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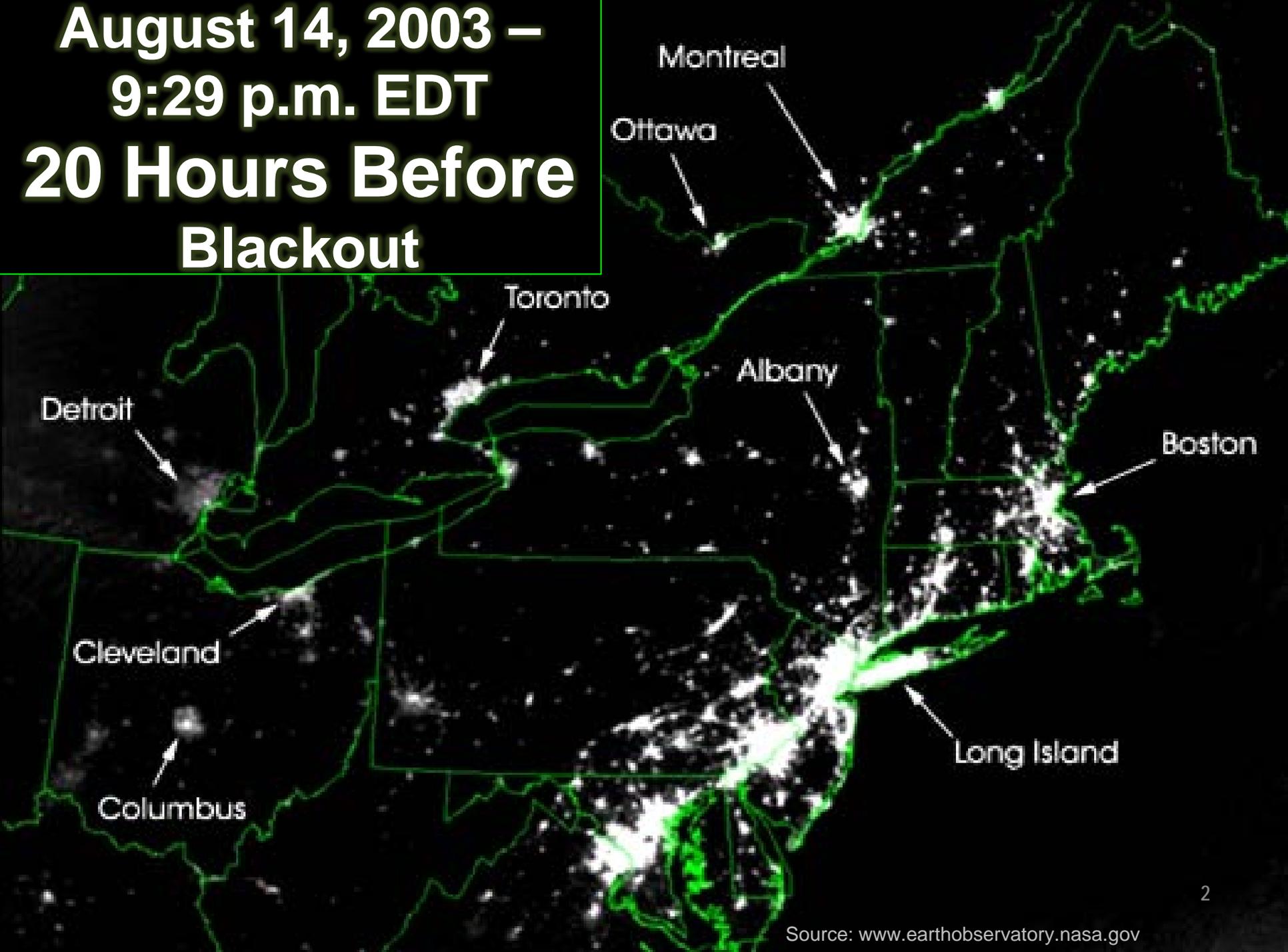
The Premier Energy Training Workshop
and Trade Show for Federal Agencies

A River of Energy Solutions

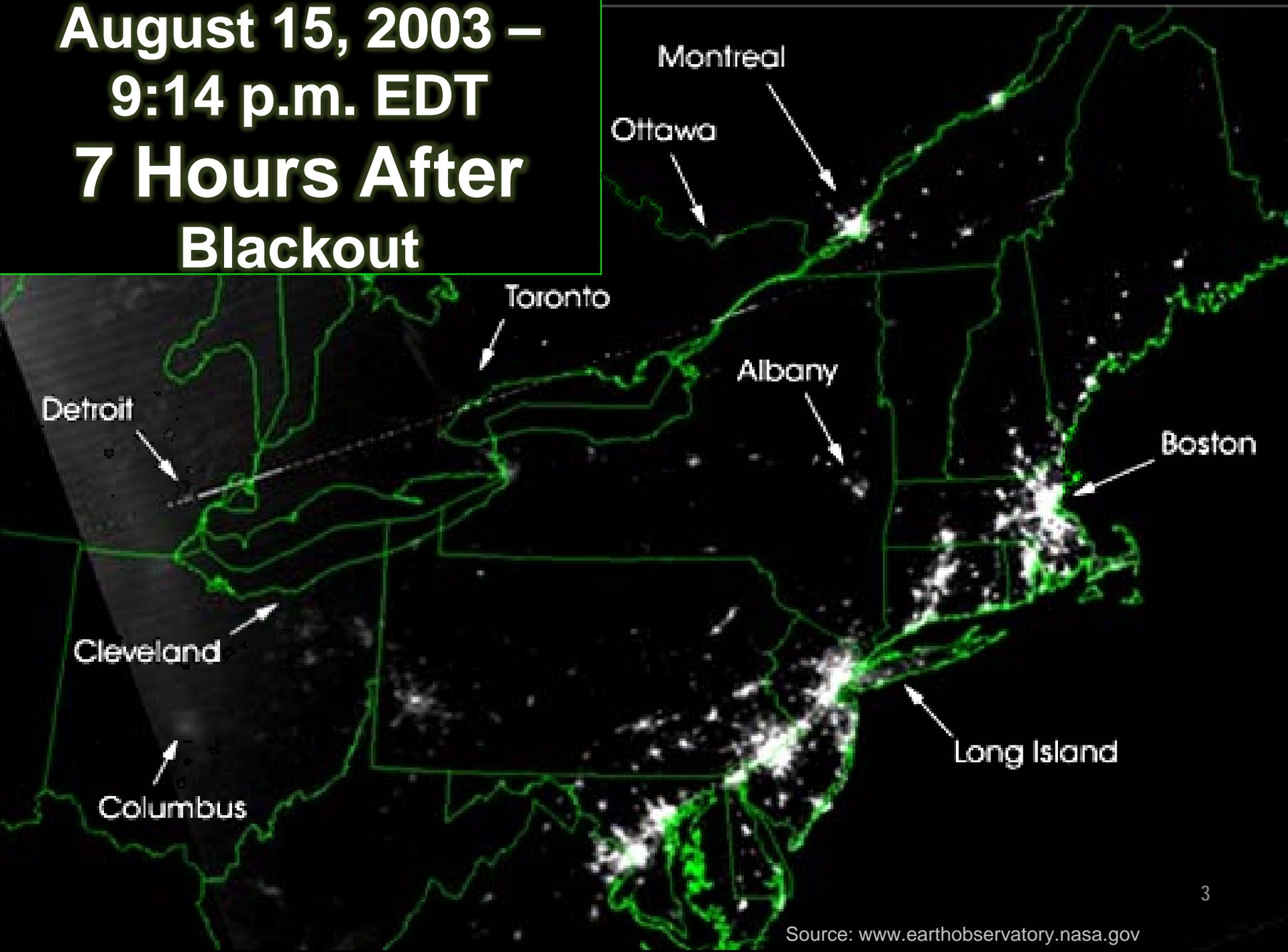
Case Studies for Security Solutions: Navy SmartGrid Pilot

