



Marine Corps Installations Command, Regional Energy Program

MCIPAC ENERGY & WATER STRATEGY



Marine Corps Installations Pacific Commanding General's Vision Statement

Ready, Resilient, Responsive



As Commanding General of Marine Corps Installations Pacific, I am committed to total force combat readiness and sustained power projection in the Indo-Asia-Pacific region. In order to bring to bear the full force of MARFORPAC's combat power, MCIPAC shall enable operating forces' supremacy in the region.

We will provide secure, uninterrupted *energy resources* and embrace *conservation principles*. Marines, Sailors, Civilian Marines and families – all must undertake this bold and noble challenge. Responsible use of energy will achieve the unified objective of serving strategic imperatives and national interests during peacetime operations, contingencies and war.

The Indo-Asia-Pacific region is complex and lethal. Natural disasters, such as typhoons, earthquakes, and tsunamis, strain our supply of energy and our demand for it. Our growing reliance on the uninterrupted flow of supply lines and fossil fuels puts lives at risk. Reducing energy dependence will strengthen our capabilities to execute and achieve our mission. From "Bases-to-Battlefields," we will prevail precisely because we embody a culture of self-sufficiency – an agile, fighting force trained to adapt to uncertainty and to win in austere environments.

The MCIPAC Energy & Water Strategy provides the framework for our installations to execute comprehensive energy conservation. The strategy promotes the sustainability of operating force combat readiness and the ability of the Marine Corps to maintain a forward-based presence and strategic posture for power projection throughout the Indo-Asia-Pacific.

MCIPAC shall ensure garrison quality of life support to our warfighters, execute Defense Policy Review Initiative (DPRI) and Aviation Campaign Plan-related actions to enable operating force combat readiness. Achieving our service goals of meeting federal conservation mandates is an essential element of MCIPAC support to the Marine Air Ground Task Force (MAGTF).

"Energy reform and the new energy economy are not just talking points. It's not a political game. It means lives of our troops. It means making our military better fighters. It means making our country more independent."

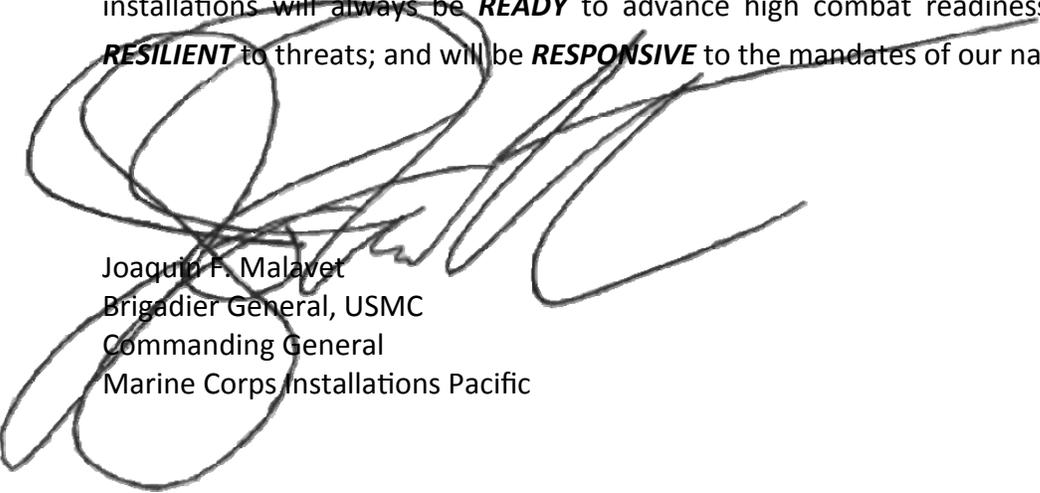
*- The Honorable Ray Mabus,,
Secretary of the Navy*



