137 (0.070)	147 (0.075)	Same as primary
Carbon monoxide (CO)	1-hour	23,000 (20)	40,000 (35)	--
	8-hour	10,000 (9.0)	10,000 (9)	--
Nitrogen oxides (NO_X)	1-hour	339 (0.18)	188 (0.100)	--
	Annual	57 (0.030)	100 (0.053)	Same as primary
Sulfur oxides (SO_X)	1-hour	655 (0.25)	196 (0.075)	--
	3-hour	--	--	1,300 (0.5)
	24-hour	105 (0.04)	(0.14)	--
	Annual	--	(0.030)	--
Particulate matter less than 10 microns in diameter (PM_{10})	24-hour	50	150	Same as primary
	Annual	20	--	--
Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)	24-hour	--	35	Same as primary
	Annual	12	12.0	15
Lead (Pb)	30-day	1.5	--	--
	Quarterly	--	1.5	Same as primary
	3-month rolling	--	0.15	Same as primary

Notes:
ppm = parts per million; µg/m3 = micrograms per cubic meters
Standards other than the 24-hour PM10, 24-hour PM2.5, and those based on annual averages are not to be exceeded more than once a year.
Concentrations are expressed first in units in which they were promulgated. Equivalent units given in parenthesis.
Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that states implementation plan is approved by the EPA.
Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
Source: California Air Resources Board 2012

3.1.2 Region of Influence

The region of influence (ROI) for this air quality analysis is defined as all of San Diego County, which equates to the San Diego Air Basin (SDAB). SDAB is under the jurisdictional authority of SDAPCD for the implementation of air pollution rules and regulations. Identifying the ROI for air quality requires knowledge of the types of pollutants being emitted, pollutant emission rates, topography, and meteorological conditions.

The ROI for inert pollutants (pollutants other than ozone and its precursors) is generally limited to a few miles downwind from a source. The ROI for photochemical pollutants, such as O3, can extend much farther downwind than for inert pollutants. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly VOCs and NOx. In the presence of solar radiation, the maximum effect of VOCs and NOx emissions on O3 levels

usually occurs several hours after they are emitted and many miles from the source.

3.1.3 Applicable Rules and Regulations

SDAPCD requires for permits for all equipment/processes that emit air contaminants. The proposed power generation units being analyzed in this EA are subject to SDAPCD rules and regulations. The power generation units will be permitted prior to their construction and operation. The units would be in full conformance of all applicable SDAPCD rules and regulations, including but not limited to, Rule 20.2-New Source Review-Best Available Control Technology, Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines, New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE), Title V Thresholds, New Source Review Emission Reduction Credits, Air Quality Impacts Assessment (AQIA) and Health Risk Assessment (HRA).

3.1.4 Affected Environment

Regional and Local Air Pollutant Sources

The SDCAPCD periodically updates emissions for the SDAB for purposes of forecasting future emissions, analyzing emission control measures, and for use in regional air quality modeling. The largest sources of VOCs, CO, and NOx emissions within the region are on-road vehicles. The SDCAPCD 2013 Annual Report indicates that about 75% of air pollution in the region comes from motor vehicles and other mobile sources. The remaining 25% of emissions is from stationary sources such as power plants and industrial processes. Pollutants of most concern include $PM_{2.5}$, volatile organic compounds (VOCs), and NO_X. Other large contributors of VOCs within the region include the use of solvents and surface coatings. Combustive sources such as vehicles, diesel engines, and industrial facilities emit fine particulate matter (PM2.5) and gaseous pollutants (such as NOx), which can react in the atmosphere to produce secondary fine particulates. Coarser particles (PM10) are directly emitted from soil-disturbing activities such as construction, mining, agriculture, and vehicular road dust.

Existing emission sources associated with facilities and operations at MCAS Miramar include civilian and military personal vehicles, commercial and military vehicles, aircraft engines, tactical support equipment, stationary combustion sources, training, maintenance, and construction activities.

Baseline Air Quality

EPA designates all areas of the U.S. in terms of having air quality better than (attainment) or worse than (nonattainment) the NAAQS. Former nonattainment areas that have attained the NAAQS are designated as maintenance areas. Currently, San Diego County is nonattainment for 8-hour O_3 and attainment for all other criteria pollutants. In 1998, the EPA re-designated the county as attainment for CO but is still categorized as maintenance area for CO until 2018. Because the county is nonattainment for O_3, the analysis must determine whether or not the proposed action conforms to the State Implementation Plan (SIP). Construction emissions are the focus of General Conformity applicability analysis and the analysis will focus on whether or not the emissions from construction activities are below the *de minimis* thresholds (e.g., 100 tons per year (tpy) VOC or NO_x; 100 tpy CO). Operating emissions – i.e. operations of the generator – will be subject to New Source Review (NSR) and permitting, and thus presumed to conform for purposes of General Conformity. The preferred alternative would only be implemented after receiving stationary source permits for the microgrid generators.

