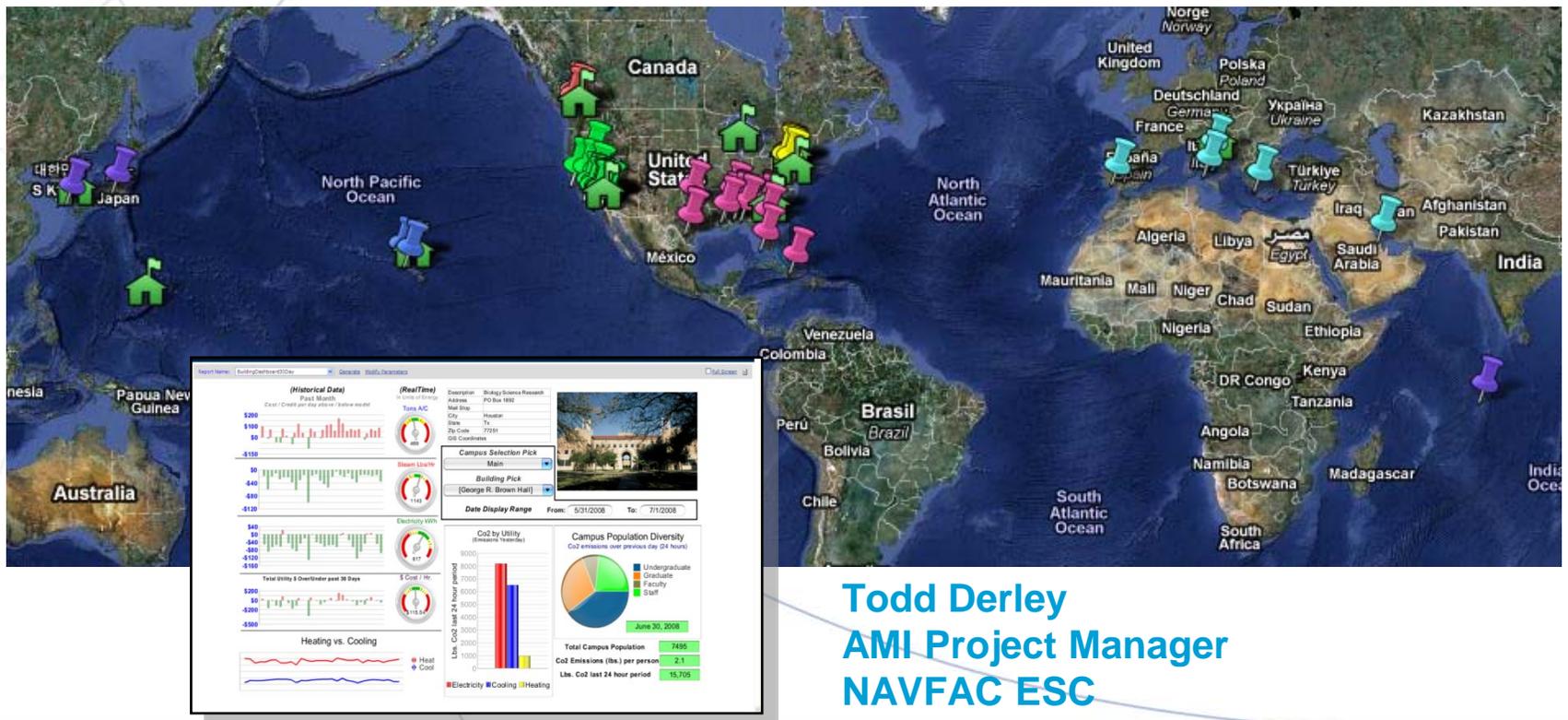


## ADVANCED METERING INFRASTRUCTURE (AMI) PROGRAM



**Todd Derley**  
**AMI Project Manager**  
**NAVFAC ESC**

# Brief Outline



- AMI Overview
  - History / strategy
  - Core functional components
  - Nuts and bolts
- Where we are now and where we are going...
  - USMC
- CIRCUITs
  - MDM
- Challenges

# AMI Program overview



- **Program drivers:**
  - Congressional mandates EPACT 05, EISA 07
- **Brief history**
  - Program initial efforts began with DoD metering plan executed in 2006 by NAVFAC
  - Leveraged A/E contract to conduct global surveys, generate FRS, provide a preliminary design for pilot project at NBVC, etc.
  - Developed SOW and awarded a 5 year, \$250M MACC to Square D, Weston Solutions, and American Systems.
- **Funding**
  - **Program**
    - Was initially funded by CNIC for program management startup efforts (1 FTE, contract support, surveys, and NBVC design)
    - Current effort includes reimbursable funds
  - **Projects**
    - Initially funded by AR&RA and CNIC
    - Additional funding provided by region/site for post award support
- **Current Projects:**
  - NBVC, Northwest, Southwest, Southeast, Naval District Washington, and PMRF (Hawaii)
  - Goal is to capture 95% of consumption



