
**Draft Finding of No Significant Impact and
Environmental Assessment
For
IMPLEMENTATION OF NET ZERO ENERGY GOALS
AT
PARKS RESERVE FORCES TRAINING AREA**



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San Antonio, Texas**

August 2013



DRAFT FINDING OF NO SIGNIFICANT IMPACT

INTRODUCTION

Parks Reserve Forces Training Area (PRFTA) is a 2,478-acre Army Reserve training site located in northern California approximately 40 miles southeast of San Francisco in Alameda and Contra Costa Counties near the cities of Dublin and San Ramon (Figure 1). In 2009, the Army prepared the Final Environmental Impact Statement (FEIS) on Master Planned Redevelopment at Camp Parks (U.S. Army, 2009) (referred to throughout as: “2009 PRFTA FEIS”) draft Master Plan. Camp Parks is now referred to as PRFTA. The 2009 PRFTA FEIS analyzed the impacts of implementing a 2005 installation Master Plan which focused on the redevelopment of a 362 acre cantonment area as well as a 180 acre land exchange from federal to private ownership. In April 2011, the Assistant Secretary of the Army for Installations, Energy, and Environment identified PRFTA as one of the Army’s pilot installations for implementation of Net Zero Energy. Currently, PRFTA does not meet the Army’s needs for energy sustainability or security. PRFTA has prepared an Environmental Assessment (EA) to identify and evaluate potential environmental effects associated with implementing Net Zero Energy goals at PRFTA by 2020.

1. PURPOSE AND NEED

The purpose of the Proposed Action is to implement the Army’s Net Zero energy goals at PRFTA in order to reduce consumption, conserve resources, and increase efficiencies in energy usage while protecting future military operations.

The Army evaluated alternatives to improve energy efficiency and to use renewable energy strategies at PRFTA. Solar photovoltaic (PV), energy efficiency measures, ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems were identified as viable technologies for renewable energy production and conservation at PRFTA. The Army determined that the following technologies for renewable energy were not economical for PRFTA based on local resources and energy needs: geothermal, biomass, waste-to-energy, wind, and concentrating solar power.

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

Proposed Action: The Proposed Action is to implement five renewable energy technologies at PRFTA to approach Net Zero energy by 2020. The five technologies include energy efficiency initiatives, ground source heat pumps, solar hot water collectors, solar ventilation preheat systems and photovoltaic (PV) energy generation.

Alternatives Considered and Evaluated: Chapter two of this EA presents a discussion of the alternatives evaluated. A variety of technologies and locations were initially considered for achieving Net Zero at PRFTA. Under any alternative, the Army Based on the screening criteria analysis presented in Section 2.1 of the EA, a Preferred Alternative and a No Action Alternative were analyzed:

- **No Action Alternative:** Under the No Action alternative, PRFTA would not construct a PV array for solar energy generation. The Army would continue to implement the master plan and redevelopment identified in the 2009 PRFTA FEIS, and would implement

energy efficiency initiatives. The Army would continue to investigate ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems for new and renovated buildings. An analysis of environmental impacts would be required for each project implementing these technologies; impacts are expected to be minor and within the scope of the 2009 PRFTA FEIS because the technologies would be implemented as part of new construction or building renovation associated with Master Planned Redevelopment. The No Action Alternative does not meet PRFTA and Army goals for Net Zero.

- **Preferred Alternative:** The Preferred Alternative would implement the Net Zero Energy goals at PRFTA by construction, operation, and maintenance of a PV system for energy generation of up to 2 MW of solar photovoltaic energy and implementing energy efficiency initiatives, ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems at new and renovated buildings as appropriate. PRFTA would pursue the use of PV technology at Solar Site 1, which is available for development of approximately 10 acres with a PV array. This area is located in the northern cantonment area, immediately south and west of the Training Area. The site was identified for future development in the 2009 PRFTA FEIS; Solar Site 1 was proposed for development as a deployable medical system (DEPMED) area, which included site preparation, grading, and construction for parking and buildings. PRFTA no longer requires a DEPMED and this area is available for solar PV development.

3. ENVIRONMENTAL ANALYSIS

Chapter 3 of the EA discusses the affected environment and potential consequences of the No Action Alternative and the Preferred Alternative. This EA tiers from the 2009 PRFTA FEIS. The term “tiering,” per 40 CFR 1508.28, refers to the coverage of general matters in broader EISs with subsequent narrower statements or environmental analyses. This EA addresses environmental and socioeconomic impacts associated with the implementation of the Net Zero Energy Installation (NZEI) Initiative at PRFTA. Broader environmental impacts were covered in the 2009 PRFTA FEIS to address the development of the cantonment area over a 20-year period from 2009 to 2029.

Environmental Consequences and Comparison of Alternatives: The environmental consequences to Valued Environmental Components (VECs) were analyzed in relation to the proposed action and alternative. VECs are categories of environmental and socioeconomic effects that enable a managed and systematic analysis of these resources. Chapter 3 of the EA discusses the affected environment and potential environmental consequences for the proposed action and no action alternative.

Cumulative effects, also discussed in Chapter 3 of the EA, are the combination of impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes those actions (Council on Environmental Quality [CEQ] Regulation 1508.7). Cumulative effects can result from actions occurring over a period of time that are minor when each is considered individually, but that are significant when viewed collectively. The cumulative effects for the proposed action were consistent with those from the 2009 PRFTA FEIS. Table E-1 summarizes the findings of Chapter 3.

Table E--1 Summarization of impacts by VEC

Alternative	Impact of Proposed Action	Cumulative Impact	Impact Reduction Measure
Land Use			
No Action	Negligible	Negligible	N/A
Preferred Alternative	Negligible	Negligible to Minor	N/A
Air Quality			
No Action	Negligible	Negligible	N/A
Preferred Alternative	None to beneficial	Negligible to Minor	Utilize Mitigations as specified in Section 4.1.3.1 of 2009 PRFTA FEIS (for construction phase only)
Topography and Soil			
No Action	Negligible	Negligible	N/A
Preferred Alternative	Negligible	Negligible	NPDES General Permit for Storm Water Discharge (for construction phase only)
Noise			
No Action	Negligible	Negligible	N/A
Preferred Alternative	Negligible	Negligible	N/A
Socioeconomics			
No Action	Negligible	Negligible	N/A
Preferred Alternative	Negligible	Negligible	N/A
Hydrology			
No Action	Negligible	Negligible	N/A
Preferred Alternative	Negligible	Negligible	BMPs for controlling storm water quality and NPDES permit (for construction phase only)
Biological			
No Action	Negligible	Negligible	
Preferred Alternative	Negligible	Negligible	Preconstruction surveys as identified in the 2009 PRFTA FEIS
Utilities			
No Action	Negligible	Negligible	N/A
Preferred Alternative	None to beneficial	Negligible	N/A

The following VECs were fully addressed in the PRFTA 2009 FEIS and do not require additional project specific analysis because the Preferred Alternative would not result in effects to these resources: Cultural Resources, Geology, Minerals, Paleontology, Transportation and Access, Nearby Special Management Areas, Visual and Aesthetic Resources, and Health/Safety and Hazardous Substances.

4. PUBLIC REVIEW AND COMMENT

The Final EA and Draft FNSI will be made available for public review and comment from 16 Aug 13 to 15 Sep 13. Documents were made available at the Dublin Public Library branch of Alameda County Public Libraries located at 200 Civic Plaza, Dublin, CA 94568. All documents have been posted on PRFTA's website, <http://www.parks.army.mil/publicworks/env.asp>. Comments can be sent to PRFTA NEPA point of contact (Liz Clark, 233 California Avenue, Fort Hunter Liggett, CA, 93928-7090, liz.r.clark@us.army.mil). Comments received within the 30-day comment period will be made part of the Administrative Record. The Army will make revisions, as appropriate, to the EA and FNSI based on the comments received.

5. FINDING OF NO SIGNIFICANT IMPACT

I have considered the results of the analysis in the EA, comments received within the public comment period, and PRFTA Net Zero needs. Based on these factors, I have decided to implement the Net Zero Energy goals at PRFTA by construction, operation, and maintenance of a 2 MW solar PV array and implementing energy efficiency initiatives, ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems at new and renovated buildings as appropriate at PRFTA. Solar Site 1 will be utilized as the location for the PV array. Implementation of the preferred alternative will not have a significant impact on the quality of the human life or natural environment.

The preferred alternative will be presented for private sector investment for development proposals. We recognize our continuing obligation to consult under section 106 of the National Historic Preservation Act, the Endangered Species Act, and that additional interagency coordination and permitting would be required during any phase of the project if unanticipated events occur, such as the discovery of archeological relicts or an endangered species.

This analysis fulfills the requirements of the National Environmental Policy Act of 1969, as implemented by the CEQ regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), as well as the requirements of the Environmental Analysis of Army Actions (32 CFR Part 651). Therefore, issuance of a FNSI is warranted and an Environmental Impact Statement is not necessary.

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Commanding

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1. INTRODUCTION

The Proposed Action being evaluated in this Environmental Assessment (EA) is the implementation of Net Zero Energy goals at Parks Reserve Forces Training Area (PRFTA) by 2020. In 2009, the Army prepared the Final Environmental Impact Statement (FEIS) on Master Planned Redevelopment at Camp Parks (U.S. Army, 2009) (referred to throughout as: “2009 PRFTA FEIS”) draft Master Plan. Camp Parks is now referred to as PRFTA. The 2009 PRFTA FEIS analyzed the impacts of implementing a 2005 installation Master Plan in which the 487 acre cantonment was expanded and divided into a 362-acre northern cantonment area for PRFTA redevelopment and a 170-acre land transfer from federal to private ownership in the southern cantonment; the land exchange was augmented by nearly 10 acres of other federal property for a total 180-acre transfer area. In April 2011, the Assistant Secretary of the Army for Installations, Energy, and Environment identified PRFTA as one of the Army’s pilot installations for implementation of Net Zero Energy. A Net Zero Energy Installation (NZEI) is an installation that produces as much energy on site as it uses, over the course of a year. The proposed action is discussed in detail in Chapter 2. The following document was developed in accordance with National Environmental Policy Act (NEPA) of 1969; the regulations issued by the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations [CFR] 1500-1508; and the Army’s implementing procedures published in 32 CFR Part 651, Environmental Analysis of Army Actions.