Rear Admiral David Boone
Director, Navy Shore Readiness Division

**August 14, 2003 –
9:29 p.m. EDT
20 Hours Before
Blackout**



**August 15, 2003 –
9:14 p.m. EDT
7 Hours After
Blackout**



A satellite-style map of the United States with green outlines of state boundaries and energy-related features. The map shows a network of green lines and dots, likely representing energy infrastructure or production sites. The background is dark, and the text is overlaid in white with a green glow.

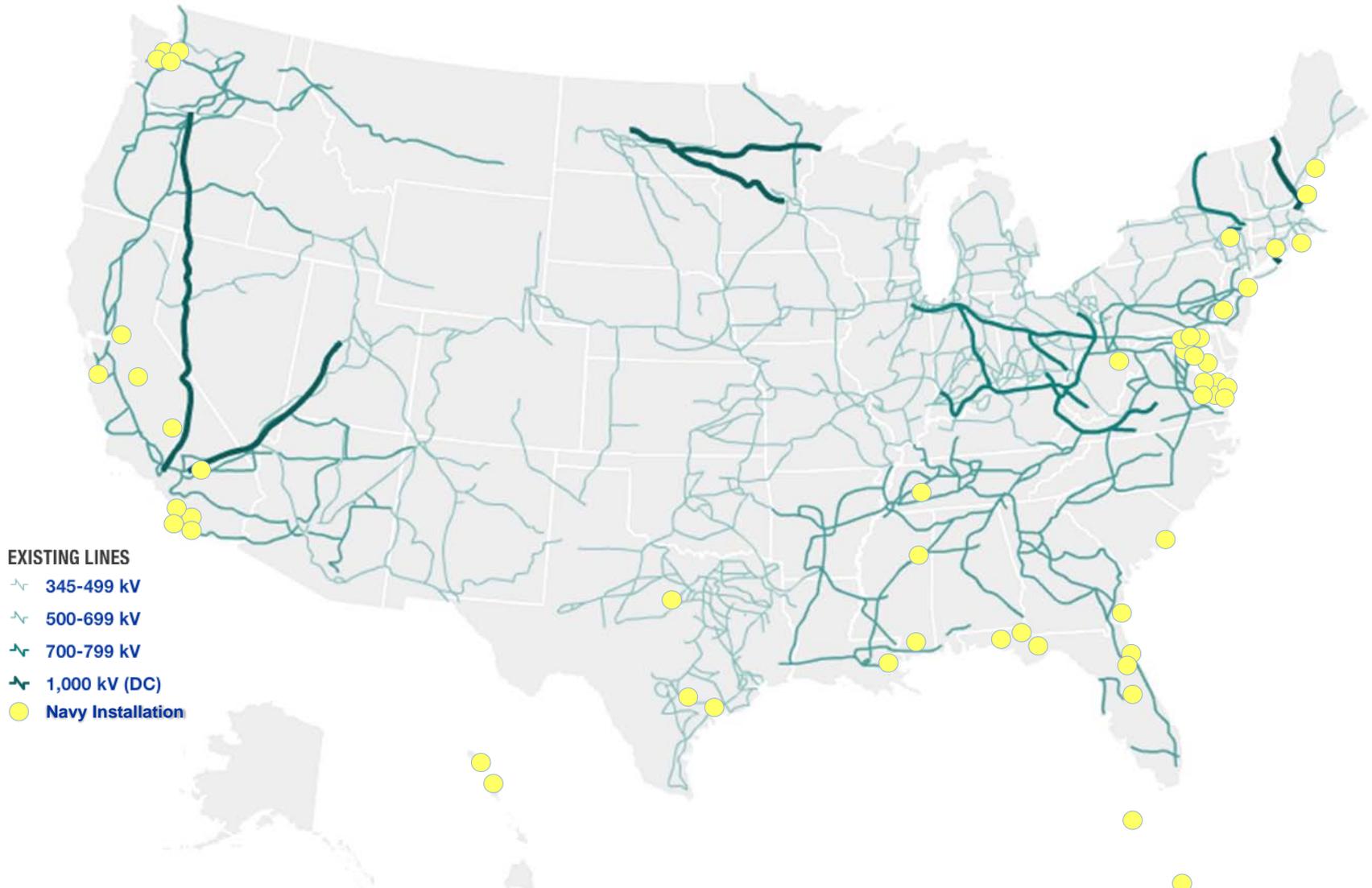
What is Energy Security?

How much is enough?

Who does it?

What capabilities do we need?