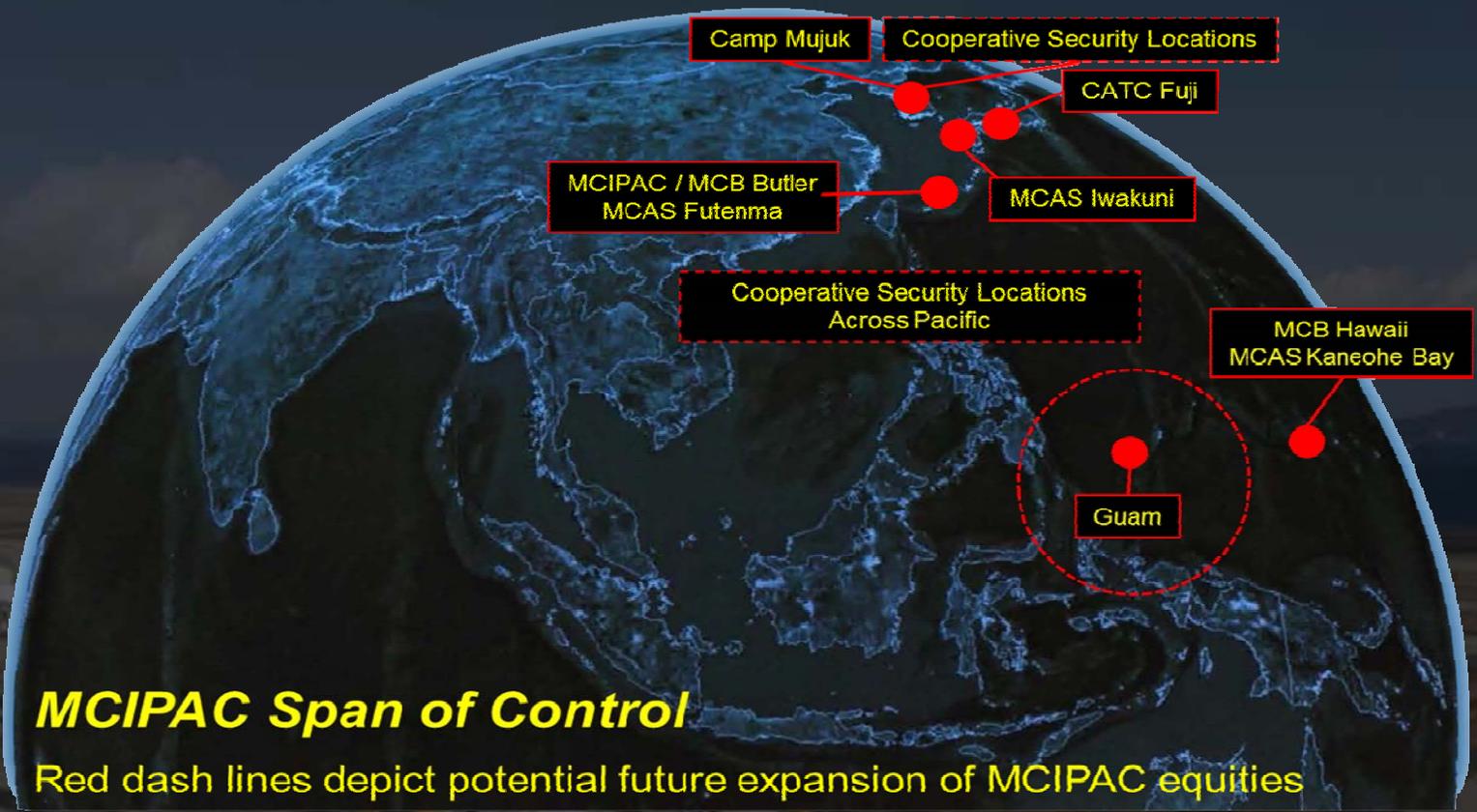
The effective execution of MCIPAC's mission of providing base and installation support to operational forces requires secure, uninterrupted sources of energy and water.