1.1. INSTALLATION BACKGROUND

PRFTA is a 2,478-acre Army Reserve training site located in northern California approximately 40 miles southeast of San Francisco in Alameda and Contra Costa Counties near the cities of Dublin and San Ramon (Figure 1). The jurisdictional boundary between Alameda and Contra Costa Counties traverses the northern portion of the installation. PRFTA is north and east of Dublin, north of Dublin Boulevard, between Dougherty Road and Tassajara Road. The Dublin Transit Center for the Bay Area Rapid Transit system is south of Dublin Boulevard. The junction of two main interstate highways southwest of PRFTA — Interstate 580 (I-580) and Interstate 680 (I-680) — provides convenient access to and through the area. The City of Pleasanton is in Alameda County south of Dublin. The City of San Ramon is north and west of PRFTA in Contra Costa County, north of Dublin.

PRFTA was initially established as a military installation for the Navy Seabees in 1942. PRFTA changed hands within the military several times from World War II to present and real property transactions resulted in the installation being reduced to its current size. Many facilities were built in the 1950s, some of which remain, and most of the cantonment area has been developed with housing and administrative support structures at one time or another. PRFTA is now an Army Reserve training facility that supports many Department of Defense (DoD) components including the Army Reserve, Army National Guard, active Army, and active and reserve units of the Air Force, Navy, and Marine Corps. Other federal, state, and local agencies and groups also use the installation.

The 362 acre northern cantonment area, located on the south side of the installation, consists of buildings and other facilities that provide for indoor training, housing, dining, administration, maintenance and storage. In the next five years, 170 acres in the southern portion of the cantonment and nearly 10 acres of other federal lands will be transferred to private ownership

and be incorporated into the city of Dublin (U.S. Army, 2009). The training areas to the north contains 1,946 acres of undeveloped land used for outdoor training, including training courses, bivouac areas, maneuver areas, tracking sites, bridge sites, medical sites, and a field kitchen.

The area surrounding PRFTA is rapidly developing and the installation is nearly surrounded by subdivisions. Only an area to the northeast of PRFTA remains undeveloped because it is outside the San Ramon 2020 urban growth boundary.

1.2 PURPOSE AND NEED

The Army faces significant threats to its energy requirements both at home and abroad; military missions could be at risk in the event of an electric grid failure (Defense Science Board, 2008). The Army faces increasing costs of centrally distributed, overburdened, utility-provided grids, as well as the vulnerabilities posed by potential disruption of military installation energy supply. Energy security is essential to ensuring and protecting the long-term viability of installation operations.

The 2010 Quadrennial Defense Review (QDR) cited the need for DoD installations to “assure access to reliable supplies of energy to meet operational needs” (U.S. DoD, 2010). The current state of dependence on fossil fuels and vulnerable electric power and transmission grids jeopardizes the security of the installation and its critical education, training and operational missions.

Increasing energy security to protect future operations is a central tenet of the Net Zero concept (defined in section 1.1.1) and of the *U.S. Army Energy Strategy for Installations*, signed 8 July 2005, which identifies four broad objectives: eliminate energy waste in existing facilities; increase energy efficiency in renovation and new construction; reduce dependence on fossil fuels; and improve energy security (U.S. Army 2005). Additionally, since 2005 a number of federal mandates have been published (described in section 1.1.2).

In April 2011, the Assistant Secretary of the Army for Installations, Energy, and Environment identified PRFTA as one of the Army’s pilot installations for implementation of Net Zero Energy. Currently, PRFTA does not meet the Army’s needs for energy sustainability or security. PRFTA’s total energy use is slightly dominated by electrical usage compared to thermal or natural gas. PRFTA currently derives a small amount of energy from renewable energy sources by operating a Natural Gas Fuel Cell electric generation plant and uses photovoltaic powered street lights.

The purpose of the Proposed Action is to implement the Army’s Net Zero energy goals at PRFTA in order to reduce consumption, conserve resources, and increase efficiencies in energy usage while protecting future operations. The Army evaluated alternatives to improve energy efficiency and to use renewable energy strategies at PRFTA. Solar PV, energy efficiency measures, ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems were identified as viable technologies for renewable energy production and conservation at PRFTA. The Army determined that the following technologies were not economical for PRFTA based on local resources and energy needs: geothermal, biomass, waste-to-energy, wind, and concentrating solar power.

PARKS RESERVE FORCES TRAINING AREA, CA U.S. ARMY RESERVE COMMAND

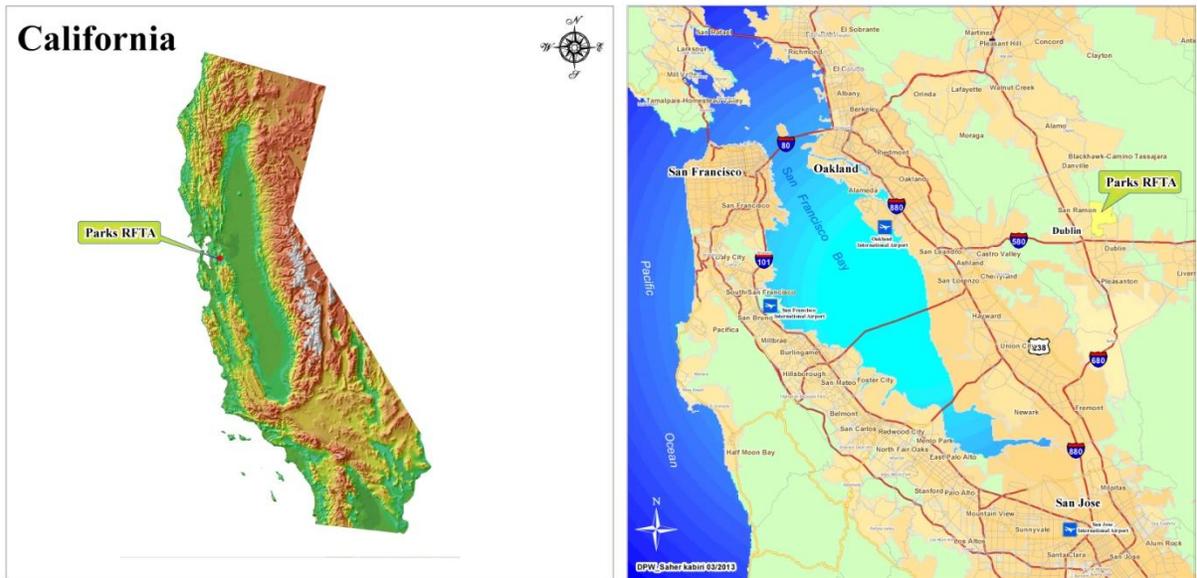
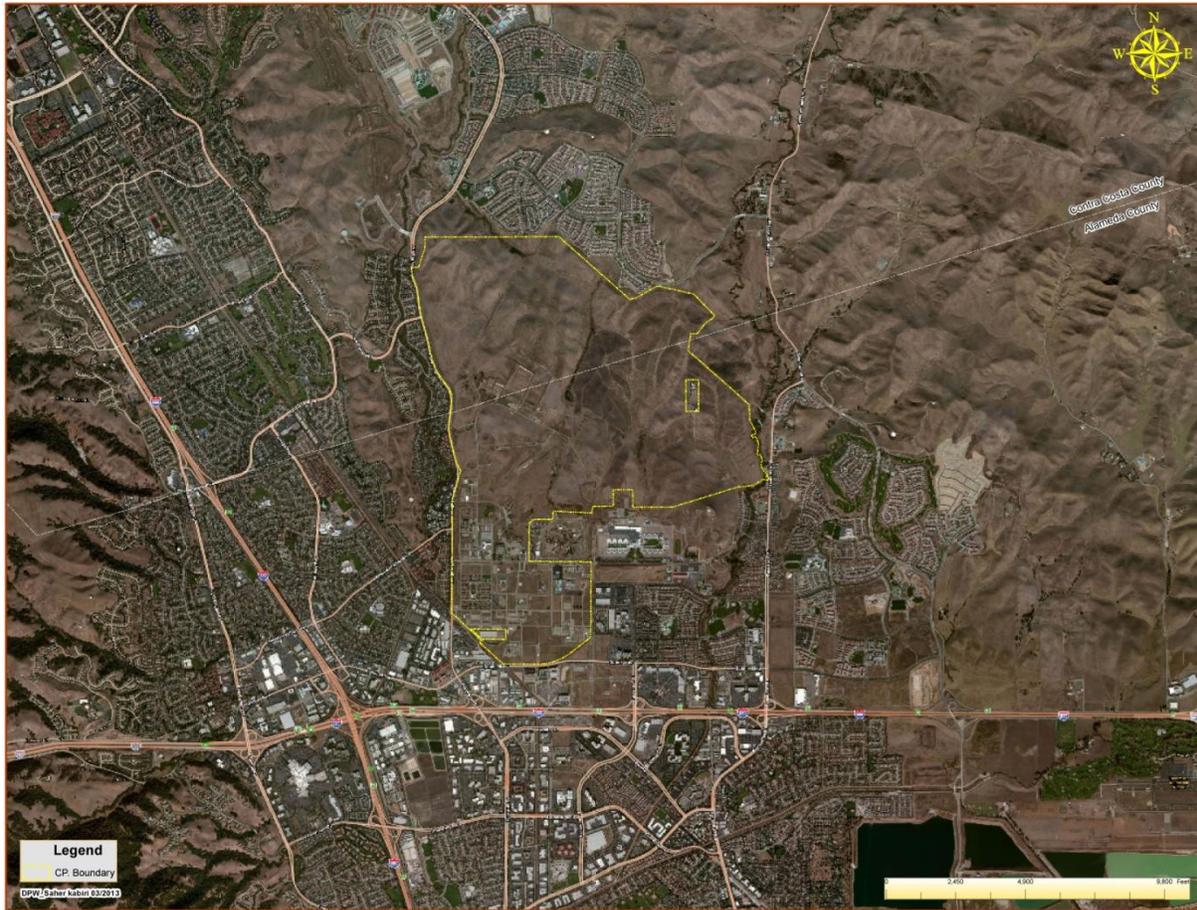


Figure 1 Location of Parks Reserve Forces Training Area, California.