Greenhouse Gas Emissions

Greenhouse gases are gases that trap heat in the atmosphere. These emissions occur from natural processes

and human activities. The accumulation of GHGs in the atmosphere influences the long-term range of average atmospheric temperatures. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

The most common GHGs emitted from natural processes and human activities include CO2, CH4, and N2O. Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons used in refrigerants and propellants, among other products) and sulfur hexafluoride. Each GHG is assigned a global warming potential (GWP), which equates to the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO2, which has a value of one. For example, CH4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO2 on an equal-mass basis. The total GHG emissions from a source are often expressed as a CO2 equivalent (CO2e). The CO2e is calculated by multiplying the emission of each GHG by its GWP and adding the products together to produce a single, combined emission rate representing all GHGs.

Federal agencies on a national scale address emissions of GHGs by reporting and meeting reductions mandated in federal laws, EOs, and agency policies. The most recent of these are EOs 13423 and 13514 and the *EPA Final Mandatory Reporting of Greenhouse Gases Rule*. Several states have promulgated laws as a means of reducing statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 (Assembly Bill 32) directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020. Groups of states also have formed regionally-based collectives (such as the Western Climate Initiative) to jointly address GHG pollutants. In an effort to reduce energy consumption, reduce dependence on petroleum, and increase the use of renewable energy resources in accordance with the goals set by EOs and the Energy Policy Act of 2005, the Marine Corps and DoD have implemented a number of renewable energy projects (NAVFAC Southwest 2006a). The types of projects currently in operation within the southwest region include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. The military also purchases one half of the biodiesel fuel sold in California and continues to promote and install new renewable energy projects within the southwest region.

The CEQ released draft guidance on February 18, 2010 regarding the consideration of greenhouse gas (GHG) in NEPA documents for federal actions. CEQ issued revised guidance on December 18, 2014 for public comment that provided additional details on how federal departments and agencies should consider the effects of GHG emissions and climate change in NEPA reviews. CEQ included a presumptive threshold of 25,000 metric tons of carbon dioxide (CO_2) equivalent (CO_{2e}) emissions; above this level an agency should conduct a quantitative analysis.

Marine Corps Air Station Miramar Emissions

Construction emissions. Alternative 1 (the preferred alternative) and alternative 2 differ in the number of hours of power generation being considered, but both would include the construction of a new building to house the generators. The analysis assumes construction of a 10,000 square foot building that would occur in four phases spanning 8 weeks (working 5 days/week, 8 hours per day, 40 workdays).

Table 3-2. Explanation of Construction Phases

Construction Phase	Description
Site Preparation	Clearing vegetation (grubbing and tree stump removal) and stones prior to grading.
Grading	The cut and fill of land to ensure proper base and slope for the foundation.
Building Construction	The construction of structures and buildings.
Architectural Coating	Coatings applied to both the interior and exterior of buildings or structures.

Construction emissions are estimated using the *California Emission Estimator Model, version 2013.2.2.* This model applies emission factors from USEPA AP-42, OFFROAD2011, and EMFAC2011. Emissions associated with proposed action and alternative action would include off-road construction equipment, on-road commuting vehicle trips, and fugitive dust from the materials removed during site preparation and grading (Table 3-2). The total estimated emissions from all construction phases are shown in Table 3-3.

Table 3-3. Summary of Construction Emissions

Criteria Pollutants (tpy)						Greenhouse Gases (metric tons (MT)/yr)			
Reactive Organic Gas (ROG)	NO_X	CO	Sulfur Dioxide (SO_2)	PM_{10}	$PM_{2.5}$	CO_2	CH_4	Nitrous Oxide(N_2O)	Total CO_2e
0.13	0.22	0.13	0.21E-03	0.02	0.01	19.12	0.48E-02	0	19.22

Operating Emissions. Operation of the microgrid generators will be subject to stationary source permits obtained from the SDAPCD following New Source Review (NSR). Operating emissions of criteria pollutants were calculated using the *American Meteorological Society/Environmental Protection Agency Regulatory Model, version 13350* from the six proposed generators (four diesel-fired and two natural gas-fired generators). The action alternatives would contain the same number of generators, but would adjust the maximum operating hours. The sum of emissions from diesel and natural gas-fired engine generators is in the table below for both action alternatives. GHG emissions were also estimated for the cumulative total of the operating hours for the generators in both scenarios (see Table 3-4) using emission factors from *The Climate Registry Protocol (Table 12.1, April 2015)*.

Table 3-4. Summary of Operation Emissions

Scenarios (Hours/Engine)		Criteria Pollutants (tpy)					Greenhouse Gases (MT/yr)			
Prime Diesel	Prime Natural Gas (NG)	ROG	NO_X	CO	SO_2	PM	CO_2	CH_4	N_2O	Total CO_2e
1500	8760	2.66	5.79	28.08	0.11	1.22	11,731.84	5.55	6.67	11,744.07
300	2000	0.57	1.18	5.69	0.02	0.27	2,677.26	1.27	1.52	2,680.04

SDCAPCD Rule 20.2, requires each project which results in an emission increase equal to or greater than any of the amounts listed in Table 3-5 below to demonstrate that the operation would not cause additional violations of NAAQS or state AAQS. Projects demonstrate compliance with NAAQS and state AAQS through an air quality impact analysis (AQIA). The AQIA compares the maximum modeled impact of a criteria pollutant with the significant impact level (SIL) thresholds in Table 3-6. The modeled impact is combined

with the background concentration of each pollutant to calculate the total impact, which is compared to NAAQS and state AAQS.