**Department of Navy's AMI Program is on track/on schedule to deliver energy and utilities benefits in compliance with regulatory requirements**

# Installation strategy



## Strategy

- Deployment
- Operation
- Evolution

## Requirements to deliver benefits

- Meter Choice
- Network Design (collect data remotely)
- Data Acquisition Server (DAS/MDM)

## Benefits desired

- Accounting / Allocations
- Energy Consumption
- Energy / Utility Management

Execution will deliver / enable energy & utility benefits

# Core functional requirements



- **Meters**

- Multiple communication protocols and are IP addressable
- Monitors power quality and stores data (mechanical as well)
- Very Accurate (0.2% Class accuracy)

- **Communication**

- Two way communication via a wired and/or wireless solution
- Meets enhanced security requirements (IA)

- **Data Acquisition Server (DAS)**

- Retrieves 15 minute data at least every 4 hours (electrical and mechanical)
- Management of alarms, outages, unusual demand, meter failures, etc
- Provides tools for energy / system management



*Regional / Site to Global*



- **Meter Data Management (MDM)**

- Receives and stores data from DAS's and other non-AMI meter resources
- Provides enterprise energy analysis
- Information available at your desk top.

# AMI Projects



**Nuts and bolts...**  
**(Meters, Network, DAS)**

# ELECTRIC METERS TO BE USED



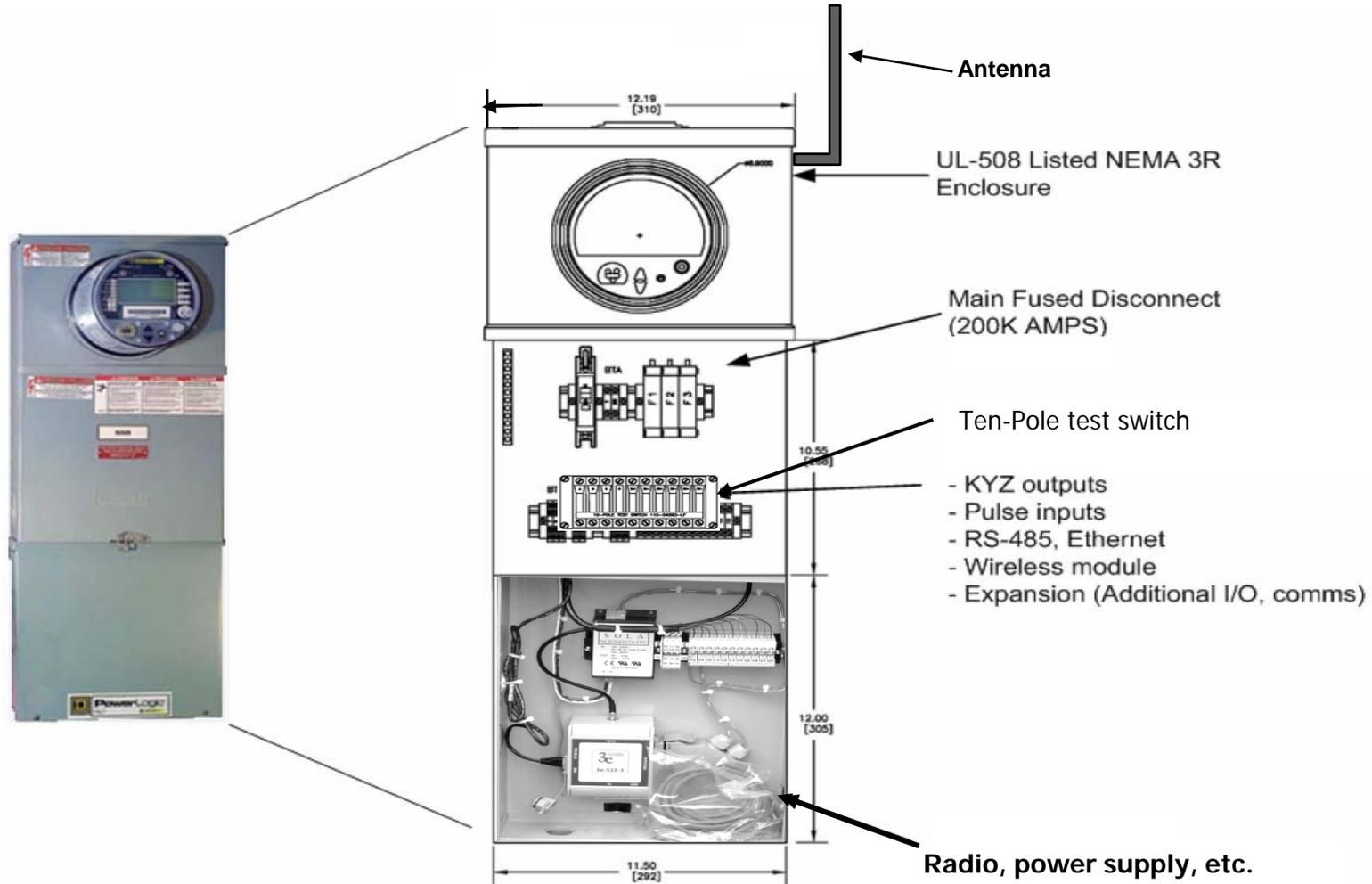
**NBVC, NW, SW, SE, PMRF:**  
PowerLogic (Schneider) ION 8600  
Offered by: Square D and American  
Systems