1.2.1 NET ZERO DEFINITIONS AND APPROACH

The Army defines Net Zero energy as follows:

A NZEI produces as much energy on site as it uses over the course of a year. To achieve this goal, installations must first implement aggressive conservation and efficiency efforts while benchmarking energy consumption to identify further opportunities. The next step is to utilize waste energy or to “re-purpose” energy. Boiler stack exhaust, building exhausts or other thermal energy streams can all be utilized for a secondary purpose. Co-generation can recover heat from the electricity generation process for increased overall energy efficiency. The balance of energy needs can then be reduced and met by renewable energy project implementation.

The Army Net Zero approach is comprised of five interrelated steps: **reduction, re-purpose, recycling, energy recovery, and disposal**. Each step is a link towards achieving Net Zero. Reduction includes maximizing energy efficiency in existing facilities, implementing water conservation practices, and eliminating generation of unnecessary waste. Re-purposing involves diverting energy, water or waste to a secondary purpose with limited processes. Recycling or composting involves management of the solid waste stream, development of closed loop systems to reclaim water, or cogeneration where two forms of energy (heat and electricity) are created from one source. Energy recovery can occur from converting usable waste to energy, renewable energy or use of geothermal energy. Disposal is the final step and last resort after the last bit of water, the last bit of thermal energy and all other waste mitigation strategies have been fully exercised (U.S. Army, 2012).

1.2.2 LEGISLATIVE REQUIREMENTS, EXECUTIVE ORDERS AND POLICY REQUIRING INCREASING ENERGY EFFICIENCY

The Army and PRFTA must meet the requirements of numerous federal statutes, Executive Orders (EOs), and mandates which require changes in our nation’s energy consumption and production and require reductions in greenhouse gas emissions. The Energy Policy Act of 2005 (EPAAct 2005) required that in Fiscal Years (FY) 2010 through 2012, five (5) percent of the total electricity consumed by the federal government shall come from renewable energy sources. The required percentage of electricity consumed from renewable sources rises to at least 7.5 percent by FY 2013. Under EO 13423, at least 50 percent of the renewable energy used must come from “new renewable sources” placed in service after 1 January 1999. In addition, EO 13423 requires federal agencies to reduce green house gas (GHG) emissions through reduction of energy intensity by (i) three (3) percent annually through FY 2015 or (ii) 30 percent by FY 2015 using a baseline of FY 2003. Along with these requirements, the National Defense Authorization Act of 2007 (NDAA 2007) requires that 25 percent of DoD’s total electric energy consumption come from renewable sources by 2025. Additional statutes and requirements are included below in Table 1.

In implementing Net Zero at PRFTA, the installation will exceed Federal energy mandates while achieving enhanced security, increased efficiency, operating cost reductions, all while improving installation sustainability. Implementation of Net Zero at PRFTA will support DoD, Army, and other federal government goals and objectives for increasing use of renewable energy, lowering GHG emissions, and reducing the Army’s reliance on fossil fuels. In achieving Net Zero goals, the Army intends to promote progress towards the following objectives:

Table 1 Summary of Legislation and Executive Orders Impacting Energy Generation and Consumption

Federal Mandate	Net Zero Area	Performance Target
Energy Policy Act (EPAAct) of 2005	Electricity use for federal government from renewable sources	At least 3% of total electricity consumption (FY 2007-2009), 5% (FY 2010-2012), 7.5% (FY 2013 +)
Executive Order (EO) 13423	Energy use in federal buildings	Reduce 3% per year or by 30% by FY 2015 (FY 2003 baseline)
	Total consumption from renewable sources	At least 50% of required annual renewable energy consumed from “new” renewable sources
	Fleet vehicle alternative fuel use	Increase by 10% annually to reach 100% (Baseline FY 2005)
Energy Independence and Security Act (EISA) of 2007	Total consumption from renewable sources	25% by FY 2025 – “Sense of Congress”
	Hot water in new / renovated federal buildings from solar power	30% by FY 2015 if life cycle cost-effective
	Fossil fuel use in new / renovated Federal buildings	Reduce 55% by FY 2010; 100% by 2030
Executive Order (EO) 13514	GHG emission reduction	DoD Goal: Reduce Scope 1 & 2 GHGs by 34% by FY 2020 DoD Goal: Reduce Scope 3 GHGs by 13.5% by FY 2020
	Net Zero buildings	All new buildings that enter design in FY 2020 and after achieve Net Zero energy by 2030
National Defense Authorization Act (NDAA) of 2010	Renewable Fuels Use	Directs the Secretary of Defense to consider renewable fuels in aviation, maritime, and ground transportation fleets
	Facility Renewable Energy Use	Produce or procure 25 % of the total quantity of facility energy needs, including thermal energy, from renewable sources starting in FY 2025

1.2.3 ENERGY SECURITY

Energy security is essential to ensuring and protecting the long-term viability of installation operations. Safe and reliable access to energy is critical to virtually all activities on PRFTA. The Army has recognized the threats to its installations and operations posed by the increasing costs of centrally distributed, overburdened, utility-provided grids, as well as the vulnerabilities posed by potential disruption of military installation energy supply. The 2010 Quadrennial Defense Review (QDR) cited the need for DoD installations to “assure access to reliable supplies of energy to meet operational needs” (QDR, 2010). The current state of dependence on fossil fuels and vulnerable electric power and transmission grid supplies jeopardizes the security of the Installation and its critical education, training and operational missions. Increasing Installation energy security to protect future operations is a central tenet of the Net Zero concept and of the *U.S. Army Energy Strategy for Installations*, signed 8 July 2005, which states the importance of integrating Army energy use improvements with a broad focus on sustainability (U.S. Army, 2005). Implementation of the Net Zero initiative at PRFTA will help to reduce consumption, conserve resources, and increase efficiencies in resource usage while protecting future operations. The implementation of Net Zero will also help the Army to achieve the four basic goals of the *U.S. Army Energy Strategy for Installations* (2005) which included the following broad objectives:

- Eliminate energy waste in existing facilities;
- Increase energy efficiency in renovation and new construction;
- Reduce dependence on fossil fuels; and
- Improve energy security.

1.3 SCOPE OF THE DECISION TO BE MADE

This EA has been developed in accordance with NEPA of 1969; the regulations issued by the CEQ, 40 CFR 1500-1508; and the Army’s implementing procedures published in 32 CFR Part 651, Environmental Analysis of Army Actions. This EA tiers from the 2009 PRFTA FEIS (U.S. Army, 2009). The term “tiering,” per 40 CFR 1508.28, refers to the coverage of general matters in broader EISs with subsequent narrower statements or environmental analyses. This EA addresses environmental and socioeconomic impacts associated with the implementation of the NZEI Initiative at PRFTA. Broader environmental impacts were covered in the 2009 PRFTA FEIS to address the development of the cantonment area over a 20-year period from 2009-2029. Current land uses and the proposed Solar Site 1 are shown in Figure 2.

NEPA requires all federal agencies to consider potential environmental effects of proposed major actions in planning and decision-making. The Army is completing this EA to evaluate the potential impacts and involve the public as it pursues the suite of policy changes and other actions that would make PRFTA a Net Zero Energy Installation.

The following Valued Environmental Components (VECs) were identified by PRFTA as having the potential for impacts, and are analyzed for the preferred alternative and no action alternative:

- Land Use
- Air Quality
- Topography and Soils
- Noise
- Socioeconomics
- Water Resources
- Biological Resources
- Utilities

As detailed in Section 2.2 below, the Proposed Action consists of multiple, related, and interconnected projects that may be necessary to implement Net Zero energy goals, comply with federal and Army energy mandates, and meet the Army's energy security objectives. The final decision will be covered within the Finding of No Significant Impact (FNSI), if the decision made is a FNSI. If it is determined that implementation of the Proposed Action would result in unavoidable or non-mitigable significant environmental impacts, the Army will publish a notice of intent (NOI) and initiate the preparation of an Environmental Impact Statement (EIS).

The geographical scope of the analysis includes alternatives being considered for implementation on PRFTA.