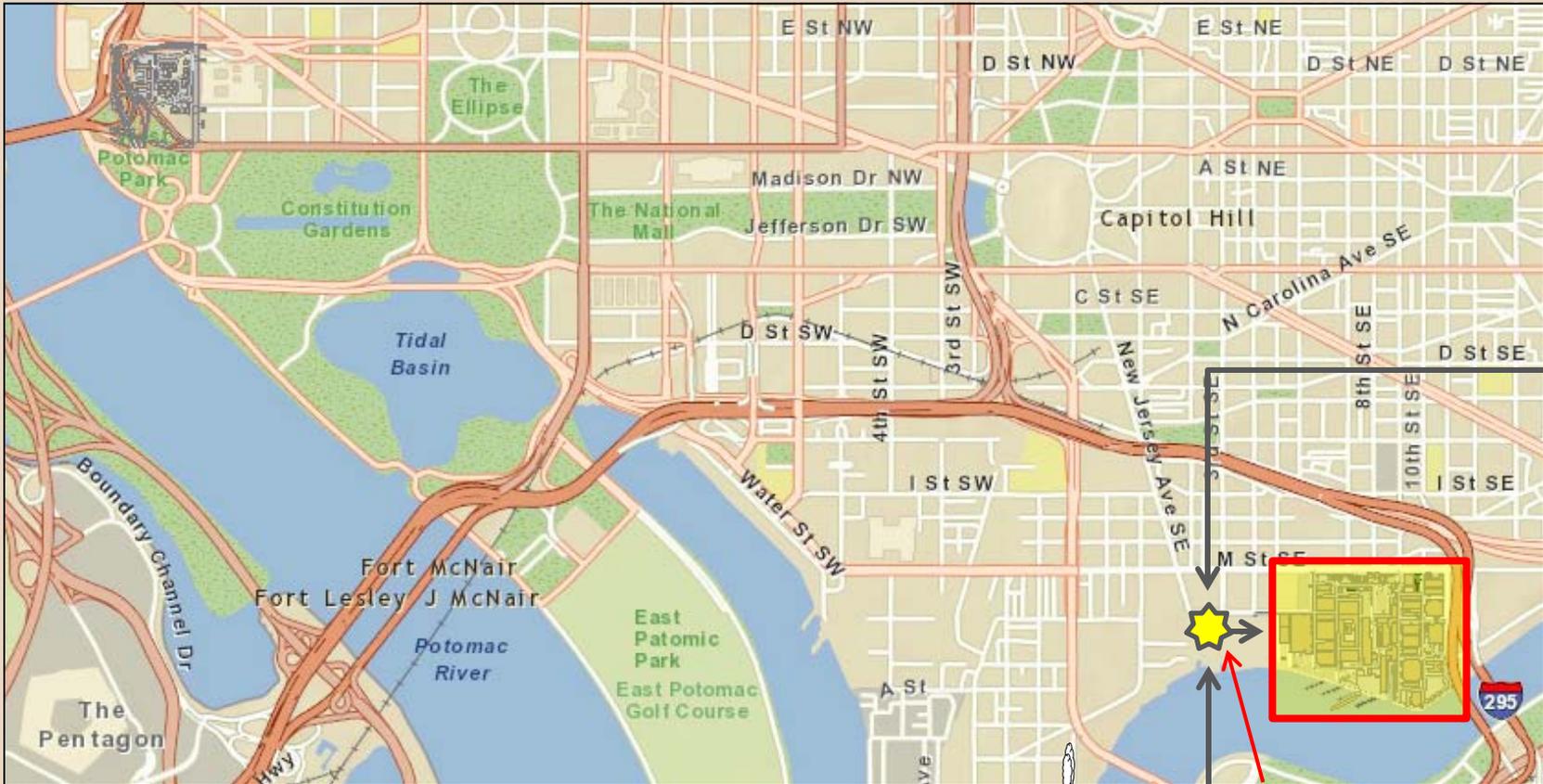
United States Electric Grid



Washington Navy Yard

Notional Electric Grid

Base View

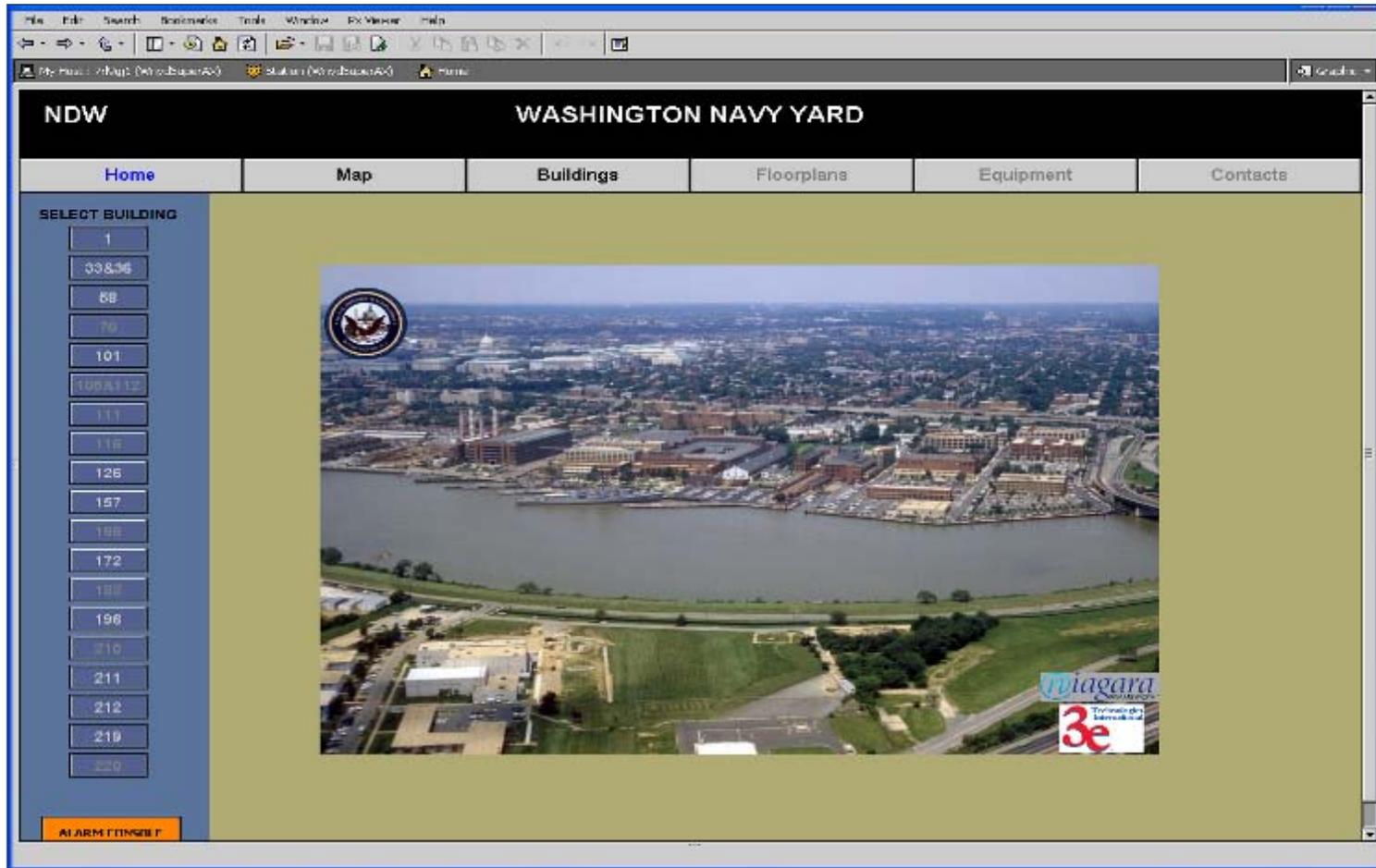


-  Power Source
-  Sub-Station

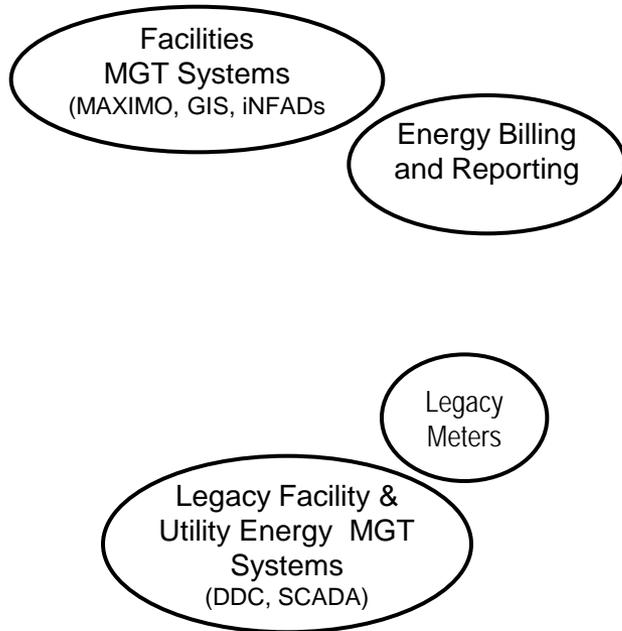
Single Point Failure

Failure Along Line to Sub-Station

Naval District Washington SmartGrid Pilot



Navy Smart Energy Management



Existing Systems...

Facility Management, Utility Management and Asset Management systems operate independently

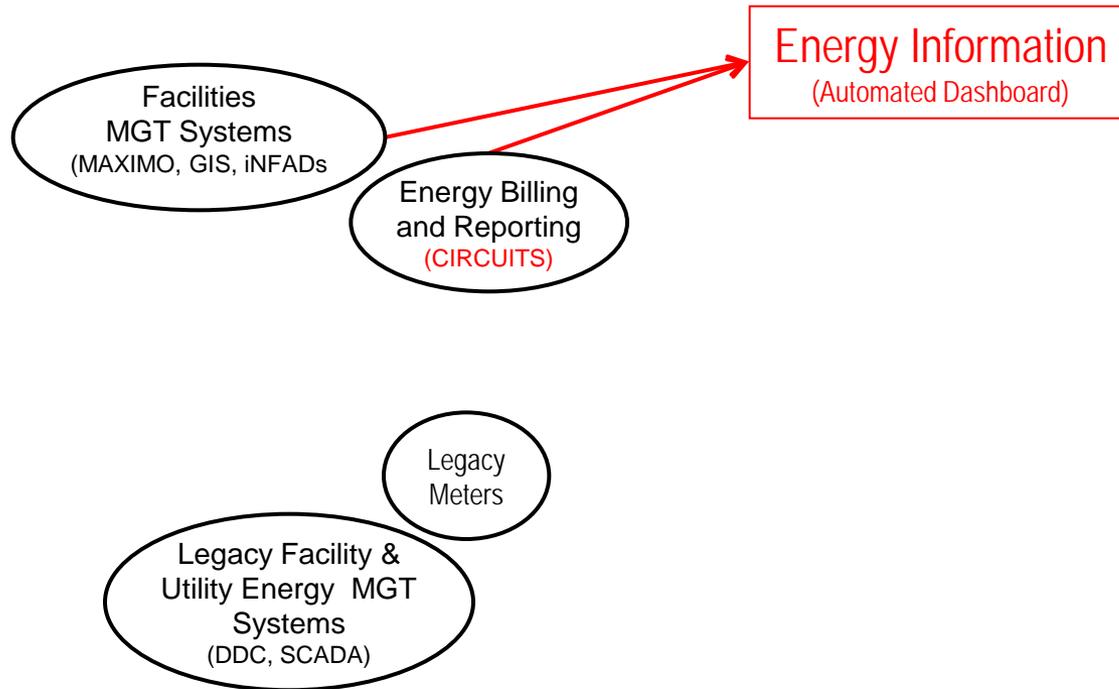
Billing and energy reporting occur separately

Existing meters track utility consumption for groups of buildings

>22,000 different existing Facility Energy and Utility control systems

- Cannot securely network "as-is"
- Cannot afford to replace

Navy Smart Energy Management



First Step:

Deploy Enterprise-wide "CIRCUITS"

Utilities Payable (UP): March 2011

- Receipt, cert, and payment of purchased utilities
- Shortened invoice processing time
- Automated payment interface

Utilities Allocation (UA): August 2011

- Apportion consumption among consuming activities
- Improved internal billing accuracy