Table 3-5. Air Quality Impact Analysis Trigger Levels

Pollutant	Emission Rate (lb/hr)	Emission Rate (lb/day)	Emission Rate (tons/yr)
CO	100	550	100
NO_X	25	250	40
PM_{10}	--	100	15
SO_X	25	250	40
Lead/Lead Compounds	--	3.2	0.6

Table 3-6. SIL Thresholds ($\mu g/m^3$) used during Air Quality Impact Analysis

CO		NO_X		PM_{10}		SO_X		
1-hour	8-hour	1-hour	Annual	24-hour	Annual	1-hour	24-hour	Annual
2,000.0	500.0	7.5	1.0	5.0	1.0	7.8	5.0	1.0

3.1.5 Environmental Consequences

Alternative 1 (Preferred Alternative) and Alternative 2

Temporary Impacts – Construction

Air quality impacts from the proposed building construction could occur from: (1) off-road construction equipment, (2) on-road commuting vehicle trips, and (3) fugitive dust from the materials removed during site preparation and grading. The annual equipment usage and fugitive dust generating activities would produce annual air emissions less than the conformity *de minimis* (Table 3-7). Therefore, construction would have minimal impact on ambient air quality. GHG emissions from construction activities would be less than 20 MT CO_2e and are expected to have a negligible impact on local air quality or climate change in general.

Table 3-7. Conformity de minimis levels for criteria pollutants in the SDAB

	VOC	NO_X	CO
Construction Emissions (tpy)	0.13	0.22	0.13
***de minimis* Levels (tpy)**	100	100	100
Emissions Below Threshold	Yes	Yes	Yes

Permanent Impacts – Operations

Air quality impacts from the operation of engine generators would vary depending on the action alternatives. The AQIA modeled impacts for all operating scenarios using the cumulative total of the operating hours for the generators (Table 3-8). The impacts would not exceed the SIL thresholds and would have minimal impact on local ambient air quality. The total impact could exceed the state AAQS for 24-hour and Annual PM_{10}. However, since the PM_{10} SIL would not be exceeded, the impact from the project is not expected to contribute to the exceedance of the state AAQS. The generators would be permitted using best management technologies available and, therefore, covered by the emissions allowance in the SIP.

Table 3-8. AQIA Modeling of Operating Scenarios

	(Hours/ Engine)	(Hours/ Engine)	Pollutant	Averaging Time	Maximum Modeled Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Modeled Impact Above SIL?
	Prime Diesel	Prime NG						
Alternative 1, Preferred Alternative Scenario	1,500	8,760	CO	1-hour	21.9	2.6	24.5	No
				8-hour	13.6	2.2	15.8	No
			NO_X	1-hour	4.5	0.1	4.6	No
				Annual	0.06	0.02	0.08	No
			PM_{10}	24-hour	0.2	50	**50.2**[1]	No
				Annual	0.01	24.7	**24.7**[1]	No
			SO_X	1-hour	0.08	0.02	0.1	No
				24-hour	0.02	0	0.02	No
				Annual	0.001	0	0.001	No
Alternative 2 Scenario	300	2,000	CO	1-hour	4.42	2.6	7.02	No
				8-hour	2.74	2.2	4.94	No
			NO_X	1-hour	0.93	0.1	1.03	No
				Annual	0.01	0.02	0.03	No
			PM_{10}	24-hour	0.05	50	**50.1**[1]	No
				Annual	0.003	24.7	**24.7**[1]	No
			SO_X	1-hour	0.02	0.02	0.04	No
				24-hour	0.004	0	0.004	No
				Annual	0.0003	0	0.0003	No

[1] *indicates that the value exceeded the ambient air quality thresholds, however, given that the modeled impact was not above the significant impact level, the threshold exceedance should not be attributed to the operation of the project*

Health Risk Assessment

A health risk assessment was completed in accordance with Air Toxics "Hot Spots" Program Risk Assessment Guidelines published by the Office of Environmental Health Hazard Assessment August 2003 and Supplemental Guidelines for Submission of Air Toxics "Hot Spots" Program HRAs obtained from SDCAPCD. The American Meteorological Society/Environmental Protection Agency Regulatory Model (Version 13350) was used to conduct unit emission level modeling. The Hotspot Analysis and Reporting Program On-Ramp (Version 1.4f) was used to calculate incremental cancer risk and health impacts associated with the project.

Toxic air pollutants, also known as hazardous air pollutants (HAPs), can have severe adverse impacts on human health and the environment, including increased risk of cancer. HAPs are federally regulated under the CAA via the National Emission Standards for Hazardous Air Pollutants (NESHAPs). EPA developed the NESHAPs for sources and source categories emitting HAPs that pose a risk to human health. Currently 187 HAPs are listed by EPA for emission reduction.