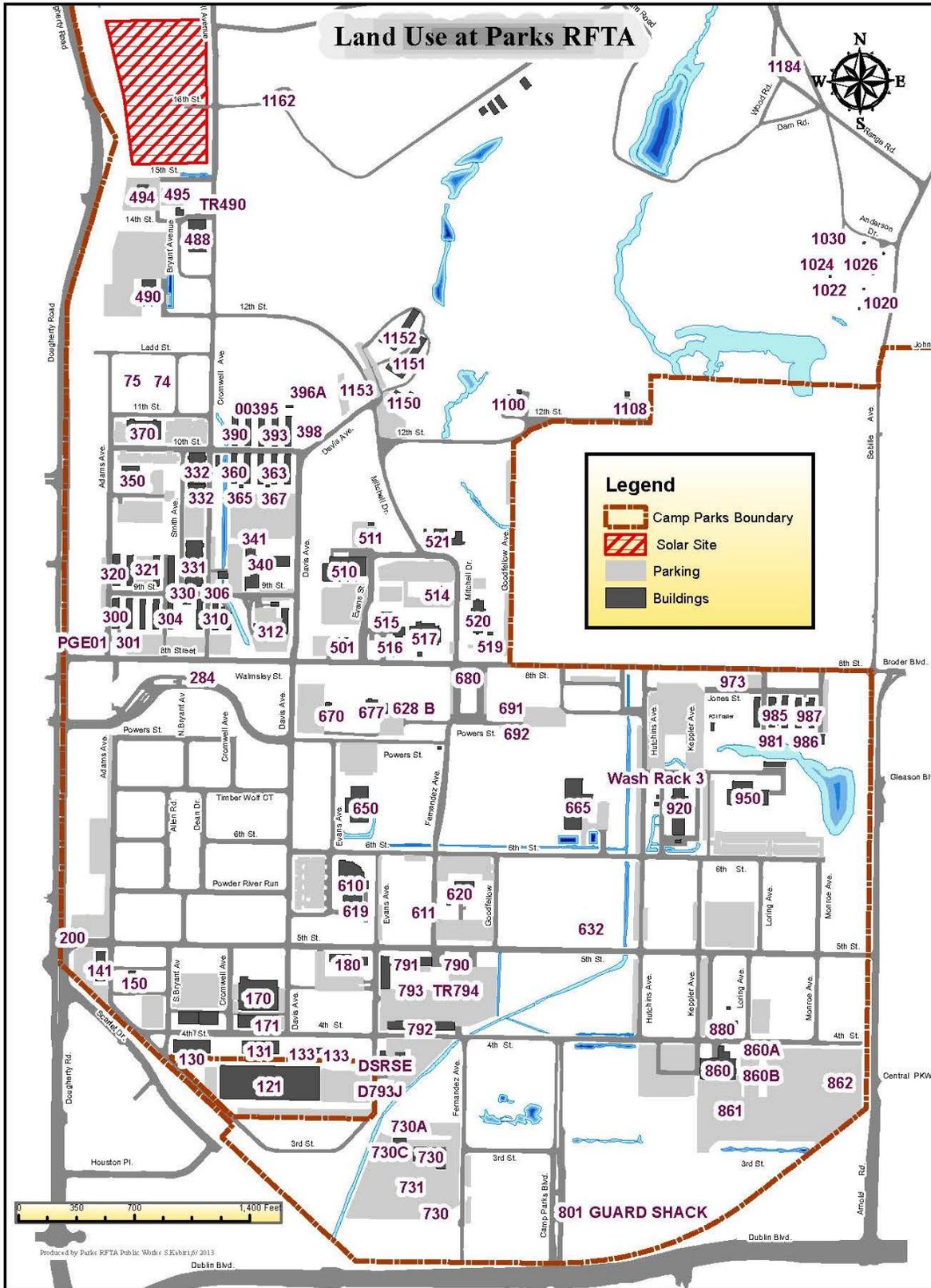


Figure 2 Land use at Parks Reserve Forces Training Area, California.

1.4 PUBLIC REVIEW PROCESS

As required by NEPA regulations, PRFTA invites public participation in the EA process. Comments from all interested persons promote open communication and enable better decision-making. All agencies, organizations, and members of the public with a potential interest in the Proposed Action, were provided the opportunity to participate in this process. Appendix A provides a record of agency coordination and public involvement conducted in association with this EA (to be developed at the close of the public comment period).

This EA process includes a 30-day public review period. Newspaper announcements have occurred in the print media publications of the Tri-Valley Times and Contra Costa Times regarding the availability of this Final EA and the Draft FNSI, the duration of the public comment period, and how to obtain information about this Final EA and provide comments. Copies of this Final EA and Draft FNSI have also been placed at the Dublin branch of the Alameda County Public Library system. This document has also been placed for review on PRFTA website at the following URL address (<http://www.parks.army.mil/publicworks/env.asp>); the 2009 FEIS will be made available at the same website. Public comments received within the 30-day comment window will be made part of the Administrative Record. Comments can be sent to PRFTA NEPA point of contact (Liz Clark, 233 California Avenue, Fort Hunter Liggett, CA, 93928-7090, liz.r.clark@us.army.mil). The Army will make revisions, as appropriate, to the EA and FNSI based on the comments received.

Table 2 Summary of Media and Locations for Public Comment Review

MEDIA	Contact
Dublin Public Library (Alameda County Public Libraries)	200 Civic Plaza Dublin, CA 94568 http://www.aclibrary.org/branches/dub/default.asp?topic=Dublin&cat=DUBHome
Tri- Valley Times	127 Spring Street Pleasanton, CA 94566 http://www.usnpl.com/addr/aaddressresult.php?id=322
Contra Costa Times	PO Box 5088 Walnut Creek, CA 94596-1088 http://www.contracostatimes.com/tri-valley-times
PRFTA Official Website	http://www.parks.army.mil/publicworks/env.asp

2 PROPOSED ACTION, ALTERNATIVES AND SCREENING CRITERIA

The Army is proposing five renewable energy technologies for PRFTA to approach net Zero Energy by 2020: energy efficiency initiatives, ground source heat pump, solar hot water collectors, solar ventilation preheat systems and photovoltaic (PV) energy generation.

This chapter includes the following: screening criteria (section 2.1), no action alternative (section 2.2), preferred alternative (section 2.3), and alternatives considered but eliminated from detailed study (section 2.4).

2.1 SCREENING CRITERIA

In order to be considered a viable alternative and carried forward for analysis, the Net Zero Energy alternative must meet NZEI and energy security requirements, and be in compliance with federal mandates and DoD and Army goals. The following screening criteria are identified to meet the purpose and need of the Net Zero Energy alternative.

- **Mission Compatibility.** Must be compatible with the military missions and training occurring at PRFTA. Site development and operations may not adversely impact military training or future planned development activities.
- **Grid Access and Electrical Tie-in Potential (Renewable Energy).** Must be close to transmission facilities (substations) or have technical viability and economic justification to building new electrical lines for interconnection to PRFTA distribution system or the grid. The infrastructure must be capable of transporting, or being upgraded to transport, electricity generated by the alternative.
- **On-Installation Energy Generation Potential for Increased Energy Security.** Must allow PRFTA to have greater control of and access to its energy supplies while reducing the possibility of external distribution failures. Preference should be given to site locations allowing maximum use of the energy produced, i.e. the potential for cogeneration.
- **Topographic and Soil Factors:** Must have topography, aspect, slope, and soils compatible with the proposed infrastructure.
- **Environmental Factors.** Must allow acceptable accommodation of cultural resources and viewsheds, as well as sensitive natural resources.
- **Safety & Unexploded Ordnance (UXO).** Must involve minimized exposure to UXO and damage from munitions. Must not conflict with military training activities or jeopardize personal safety of those constructing or operating the facilities. Ongoing operational needs must not adversely impact traffic safety or security risk.
- **Project Financeability & Use of Proven Technologies.** Must use proven renewable energy technologies that may be financed at reasonable rates.
- **Compliance with Federal Mandates and DoD or Army Goals.** Must enhance compliance with government mandates and DoD and Army goals and objectives regarding renewable energy production, energy security, increased energy efficiency, and GHG emissions reduction.

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- **Utility Considerations.** Must be reasonably acceptable to local utility companies, the current electric supplier, and not unreasonably interfere with local utilities' ability to absorb intermittent impacts and variance in peak energy generation.

2.2 NO ACTION ALTERNATIVE

Under the No Action alternative, PRFTA would not construct a PV array for solar energy generation. The Army would continue to implement the master plan and redevelopment actions identified in the 2009 FEIS, and would implement energy efficiency initiatives. The Army would continue to investigate and implement as appropriate ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems at new and renovated buildings. An analysis of environmental impacts would be required for each project implementing these technologies; impacts are expected to be minor or within the scope of the 2009 PRFTA FEIS because the technologies would be implemented as part of new construction or building renovation associated with Master Planned Redevelopment. The No Action Alternative does not meet PRFTA and Army goals for Net Zero.

2.3 PREFERRED ALTERNATIVE

The Preferred Alternative is to implement the Net Zero Energy goals at PRFTA by construction, operation, and maintenance of PV systems for energy generation of up to 2 MW of solar photovoltaic energy and implementing energy efficiency initiatives, ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems at new and renovated buildings as appropriate. At this time, the suitability, feasibility, and sustainability of these technologies have not been evaluated for PRFTA.

2.3.1 PHOTOVOLTAIC (PV) ARRAY

The PV technology converts sunlight directly into electric current through the use of semiconductors. Semiconductors are usually composed of crystalline silicon wafers, either single crystal or polycrystalline, and thin film amorphous silicon. When semiconducting materials are exposed to light, they absorb some of the sun's energy in the form of photons and emit electrons in the form of electricity. The electricity produced is direct current (DC). The basic PV cell produces only a small amount of power. To produce more power, PV cells are wired in a series to form panels that can range in output from 10 to 300 watts. PV panels are commonly installed on racks and can be mounted to the ground, rooftops, poles or carports. Several PV panels are installed in a rack to form a photovoltaic array. Arrays can be mounted at a fixed angle facing south or they can be mounted on a tracking system that follows the sun's path to optimize and increase power production. The power-producing components of a PV facility consist of the solar array field (the PV panels), the power conditioning system, which contains an inverter to convert the energy produced from DC to alternating current (AC) for use on the electrical grid, and a transformer to boost voltage for feeding the power into the electrical grid. The power conditioning system also contains devices that can sense grid destabilization and automatically disconnect the PV facility from the grid, if needed.

Construction: PV technology requires flat or gently rolling terrain with unobstructed southerly views. Approximately 10-12 acres are required to produce 2 MW of electricity per year depending on location and current technology. To minimize site disturbance where construction is proposed on undeveloped sites, the sites would be cleared, grubbed, and graded only to the

extent needed to construct the PV arrays and provide access and storm water drainage. Best Management Practices (BMPs) per a National Pollutant Discharge Elimination System (NPDES) construction general permit (CGP) would be used to control fugitive dust and erosion during construction on sites, whether currently developed or undeveloped. Following construction, all disturbed areas, including maintenance roads, would be surfaced with gravel. Storm water drainage would comply with Section 438 of the EISA 2007. For construction on currently undeveloped sites, all site preparation and utility installation would require a preconstruction biological survey and avoidance of or mitigation for federally protected species.