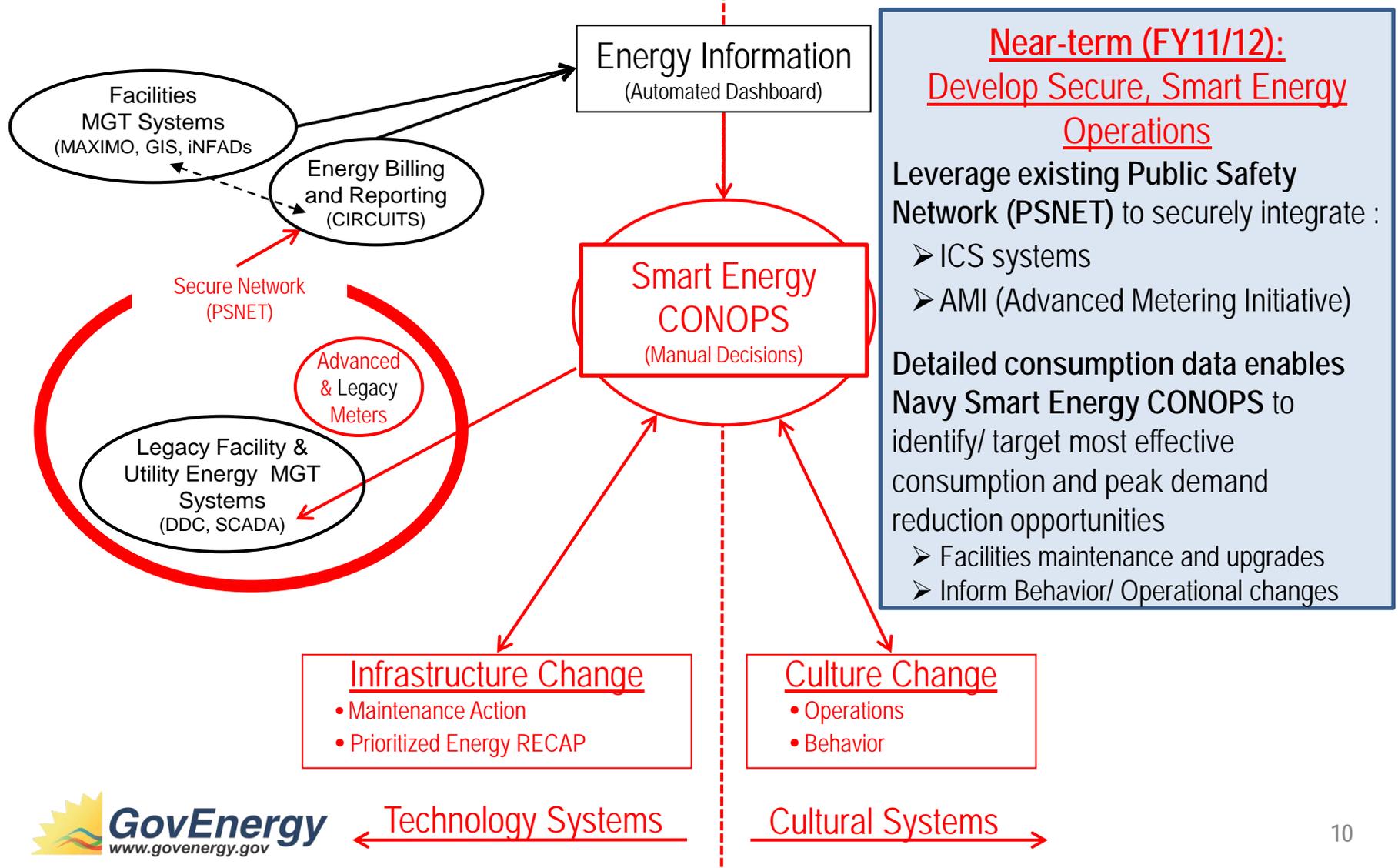
Enterprise Reports (ER): August 2011

- Metrics and analysis of utility consumption
- Near real time energy usage data to all Navy tenants.
- Reporting based on certified data and authoritative sources

Meter Data Mgmt (MDM): August 2011

- Single, authoritative source for Navy utility/energy data. Integrated data with other enterprise systems (iNFADS, MAXIMO, RSIMS, DWAS)
- Analytical tools for consumption, demand, power quality
- Processed AMI to support UA and ER modules, support investment decision-making

Navy Smart Energy Management



Near-term (FY11/12):

Develop Secure, Smart Energy Operations

Leverage existing Public Safety Network (PSNET) to securely integrate :

- ICS systems
- AMI (Advanced Metering Initiative)

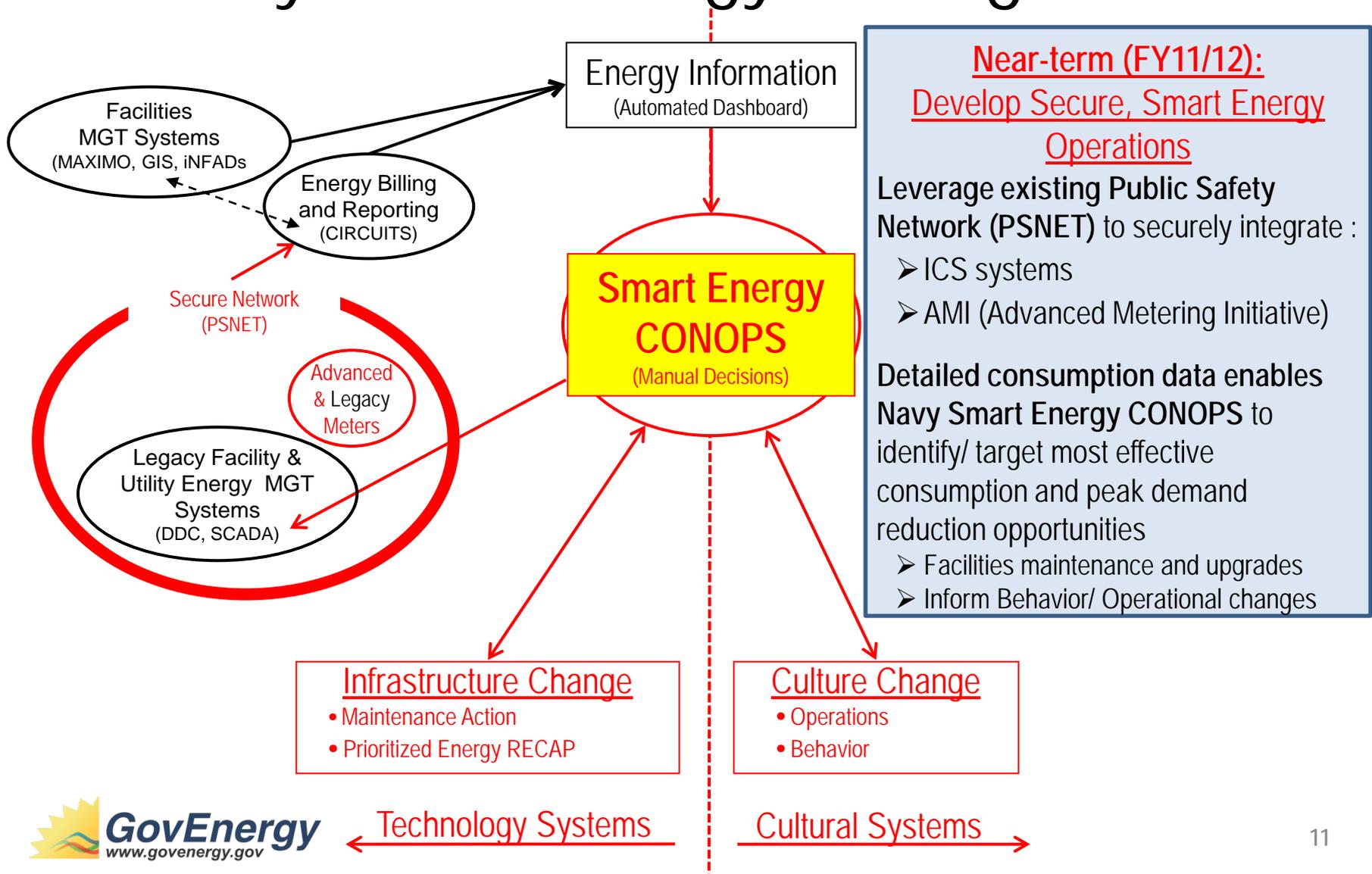
Detailed consumption data enables Navy Smart Energy CONOPS to identify/ target most effective consumption and peak demand reduction opportunities

