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Energy Security

A Performance Contracting Perspective

Bottom Line Up Front

- Determine need for energy security
- Quantify the value of energy security
- Maximize the value of improvements
- Plan as early as possible
 - New construction
 - Mechanical recapitalization

Agency Budgets are Limited

- Energy Security has a cost
- Energy Security has value to the site
 - Critical need?
 - Insurance?
 - “Nice to have”?
- Energy Assets have value to the utility
 - Control of peak



DEMAND



SUPPLY

DEMAND

SUPPLY





- Efficiency
- Behavior
- Shed load
- Micro-Grid (isolate critical loads)

DEMAND

May be more cost-effective to reduce the need rather than meet the need

- Redundant Feeds
 - Eliminate single point of failure
- Fuel Diversity
 - Adapt to shortages
 - Respond to price signals
- Generation Assets



Propane / Air

- Propane / air mixture
- Natural gas replacement*
- Common in industrial facilities



Renewable Energy Security

- Reduced dependence on foreign resources?
- Readily available?
- “Dispatchable”?



Traditional Generation

- Isolated – serving one building
- Questionable Reliability – will it run?
- Limited Flexibility – can't share power / loads



Generation Improvements

- Centralized
 - Easier to extract value
 - Easier to size
 - Enhanced reliability
 - Improved flexibility



Energy Assets Have Value

- Energy Security
- Avoided Capital Cost
- Rate Value
 - Peak Control
 - Time of Use / Curtailable rates
- Energy Value
 - Electricity
 - Heat
 - Cooling



Fort Bragg

- Need
 - 82nd central energy plant
 - Aging boilers & distribution lines
- Approach
 - ESPC
 - DOE ORNL / FEMP



Fort Bragg

- 5MW dual-fuel Solar turbine
- Heat recovery steam generator
- Absorption chilling
- Time of use rate structure



GSA White Oak

- Facility
 - FDA laboratory & office space
 - 3.7M SF campus build-out
- Need
 - Protect value of experiments
- Approach
 - ESPC for “new construction”



GSA White Oak

- 25.6MW onsite generation
 - Four 4.5MW turbines
 - One 5.6MW dual-fuel
 - One 2.0MW diesel
- 70 MMBtu heating capacity
 - 40 MMBtu heat recovery
 - 30 MMBtu boilers
- 10,000 tons cooling capacity
- Benefits
 - Avoided capital cost
 - Energy security / reliability
 - Demand response capability



GSA St. Elizabeth's

- Facility

- Department of Homeland Security
- 4.5M SF campus build-out

- Need

- Reliable Critical Ops Center

- Approach

- UESC for “new construction”
- 25MW electricity (30% of peak load)
- Hot water
- Chilled water
- Reduced emissions
- Avoided capital cost



Key Take-Aways

- Determine need for energy security
- Quantify the value of energy security
- Maximize the value of improvements
- Plan as early as possible
 - New construction
 - Mechanical recapitalization