The PV arrays would be ground-mounted. Solar lighting and security fencing will be considered. An all weather road is required to access the site in inclement weather. The project includes a meter for verifying and monitoring usage and energy that is fed back to the power grid as well as a web-based metering to assist with data collection. The project will include wireless systems complete with: Energy Management Control System, Metering System, Emergency System, and Response Station System.

Electrical Tie-In: The PV array would provide 2 MW and would tie in to the closest interconnection point to the site. From each PV site to the interconnection point, the transmission lines may or may not parallel an existing right-of-way. Upgrades may be required to transmission lines to ensure that power could be directed to PRFTA.

Operations and Maintenance: Maintenance would be required for the PV arrays, including vegetation control, panel washing, snow removal, and panel replacement.

Estimated Capacity: Approximately 2 MW.

Location Alternatives: PRFTA would pursue the use of PV technology at Solar Site 1, which is available for development of approximately 10 acres with a PV array (Figure 2 and Figure 3). This area is located in the northern cantonment, immediately south and west of the Training Area. The area is a gently sloping, south facing hill side which levels out to a flat area to the south. The area is mostly grass-covered with a few shrubs. This location would tie into nearby transmission lines. An existing chain link fence on the western and southerly edge extends into the tract, which may need to be moved or taken down depending on placement of the arrays.

Solar site 1 was identified for future development in the 2009 PRFTA FEIS, in which the location was proposed for development as a deployable medical system (DEPMED) that included site preparation, grading, and construction for parking and buildings. There is no longer a requirement for a DEPMED at this site.

2.3.2 ENERGY EFFICIENCY MEASURES

The Army analyzed the potential for energy efficiency improvements before analyzing renewable energy technologies on the installation. Energy efficiency measures are commonly the most cost-effective energy project investment besides behavior change. Common energy efficiency actions being implemented or considered at PRFTA include metering, lighting retrofit, building envelope upgrades, and heating, ventilation and air conditioning (HVAC) distribution systems upgrade. The Hawthorn Effect, the theory that that people change behavior with the knowledge that they are being monitored or studied, suggests that simply monitoring energy usage by metering can reduce total energy use by 2%. Lighting retrofit projects involves replacing bulbs and fixtures with more energy efficient equivalents. Improvements to building

envelopes include: blown-in insulation into walls with wood frames and limited insulation, installation of double pane windows or use of window film, and increase roof insulation. Potential upgrades to HVAC distribution include replacing existing boilers, furnaces and air conditioning units with more efficient equivalents. Other basic and cost effective energy efficiency practices are lower temperatures on water heater tanks and insulated pipes.

2.3.3 CONSTRUCTION AND OPERATION OF GROUND SOURCE HEAT PUMP UNITS

PRFTA would pursue the construction and operation of ground source heat pumps to heat and cool on-post buildings from on-post renewable sources. Ground source heat pumps use the constant temperature of the earth to heat or cool buildings instead of the outside air temperature. Differing from geothermal energy, which uses high-temperature thermal energy directly from the earth, this technology relies the earth remaining at a relatively constant temperature beneath the surface. The subsurface is warmer than the air above it during the winter and cooler in the summer. A heat pump is used in these systems to enhance the natural flow of heat to a cool space in the winter or force heat from a warm space underground, where it cools. Ground source heat pump systems are generally composed of geothermal heat pumps, fluid circulating pumps, and a buried ground loop heat exchanger usually composed of plastic pipe. In the summer, ground source heat pumps extract heat from buildings and transfer it to the circulating fluid in the cooler ground loop system. In the winter, fluid circulating in the ground loop system absorbs heat from the earth and transfers it to the ground source heat pump. Ground source heat pumps extract the heat from the fluid which is then used to increase the temperature of the air transported to the buildings. This alternative would reduce the installation's electric energy requirements for heating and cooling and improve the energy security of PRFTA.

Construction: This project would involve the construction of ground source heat pump units for use in heating and cooling buildings on PRFTA. Implementation of this technology would involve the installation of a well field and connections to ground source heat pump units within existing and future buildings. These projects would be associated with existing buildings and potentially incorporated into future building construction. Wells would typically be constructed to vertical depths of 300 to 400 feet below the surface. They can also be installed vertically or diagonally using small boring equipment. Disturbance footprints for borehole drilling are typically very small involving a 7 to 14 feet diameter of disturbance. However, each bore would require a land area of 400 square feet to account for 20-foot spacing between all boreholes and avoiding overcharging (discharging) of the thermal mass available. Each system's tie-in to the building(s) in the proximity of the GSHP wells would be dependent upon the thermal and occupancy zoning requirements of each building. The number of wells would be based on the dominant load condition (i.e., heating or cooling) of each building. Each building supported by GSHP technology would require the design and installation of new supply air ductwork.

Operations and Maintenance: Occasional maintenance would be required for the GSHP system to ensure pumps remain operational and pipes do not become impaired.

Estimated Capacity: None, technology would be installed where feasible.

Location Alternatives: PRFTA would pursue the use of GSHP wells under future parking lots, which are planned as a part the 2009 PRFTA FEIS. Placement of the GSHP sites would support heating and cooling of individual or multiple buildings in the proximity of the applicable site.

2.3.4 SOLAR HOT WATER COLLECTORS ON BUILDINGS WITH HOT WATER TANKS

Construction: This project would involve the construction of SHW collectors on some PRFTA buildings. Construction of solar hot water collectors is a non-ground disturbing operation and involves placing fixtures on rooftops and sides of buildings. Most solar water heating systems for buildings have two main parts: a solar collector and a storage tank. The most common collector is called a flat-plate collector. Mounted on the roof, it consists of a thin, flat, rectangular box with a transparent cover that faces the sun. Small tubes run through the box and carry the fluid — either water or other fluid, such as an antifreeze solution — to be heated. The tubes are attached to an absorber plate, which is painted black to absorb the heat. As heat builds up in the collector, it heats the fluid passing through the tubes.

The storage tank then holds the hot liquid. Conventional water heaters can be modified for solar hot water use, though the solar hot water storage tanks are usually larger and very well-insulated. Systems that use fluids other than water usually heat the water by passing it through a coil of tubing in the tank, which is full of hot fluid.

Electrical Tie-In: N/A

Operations and Maintenance: Solar water heating systems can be either active or passive, but the most common are active systems. Active systems rely on pumps to move the liquid between the collector and the storage tank, while passive systems rely on gravity and the tendency for water to naturally circulate as it is heated.

Estimated Capacity Limits: N/A, will be implemented wherever feasible.

Location Alternatives: PRFTA would pursue the use of solar hot water technologies on future building construction and by retrofitting existing buildings within the cantonment area.

2.3.5 SOLAR VENTILATION PREHEATING SYSTEMS

Construction: This project would involve the construction of transpired collectors on buildings identified as appropriate for this technology. A transpired collector is a thin, black metal panel mounted on the south-facing exterior wall of a building. Construction of solar thermal technologies for space heating is a non-ground disturbing operation and involves placing fixtures on rooftops and sides of buildings.

Electrical Tie-In: N/A

Operations and Maintenance: Many large buildings need ventilated air to maintain indoor air quality. In cold climates, heating this air can use large amounts of energy. But a solar ventilation system can pre-heat the air, saving both energy and money. This type of system typically uses a transpired collector, which consists of a thin, black metal panel mounted on a south-facing wall to absorb the sun's heat. Air passes through the many small holes in the panel. A space behind the perforated wall allows the air streams from the holes to mix together. The heated air is then sucked out from the top of the space into the ventilation system.

Capacity Limits: None, will be implemented wherever feasible.

Location Alternatives: PRFTA would pursue the use of solar thermal technologies on future building construction and by retrofitting existing buildings within the cantonment area.

2.4. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

PRFTA considered a distributed site location for development of the PV arrays on buildings and over parking areas located throughout the cantonment area. The design would require eight areas totaling 13.9 acres consisting of developed and undeveloped sites. Due to the fragmented nature of this alternative, each separate location would require its own converter. This alternative was eliminated from detailed study because long-term development in the cantonment area has not yet progressed to the point of parking areas and buildings being available for the long-term for placement of PV arrays, and the arrays would be damaged or need to be relocated to fit future planned development.

PRFTA considered a single 13 acre site east of Solar Site 1 and south of the training area. This site was identified as Open Space in the 2009 PRFTA FEIS. Development of a solar field would have conflicted with the Open Space Land Use designation identified in the 2009 PRFTA FEIS because no development was identified for Open Space areas; therefore, this site was eliminated from further consideration and detailed study. Other undeveloped sites in the cantonment area that would otherwise appear to be suitable alternatives were not suitable due to encroachment into other planned development sites.

Wind energy sources were eliminated due to lack of consistent and strong enough prevailing winds to provide suitable wind generation power. Biomass and waste to energy alternatives were eliminated because PRFTA does not generate sufficient waste for these alternatives to be economically feasible. Geothermal and concentrating solar power alternatives were eliminated due to cost of project development for the relatively small energy usage requirements at PRFTA. These alternatives were eliminated from further consideration and detailed study.



Figure 3 Site Location for the proposed solar PV array, Parks Reserve Forces Training Area, California.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment of PRFTA to form a baseline for analysis of the environmental effects for the alternatives described in Chapter 2. This chapter also provides a discussion of the impacts anticipated from the implementation of the Preferred Alternative described in Chapter 2.

3.1 APPROACH FOR ANALYZING IMPACTS

Valued Environmental Components (VECs) are categories of environmental and socioeconomic effects where categorization is conducted to enable a managed and systematic analysis of these resources. Affected environment and environmental consequences, to include cumulative effects, would be analyzed, as appropriate, by the VEC categories listed below:

- Land Use
- Air Quality
- Topography and Soils
- Noise
- Socioeconomics
- Hydrology
- Biological Resources
- Utilities

The following VECs were fully addressed in the PRFTA 2009 FEIS and do not require additional project specific analysis because the Preferred Alternative would not result in effects to these resources: Cultural Resources, Geology, Minerals, Paleontology, Transportation and Access, Nearby Special Management Areas, Visual and Aesthetic Resources, and Health/Safety and Hazardous Substances.