- Facilities maintenance and upgrades
- Inform Behavior/ Operational changes

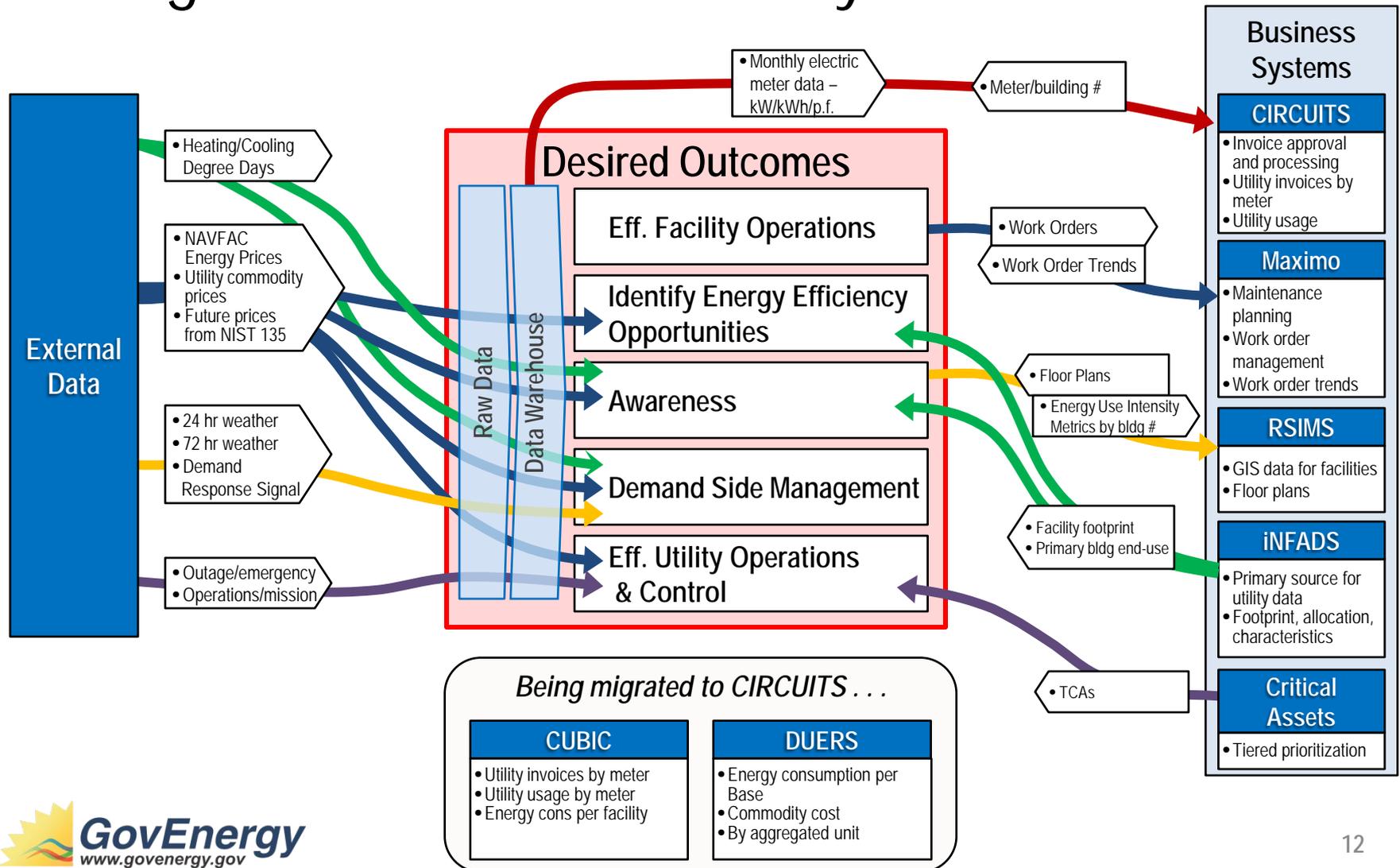
Technology Systems ←

Cultural Systems →

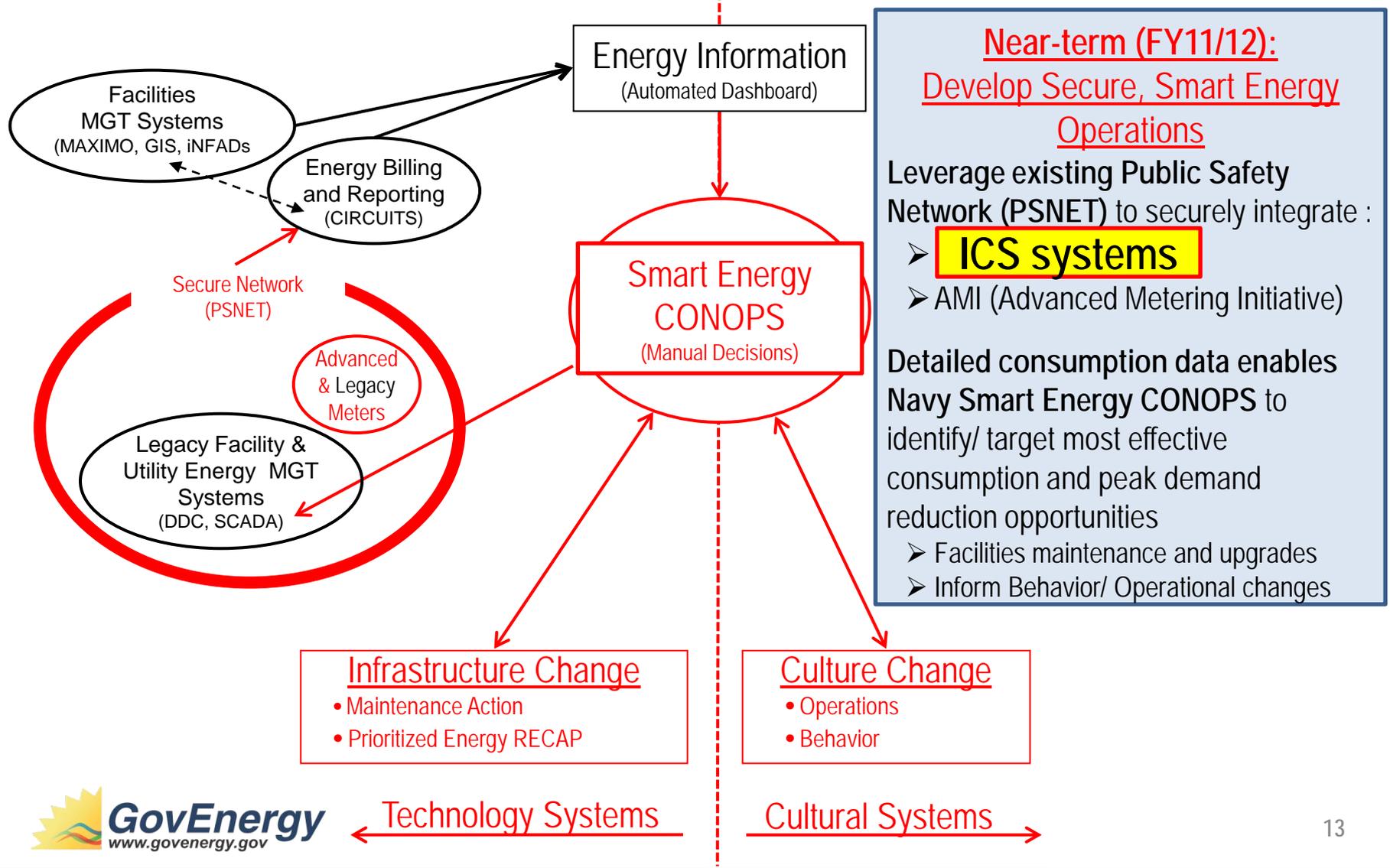
Navy Smart Energy Management



Integration of Smart Energy Management with Business Systems



Navy Smart Energy Management



Near-term (FY11/12):
Develop Secure, Smart Energy Operations

Leverage existing Public Safety Network (PSNET) to securely integrate :

