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Charting a Course to Energy Independence

Providence, RI
August 9-12, 2009

Purpose

- *Provide an overview of the Public Works Defense Infrastructure Sector's roles and responsibilities as they apply to the Defense Critical Infrastructure Program (DCIP) and the Sector's current support initiatives to identify, assess reliability, availability and quality to assure Public Works utilities.*

- *Enhance resilience through planned investment strategies to address development and implementation of exercised measures and polices.*

DCIP Program-Wide Mission-Vision-Goals

MISSION

Enhance risk management decisions at all levels to ensure that Defense Critical Infrastructure is available when required

VISION

Assurance of Defense Mission Critical Infrastructure in an all-hazards environment

THE PUBIC WORKS SECTOR

"The DoD, government and private sector worldwide network, including the real property inventories (buildings, roads, bridges, real estate, etc.) that manages the support, generation, production, and transport of commodities (e.g., electric power, oil and natural gas, water and sewer, emergency services, etc.) for and to DoD users."

Components of "Smart" Utility System

What needs to be done?	What tools are needed to do it?
See ground truth	Sensors and SCADA
See ground truth throughout the whole network	Simulations to "extrapolate" sensor data
Understand what it means	Simulations and algorithms to meaningfully interpret results
Diagnose problems (immediate, short & long term)	Algorithms to detect/ diagnose problems/ abnormalities
Analyze response options	Simulations and visualizations
Respond (immediate, short & long term)	SCADA-enabled counter-measures (immediate); Repair, rehab, or replace (short & long term) (immediate, short & long term)

ERDC-CERL Utility Reliability & Security Technology Demonstrations at Fort Drum

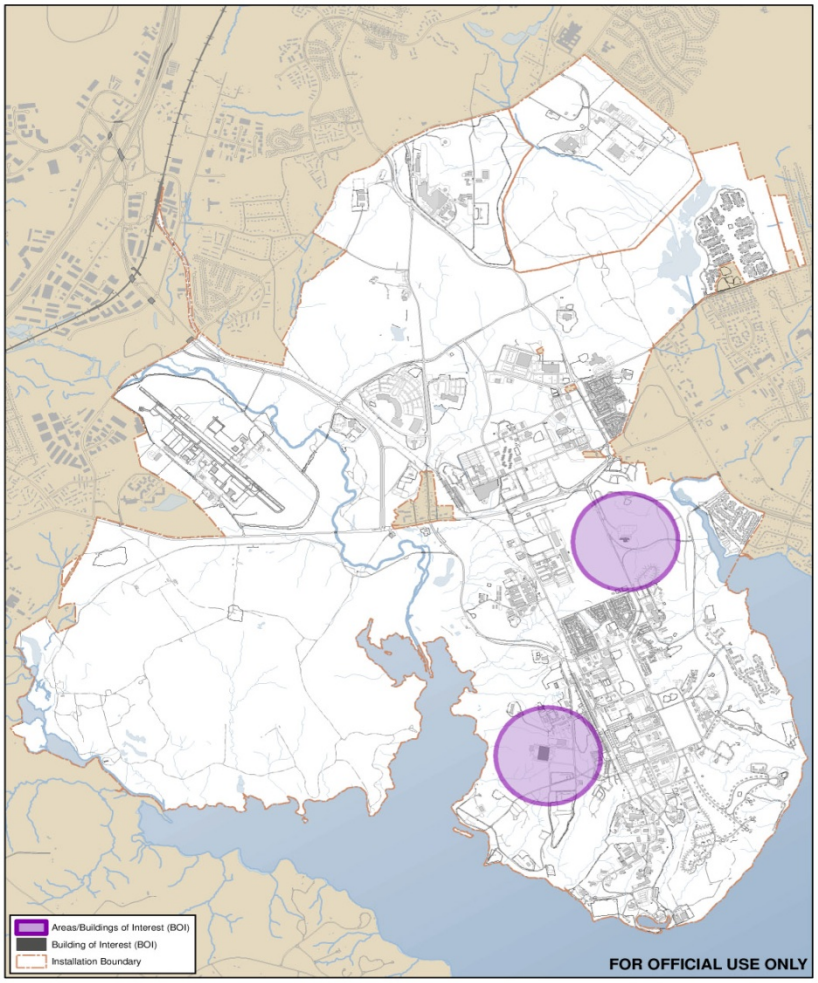
- FY00-02: Dynamic simulation used to diagnose water quality problem
- FY05-06: Implementation of water quality & corrosion rate sensors and ice-free cathodic protection (DoD Corrosion Prevention & Control Program)
- FY06-07: Real-time water security sensor demonstration (Congressional)
- FY06-08: Electrical Distribution Design real-time utility system modeling and diagnostics demonstration (STTR)
- FY07-08: Corrosion Detection & Management System for Potable Water (DoD Corrosion Prevention & Control Program)

- *Objective: Develop methods and algorithms that enable quick detection of and response to a utility system failure so that its impact can be minimized, especially during an attack, natural disaster, or other crisis situation.*