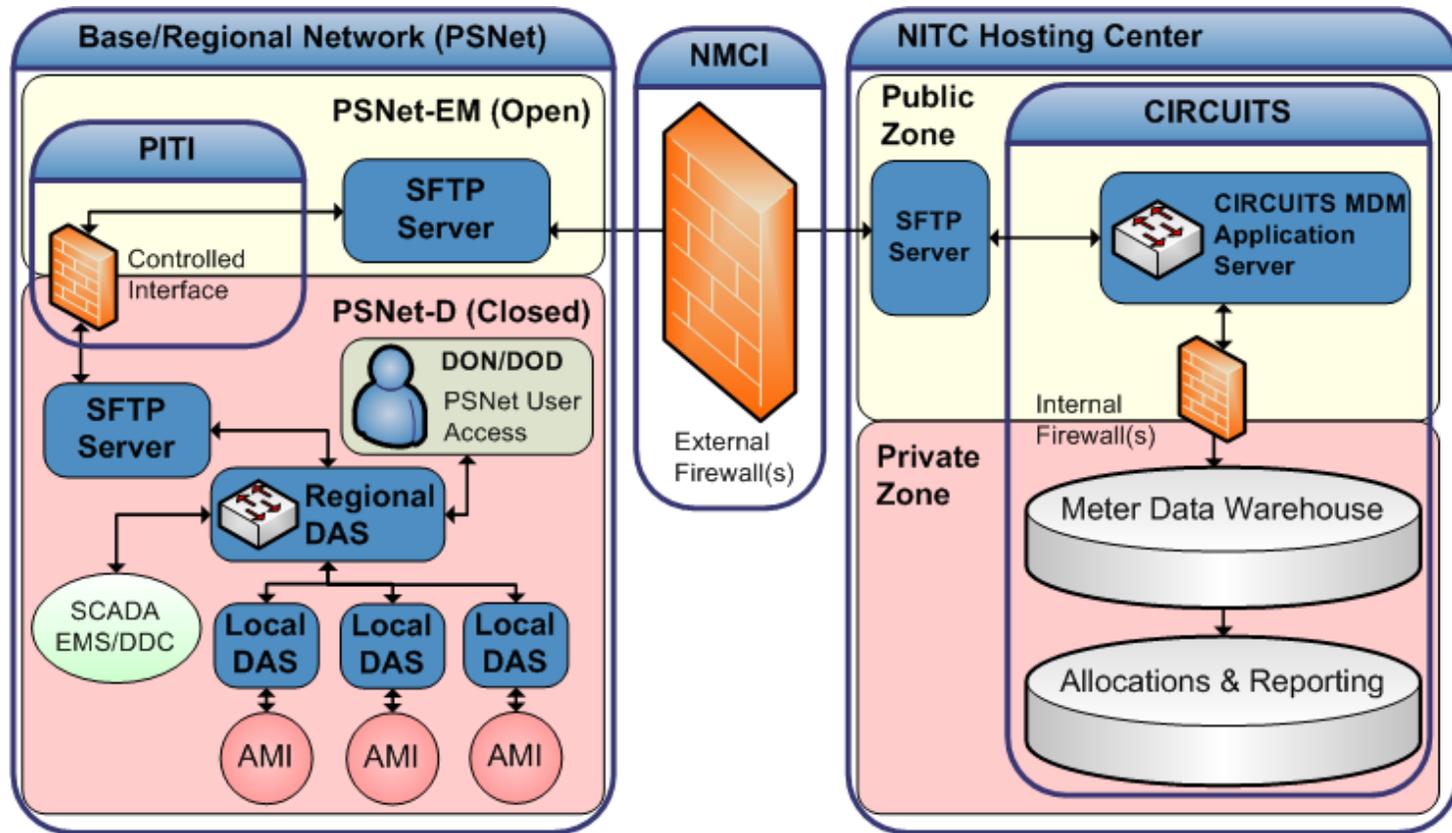
**Naval District Washington:**  
Electro-Industries Nexus 1272  
Offered by: Weston Solutions