- **ICS systems**
- AMI (Advanced Metering Initiative)

Detailed consumption data enables Navy Smart Energy CONOPS to identify/ target most effective consumption and peak demand reduction opportunities

- Facilities maintenance and upgrades
- Inform Behavior/ Operational changes

Enterprise Industrial Controls Systems (ICS)

Mission

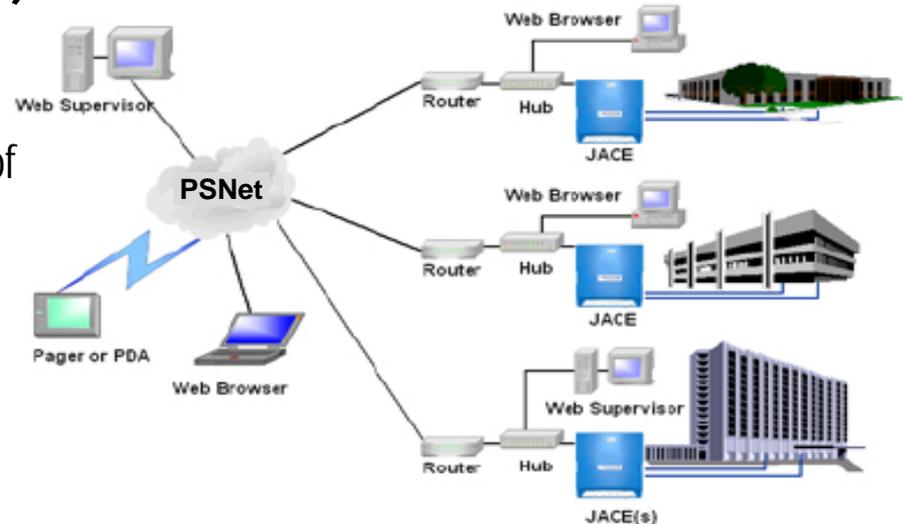
- Centralized energy monitoring capability integrating DDC & SCADA systems in support of Region Energy Reduction Initiatives
- EICS model scalable for Navy enterprise-wide deployment

Capabilities

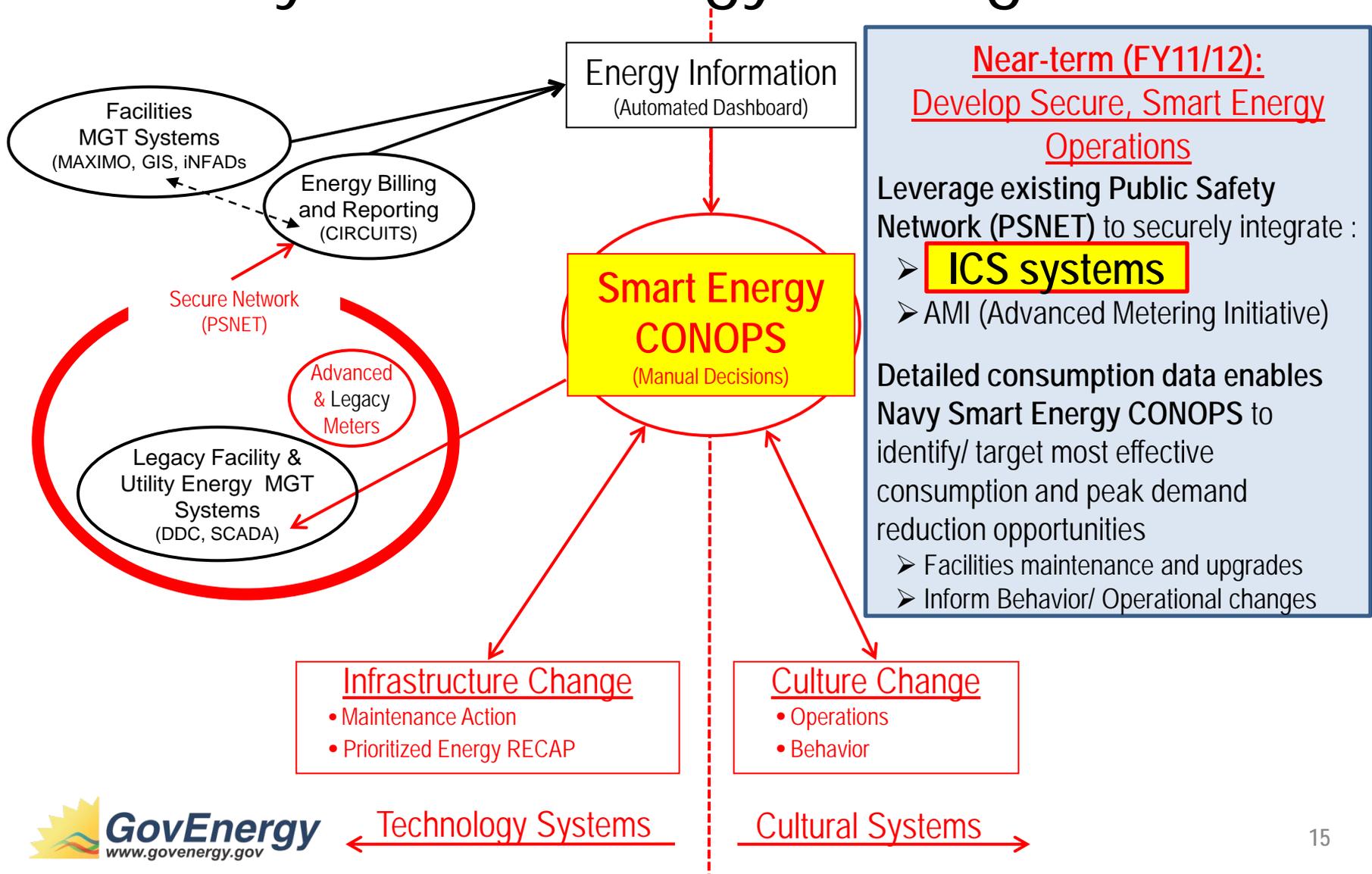
- Integrated EICS solutions
- Critical Infrastructure Monitoring using advanced camera technology

