

# Construction Network Electrifying Facilities for the Future

Jeff Twining, PE  
Assistant Chief Engineer, NAVFAC Southwest

Holiday Inn  
La Miranda, CA  
2 OCT 2024

# NAVFAC SW Area of Responsibility (AOR)



~ 140 Military



~ 3,433 Civilians



• 10 Navy

• 8 Marine Corps

• 1 Air Force

~ \$3B+ of Products & Services Executed Annually Across 6 States!

# Demographics

## NAVFAC SW AOR

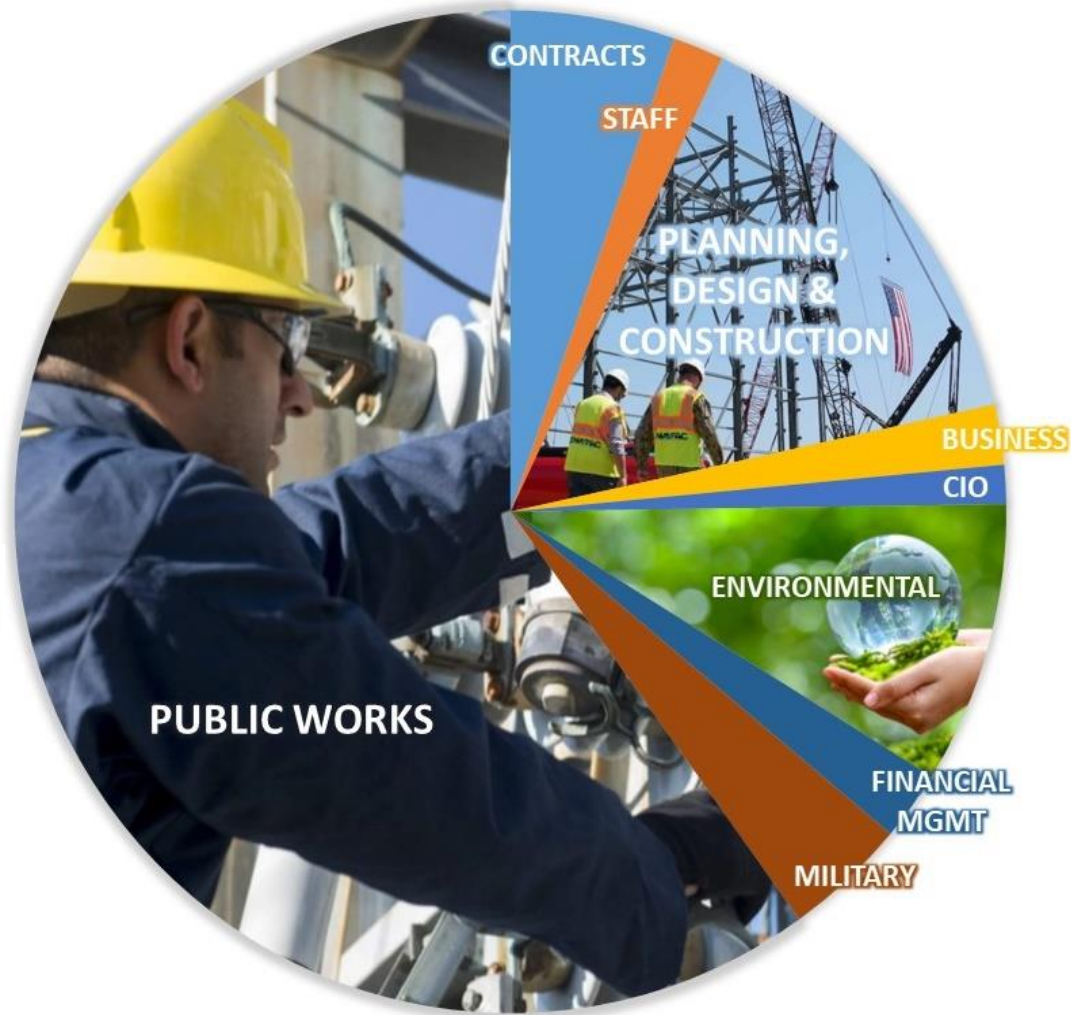
Navy	USMC	USAF
10 Installations	8 Installations	1 Installation
11,000 Facilities	10,000 Facilities	1,725 Facilities
19 Runways	12 Runways	3 Runways
61 Hangars	30 Hangars	8 Hangars
1.8M Acres	795k Acres	6,400 Acres
189 Special Areas	640 Training Areas/Ranges	
42 Piers/Wharves	6 Landing Beaches/Docks	
13 Small Arms Ranges	135 Small Arms Ranges	
12,283 PPV Homes	12,797 PPV Homes	
1,698 PPV UH Beds	13 Reserve Centers	
17 Reserve Centers	81 Tenant Commands	
530 Tenant Commands		