Both alternatives require the application of Toxic Best Available Control Technology (T-BACT) on natural gas fired engines to reduce the amount of NOX emitted below BACT thresholds. BACT is intended to reduce the emissions to the maximum extent possible considering technological and economic feasibility. The application of this technology decreases the risk of cancer and, as a result, increases the allowable threshold levels to 10 in one million. When this technology is applied it allows the engines to run without resulting in higher health risks. If T-BACT is not applied to a project, the risk is greater, and therefore the cancer risk threshold is lower, equal to one in one million. In both scenarios, where T-BACT is applied, allowing for a

higher threshold, the calculated cancer risk was below the allowable threshold at the point of maximum impact. Certified Tier 4, Final Diesel engines meet T-BACT requirements. Operation of Certified Tier 4, Final Diesel engines within their permit limits in both scenarios would not lead to a cancer risk above the allowable threshold of 10 in one million at the point of maximum impact.

No Action Alternative

Under the No Action alternative, there would be no building construction or generator operation and therefore no additional pollutants emitted into the SDAB. There would be no impacts under this alternative.

3.2 Noise

The level of noise in a community changes over the course of a day and over time. Noise levels are typically controlled by the activities occurring within and nearby an area. The acceptability of the level of sound is based on the compatibility of activities in an area. Unwanted or excessive sound is perceived as intrusive noise. Noise is often considered more annoying during relatively quiet nighttime hours when people are trying to relax or sleep. Ambient or baseline sound level is the background sound level and is a composite of sound from existing sources both near and far. Because ambient or baseline sound is not considered adverse, it is not classified as noise. The location of this project is an active Marine Corps Air Station that is located in a mostly industrial community (Miramar) and has a wide range of noise generating activities.

There are no applicable federal or state standards for short-term (i.e., construction) noise. Long-term noise guidelines from the California Department of Health Services were used in assessing long-term (i.e., operational) noise impacts on specific land uses. Table 3-9 shows the number of hours estimated for all construction activities based on the hours per day and number of days estimated for the building construction and equipment installation.

Table 3-9. Construction Noise Operating Scenarios
Off-Road Equipment Use:

Phase Name	Equipment Type	Unit Amount	Hours/Day	Total Days	Total Hours
Site Preparation	Tractors/Loaders/Backhoes	1	8	3	24
Grading	Tractors/Loaders/Backhoes	1	8	2	16
Building Construction	Cranes	1	8	30	240
Building Construction	Forklifts	1	8	30	240
Building Construction	Tractors/Loaders/Backhoes	1	8	30	240
Paving	Cement and Mortar Mixers	1	4	3	12
					772

The unit used to describe the intensity of sound is decibel (dB). Audible sounds to the human ear range from 0 dB to about 140 dB and the frequency range is 20 Hertz to 20 Kilohertz. The noise metric used to approximate the range of human hearing is the A-weighted scale and is denoted as dB(A). For example, conversational speech is approximately 60 dB(A) and an aircraft taking-off at an airport is approximately 110 dB(A). This noise metric does not account for the duration of the sound or any variation of the sound with time.

3.2.1 Definition of Resource

Ambient noise levels vary depending on a site's setting (e.g., urban, rural). Generally, urban areas are noisier than rural areas. Ambient noise levels for urban sites typically range from 60 to 70 dBA due to vehicles, construction, public transportation, and other human activities compared to 50 to 60 dBA in quieter rural areas.

3.2.2 Region of Influence

The ROI for noise impacts as defined above encompasses the project site area within the proposed action at MCAS Miramar. The site evaluated in this EA is in the general vicinity of sensitive receptors that include on-base residences and recreational areas.

3.2.3 Affected Environment

The ROI for utilities and services as defined above encompasses the project site area within the proposed Action at MCAS Miramar

3.2.4 Environmental Consequences

No sensitive receptors were identified within 1,000 feet of the generator facility, so there would be no unique impacts to sensitive receptors. For Alternative 1 (Preferred Alternative) and Alternative 2, implementing the alternatives could create minor, temporary noise impacts with no increases in ambient (background) noise levels at or adjacent to the proposed construction site, since the proposed activities would be similar to activities currently taking place on the installation. Noise from heavy equipment (e.g., tractors, trucks) is common in the urban/industrial environment. The equipment that would be used during construction activities is anticipated to generate less noise than is typically generated by aircraft in the vicinity of the facility during training activities. The potential for increased noise levels associated with both alternatives would be minor, temporary, and localized. In addition, traffic through communities is not expected to escalate to levels that would increase ambient noise levels along existing transportation routes.

No Action Alternative
Under the No Action Alternative, the proposed action would not be implemented and the affected environment would remain unchanged.

3.3 Transportation

3.3.1 Definition of Resource

Traffic and circulation refers to the movement of vehicles on roadways and through intersections. Operating conditions for roadways and intersections are typically defined in terms of average daily trips and level of service. These factors indicate the ability of the roadway network to adequately accommodate existing and future traffic loads.