We must consider the unique operating environment of the Indo-Asia-Pacific and the necessity of working with our allies and partners. Energy insecurity and poverty add complexity to innovative project planning and execution. We will address these challenges in our Strategy, while recognizing the tremendous value of partnerships and the vital role they play in the support of our bases throughout the region.

Our vision remains valid. Energy wisdom is essential. Our energy-efficient and energy-effective installations will always be **READY** to advance high combat readiness and power projection; will be **RESILIENT** to threats; and will be **RESPONSIVE** to the mandates of our national interests.



Joaquin F. Malavet
Brigadier General, USMC
Commanding General
Marine Corps Installations Pacific



MCIPAC Span of Control

Red dash lines depict potential future expansion of MCIPAC equities



MCIPAC Regional Vision 203X

Our Vision

We build, maintain, sustain and advance modern platforms - Air Stations, Bases, Camps, Cooperative Security Locations, and Installations - with cutting-edge technologies and functional designs that are energy efficient and operationally aligned, at the right geographic locations, to serve strategic imperatives and national interests during peacetime operations, contingencies and war to guarantee security in the Indo-Asia-Pacific. We enable the high combat readiness of Marine Corps, Joint and Combined forces and enable non-kinetic and kinetic power projection with speed, assurance and reliability for new forms of warfare to achieve victory on modern, high-tech and lethal battlefields. Our Master Plans for known and future platforms represent our essential blueprints for strategic wins.

Our Mission

Marine Corps Installations Pacific strengthens and enables non-kinetic and kinetic power projection in the Indo-Asia-Pacific with our allies and partners to protect and defend the territory of the United States, its people, and its interests. Our Air Stations, Bases, Camps, Cooperative Security Locations and Installations arrayed strategically across the region with smart, purposeful and industrial designs, clearly set theater-strategic conditions for partnered presence, intelligence, command and control, logistics, maneuver/mobility, fires and force protection. Our power projection platforms - linked functionally with optimized designs - represent the requisite and foundational support to the capability, capacity and power of Marine Corps Forces Pacific to meet the mandates of PACOM Plans.

Specifically, we provide world-class enabling support to Marine Corps, Joint and Combined forces for cross-functional training and combat readiness. Our platforms - visible and concealed - enable the application of new forms of warfare. We enable the strategic launch and recovery of civilian and military capabilities to save lives and to preserve regional peace, stability and security. Our forward-based platforms also ensure garrison quality of life support to our Marines, Sailors, civilians, partners and their families to strengthen operating force combat readiness.

**To achieve our
vision, we Learn,
Adapt, and
Anticipate**



Our Guiding Principles

- MILITARY READINESS:** We remain the first essential enabling element for advancing requisite states of effective training and high combat readiness to achieve national interests.
- PARTNERSHIPS:** We strengthen regional platforms with our allies and partners.
- PRESENCE:** We anticipate, adapt, and advance our regional presence with strategic and operational designs.
- FORCE PROJECTION:** We build, maintain, sustain and advance our platform capacities to enable non-kinetic and kinetic power projection capabilities across the Indo-Asia-Pacific.
- UNITY OF EFFORT:** We contribute to Marine Corps, whole-of-government and partnered approaches to solve complex challenges collaboratively for mutual benefit, and to serve mutual interests.
- STRATEGIC COMMUNICATION:** We clearly convey our intent and resolve by ensuring our words, our actions and our resources are aligned with our essential regional vision and mission.

**Our Readiness, Resiliency
and Responsiveness are
the competitive
advantages that
guarantee Victory**

Our Lines of Operation

We will drive our tactics, operations and strategies in accordance with the guidance, tenets and mandates of our Commandants' Planning Guidance, the Marine Corps Facilities Investment Campaign Plans, the Marine Corps Installations and Logistics Roadmaps, and the MCICOM Vision 203X.