Provides LP data [consumption and instantaneous status], provides event/alarm logs, security logs, 0.2 Class Accuracy, IP addressable, three modes of registers, pulse output/input capability, passed ANSI C12 tests, support Ethernet and other protocols

# Main components of electric meter installation

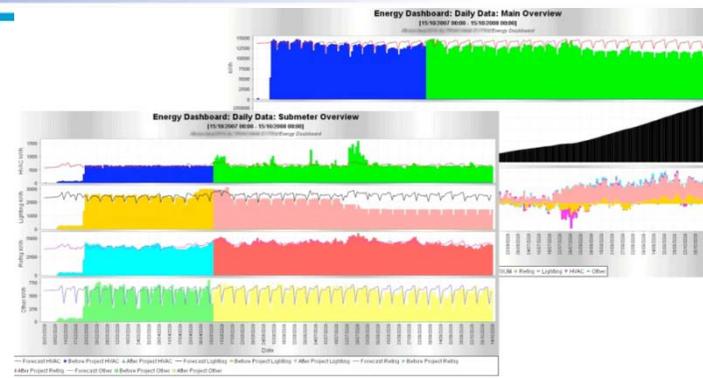
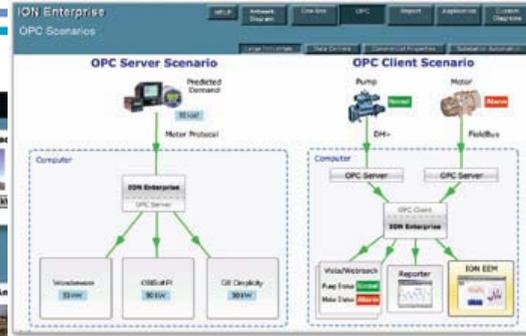


# Integration: PSNet (Transport Method)



# DATA ACQUISITION SYSTEMS

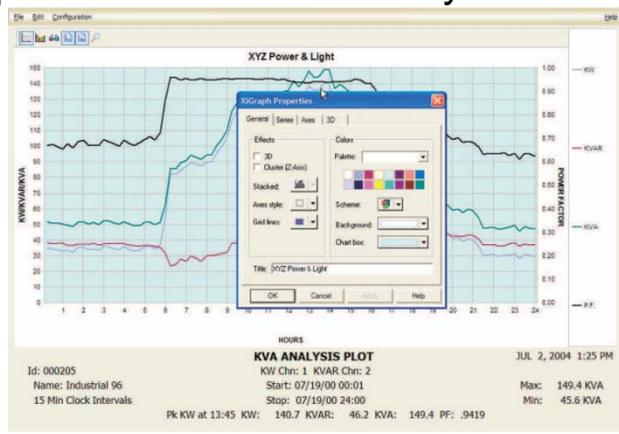
Two way communication with meters, data analysis