~ 140  
Military



~ 3433  
Civilians



PUBLIC WORKS

ENVIRONMENTAL

FINANCIAL  
MGMT

MILITARY

CONTRACTS

STAFF

PLANNING,  
DESIGN &  
CONSTRUCTION

BUSINESS

CIO



# NAVFACSW Construction Outlook

Service Branch	Installation		Pre-Award		Post-Award
	NB Coronado	\$386M	<b>SW: \$3B</b>	\$853M	<b>SW: \$4.1B</b>
	NAS Lemoore	\$57M		\$712M	
	NAWS China Lake	\$205M		\$662M	
	NB San Diego	\$218M		\$525M	
	NWS Seal Beach	\$34M		\$338M	
	NAS Fallon	\$228M		\$156M	
	NB Ventura County	\$590M		\$512M	
	NB Point Loma	\$230M		\$164M	
	NAF El Centro	\$9M		\$60M	
	NSA Monterey	\$1026M		\$60M	
	MCB Camp Pendleton	\$634M	<b>SW: \$1.5B</b>	\$1045M	<b>SW: \$2.3B</b>
	MCAS Miramar	\$168M		\$450M	
	MCAGCC 29 Palms	\$114M		\$344M	
	MCAS Yuma	\$322M		\$310M	
	MCLB Barstow	\$4M		\$9M	
	MCRD San Diego	\$198M		\$135M	
	MCAS Camp Pendleton	\$18M		\$39M	
	MCMWTC Bridgeport	\$38M		\$11M	
	Travis AFB	\$109M	<b>\$109M</b>	\$195M	<b>\$195M</b>

Post Award Construction Workload @ \$6.6 Billion...Poised To Do More! Tracking to Award \$4.6 Billion in FY25+

# Executive Order 14057



Implementing Instructions for  
Executive Order 14057  
Catalyzing Clean Energy Industries and Jobs  
Through Federal Sustainability

The White House Council on Environmental Quality

August 2022

*“By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to reestablish the Federal Government as a leader in sustainability, it is hereby ordered as follows:*

**Section 101. Policy.** *The Federal Government faces broad exposure to the mounting risks and costs already posed by the climate crisis. In responding to this crisis, we have a once-in-a-generation economic opportunity to create and sustain jobs, including well-paying union jobs; support a just transition to a more sustainable economy for American workers; strengthen America’s communities; protect public health; and advance environmental justice. As the single largest land owner, energy consumer, and employer in the Nation, the Federal Government can catalyze private sector investment and expand the economy and American industry by transforming how we build, buy, and manage electricity, vehicles, buildings, and other operations to be clean and sustainable.*

*- Joe Biden Jr., President of the United States*  
Executive Order 14057 of December 8, 2021, Catalyzing Clean Energy  
Industries and Jobs Through Federal Sustainability

- **Clean Energy Generation**
  - 100% carbon pollution-free electricity (CFE) on a net annual basis by 2030
- **Transitioning to a Zero-Emission Fleet**
  - 100% zero-emission vehicle acquisitions by 2035
  - 100% zero-emission light-duty vehicle acquisitions by 2027
- **Achieving Net-Zero Emissions Buildings, Campuses, and Installations**
  - Net-zero emissions building portfolio by 2045, including a 50% emissions reductions (2008 baseline) by 2032
  - 65% reduction in scope 1 & 2 greenhouse gas (GHG) emissions from federal operations by 2030 from 2008 levels

# What Electrification Means to the Navy

## Department of the Navy Building Electrification Implementation Policy, 20 November 2023

- All DON Military Construction (MILCON) and Facilities Sustainment, Restoration and Modernization (FSRM) projects shall immediately incorporate into advance planning and design efforts the use of all-electric technologies for all building system components, including but not limited to space conditioning, water heating, cooking, and laundry, where market ready technologies exist.
- All existing facilities shall shift to all-electric systems as building systems are replaced or in conjunction with renovation projects.
- The implementation of this policy may increase electricity demand beyond the load capacity supported by existing switchgear, transformer, substation, or other electrical utility infrastructure. As a result:
  - Planning and resulting design of projects covered by this policy must incorporate to the project scope infrastructure requirements beyond immediate boundary of the facility where required.
  - In cases where the utilities are privatized, the utilities privatization system owner may require modification to capture any increased demand utilities infrastructure requirements.
  - Installations must assess and update their installation energy plans, and apply energy resilience assessments of energy systems for critical missions and supporting infrastructure, to account for the increased energy requirements resulting from future year projects to include capital improvements to power generation and distribution facilities.