Context and intensity are taken into consideration in determining a potential impact's significance, as defined in 40 CFR Part 1508.27. The intensity of a potential impact refers to the impact's severity and includes consideration of beneficial and adverse impacts, the level of controversy associated with a project's impacts on human health, whether the action establishes a precedent for future actions with significant effects, the level of uncertainty about project impacts, or whether the action threatens to violate federal, state, or local law requirements imposed for the protection of the environment. The severity of environmental impacts is characterized as negligible, minor, moderate, major or beneficial:

- **None/Negligible** – No measurable impacts are expected to occur.
- **Minor** – Primarily short-term but measurable adverse impacts are expected. Impacts may have slight impact on the resource.
- **Moderate** – Noticeable adverse impacts that would have a measurable effect on a resource and are not short term.
- **Severe** – Adverse impacts would be obvious; both short term and long term, and would have serious consequences on a resource. These impacts would be considered significant unless mitigable to a less-than-significant level.
- **Beneficial** – Impacts would benefit the resource/issue.

Impacts that range from none to moderate are considered insignificant. Significant adverse impacts would result from those impacts categorized as severe.

To maintain a consistent evaluation of impacts in the EA and in accordance with the Army NEPA Regulations, thresholds of concern were used for each resource. Although some thresholds have been designated based on legal or regulatory limits or requirements, others reflect discretionary judgment on the part of the Army in accomplishing its primary mission of military readiness, while also fulfilling their conservation stewardship responsibilities. Quantitative and qualitative analyses have been used, as appropriate, in determining whether, and the extent to which, a threshold would be exceeded. Based on the results of these analyses, this EA identifies whether a particular potential impact would be adverse or beneficial, and to what extent. The following sections discuss the environmental consequences associated with the No Action Alternative and the Preferred Alternative.

CEQ regulations require that cumulative impact of a proposed project be addressed as part of a NEPA document. Cumulative impacts are effects on the environment that result from the incremental effect of a project in combination with other past, present, or reasonably foreseeable future actions, regardless of jurisdiction or entity. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time. Cumulative impacts for each VEC have been updated as necessary from the 2009 PRFTA FEIS and are discussed in section 3.10.

3.2 LAND USE

3.2.1 AFFECTED ENVIRONMENT

The way the land is developed and used for various anthropogenic activities (e.g., residential, commercial, and industrial) affects quality of life and the environment. Off-site and on-site land uses associated with PRFTA are described in the following sections in terms of their compatibility with adjacent uses, environments, and intensity.

Off-site Land Uses

PRFTA is within Alameda and Contra Costa Counties. The cities of Dublin, Pleasanton, and San Ramon are adjacent to PRFTA. Urban development to include residential, commercial and industrial land uses, border PRFTA on all sides except to the northeast. Existing land uses east of the installation also include a U.S. Department of Justice low security prison. The East Bay Regional Park District owns and manages the 27.4 acre Tassajara Creek Regional Park which is adjacent to northeast corner of the training area.

PRFTA Land Uses

Existing PRFTA land uses are described in the 2009 PRFTA FEIS. PRFTA occupies 2,478 total acres, which is divided into the training area in the northern undeveloped portion of the installation and the cantonment area in the southern developed portion of the installation. The 1,991-acre training area is used for military field training exercises. The 487-acre cantonment area land uses accommodate facilities for the PRFTA Garrison and all tenants supported by the installation. PRFTA presently supports 13 major tenant and 36 individual tenants that primarily require administrative facilities. Most of the office space at the installation is in direct and indirect support of training and unit stationing activities. The operations and training land

use directly supports tenant training missions, which include the Army Reserve Centers, Army National Guard armories, and One Army School System facilities. The Pacific Division 75th Training Command, the Parks Noncommissioned Officers Academy (NCOA), 80th Training Command Total Army School System (80th TASS), Regional Training Site-Medical (RTS-Med), and Western Army Reserve Intelligence Support Center (WARISC) organizations and others support academic and applied instruction within or adjacent to their complexes. Secondly, land use supports local law enforcement, fire agencies, and other State and federal governmental agencies. The 2009 PRFTA FEIS describes land use patterns based on future developmental actions likely to take place. All proposed Net Zero actions take place within the cantonment area in areas addressed for future development in the 2009 PRFTA FEIS.

3.2.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

Land use impacts resulting from the preferred alternative site locations would be considered significant if they were to substantially change existing land uses; or disrupt, divide or conflict with established land use. Types of impacts that can occur to land use resources are direct or indirect in nature. Conflicts with existing land uses, plans or policies constitute direct impacts while changes to development patterns off-post are considered indirect impacts. The preferred alternative, including construction and operation, would have negligible impacts on the existing land use at PRFTA. Solar site 1 is currently vacant and unutilized by PRFTA. The area is predominantly ruderal grassland with areas of past soil disturbance.

The preferred alternative is within the areas addressed for development in the 2009 PRFTA FEIS. Solar site 1 was identified in the 2009 PRFTA FEIS for industrial type land uses. Energy efficiency measures, ground source heat pumps, solar hot water collectors, and solar ventilation preheating would be implemented or constructed at existing or future buildings or parking areas consistent with land uses identified in the 2009 PRFTA FEIS. The actions associated with the preferred alternative would include minor ground disturbance during the construction phase of the solar array. Infrequent maintenance and cleaning would be required during the operation phase. The impacts associated with the preferred alternative would be equal or less than what would be considered for industrial type land use development. The preferred alternative is consistent with the criteria used in the 2009 PRFTA FEIS in that it is compatible with neighboring uses and consistent with relevant local land use policies.

3.3 AIR QUALITY

3.3.1 AFFECTED ENVIRONMENT

Air Quality

Ambient air quality standards have been established by the U.S. Environmental Protection Agency (EPA) and the California EPA (CALEPA) for the following six pollutants, generally known as “criteria pollutants:” ozone, carbon monoxide (CO), nitrogen oxides (NO_x, measured as NO₂), sulfur dioxide (SO₂), fine particulate matter, and lead (Pb). The fine particulate matter standard includes two distinct categories: particulate matter with an aerodynamic diameter of 10 micrometers (µm) or smaller (PM₁₀) and particulate matter with an aerodynamic diameter of 2.5 µm and smaller (PM_{2.5}). For the purpose of regulation, air pollution control measures typically focus on whether the pollution originates from stationary or mobile sources. A stationary source can be a major, minor, or area source. Major and minor sources are typically individual discrete facilities such as industrial or large commercial operations. Mobile

sources consist of both on-road and off-road equipment. Off-road or off highway vehicle (OHVs) include construction equipment.

The criteria pollutants of greatest concern in the PRFTA vicinity are primarily those in which the California or national ambient air quality standards (CAAQS and NAAQS, respectively) are occasionally being exceeded (ozone, PM₁₀, and PM_{2.5}) or have been exceeded in the recent past (CO). In addition, compounds that result in the formation of these pollutants in the atmosphere (precursors) also are a concern. These compounds include reactive organic gases (ROG) (or volatile organic compounds [VOC]) and NO_x for ozone formation, and NO_x and SO₂ for PM_{2.5} formation. The CALEPA standards for most of these criteria pollutants are more stringent than the national standards. The 2009 PRFTA FEIS Appendix D-1: Air Quality Regulations includes additional detail about the NAAQS and CAAQS.

Green House Gases

Greenhouse gases (GHGs) are chemical compounds in the Earth's atmosphere that allow incoming short-wave solar radiation but absorb long-wave infrared radiation re-emitted from the Earth's surface, trapping heat. Most studies indicate that the Earth's climate has warmed over the past century due to increased emissions of GHGs, and that human activities affecting emissions to the atmosphere are likely an important contributing factor.

Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide, methane, and nitrous oxide are examples of greenhouse gases that have both natural and manmade sources, while other greenhouse gases such as chlorofluorocarbons are exclusively manmade. In the US, most greenhouse gas emissions are attributed to energy use. Such emissions result from combustion of fossil fuels used for electricity generation, transportation, industry, heating, and other needs.

The principal GHGs that enter the atmosphere due to human activities are:

- **Carbon Dioxide (CO₂).** CO₂ enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO₂ is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- **Methane.** Methane is emitted during the production, transport, and combustion of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide.** Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases.** Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone (O₃)-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as High Global Warming Potential gases.

The project site does not currently generate GHGs.

3.3.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

Air Quality

Air Quality impacts associated with the preferred alternative are considered minor and short term during the construction phase. Section 4.1 (Air Quality) of the 2009 PRFTA FEIS discusses expected impact occurrences based on calculations of emissions associated with construction activities, vehicular traffic, and general land use. The region of influence of the 2009 PRFTA FEIS covered the area within the boundary of PRFTA and included assessment of future emissions that would result from construction of new facilities in the northern cantonment area. The Proposed Action in the 2009 PRFTA FEIS would produce maximum emissions, during the height of the construction/demolition activities. Under the 2009 PRFTA FEIS Proposed Action, calculated increases in all pollutant emissions due to construction and operational activities at PRFTA are less than their respective Bay Area Air Quality Management District (BAAQMD) and EPA thresholds and therefore not considered significant. The preferred alternative discussed in this EA is located within an area described by the 2009 PRFTA FEIS as Industrial type land uses where development was anticipated, therefore covered in the analysis conducted in the FEIS. A number of mitigation measures have been identified within the 2009 PRFTA FEIS to reduce potential air quality impacts. Proposed construction phase mitigation measures would be followed during construction and development of the preferred alternative. Potential beneficial impacts to Air Quality are anticipated during operational phase of the preferred alternative. The consumption of energy produced by PV will replace energy produced by burning fossil fuel. Energy efficiency measures, ground source heat pumps, solar hot water collectors, and solar ventilation preheating would reduce energy usage at PRFTA. Although minor, the air pollutants produced by burning fossil fuels and other non-renewable products to produce energy will be reduced by utilizing energy provided from the PV solar area.