EICS Subsystems

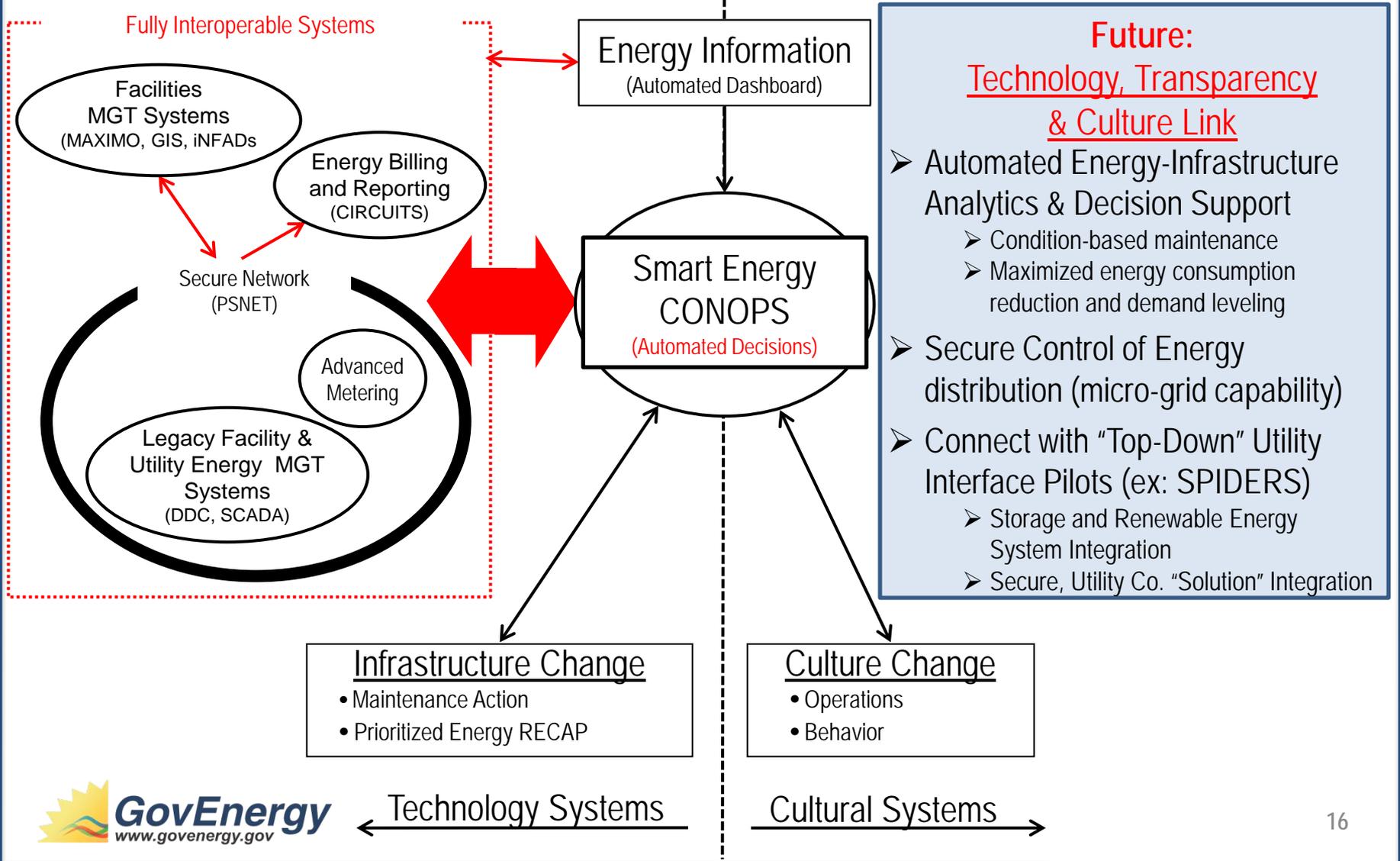
- Wireless Mesh Network
- "PSNET" Network Interface & Firewall
- Networked Programmable Logic Controller (PLC)
- Legacy DDC PLCs and Secondary Controllers
- EICS Management Server & Graphical User Interface



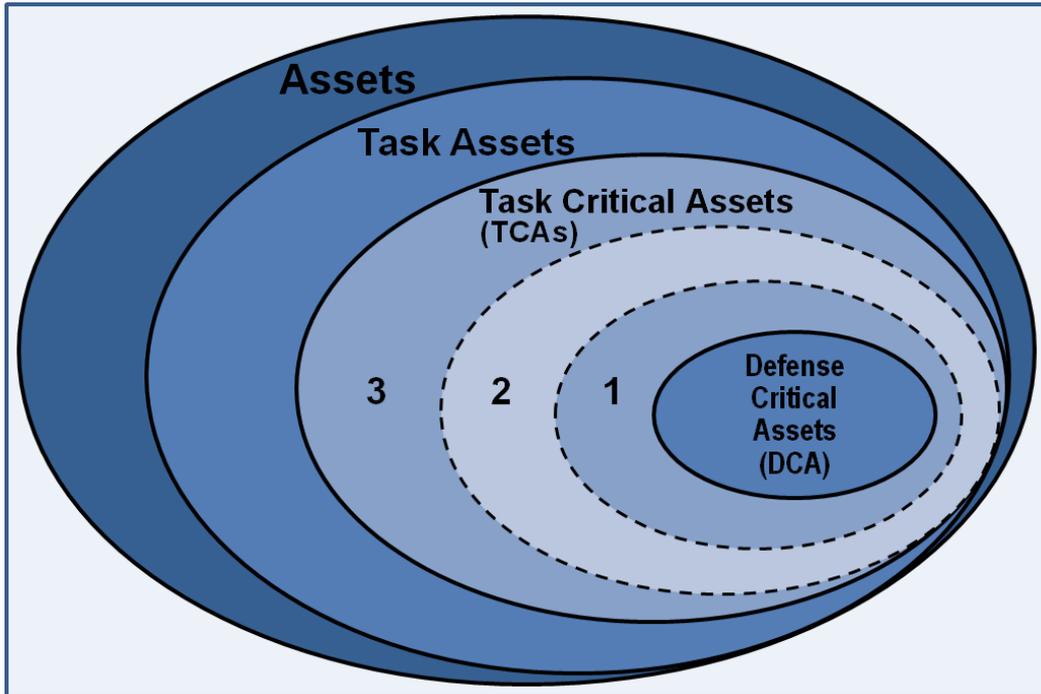
Navy Smart Energy Management



Navy Smart Energy Management



Critical Infrastructure



Energy Security Audit Program (ESAP): Assess vulnerability and risk associated with critical energy supply systems for Navy Tier I* and II Critical Assets Ashore

Steps:

- Determine risk and vulnerability associated with defined Critical Assets.
- Identify countermeasures options and costs to mitigate risks.
- Create Integrated Priority List to fund

Timeline:

- FY11 Pilot ESAP assessments (DCA/ Tier I assets on 4 installations around the world)
- Perform full ESAP assessments on 100% of Navy Tier I and Tier II assets (FY12-15)

Navy Shore Energy Security

Strategic Control