We will:

- Provide ready, resilient, responsive forward-based platforms for training and power projection.
- Strengthen and enhance our strategic relationships with current and future allies and partners.
- Ensure our platforms remain viable across the warfighting functions for strategic power projection.
- Take great care of our Marines, Sailors, civilians and their families – safeguard them and secure vital assets.
- Optimize and maximize the efficient and effective use of our resources – most essentially our workforce.
- Lead energy innovation and introduce scientific advances into our platform designs to eliminate threats, realize opportunities and serve the evolving strategic imperatives in the complex Indo-Asia-Pacific region.





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1. Current Situation

An unintended consequence of the rapid modernization of the United States Marine Corps over the past two decades has been an increased demand for fuel, electricity, and water to maintain and employ new warfighting technologies and weapons systems. The operational environment in the Indo-Asia-Pacific region shares an important characteristic: enduring competition for energy resources.

Combat readiness demands an acute awareness and diligent use of energy management programs, from strategic planning to individual tactical procedures.

Forward-based Marine Corps forces face unique and often difficult constraints not encountered in Continental United States (CONUS). Currently, Marine Corps Installations Pacific (MCIPAC) incurs the highest energy and water costs within Marine Corps Installations Command (MCICOM). U.S. Marine Corps bases in Japan and Korea must collaborate closely with host-nation governments to continue to build, maintain, and operate. Hawaii presents its own set of challenges due to its geographic separation.

The cost to project force - unique to the demands of the Indo-Asia-Pacific region - requires a substantial investment in conservation programs and efficient technologies – a strategic imperative. Our continued success as a lean “fight tonight” force demands that we implement these programs from ship to shore. Each Marine armed with an energy conservation ethos can exploit opportunities to achieve national defense objectives.

MCIPAC installations are undergoing major realignment with significant expansion at MCAS

Iwakuni and MCB Hawaii, consolidation and relocation of installations’ assets planned for Okinawa, and a proposed transfer of significant forces and assets to Guam.

The uncertainty of timelines for executing the DPRI process poses a challenge for valuation of potential energy investments and must be addressed through strategic prioritization of projects. However, DPRI also provides opportunities to incorporate energy efficiency and renewable elements into new construction and major renovations.

As utility cost-sharing by Government of Japan (GOJ) may decrease, the onus on U.S. taxpayers may subsequently increase. It is critical that we offset this impact by investing in energy-efficient technologies.

Given that GOJ provides the majority of funding for projects in Japan, we must team with our host nation counterparts to develop energy efficient designs to meet both U.S. and Japanese energy goals.

Guam presents a unique opportunity to get it right. Visionary master planning is the cornerstone for efficiency and expeditionary utility. We must establish the new standard for Marine Corps installations in Guam.

MCIPAC will benefit from the experience and cooperation of other regional commands by leveraging third-party financing. Third-party funding options such as Energy Savings Performance Contracts (ESPCs), Utility Energy Services Contracts (UESCs), and Power Purchase Agreements (PPAs) provide non-government resources for energy efficiency and renewable energy projects.

Future cooperation with Naval Facilities Engineering Command Expeditionary Warfare Center (NAVFAC EXWC) promises to open opportunities for MCIPAC by providing access to third-party contract vehicles. We must involve the Energy Service Companies (ESCO) and private energy investors in our efforts.

MCIPAC installations on foreign soil must continue to dialogue with host-nation governments and local utilities to explore and seize all possible opportunities and ensure collaboration on future energy projects.