3.3.2 Region of Influence

The ROI for traffic/circulation as defined above includes the roadways and major intersections found on MCAS Miramar in the vicinity of the alternatives.

3.3.3 Affected Environment

I-15 serves as the major regional interstate that provides access to MCAS Miramar, bisecting the Air Station north to south and dividing it into two areas (West Miramar and East Miramar). SR-52 traverses the southern boundary of the Air Station and I-805 is located along the western boundary of the Air Station. Miramar Way is the prime internal east-west arterial on the installation, ranging from two to four lanes, and is located just north of Military Construction (MILCON) project P-906.

3.3.4 Environmental Consequences

This section evaluates the potential for the preferred alternative, alternative 2, and the No Action Alternative to impact local roadway and driveway operations. Potential traffic and circulation impacts addressed include volume increases due to construction of the alternatives, effects on the capacities of local freeway segments and intersections, and the ability of the system to operate at acceptable levels of service given such increases.

Alternative 1 (Preferred Alternative) and Alternative 2

Trip Generation

The MILCON project would generate minimal construction traffic and was evaluated using a conservative scenario. In order to determine the amount of traffic associated with the project, assumptions were made based on the size of the project relative to other construction projects. There is no standard trip generation guideline for estimating construction traffic, so assumptions were made based on engineering judgment and past experiences with similar projects. The assumptions were made to be conservative as actual construction traffic would vary depending on the work to be done each day. This estimate is shown in Table 3-10 below.

The power generation facility would generate an additional one to three truckloads of diesel fuel each week as calculated in Table 3-11. The variation in this range is based on the power generation capacity, the number of hours of operation each week, and the amount of load that is used when the generators are operating; when in operation. All of these factors are part of the permitted operating level that would be finalized before construction and would not be greater than the levels discussed here. This means that no significant impacts to traffic/circulation would occur on a permanent basis since this would be a small increase in the number of truckloads of diesel fuel delivered to the air station.

Table 3-10. On-Road Vehicle Trips:

Phase Name	# Trips/day (Workers)[1]	# Trips/day (Vendor)[2]	Total Trips (Hauling)[3]	Total Days	Total Miles
Site Prep	8 (2 x 4)	0	0	3	259.2
Grading	8 (2 x 4)	0	40 (max)	2	972.8
Building Construction	20 (2 x 10)	0	0	30	6,480
Paving	2 (1 x 2)	0	0	3	64.8
Architectural Coating	4 (1 x 4)	0	0	2	86.4
TOTAL					**7,863.2**

[1] *Worker Trip Length = 10.8 miles*
[2] *Vendor Trip Length = 7.3 miles*
[3] *Hauling Trip Length = 20 miles*

Table 3-11. Fuel Delivery Truck Traffic Estimate

	Preferred Alternative	Action Alternative
Maximum fuel usage per 1 MW generator	283.8 gallons/hour	283.8 gallons/hour
Maximum hours of diesel operation per year	1,500	300
Maximum number of 1 MW generators	4	4
Maximum amount of fuel per year	1,702,800 gallons	340,560
Gallons of fuel per truckload	11,600 gallons	11,600 gallons
Number of trucks	146.8	29.4
Number of trucks per week	2.8	0.6

No Action Alternative

Under the No Action Alternative, the proposed action would not be implemented and the affected environment would remain unchanged. Accordingly, no associated impacts to traffic/circulation would occur.

3.4 Infrastructure, Utilities and Services

3.4.1 Definition of Resource

Infrastructure is defined as the supporting elements required to maintain and operate an installation or facility. Utilities, as defined for the purposes of this review, include electric power lines and substations, since no other services are impacted or used by the new facility.

3.4.2 Region of Influence

The ROI for utilities and services, as defined above, encompasses the project site area within the proposed Action at MCAS Miramar, as well as on- and off-site areas that contain utility lines / infrastructure or services that would be affected by potential changes to existing conditions.

3.4.3 Affected Environment

Utilities at MCAS Miramar are owned, planned for, maintained, and operated by the Navy Public Works Center. The utilities at this leased parcel of land are connected to MCAS Miramar, but are not serviced by the base.

Electrical Distribution Systems

Electrical services to MCAS Miramar are provided through a 12-kilovolt (kV) underground connection originating at the SDG&E substation located on Miramar Road, which connects to Miramar's 12-kV switching station. From there, power is distributed throughout the Air Station via five additional substations and more than 90 miles (145 km) of transmission lines (MCAS Miramar 2006b). The Air Station has fixed standby generators in support of essential buildings and functions, and also has an agreement with SDG&E for emergency provision of electrical power in the event normal power sources to the Miramar Substation are lost (MCAS Miramar 2006b).

3.4.4 Environmental Consequences

This section evaluates the potential utilities and services impacts associated with implementation of the alternatives and the No Action Alternative. A potential impact occurs if the proposed action would disrupt

utilities or services or would require the construction of new utilities or services infrastructure, which may then result in environmental impacts.