**NBVC, SW, SE, PMRF:**  
Schneider ION Enterprise (WinPM.Net)  
Offered by: Square D and American Systems

**Naval District Washington:**  
EnergyICT EI-Server  
Offered by: Weston Solutions

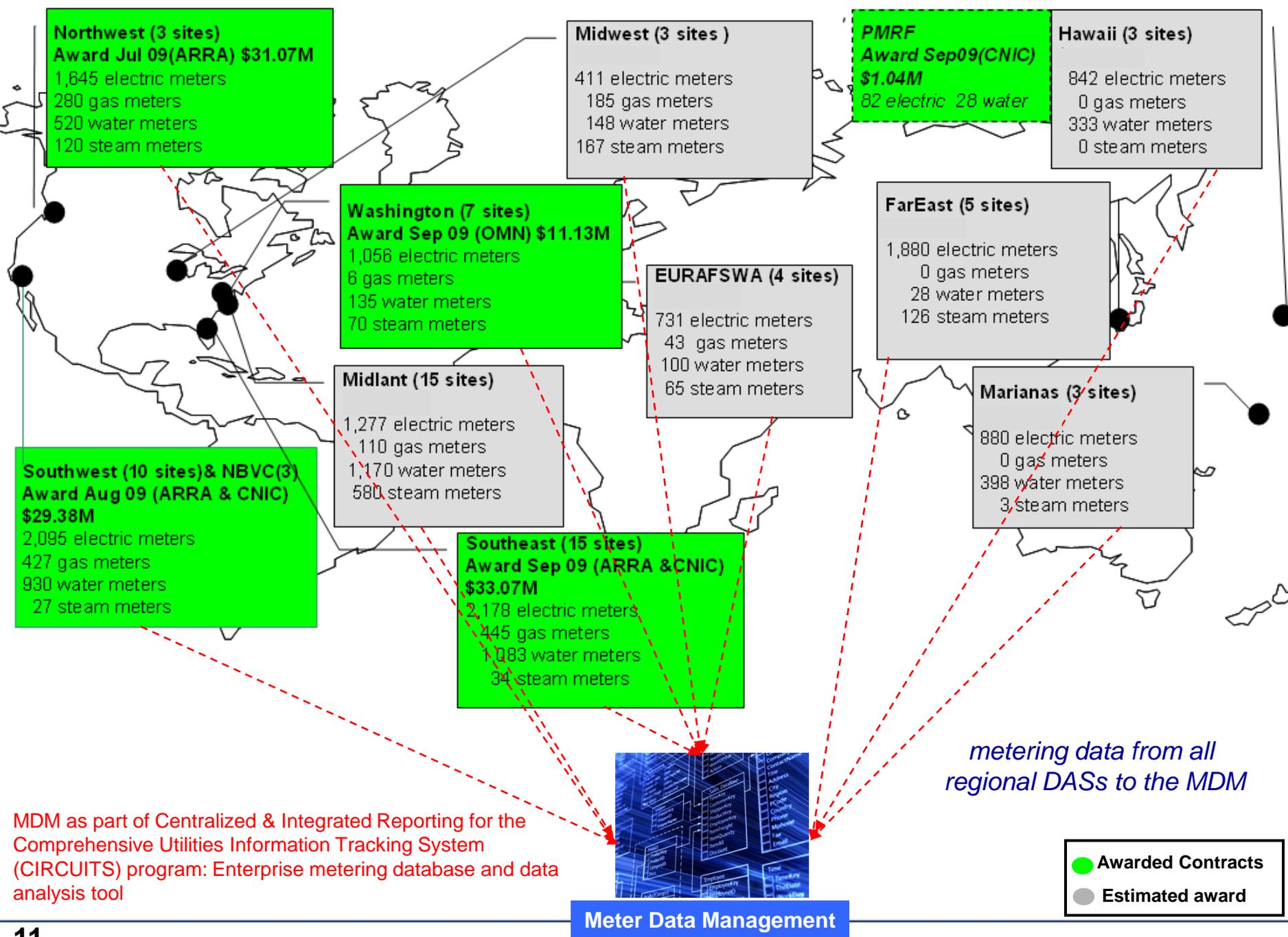
**Northwest:**  
Existing Itron  
MV90-xi.  
Considering ION Enterprise



- Data Acquisition Systems meet pre-determined req'ts**
- Two-way communication with electric meters: read meters, program main parameters
  - Scheduled for automated meter readings, capable to initiate on-demand inquiries
  - Capable of data analysis/reporting such as consumption trending, validation, estimation
  - Store collected data for at least 13 months
  - Provide output data in designated ASCII format to report to MDM
  - Local DASs report data to Regional DASs in operator selectable interval