Content – collect data

Facilities

Critical Asset Management System (CAMS)
Key Tenants
Vulnerability Assessments
Threat Assessments
Mitigation Plans
Memorandums of Agreement (MOA) with neighboring municipalities



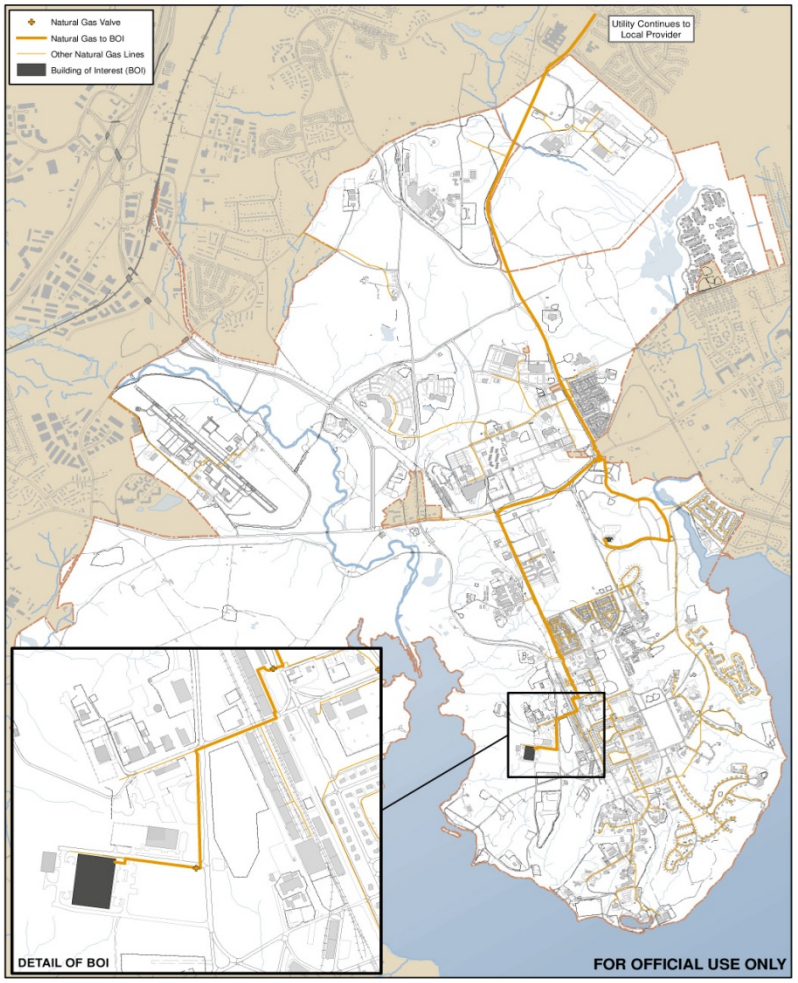
Example 1: Areas/Buildings of Interest (BOI)

NOTE - Example is for illustrative purposes only and does not reflect actual conditions

Content – collect data

Utilities

- Natural Gas, Fuel, Electric lines
- Communications
- Water, Waste Water, HVAC, Steam, Pressurized Air Supply
- Chemical Supply and Storage



Example 2: Natural Gas Infrastructure

NOTE - Example is for illustrative purposes only and does not reflect actual conditions

Content – analyze data

For each <u>supporting</u> asset, assess:

Criticality: Consequence of the loss or degradation of asset relative to the mission (coordinate with TCA owners)

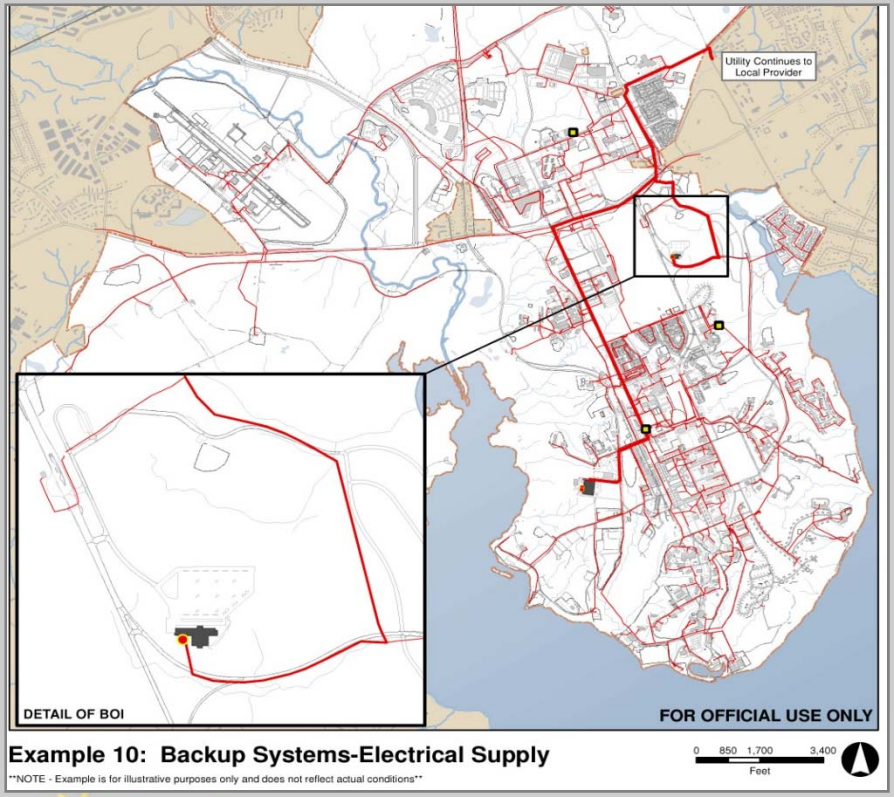
Vulnerability: Any weakness that can be exploited to gain access to an asset