2. Desired End State

MCIPAC will develop a tailored regional approach across its energy Lines of Operation (LoOs), incorporating the guiding principles that highlight the energy and water tenets specified in the USMC Installations Energy Strategy. They are:

- **Ethos:** Influencing energy behavior throughout MCIPAC
- **Information:** Acquiring energy information systems that enhance management's decision making
- **Efficiency:** Investing in technologies that yield the greatest energy savings and return on investment
- **Renewable Energy and Alternative Fuel:** Access untapped or underutilized energy sources such as solar, wind, geothermal, etc.
- **Energy Security:** Ensuring uninterrupted access to energy at all MCIPAC installations through utilities infrastructure protection and energy resilience

MCIPAC installations are the most dynamic in MCICOM, with multiple on-going DPRI

construction efforts, populations that fluctuate with Unit Deployment Program cycles, and changing mission requirements placed on the Marine Corps. As a result, federally-mandated energy and water consumption baselines will be considered within the context of this unique operational environment. While energy and water intensity have changed slightly over the years, installation footprints have and continue to change significantly. We will measure ourselves by the following goals. (These will be updated as required when energy and water consumption baselines are revised.)

1. Energy Efficiency: MCIPAC will contribute to the Marine Corps goal of achieving energy use intensity reduction of 25 percent by 2025, from a 2015 baseline.

2. Renewable Energy: By 2025, MCIPAC will aim to produce or procure 25 percent of the energy it uses through renewable energy sources.

3. Water Efficiency: By 2025, MCIPAC will reduce overall water consumption by 36 percent from a 2007 baseline, focusing on installations located in Japan where water costs are the highest.

4. Net Zero: MCIPAC will pursue projects, technologies, new construction, and other pathways to achieve Net Zero energy and/or water at its facilities.

3. Roadmap to Energy Sustainability

In pursuing the aforementioned LoOs, MCIPAC will focus investments in energy efficiency, renewables, and energy infrastructure that will enhance the energy resilience of its installations and lower energy costs.



We will improve our governance with both technical and resource support for comprehensive energy planning, target investments to installations that have lagged on energy efficiency projects, and explore ways to improve access to suitable contracting vehicles.

MCIPAC will improve project planning and execution support with a greater region-wide focus on renewables to accelerate their integration and employment. This will enable the region to take advantage of the exceptional opportunities for solar energy at lower latitudes such as Okinawa where the high price of electricity in the region makes renewables the most cost-effective.

The following sections discuss each LoO in greater detail and identifies and assigns planning and execution responsibilities within the command.

I. Ethos

MCIPAC supports the Commandant of the Marine Corps' (CMC) goal of developing a shared energy ethos, engaging collective as well as individual awareness of energy conservation, to achieve best practices.

MARADMIN 114/15, released March 2015, announced the beginning of the Energy Ethos Campaign and Unit Energy Manager (UEM) program. MCIPAC followed this with the April 2015 Letter of Instruction for the Appointment and Training of Unit Energy Managers. Currently, over 120 UEMs throughout MCIPAC work to identify opportunities to increase energy efficiency and promote a culture of energy awareness.

Current initiatives:

MCB Hawaii, a pioneer in energy conservation, established a tenant engagement program relying

on Unit Energy Managers (UEM) to carry out awareness efforts and best practices for each unit.

Actions:

- Ensure command awareness and support of the Energy Ethos Behavior Change Plan.
- Utilize Public Affairs Offices in our Energy Ethos Campaign.
- Explore all avenues of assistance, e.g. MCCS.
- Support the UEM program by coordinating with operational forces to mitigate their negative impact.
- Engage with MARFORPAC throughout the design and planning of future projects to ensure energy efficiency and renewable energy goals are nested, e.g. MCB Guam.
- Commands will implement local incentive programs that recognize unit energy saving efforts and reward individual energy conserving behavior.
- Define energy and water surge requirements in the Indo-Asia-Pacific region and execute time-phased force deployment in OPLAN/CONPLAN.

II. Energy Information

Energy and water information will:

- Provide leaders with actionable information to manage and drive conservation in behavioral and operational decision making
- Provide useful feedback for shaping facility maintenance that can cut costs without negatively impacting tenants.