# What Electrification Means to the Navy

## Department of the Navy Policy for Inclusion of Electric Vehicle Charging Infrastructure in Project Documentation, 05 November 23

- All DON projects, which contain parking for covered vehicles, shall immediately incorporate into advance planning and design efforts electric vehicle charging infrastructure and the appropriate amount of charging stations.
- Action:
  - Projects must include electric vehicle charging infrastructure to support no less than 15% of all Federal Government motor vehicles planned to be parked at the facility.
  - Provide charging provisions for at least one electric vehicle where less than seven, but at least one, Federal Government vehicle(s) is planned to be parked at the facility.
  - Include the cost for construction of the electric vehicle charging capability in the overall cost of the project.
  - Locate electric vehicle charging facilities a minimum of 10 m (33 feet) from buildings and parking garages. Do not affix to buildings nor install inside parking garages.
- The implementation of this policy may increase electricity demand beyond the load capacity supported by existing switchgear, transformer, substation, or other electrical utility infrastructure.

# Electrification Challenges and Opportunities

## CHALLENGES

- **Unfunded Mandate:** Must electrify with no dedicated funding source.
- **Legacy Utility Infrastructure Systems with Limited Capacity:** May not be able to support the transition to all-electric systems.
- **EV Predictions Uncertain:** Unknown future demand for electric vehicles.
- **Additional Studies Needed:** Requires detailed technical analysis of installation / local grid conditions to plan for future demand and prioritize the utility system upgrades.
- **Potentially Significant Project Cost Increases:** Second-order utility upgrade requirements may increase project costs and/or delay projects
- **Impact on Energy Resilience:** Accelerates importance of resilient back-up systems to support critical missions.
- **Unknown Supply Chain:** Sourcing for all-electric systems and replacement parts.
- **Increased Preventive Maintenance:** May be necessary for electric systems running all four seasons.

## OPPORTUNITIES

- **Improved Infrastructure:** Installations will benefit from utility infrastructure system upgrades which otherwise might have been challenging to prioritize/get funded.
- **Renewable Energy Integration & Smart Grids:** Facilitates the use of renewable energy sources and encourages the development of smart grids, improving energy management and efficiency.
- **Economic Growth & Innovation:** Creates new markets, job opportunities, and drives technological advancements in energy storage, grid management, and building automation.
- **Energy Security:** Reduces dependency on imported fuels, enhancing national energy security.
- **Build Climate Resilience:** Ensure that our forces, systems, and facilities can continue to operate effectively and achieve the mission in the face of changing climate conditions, and worsening climate impacts.
- **Reduce Climate Threat:** The Navy must reduce its greenhouse gas emissions and draw greenhouse gases out of the atmosphere, stabilize ecosystems, and achieve the nation's commitment to net-zero emissions by 2050.



# Current Southwest Initiatives

## Naval Base Point Loma Islanding Study

- NRSW, NPS, and Stanford are seeking solutions to develop modular, scalable, zonal microgrids that provide ability to sustain critical installation operations independent of local utility services for a minimum of 30 days.

## Electrification Blueprint Studies

- NRSW, EXWC and Lawrence Berkeley National Laboratory (LBNL) performing studies to establish framework for how installations can transition to 100% Zero Emissions Forklifts and Advanced Clean Fleets and associated charging stations.
- Locations include NB San Diego, NB Ventura County and NAS Lemoore.

## Zero-Emission Vehicle Site Assessments and Infrastructure Initiatives

- Assess top-priority potential ZEV charging sites and ancillary infrastructure at NB Point Loma and NB Ventura County.
- Identify upgrade requirements at each site and develop a schematic design for one of the potential charging sites.

## Electrification Impacts to Metro San Diego Installations Study

- Proposed study on Electrification Impacts focused on three Metro SD installations by University of North Carolina.
- Assess risk of the local utility electrical system and the installations' electrical systems to support projected future electric loads.
- Study will cover vehicle fleet electrification, building electrification, and other electrification end-use goals on the naval installations.

## Privately Owned Vehicle (POV) Electric Vehicle Charging Stations

- Initiative to provide POV charging at 8 of 10 SW Navy bases which can be funded by portion of available FY24 \$40M.
- Provide POV charging via 4 potential COAS: NEX operated, MWR operated, PWD operated, and monthly pay.gov payments.
- Develop a regional POV EVSE policy.
- First POV/GOV dual use electric vehicle chargers in Region commissioned 12 July at NB San Diego.