Alternative 1 (Preferred Alternative) and Alternative 2

The proposed action would result increased reliability for the electrical support to critical operational functions on the installation. The electrical lines needed to tie this increased capability are already in place and in use. If any construction activities require that nearby utility lines (e.g., electrical and telecommunication) be switched off, users would be given advance notice and switch-offs would be temporary and completed as rapidly as possible. The alternatives would positively affect infrastructure by providing additional local power generation, increasing base resiliency for power, and reducing dependency on grid power requirements. Based on the existing electrical distribution conditions within the developed site and vicinities, no associated significant impacts would result.

No Action Alternative

Under the No Action Alternative, the proposed action would not be implemented and no associated impacts related to utilities would occur.

3.5 Public Health and Safety

There is no public access to the facility and proposed construction site area and access is only via a private driveway. This is a controlled industrial facility that complies with all Occupational Safety and Health Administration regulations and therefore, presents a low risk to worker safety. The use of natural gas as the primary fuel source reduces the risk of liquid fuel transportation and use spillage as a public health and safety risk. Diesel fuel deliveries would be required to meet existing installation and local requirements. None of the alternatives would present health risks that affect children or the public.

3.6 Summary of Impacts

This section provides a comparison of impacts and mitigation measures between the proposed actions, and the No Action Alternative.

Table 3-12 COMPARISON OF IMPACTS AND MITIGATION MEASURES

Alternative 1 (Preferred Alternative)		Alternative 2		No Action Alternative	
Impacts	**Mitigation**	**Impacts**	**Mitigation**	**Impacts**	**Mitigation**
Noise					
No significant noise impacts would occur based on planned construction and design measures. Increased operating time would not occur during nighttime hours.	No mitigation is needed or proposed.	No significant noise impacts would occur based on planned construction and design measures. Increased operating time would not occur during nighttime hours.	No mitigation is needed or proposed.	There would be no effect on noise levels based on planned design measures.	No mitigation is needed or proposed.

Air Quality					
Permanent No significant air quality impacts would occur. Stationary Source permitting requirements would ensure that any impacts to air quality are not significant.	Permanent No mitigation is needed or proposed since this action is expected to be within permitted authority levels.	Permanent No significant air quality impacts would occur. Stationary Source permitting requirements would ensure that any impacts to air quality are not significant.	Permanent No mitigation is needed or proposed since this action is expected to be within permitted authority levels.	Permanent Air quality would remain the same.	Permanent No mitigation is needed or proposed.
Temporary Construction emissions of greenhouse gases would not be expected to make a significant contribution to global climate change, and impacts are not anticipated to be significant.	Temporary No mitigation is needed or proposed.	Temporary Construction emissions of greenhouse gases would not be expected to make a significant contribution to global climate change, and impacts are not anticipated to be significant.	Temporary No mitigation is needed or proposed.	Temporary Air quality would remain the same.	Temporary No mitigation is needed or proposed.
Transportation					
No significant impacts to traffic\circulation would occur on a permanent basis although there would be a small increase in the number of truckloads of diesel fuel delivered to the air station.	No mitigation is needed or proposed.	No significant impacts to traffic\circulation would occur on a permanent basis although there would be a small increase in the number of truckloads of diesel fuel delivered to the air station.	No mitigation is needed or proposed.	There would be no change in traffic/ circulation patterns.	No mitigation is needed or proposed.
Utilities and Services					
No significant utilities and services impacts would occur.	No mitigation is needed or proposed.	No significant utilities and services impacts would occur.	No mitigation is needed or proposed.	There would be no effect on utilities and services.	No mitigation is needed or proposed.

Public Health and Safety					
No significant public health and safety impacts would occur and there would be compliance with all applicable requirements	No mitigation is needed or proposed.	No significant public health and safety impacts would occur and there would be compliance with all applicable requirements	No mitigation is needed or proposed.	There would be no effect on public health and safety.	No mitigation is needed or proposed.

4.0 OTHER CONSIDERATIONS REQUIRED BY NEPA

4.1 Cumulative Impacts

CEQ regulations implementing the National Environmental Policy Act (NEPA) require that the cumulative impacts of a proposed action be assessed (40 CFR Parts 1500-1508). A cumulative impact is defined as the following: *"…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR § 1508.7)*

CEQ's guidance for considering cumulative effects states that the NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant" (CEQ 1997). The first step in assessing cumulative effects, therefore, involves identifying and defining the scope of other actions and determining their interrelationship with the Proposed Action. The scope must consider whether other projects coincide with the location and timetable of the Proposed Action and other actions. This Cumulative Impacts section examines past, present and reasonably foreseeable future actions to determine if they interact with the Proposed Action. After examining these actions, the analysis determined the nature of the interaction. Subsequent discussions then provide an analysis of how the impacts of the defined actions might affect or be affected by those resulting from the Proposed Action for affected environmental resources discussed in this EA.