Effective information management demands ease-of-access to accurate, real-time energy data. The

data must be interpreted in a relevant, concise and precise manner, and then rapidly disseminated to the end-user. This can be achieved by linking advanced meters and other industrial control systems (ICS) into integrated frameworks for remote monitoring and load control.

Current initiatives:

MCB Hawaii is planning the installation of a remote, advanced water/energy metering system for load management on a limited scale of 65 buildings.

MCAS Iwakuni installed centralized monitoring and control systems for heating/cooling in 48 buildings.

These systems will provide future energy savings by diagnosing problems, anticipating maintenance needs, and enabling optimization of energy systems.

Actions:

- Complete the deployment of smart meters in new facilities and retrofit existing facilities to meet requirements of DOD Utilities Meter Policy and MCICOM's Advanced Metering Infrastructure Best Practices.
- Construction and renovations carried out on foreign soil will meet or exceed metering requirements through the deliberate actions of the host nation and/or by the installation.
- Achieve and maintain ICS accreditation throughout MCIPAC installations.
- Develop metrics for analysis that will guide master plan development and provide a better approach for energy and water monitoring. Consider **ALL** available private/public partnerships for best value and greatest return on investment.

- Provide tenant unit leaders with information that can influence behavior change. Employ UEMs to establish building consumption profiles and empower UEMs to seize reduction opportunities with unit behavior modification.

III. Energy Efficiency

"Unleash us from the tether of fuel." General James Mattis, 2006.

MCIPAC installations face the highest and fastest-rising energy costs among all Marine Corps installations. This upward trend underscores the importance of reducing our exposure to the volatility of energy costs, and the need for us to take immediate action and protect our Marines from unnecessary risks.

Our objectives are twofold:

- Establishment of a formalized structure of energy governance that delineates the roles/responsibilities of staff and provides clear communication pathways that lead to execution of energy and water efficiency programs.
- Required stakeholder involvement in facility planning and proactive communication of requirements to USFJ, NAVFAC, U.S. Army Corps of Engineers (USACE), and all involved organizations.

Current initiatives:

MCB Hawaii is the model energy efficiency leader – with decades of investments in energy conservation measures (ECM) resulting in installation energy use intensity that ranks in the bottom third of the Marine Corps. While the base has addressed the opportunities with the largest savings and marginal cost avoidance, a strong audit and retro-

commissioning program will produce further no-cost/low-cost improvements.

Combined Arms Training Center (CATC) Camp Fuji has identified high-energy consuming buildings with aging kerosene and diesel-fired systems as targets for potential efficiency measures.

An Energy Investment Program (EIP)-funded project at MCAS Iwakuni replaced steam absorption chillers with air-to-air heat pumps on five BEQ facilities that housed more than 5,000 personnel. The project saves more than \$250,000 each year.

Installations in Japan present the greatest opportunity for investment within MCIPAC. All installations must leverage DOD funding channels such as the EIP and Energy Conservation Investment Program. The unique ability to pursue GOJ funding from the Japan Facilities Improvement Program provides an additional source of revenue for mutual benefit.

Actions:

- Coordinate with U.S. Forces Korea (USFK) to investigate opportunities to pursue Republic of Korea (ROK)-funded construction and logistics cost-sharing for energy efficiency projects at existing facilities.
- Considering that change in the Indo-Asia-Pacific region is inevitable, potential obstacles to acquisition process and funding *must* be elevated and handled at the appropriate command level. This establishes our ability to provide first-rate continuity of operations planning, diligent attention to funding timelines, and ensures funding *is not* jeopardized.
- Incorporate energy efficiency into GOJ-funded projects, such as DPRI building design and

construction in Japan and Guam. We will integrate U.S. design standards that optimize life cycle costs.

- Investigate alternative financing mechanisms, such as ESPCs, at installations to accelerate the deployment of ECMs, and coordinate with NAVFAC Far East, NAVFAC Pacific, USACE, and entities that support MCIPAC energy project execution.