Green House Gases

GHG impacts are considered minor and short term during the construction phase caused from the combustion of fossil fuels in construction vehicles and equipment. Additionally, the net removal of vegetation for construction results in a loss of carbon sequestration in plants. Electricity generation GHG emissions are generally dominated by CO₂ emission from carbon-based fuels. For this solar project, the primary fuel is solar energy, which is GHG-free. While in operation the production of energy from the solar PV panels will offset energy previously purchased and produced by burning fossil fuels. Therefore, impacts to GHG will be beneficial and long term during the operation phase. While construction will result in a slight increase in GHG emissions during the construction phase, it is anticipated that any increase in GHG emissions due to construction will be offset by the net reduction in GHG emission from use of a solar PV array.

3.4 TOPOGRAPHY AND SOIL

3.4.1 AFFECTED ENVIRONMENT

Topography

The cantonment area south of about 8th Street is a relatively flat to gently sloping landscape where elevations range from about 325 to 360 feet. The cantonment area north of 8th Street

and the training area are characterized by rolling hills and relatively steep slopes, where hilltop elevations vary between 650 and 765 feet with valley floors around 500 feet. PRFTA is flanked by two main surface water features that flow southward: Alamo Creek on the west and Tassajara Creek on the east.

Soil Conditions

There are six soil mapping units in the Contra Costa County portion of PRFTA and nine soil mapping units in the Alameda County portion. The predominant soil type at PRFTA is Diablo Clays of varying slope, followed by the Clear Lake Clay. The soil mapping units and characteristics are described in detail in section 3.4 of the 2009 PRFTA FEIS. The 2009 PRFTA FEIS analyzed soil effects within a Region of Influence that covered any area within the PRFTA boundary. Significant impacts would occur if an action resulted in the following:

- Activities cause substantial erosion of the soil.
- Soils are degraded as a result of contamination from spills of chemicals or fuels that require remediation.
- Soil properties, such as shrinking, swelling, or soils that are corrosive, cause substantial damage to a structure or road.

3.4.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

The preferred alternative will have negligible effects to topography and soil conditions. Effects to soil conditions from construction and future development were addressed in the 2009 PRFTA FEIS for the preferred alternative. As stated in the 2009 PRFTA FEIS, disturbing soil during construction can cause erosion and the eroded sediment can then be transported to surface water bodies. Construction of the solar PV array and ground source heat pump wells could result in minor ground disturbance to soils which could lead to erosion and sediment runoff. The 2009 PRFTA FEIS noted that phasing construction and implementing effective storm water best management practices (BMPs) should be adequate to reduce or eliminate the potential impacts to soil. Additionally, the soils within the cantonment area are characteristic of moderate to severe shrink/swell potential. If the soil shrink/swell potential is considered during design and construction, the impact to pavement and structures will not be significant.

Each of the potential impacts to soil would be mitigated by following appropriate measures as discussed in the 2009 PRFTA FEIS. Such mitigations include National Pollution Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity from the State Water Resources Control Board prior to initiating construction activities.

3.5 NOISE

3.5.1 AFFECTED ENVIRONMENT

The Army has quantified the existence and extent of noise from training activities conducted at PRFTA and has published these data in its Environmental Noise Management Plan (USACHPPM 2000), which was updated in 2005. This document notes that two activities contribute the majority of noise perceived near PRFTA: small arms training and helicopter noise. PRFTA discontinued small arms training. Common training includes land navigation

courses and maneuver training. Alamo Creek Park and an apartment community are located west of Dougherty Road and opposite the fence line of the site of the proposed PV array.

3.5.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

Short term noise impacts from construction vehicles and equipment operations may cause intermittent noise limited to the construction phases of the preferred alternative. Visitors of the park and the community are the individuals most likely to be impacted by noise from construction of the PV solar array. Construction noise would be temporary in duration and is not anticipated to exceed levels that are common to the area. Therefore noise impacts during the construction phase are minor to negligible and short term. No noise is anticipated from operation of the preferred alternative. If there is reflection from the PV solar array that affects the community, it could be mitigated by appropriate measures, e.g. a visual barrier such as landscaped vegetation.

3.6 SOCIOECONOMICS

3.6.1 AFFECTED ENVIRONMENT

Socioeconomic impacts include changes, resulting from an alternative considered in this EA, to employment and the economy; population; housing; retail, commercial, and industrial enterprise, infrastructure and public services; and social and community relationships; as well as any environmental justice concerns. Impacts to socioeconomic resources from implementation of the alternatives would be considered significant if one or more of the following occurs:

- Substantial gains or losses in population and/or employment.
- Disequilibrium in the housing market such as severe housing shortages or surpluses.
- Project-related demands on public infrastructure or services triggering the need for expanded capacity or resulting in discernible reductions in the level of service provided.
- Activities or operations substantially altering lifestyles or quality-of-life of PRFTA employees and their families or civilian households living near PRFTA.
- Disproportionately high and adverse environmental or human health impacts to an identified minority or low-income population, which appreciable exceed those to the general population around the project area.

3.6.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

The preferred alternative would cause no increase in local population and a negligible increase in local employment, and therefore would not affect the housing market in the Dublin area. Additionally, there are no disproportionately high and adverse environmental or human health impacts anticipated. The proposed solar array could supply approximately 2 MW of energy and provide power to meet many of PRFTA's energy demands. This could have an impact on utility rates as all or a portion of PRFTA's power demands would not be supplied from the electrical grid. However, this impact is expected to be negligible given the small percentage of power potentially saved from the grid.

3.7 WATER RESOURCES

3.7.1 AFFECTED ENVIRONMENT

Water resources are covered in detail in the 2009 PRFTA FEIS and includes surface and ground water resources. The region of influence in the 2009 PRFTA FEIS included the Arroyo de la Laguna drainage basin of the Alameda Creek Watershed for surface water; and the Dublin and Camp subbasins within the Livermore Valley Groundwater Basin for ground water. Among others, the 2009 PRFTA FEIS assessed the potential for pollution of surface water bodies resulting from construction-site storm water pollutants; pollution of surface water bodies due to spills of chemicals or fuel; degradation of groundwater quality resulting from infiltration of contaminated construction-site storm water and spills/leaks of chemicals or fuels

3.7.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

The 2009 PRFTA FEIS anticipated surface and ground water could be impacted in the area categorized as industrial land use. Expected impacts anticipated were caused by construction and future use of proposed buildings and parking lots. Similarly, the construction phase of the solar PV array and ground source heat pumps could impact surface and ground water resources. Construction could potentially result in construction-site storm water pollutants and pollution of surface water bodies and ground water due to spills of chemicals or fuels from equipment. Construction would be brief and affect a relatively small land area, and therefore impacts would be negligible. Impacts to water sources from the operation phase of the preferred alternative would be negligible. The operation phase of the solar PV array would likely have fewer impacts on surface water than buildings or parking lots. Water would run off of the panel during a rain or other precipitation event; however, the surface beneath the panels would be gravel or similar fill material which would allow for water infiltration. Once in operation, there would be no source of chemical or fuels from the solar PV array to contaminate surface water ways or ground water. Solar panels will be cleaned according to manufacturer directions; common practice is plain water.

Proposed mitigation measures were discussed in detail in the 2009 PRFTA FEIS to reduce potential impacts to surface water and ground water. PRFTA will utilize mitigation measures as discussed in the 2009 PRFTA FEIS to reduce impacts during construction and operation of the preferred alternative, for example, implementation of best management practices in accordance with the National Pollutant Discharge Elimination System permit process.

3.8 BIOLOGICAL RESOURCES

3.8.1 AFFECTED ENVIRONMENT

The 2009 PRFTA FEIS (US Army, 2009) and the PRFTA Integrated Natural Resources Management Plan and associated Environmental Assessment (US Army 2012) include information about biological resources within and surrounding PRFTA. PRFTA consults with the US Fish and Wildlife Service (USFWS) prior to actions that may affect federally listed species under the Endangered Species Act.

The preferred alternative site for the solar PV array is within a grassland field approximately 150 feet north of 15th Street, west of Seville Road, east of the installation boundary, and more than 300 feet south of jurisdictional PRFTA wetland #48. A non-jurisdictional ditch (PRFTA wetland #

23) lies immediately north of 15th Street and approximately 75 feet south of the proposed project boundary. Energy efficiency measures, ground source heat pumps, solar hot water collectors, and solar ventilation preheating would be implemented or constructed at existing or future buildings or parking areas consistent with land uses identified in the 2009 PRFTA FEIS.

Federally threatened or endangered species at PRFTA include California tiger salamander and California red-legged frog. Both species occur within one mile of the preferred alternative, though neither species has been sighted within or adjacent to this site. Federally threatened San Joaquin kit fox have been sighted within the County, though none have been sighted to date at or adjacent to PRFTA. Burrowing owls are protected under Migratory Bird Treaty Act and occur in grasslands at PRFTA. Burrowing owl have been sighted at and adjacent to the preferred alternative.

In association with preparation of the 2009 PRFTA FEIS, the Army prepared a Biological Assessment (BA) for Master Plan Redevelopment. In May 2006, the Army submitted the BA to US Fish and Wildlife Service to request formal consultation under the Endangered Species Act to address impacts of Master Plan Redevelopment on federally listed species (US Army, 2006). The BA identified the boundaries of future redevelopment and determined there would be a loss of potential habitat for federally listed species because grassland areas would be converted to buildings, parking areas, and associated facilities. The USFWS issued a Biological Opinion in December 2006 that determined the PRFTA Master Plan Redevelopment was not likely to jeopardize the continued existing of federally listed species (USFWS 2006).

3.8.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

The preferred alternative would result in loss of vegetation communities that are suitable for California tiger salamander, California red-legged frog, San Joaquin kit fox and burrowing owl. The preferred alternative is sited within the area that the Army identified for construction and redevelopment in the 2009 PRFTA FEIS. Habitat loss from the preferred alternative due to development of facilities and parking areas was addressed in the 2006 formal Endangered Species Act consultation and the 2009 PRFTA FEIS (US Army, 2006; US Army, 2009).