Projects Considered in the Cumulative Analysis

Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location or during a similar time. Actions overlapping, or in close proximity to, the proposed action can have more potential for cumulative impacts on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally may have higher potential for cumulative impacts. To the extent that details regarding such actions exist and the actions have a potential to interact with the proposed action outlined in this EA, these actions are included in the cumulative analysis.

The environmental resource areas addressed in this EA are: air quality; noise; transportation; infrastructure, utilities and services; and public health and safety. The impacts of concern associated with the proposed action are: air quality emissions, including GHG's and noise. Consequently, the cumulative impact analysis will focus more on air quality emissions, including GHG's and noise impacts in relation to past, present and future actions. In doing so, the following projects /actions have been identified as having relevant impacts to the proposed action:

MV-22 EIS: The Department of the Navy (DoN) prepared an Environmental Impact Statement (EIS) to assess the potential environmental impacts of basing the MV-22 Osprey tilt-rotor (MV-22) aircraft in the Western United States (U.S.). The introduction of MV-22 aircraft to the Western U.S. was part of a U.S. Marine Corps (USMC)-wide process of replacing its aging fleet of medium lift helicopters with more advanced, operationally-capable aircraft. The replacement of CH-46E helicopters with MV-22 aircraft modernized the USMC medium lift fleet and improved the operational capabilities of the Third and Fourth Marine Aircraft Wing (3D and 4th MAW) squadrons. The action included: 1) basing up to eight MV-22 squadrons for employment by the 3D MAW to provide medium lift capability to I Marine Expeditionary Force (I MEF); 2) basing of up to two 4th MAW MV-22 squadrons to provide a West Coast reserve component medium lift capability; 3) construction and/or renovation of airfield facilities necessary to accommodate and maintain the MV-22 squadrons; and 4) conducting MV-22 readiness and training operations and special exercise operations to attain and maintain proficiency in the operational employment of the MV-22. The record of decision selected the preferred alternative – up to eight active and two reserve squadrons, with eight at MCAS Miramar and two at MCAS Camp Pendleton. That decision has been implemented.

Wildland Fire Management Plan (WFMP) EA: Marine Corps Air Station (MCAS) Miramar prepared an Environmental Assessment (EA) for the WFMP, which guides wildland fire management and planning decisions on MCAS Miramar. It provides a comprehensive vegetation and fire management program for MCAS Miramar. The MCAS Miramar Fire Department has the responsibility of fire prevention and fire suppression on the Station. The fire prevention and suppression measures described in the WFMP serve to prevent and/or control the frequency, size, distribution, and intensity of wildfires. These measures are also intended to protect high-value areas on- (e.g., military assets and sensitive natural and cultural resources) and off-Station (e.g., residential and commercial areas that border MCAS Miramar).

F35B EIS : The Department of the Navy (DoN) prepared an Environmental Impact Statement (EIS) to assess the potential environmental impacts of basing the F-35B Lightning II Joint Strike Fighter (JSF) (referred to as the F-35B) on the West Coast of the United States (U.S.). The Proposed Action included: 1) basing up to 11 operational F-35B squadrons and 1 Operational Training and Evaluation (OT&E) squadron at West Coast bases to replace the F/A-18 and AV-8B legacy aircraft; 2) construction and/or modification of airfield facilities and infrastructure to accommodate the F-35B squadrons; 3) changes to personnel in support of basing, including addition or reduction of military personnel and civilian employees; and 4) conducting F-35B training operations in existing airspace and on existing ranges to ensure pilots attain and maintain combat ready status. The record of decision selected the preferred alternative, basing six operational F-35 squadrons at MCAS Miramar while five operational squadrons and the OT&E squadron are based at MCAS Yuma, Arizona. the transition from F/A-18 squadrons to F-35 squadrons is currently scheduled to begin in 2024.

Sewer Equalization Tank: This EA describes the potential environmental consequences resulting from a proposal by MCAS Miramar, to upgrade its existing sanitary sewer system to reduce the effluent flow into the City of San Diego's sewer system to less than the permitted limit of 1.6 million gallons per day (mgpd). The proposed action involves construction and operation of an underground storage tank with a holding capacity sufficient to temporarily retain excess sewage flow generated by stormwater incursion during a nominal 10-year 24-hour storm event (1.5 million gallons); an active flow control system to regulate the discharge flow; and associated piping, pumps, conduits, and access points. Additional supporting improvements include site access and utility infrastructure upgrades.

For the purposes of this EA, the timeframe of current and/or reasonably foreseeable projects extends from 2009 to 2015. For conservative evaluation, the data of the preferred alternative to the proposed action has been used. The cumulative air quality and noise impacts relevant to past, present and future actions are summarized in Table 4-1.

TABLE 4-1: CUMULATIVE AIR AND NOISE IMPACTS RELEVANT TO PROPOSED ACTION

(The data on this table were derived from the EA and EIS documents of the relevant projects.)