**Where we are now...**

**Where we are going**

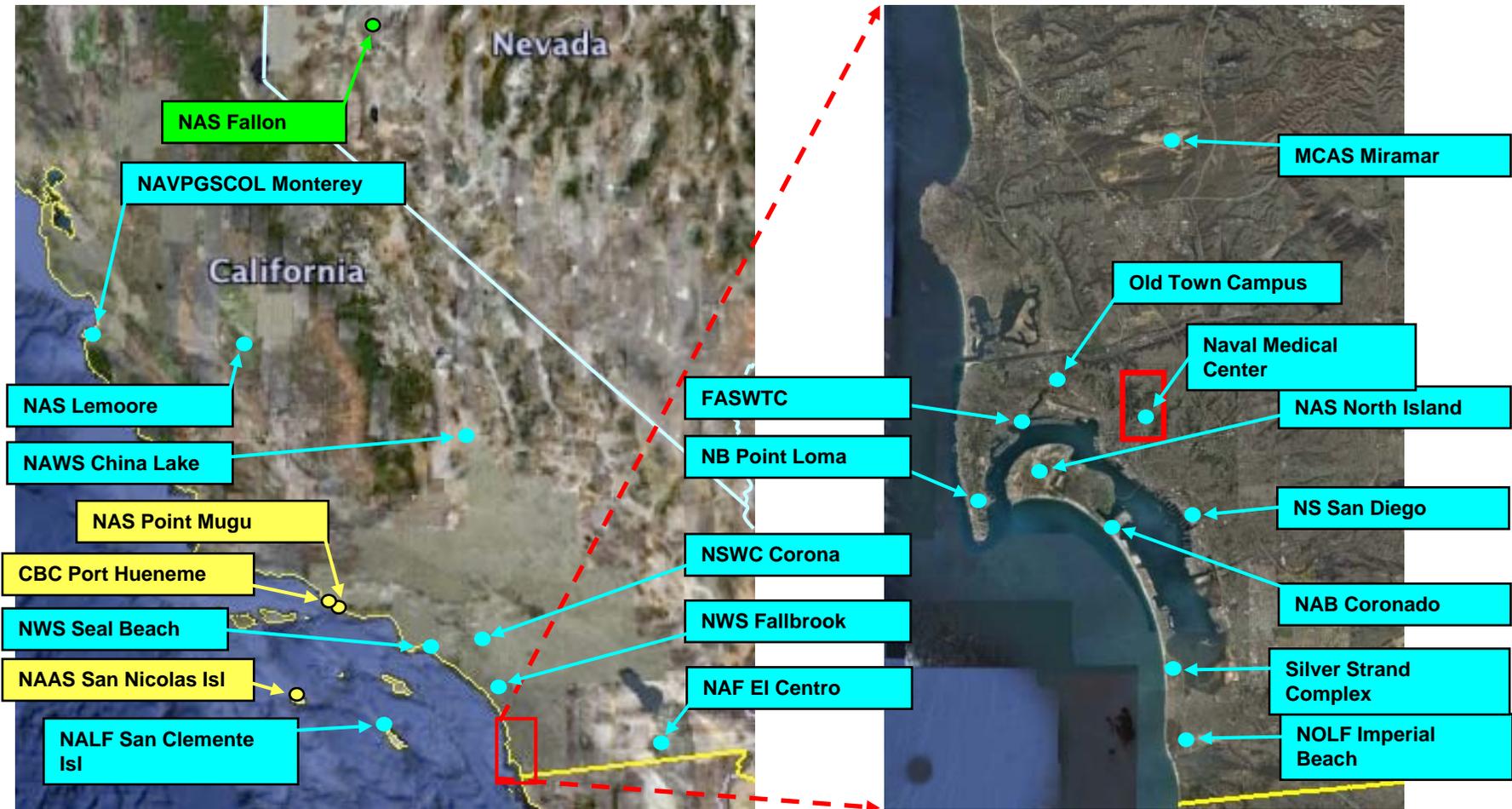


# AMI at Navy Southwest region

Awarded 21 Aug 09 to American Systems for \$23.55M



**Awarded: 1787 electric, 378 gas, 899 water, and 15 steam meters**

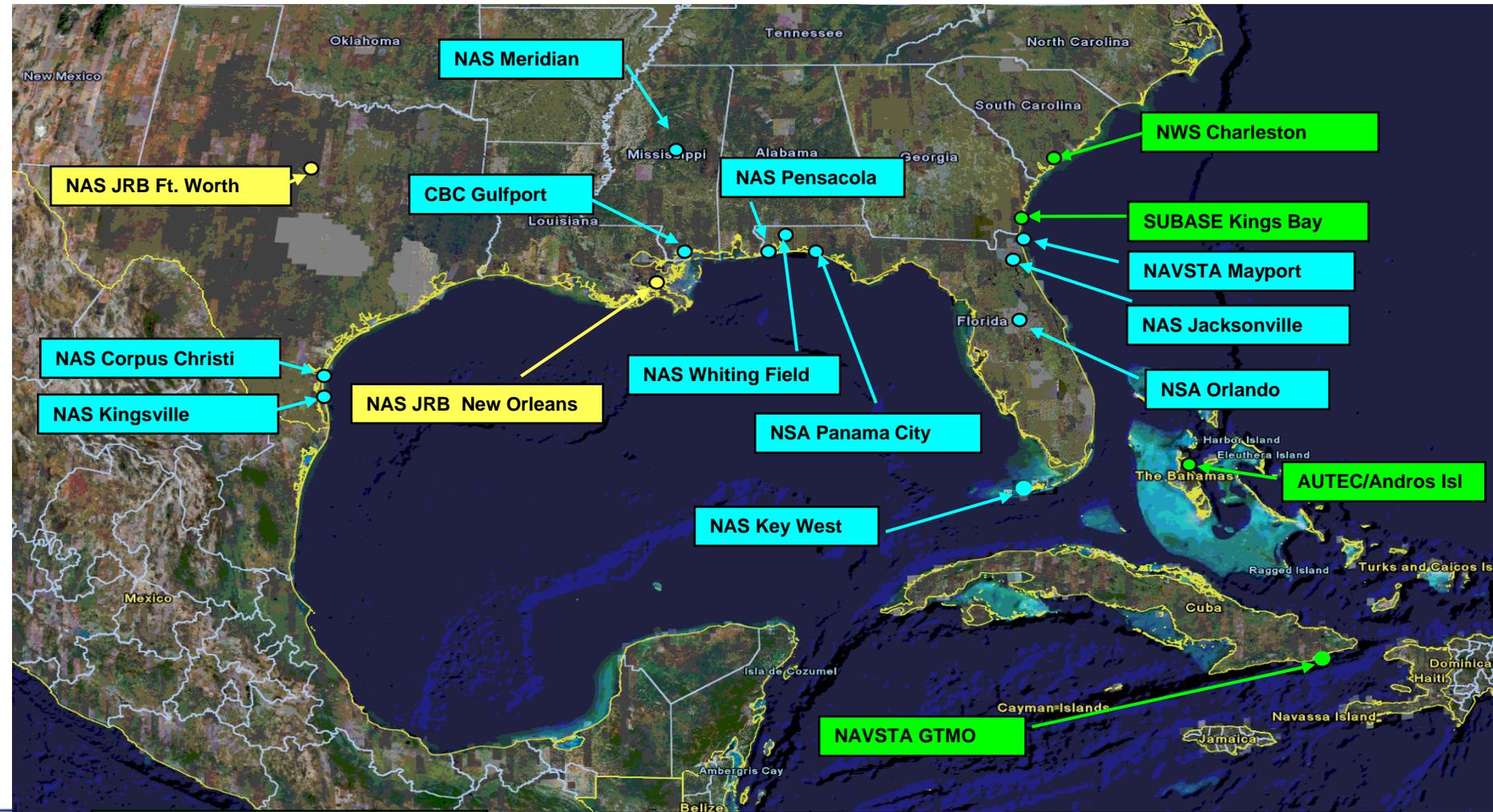


# AMI at Navy Southeast region

Awarded 15 Sep 09 to Square D for \$32.25M



**Awarded: 2123 electric, 339 gas, 716 water, and 23 steam meters**



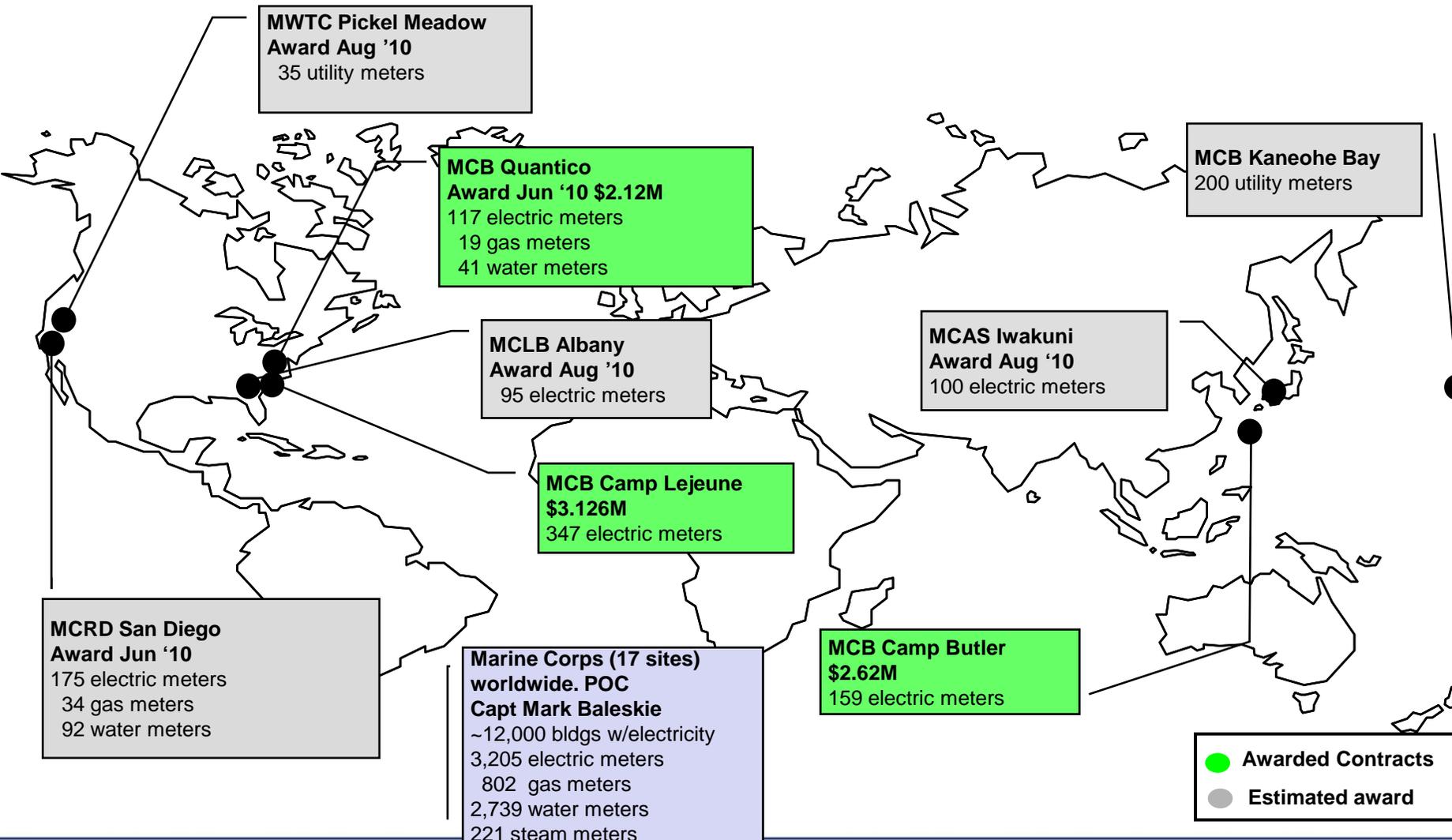
## USMC

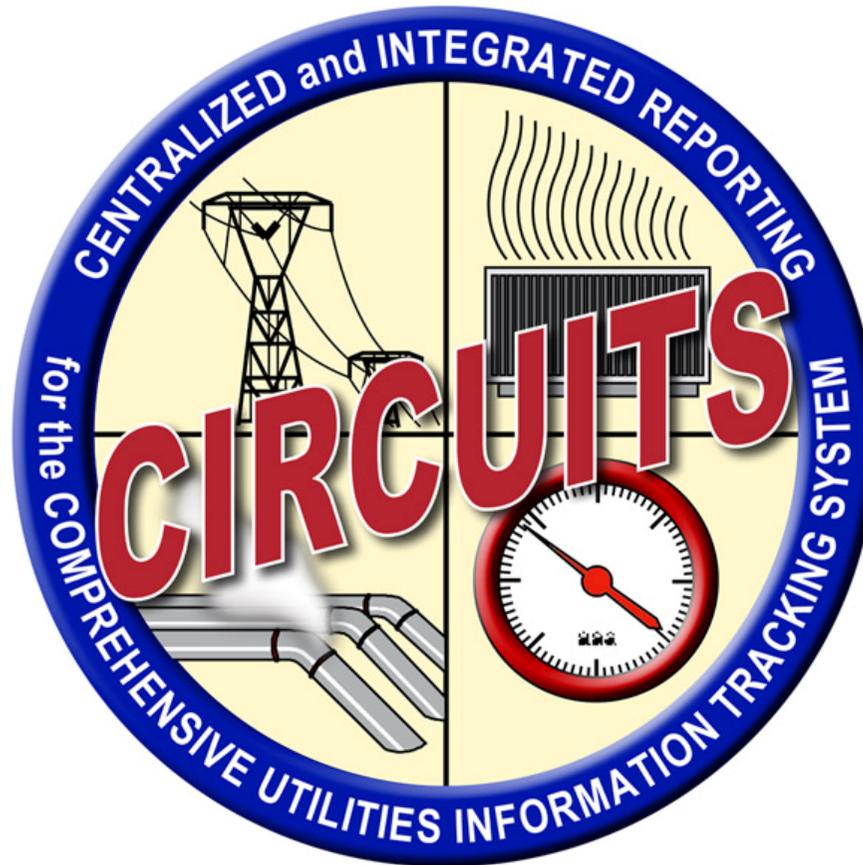
# USMC Support



- **NAVFAC ESC is continuing to work with the Marine Corps to identify where AMI requirements can be met utilizing our MACC & support services.**
- **Currently supporting:**
  - MCB Quantico
  - MCLB Albany
  - MCAS Iwakuni
  - MWTC Pickel Meadow
- **Future**