In May 2013, the Army sent a letter to US Fish and Wildlife Service requesting their concurrence under Endangered Species Act that the proposed solar field was adequately addressed by the 2006 biological opinion. The Army determined that the impacts from the preferred alternative are consistent with notional development identified in the 2006 BA and would occur within areas already identified for development. If the Service does not concur, the Army would enter into formal consultation for the preferred alternative.

3.9 UTILITIES

3.9.1 AFFECTED ENVIRONMENT

Pacific Gas & Electric (PG&E) is the current utility provider for PRFTA. PG&E owns the electrical infrastructure south of 8th Street and PRFTA owns the electric infrastructure north of 8th Street. All buildings are metered. Future service connections and improvements to the system would be coordinated and supported by PG&E. PRFTA electrical distribution system is in satisfactory condition. For the portion of the base north of 8th Street, a major conversion project recently replaced 12,000-kilovolt (kV) service with 21-kilovolt-ampere (kVA) service.

The project included new poles, transformers, overhead lines, and upgrading the existing transformer substation on 5th Street. The electrical distribution system on this northern part of the post is owned by PRFTA, and electricity use is metered at the transformer substation on 5th Street. In the area south of 8th Street, PG&E owns the distribution system, and electricity use is metered at each building. With future expansion and improvement, this system can supply all anticipated demands and new facilities. PRFTA's energy usage in 2011 was approximately 14 MW hours. The Army, US Army Corps of Engineers (USACE) and PRFTA are engaged to demonstrate the benefits of a fuel cell power plant. In September 2010, Fuel Cell Energy was awarded a contract to relocate, install, commission, and operate a 300- kilowatt (kW) natural gas fuel cell. The natural gas fuel cell currently operates continuously on PRFTA, providing electrical energy to the installation. The fuel cell produces electrical energy, but is not considered renewable because production consumes natural gas. The contract length for this project is four years, after which the installation will own the fuel cell and may choose to continue operation and maintenance.

3.9.2 IMPACTS ASSOCIATED WITH THE PREFERRED ALTERNATIVE

Operation of solar PV energy on PRFTA would partially offset energy supplied by PG&E. The solar energy produced could supply approximately 2 MW of PRFTA approximately 14 MW annual requirement. Energy efficiency measures, ground source heat pumps, solar hot water collectors, and solar ventilation preheating would additionally reduce PRFTAs annual energy requirement. This could have a negligible impact on utility rates as a small portion of PRFTA's power demands would not be supplied from the electrical grid.

3.10 CUMULATIVE IMPACTS

Cumulative effects to the VECs would be minor and not significant. The impacts of the preferred alternative discussed in this EA are consistent with impacts discussed in the 2009 PRFTA FEIS and therefore, covered within the scope of that cumulative impacts analysis. The following summary of cumulative impacts is adapted from the 2009 PRFTA FEIS:

- Land Use - The future exchange of the southern cantonment area from federal ownership for development contributes to cumulative urban development surrounding PRFTA. The area surrounding PRFTA is rapidly developing. The Training Area and northern cantonment area would remain in federal ownership and be used to support military training administered by the Army.
- Air Quality - The 2009 PRFTA FEIS calculated emissions using Urban Emissions software (URBEMIS) for the existing City of Dublin, the 2009 PRFTA FEIS No Action Alternative, the 2009 PRFTA FEIS Proposed Action Alternative, the development of Dublin Crossing, and other development projects within Dublin, CA. This assessment assumes all projects would be complete by 2014.
- Topography and Soil - Soil and topographic disturbances from development at PRFTA and in the area surrounding PRFTA can cause erosion and the eroded sediment can then be transported to surface water bodies. This would be minimized through compliance with Clean Water Act (NPDES permit system) and EISA section 438.
- Noise - Rapid population growth in the surrounding PRFTA area has and will cumulatively affect noise levels. Development of a solar field would add minimal noise during the construction phase, and no noise during the operation phase.

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- Socioeconomics - The preferred alternative would occur in chorus with projects addressed in the PRFTA 2009 FEIS and in the context of a rapidly growing urban region. The cumulative impacts of the socioeconomic resources are well within the projected population increase of the area and minor within the surrounding community.
 - Water Resources – Increased land use intensity at and surrounding PRFTA would contribute incrementally to urban- and construction- related pollutant loadings and flooding of Arroyo Mocho, Arroyo De La Laguna, and Alameda Creek. However, storm water discharge and proper use, storage, and disposal of chemicals and fuels are regulated and monitored by the state for all projects under their purview. This would minimize the cumulative effect of these development actions because each of these assumed to be individually compliant with state standards relating to hydrology.
 - Biological Resources – Increased development and land use intensity at and surrounding PRFTA would contribute incrementally to loss of wildlife habitat for federally listed and non-listed species, loss of vegetation communities, and adverse effects to wetlands. Ruderal non-native grassland and wetland acres that would be lost to redevelopment of the PRFTA cantonment area have been previously disturbed, and are surrounded by extensive urbanization. Non-native grassland to be lost is primarily ruderal, and mitigation would be implemented for the loss of any wetlands that cannot be avoided. None of the wetlands in the cantonment area have been shown to contain sensitive species, and the Training Area wetlands, where California tiger salamander, California-red legged frog, and California linderiella occur, are protected by buffer zones. The loss of habitat and documented nesting and foraging sites would be in the context of extensive surrounding urbanization. Within the context of surrounding urbanization, the natural habitats that remain at Camp Parks after redevelopment would assume increasingly greater regional importance.
 - Utilities - The preferred alternative would occur in chorus with projects addressed in the PRFTA 2009 FEIS and additionally, in the context of a rapidly growing urban region. The preferred alternative has the potential to produce up to 2MW of energy which would normally be supplied from the electrical grid for use by PRFTA. Therefore, this project could offset some energy demand increases resulting from urban growth in the surrounding areas and local projects. The addition of 2MW could have an impact on utility rates, however the impact is anticipated to be a small percentage of power saved from the grid. The cumulative impacts or net gain or increase caused from the proposed actions addressed in the PRFTA 2009 FEIS are within the capacity of the current utility infrastructure in the area.

3.11 IMPACTS ASSOCIATED WITH THE NO ACTION ALTERNATIVE

The No Action Alternative assumes no change from the current situation. Under the No Action Alternative, PRFTA would not construct a PV array for solar energy generation and, therefore, would not help PRFTA and the Army achieve Net Zero goals. The Army would continue to implement the master plan and redevelopment identified in the 2009 PRFTA FEIS, and would implement energy efficiency initiatives. The Army would continue to investigate ground source heat pumps, solar hot water collectors, and solar ventilation preheating systems for new and renovated buildings. An analysis of environmental impacts would be required for each project implementing these technologies; impacts are expected to be minor and within the scope of the 2009 PRFTA FEIS because the technologies would be implemented as part of new construction or building renovation associated with Master Planned Redevelopment.

4 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This section summarizes the anticipated level of impacts to the VECs under the no action alternative and preferred alternative as discussed in Chapter 3. Table 4 also outlines impact reduction measures identified in Chapter 3. The level of cumulative impact displayed in the table represents the implementation of the preferred alternative discussed in Chapter 2.

Table 3 Level of impact to each VEC under the no action and preferred alternative.

Alternative	Activity	Level of Impact	Cumulative Impact	Impact Reduction Measure
Land Use				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible to Minor	N/A
	Operation	Negligible	Negligible to Minor	N/A
Air Quality				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible to Minor	Utilize Mitigations as specified in Section 4.1.3.1 of 2009 PRFTA FEIS
	Operation	None to beneficial	Negligible to Minor	N/A
Topography and Soil				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible	NPDES General Permit for Storm Water Discharge
	Operation	Negligible	Negligible	N/A
Noise				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible	N/A
	Operation	Negligible	Negligible	N/A
Socioeconomics				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible	N/A
	Operation	Negligible	Negligible	N/A
Hydrology				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible	BMPs for controlling storm water quality and NPDES permit
	Operation	Negligible	Negligible	N/A
Biological				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible	Preconstruction surveys as identified in the 2009 PRFTA FEIS
	Operation	Negligible	Negligible	N/A
Utilities				
No Action	N/A	Negligible	Negligible	N/A
Preferred Alternative	Construction	Negligible	Negligible	N/A
	Operation	None to beneficial	Negligible	N/A

5 ABBREVIATIONS AND ACRONYMS

AC	Alternating Current
BAAQMD	Bair Area Air Quality Management District
BMP	Best Management Practice
CAAQS	California Ambient Air Quality Standard
CALEPA	California Environmental Protection Agency
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DC	Direct Current
DEPMED	Deployable medical system
DoD	U.S. Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA 2007	Energy Independence and Security Act of 2007
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPAAct 2005	Energy Policy Act of 2005
FEIS	Final Environmental Impact Statement
FNSI	Finding of No Significant Impact
FY	Fiscal Year
GHG	Greenhouse gas
HVAC	Heating, ventilation and air conditioning
kV	kilovolt
kVA	Kilovolt amp
kW	Kilowatt
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NCOA	Noncommissioned Officers Academy
NDAA 2007	National Defense Authorization Act of 2007
NEPA	National Environmental Policy Act
NO ₂	Nitrogen Dioxide
NOx	Nitrogen Oxides
NZEI	Net Zero Energy Installation
Pb	Lead
PG&E	Pacific Gas & Electric
PRFTA	Parks Reserve Forces Training Area
PV	Photovoltaics
QDR	Quadrennial Defense Review
RTS-Med	Regional Training Site- Medical
SO ₂	Sulfur Dioxide
TASS	Training Command Total Army School System
USACE	US Army Corps of Engineers
UXO	Unexploded Ordnance
VEC	Valued Environmental Component
VOC	Volatile Organic Compounds
WARISC	Western Army Reserve Intelligence Support Center

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