FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR

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Building Resilience at Marine Corps Base Camp Lejeune

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Hosted by:

Federal Energy Management Program

Edison Electric Institute
Why the Marine Corps Pursues UESCs

• Long-term relationship between installation and utility
  – Knowledge of critical infrastructure and planned future growth
  – Understands how new projects can impact the installations (e.g. tariff rates, departing loads, stand-by charges)
  – Communicates/shares what Public Utilities Commission (PUC) is promoting (e.g., storage and renewable energy incentives)

• Understands the health of our infrastructure
  – Awareness of aging distribution systems (electric, gas, steam, water)
  – Able to identify single points of failure, overloaded circuits, sub-station and switching station degradation

• High speed of execution
  – UESCs are a faster process than traditional government programming or other 3rd party financing options
How the Marine Corps Uses UESCs

• Comprehensive approach that looks at the **total bundle**, not just single Energy Conservation Measures (ECMs)

• By utilizing savings from all ECMs, UESCs address both the routine and the difficult:
  – Standard ECMs with <20 year Simple Paybacks: HVAC, boilers, controls, water, lighting, etc.
  – Challenging ECMs with longer paybacks: renewable energy, storage, etc.
  – Improvements w/ difficult to quantify paybacks: microgrids, utility upgrades, etc.

• UESCs solve several contract / financial challenges:
  – Ability to combine funding sources
  – Option to pay off of the balance early
  – Can make changes to the Scope of Work without having to re-advertise
Marine Corps Base Camp Lejeune

- 156,000 acres/244 sq. miles (roughly the size of Chicago)
- 50,000 active duty
- Electrical distribution
  - 5 substations
  - 400 miles of distribution
- Water and wastewater treatment
  - 4 water treatment plants
  - ~150 lift stations
  - ~80 wells
  - wastewater treatment plant
- >2,000 facilities
Duke Energy Service Territory
Main Resiliency Requirements

1. Water and Wastewater SCADA
2. Building Controls
3. High Voltage Upgrades and SCADA
Energy Conservation Measures (ECMs):

- Modernization of Water/Wastewater SCADA system, replace & upgrade mixing & UV systems
- Conversion of Lift Stations to Gravity Flow
- Electrical Substation Upgrades / Replacement
- EMCS system - HVAC and Boilers
- Airfield Lighting conversion / upgrades
- Utility Metering/AMR Enhancements
- Building Automation System (BMS) Integration for HVAC and Utility-Grade Boiler, Optimization of HVAC Controls
- Photovoltaic Optimization
- LED Lighting Conversions
- More
Lessons Learned

1. Partnership:
   • Think holistically and long-term
   • Work with utility to develop needs into projects

2. Communication:
   • Constant communication is key
     • Kick-off charrette, weekly technical meetings, biweekly management meetings
     • Prioritize resilience needs

3. Acquisition Strategy:
   • Leverage existing funding to buy-down
   • Bundle, bundle, bundle for project maximization!

4. Adaptability:
   • Previous decentralization project