Project Title	Document Type	VOC	NOx	CO	SOx	PM10	PM2.5	GHG-CO2E	Noise (DB)
		Tons/ yr	Tons/ yr	Tons/ yr	Tons/ yr	Tons/ yr	Tons/ yr	Metric Tons/yr	
MV-22	2009 EIS	-20.42	36.4	-75.78	4.19	-5.47	3.18	80.26	60-85
WildFire Mgt Plan	2010 EA	8.32	2.35	88.53	0	13.12	10.29	2	None
F35-B	2010 EIS	-573.27	-55.13	-1627.04	23.67	-211.49	-206.70	101,285	45-75
Sewer Equalization Tank	2015 EA	0.05	0.63	0.15		1.24	0.15	79.96	<85
Energy Security Microgrid-P906 (Preferred Alternative)	Draft EA under review	2.65	5.79	28.08	0.11	1.22	None reported	11,763	46-95

Cumulative Impact Analysis

The planned actions were evaluated for cumulative impacts related to the environmental resource areas discussed in this EA. The localized nature of certain environmental effects and comprehensive Air Station-wide policies for managing environmental resources and mitigation of impacts are all factors that were considered in the significance of environmental impacts. Construction resulting from the proposed action is assumed to occur between 2016 and 2017. The potential for an overlap of adverse impacts with respect to the implementation of the proposed action was used as the basis for the cumulative analysis.

The immediate area of the building construction is already a developed industrial area and no significant additional development is anticipated. There is little potential for this activity to have any impact on other projects or planning for the immediate area.

The DoN directives that were previously referenced as the basis for shifting the electrical power source to renewable energy are specifically incorporated in the overall strategy for reduction in the use of energy and the conservation of natural resources as part of the installation planning and management process. The installation has been working toward this result and has a number of studies and initiatives underway to continue reducing energy usage and utilizing alternative sources of energy. There are no indications that this source of alternative power would contribute to an increase in power usage in the foreseeable future.

Air Quality

It is anticipated that the potential impacts to air quality would be negligible from the proposed action considering the permit and emission control requirements for the proposed engines by the SDAPCD . In addition, MCI West anticipates reducing GHG emissions by about 250,000 metric tons from current operations over a 25-year life cycle (DoN 2010). These projects include thermal and photovoltaic solar systems, geothermal power plants, and wind generators. These renewable energy initiatives contribute to DoN's conformance with EO 13514 and enable it to factor GHG management into DoN proposals and impact analyses. Therefore, the criteria pollutants and GHG emissions from the construction and operation of the generators including past, present, or reasonably foreseeable actions in Table 4-1, will not have significant cumulative impacts to air quality.

Noise

The proposed action would result in only temporary increases of noise levels from construction beyond those already present at the project location and the surrounding areas. The equipment that would be used during construction activities is anticipated to generate less noise than is typically generated by aircraft in the vicinity of the facility during training activities. In addition, no sensitive noise receptors are within 1000 feet of the proposed action, and all sensitive receptors in the general vicinity are aboard the base and exposed to aircraft noise that already dominates over other noise sources. Therefore, noise impacts associated with the proposed action and other projects in Table 4-1 will not have significant cumulative impacts.

Transportation

No significant impacts to traffic/circulation would occur during construction or on a permanent basis from the proposed action, since this would be a negligible increase in the number of truckloads of diesel fuel delivered to the air station. Therefore, transportation impacts associated with the proposed action and other projects will not have significant cumulative impacts.

Infrastructure, Utilities and Services

The proposed action, when added to the impacts of the other identified actions, would not result in cumulatively significant impacts to utilities and infrastructure. Demands would not significantly increase, and any needs would be adequately addressed by existing/proposed facilities. Positive impacts from proposed action may result from better management of the critical electrical loads for operations and increased resilience of the system to operational disruptions.

Public Health and Safety

No significant cumulative impacts to health or safety would result from implementation of the proposed action in relation to the actions identified in this sturdy. Air quality modeling for the engines associated with the proposed action was conducted assuming conservative operational scenarios and did not indicate any significant increases in risks to human health. Accordingly, the proposed action and relevant actions identified in this cumulative analysis would not contribute to significant public health and safety impacts.

4.2 Possible Conflicts between the Action and the Objectives of Land Use Plans

Implementation of the proposed action would not conflict with the objectives of federal land use plans. The action does not conflict with the applicable policies of the MCAS Miramar Master Plan (MCAS Miramar 2006b).

4.3 Irreversible and Irretrievable Commitment of Resources

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources, such as metal and fuel, and other natural or cultural resources. These resources are irretrievable in that they would be used for this project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. Another impact that falls under this category is the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The proposed action would not result in a significant irreversible or irretrievable commitment of resources. Under the proposed action, construction would require the consumption of limited amounts of materials typically associated with construction (e.g., concrete, etc.). In addition, the use of construction vehicles at the locations would result in the consumption of additional fuel, oil, and lubricants. The consumption would not be significant.

4.4 Summary of Cumulative Impact on Environmental Resources

There is no indication that the proposed action would have a cumulative impact since it would not adversely affect significant biological resources, air quality; cultural resources; geologic resources; hydrologic resources; infrastructure, utilities and services; and public health and safety. It was also found that it would not incrementally contribute to the effects of other actions on significant environmental resources.

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