IV. Renewable/Alternative Energy

Due to the vulnerabilities inherent in dependence upon extended supply lines of fuel and water, installation-generated energy provides a sound advantage. Renewable energy has the potential to enhance mission success.

Each MCIPAC installation has different administrative, economic, and geographic characteristics which define the feasibility of prospective energy opportunities. Overall, solar thermal and photovoltaic (PV) technologies are the most compatible with the region's climate as well as the most cost-effective relative to other renewable solutions.

Current Initiatives:

Solar-powered traffic signals installed at MCB Butler not only reduce drain on energy resources, but continue to operate even when electricity grids go down.

Solar thermal has been successfully deployed on BEQs at MCB Butler and is included in DPRI-funded housing designs at MCAS Iwakuni. MCB Hawaii has an aggressive solar PV and solar thermal program, utilizing existing rooftops and carports.

MCB Hawaii continues to host demonstration projects to advance pre-commercial renewable

technologies, such as the first U.S. ocean wave energy project to feed into a grid. The results may strengthen future capabilities for harnessing renewables to provide energy security through onsite power generation that relies less on imported fuels.

Actions:

- Incorporate energy goals into DPRI processes to help identify and support negotiations for renewable solutions that enhance the installations' resilience to energy price risks, as well as promote energy security within both the installation and local community.
- Ensure renewable technologies are incorporated into all new construction projects and pursue opportunities to retrofit existing facilities.
- Support and facilitate dialogue with the GOJ (as a joint utility customer and bill-payer) for potential collaboration on large-scale renewable energy projects.
- Leverage either appropriated funds or third-party funding to finance large-scale renewable energy projects.
- Support feasibility studies to assess the technical and economic viability of renewable technologies at current and future installations.

V. Energy Security

Energy Security is essential to MCIPAC installations. The majority of energy comes from oil imported through vulnerable supply chains and received at isolated island locations. Our dependence on external fuel pipelines and commercial grid electricity is an attractive critical vulnerability in

mission-critical support operations and base defense scenarios. The potential impact of natural disasters on energy security in the Indo-Asia-Pacific region was exemplified by the 2011 Japanese earthquake and tsunami which resulted in the shut-down of nuclear energy generation in the country.

In light of such vulnerabilities, installations have leveraged robust continuity of operations with fixed and mobile backup power generation and associated fuel reserves to serve mission-critical needs. In recent years, the importance of identifying mission critical loads and opportunities to reduce demand has intensified for locations in mainland Japan.

Current Initiatives:

CATC Camp Fuji instituted ECMs through its load-sharing program to meet mandatory summer demand reduction requirements for customers of the Tokyo Electric Power Company and reduce the risk of blackouts.

The build-up in Guam entails assessment of new generation capacity. The opportunity exists to build energy resilience directly into new facilities through minimized energy footprints, careful planning for efficient back-up power generation, and the use of smart grids to maximize the potential of renewables.

The Smart Power Infrastructure Demonstration for Energy Reliability (SPIDER) project at MCB Hawaii integrates smart metering and renewable energy sources with distributed energy storage into an isolatable micro-grid. The lessons learned will be used to investigate microgrid potential and energy security that is truly less reliant on outside sources in other MCIPAC locations.

Actions:

- Improve dialogue with host nations as a joint utility customer for collaboration on energy resilience projects.
- Coordinate with MARFORPAC DPRI, NAVFAC Far East and Pacific, USACE, and others to ensure that energy security considerations are incorporated into plans and designs for facilities in both Guam and Japan.
- Installation Energy Managers and Critical Infrastructure Protection Officers will collaborate to conduct energy security assessments that shape planning of future energy programs.
- Improve continuity of operation plans with the specific focus of identifying mission-critical and essential loads. Source and maintain sufficient back-up generation capabilities. Ensure key stakeholders are properly trained to execute mission at alternate locations.



Marine Corps Installations Command, Regional Energy Program
MCIPAC Energy & Water Strategy