  - Potential locations include MCB Pendleton Air Station, MCB Camp Fuji, and MCB Kaneohe Bay
- **Two USMC bases leveraging our MACC autonomously**
  - MCB Butler (Okinawa) via Square D
  - MCB Camp Lejeune, NC via American Systems

# USMC AMI Efforts





**Navy's strategic plan for utilities and energy management (UEM). Creates and leverages corporate business processes, authoritative databases, and expanding metering infrastructure for a secure, holistic and flexible solution- hosted on NMCI.**

- **Four Modules**

- **Utilities Payable (UP)**

- Outside the fence utility invoice processing

- **Utilities Allocation (UA) (aka CUBIC)**

- Inside the fence allocation bill processing
- Provides consumers fair share portion of purchased utilities and overhead\*

- **Enterprise Reporting (ER)**

- Canned reports derived from daily business processes
  - DUERS, UCAR, EPSS, Budget Reports, Purchase Utilities, Bill Processing, consumption...
- Ad-hoc Reports

- **Meter Data Management (MDM)**

- Global meter interface
- Validates and analyzes raw meter inputs
- Provides powerful and flexible analytics

# Meter Data Management (MDM)



- **Module in CIRCUITS**
  - **Controlled access**
- **Consumes Meter Reading Data**
  - **AMI and legacy**
- **Generates Reading Exports**

- **One common data repository meter data**
- **Establish consistent practices**
- **Efficient and practical use of data collected**
- **Make data accessible**



# Challenges



- Information Assurance
  - DIACAP
  - Controlled interface
- Integration of other ICS's
- Transition
  - New system for metering shop to learn / manage / leverage

# Advanced metering is underway!



Questions?