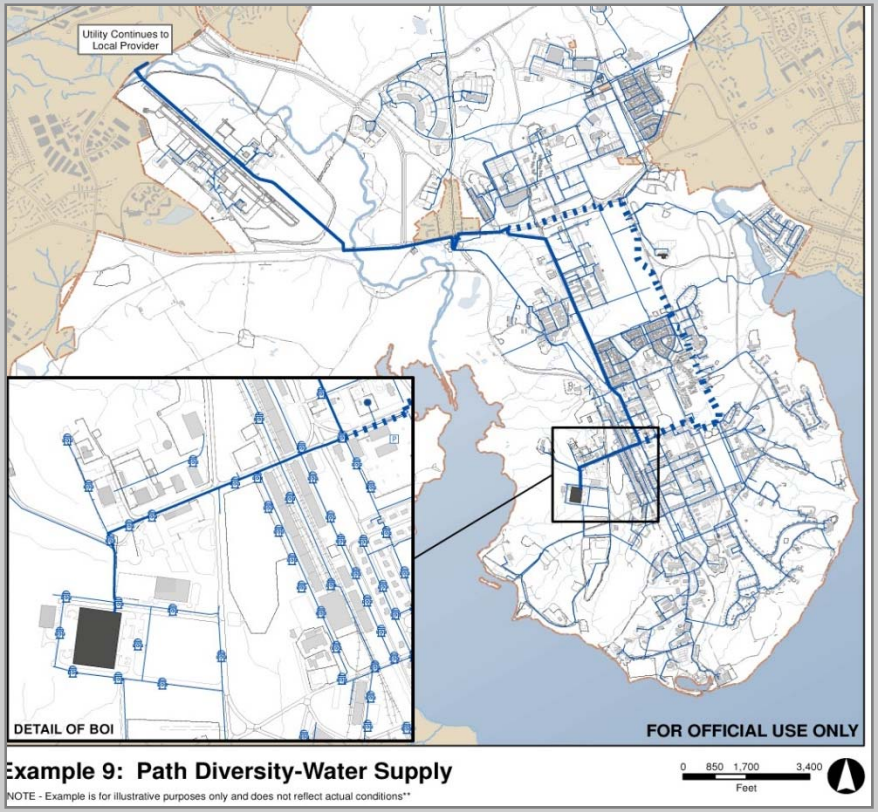
Threats/Hazards: Intentional such as arson or attack and non-intentional such as accidents or weather events

Evaluation Criteria	Criticality	Calculate			Risk
		Vulnerability	Threat	Probability	
Supporting Infrastructure					

Content – develop alternatives

- **Develop Projects that:**
  - Establish Redundancy
  - Establish Backup Systems
  - Harden Assets

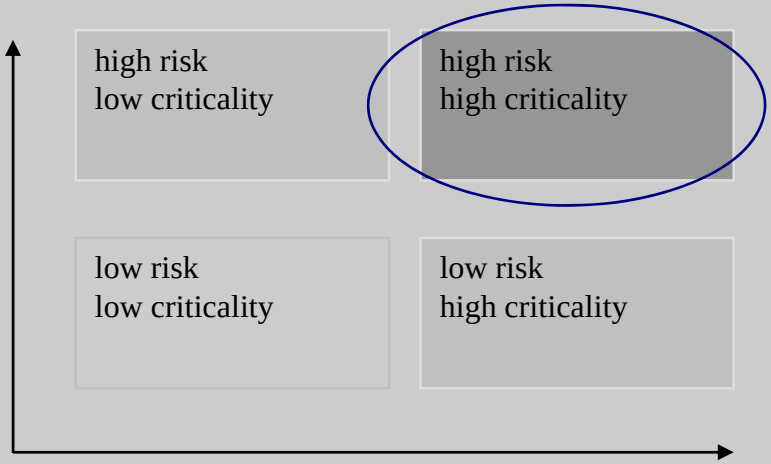




- **Develop Projects that:**
  - Update Designs
  - Establish Path Diversity
  - Enhance Security

Conclusion

- **Work closely with installation staff, tenants, surrounding community and utility providers**
- **Rank alternatives by how well they address risk & criticality**
- **Combine solutions in ways that**
  - Function together
  - Are best for the installation as a whole
  - Take into account other planned activities and actions
  - Address current needs as well as future changes



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QUESTIONS

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