FEDERAL UTILITY PARTNERSHIP WORKING GROUP SEMINAR
November 7-8, 2018
Herndon, VA

Financing Resiliency Projects

Hosted by:

FEMP
Federal Energy Management Program

Dominion Energy®
Speakers

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Joe is a Managing Director with Deloitte’s Global Infrastructure & Capital Projects practice, specializing in energy and utility advisory services. He has over 20 years’ experience at leading transaction advisory, capital raising, P3, utility restructuring and strategic consulting projects for public and private sector clients.

Ryan Daly
Ryan Daly, Manager with Deloitte’s Government & Public Services energy practice, focuses on building the resiliency of power sectors – both domestically and internationally – by improving electric utility performance and fostering growth in innovative technologies.
Deloitte’s Energy Expertise

Deloitte’s 8,000+ global energy professionals provide service to a broad range of public and private sector energy clients in every part of the energy industry’s value chain through the global network of Deloitte member firms.

100%
Deloitte serves government clients in 100% of G20 member countries.

60 Countries
Deloitte is a true global organization with energy professionals working in over 60 countries.

Deloitte’s Federal Energy Clients

8,000
Deloitte has over 8,000 dedicated energy specialists serving local and multi-national organizations worldwide.

20 of 30
Largest Global Power Companies
Deloitte serves two thirds of Fortune Global 500 power companies.

96%
of Global Fortune 500 Energy companies served

> $15B
Public and Private Energy Investments Mobilized

Federal Utility Partnership Working Group
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Agenda

i. Market Trends
ii. Financing Energy Security
iii. UESCs and Energy Security
Market conditions for energy security projects

- Changing generation fuel-mix
- Flattening demand and prices
- Growth of distributed energy resources (DER)
- Increased threats from cyber and physical security risks
Changing Fuel Generation mix

Wind, solar thermal and photovoltaic, and natural gas have seen huge growth in recent years, while more costly fuel sources have seen a net decrease in capacity.

**U.S. Electricity Generation, Cumulative Change in MWh Generated by Source 2014-2019 (Real and Projected, EIA)**

- **Natural Gas**: 837.17'000 MWh/day
- **Wind**: 295.89'000 MWh/day
- **Solar**: 156.07'000 MWh/day
- **Petroleum**: -19.52'000 MWh/day
- **Coal**: -1,338.14'000 MWh/day

IPPs, large consumers, and utilities are shifting their generation sources placing pressure on the grid to adapt to difference between sources.

Source: EIA
Flattening Demand + Retail Prices + DER

Traditional utility models are under pressure to adapt to more efficient electricity use, commodity price stagnation, and rapid growth in power previously considered non-economic.

Utility business models are being disrupted, the DoD – a credit worthy, resiliency demanding, large consumer – may appear an attractive partner.

Cyber and Physical Threats

Cyber and Physical Threats

Utilities have recognized the need for secure (cyber and physical) electrical infrastructure in order to maintain resilient domestic electricity supply.

Threat Actors
- Foreign Intelligence
- Terrorists
- Insider Threats
- Contractors/Vendors
- Cyber Criminal
- Activists

Recent Events
- “Ukrainian Attack”
  - More than 230,000 residences lost power, including disabling of back-up power resources

- “Shamoon Attack”
  - Saudi Aramco had 35,000 computers partially wiped or totally destroyed... unable to pay, transportation halted

- “Antwerp Port Hack”
  - Drug traffickers hacked computer networks controlling shipping at the port of Antwerp to traffic narcotics among legitimate cargoes

Motivations
- Industrial Espionage
- Foreign Intelligence / Cyber Warfare
- Material Gain

Source: Deloitte Analysis

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Bankability Considerations

Resiliency projects are attractive to commercial contractors and financiers because they contain much of the upside sought after in the private sector.

- Generally bipartisan (and taxpayer) support for infrastructure and resiliency investments
- Utilities are eager to keep DoD customers on grid
- Growth and profit potential in updating legacy infrastructure systems
- The military isn’t going away (no Amazon.com risk)
- Operating costs on military bases are a creditworthy and durable revenue stream
- Strong economy stimulates lending and investing confidence
Financier Due Diligence

Financiers and contractors conduct project due diligence by asking questions about the project developers, the project stakeholders, and the project plan.

**About Developers/Stakeholders**
- Who are the different parties involved? Experience?
- Is the offtaker creditworthy?
- Has the developer completed these types of projects before?
- Do they have a strong chance of winning the work?

**About the Project Plan**
- Are project cash flows sufficient to repay capital?
- How long is the repayment period?
- Are projections realistic?
- What are contracting risks and cancellation clauses?
- Are there permitting or environmental risks?
- Are there risks to asset ownership?
- Are there tax impacts?
UESC Financing Costs

UESC financing costs are impacted by the terms of the project, macroeconomic conditions, and the stakeholders involved.

<table>
<thead>
<tr>
<th>Stakeholder Impact</th>
<th>Financing Requirement</th>
<th>Project Type</th>
</tr>
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<tbody>
<tr>
<td>Utilities borrow at relatively low costs.</td>
<td>Amount and tenor (length) impact financing costs.</td>
<td>Project complexity + contractor’s experience impact financing costs.</td>
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<table>
<thead>
<tr>
<th>Building &amp; Performance Risk</th>
<th>Contract Terms</th>
<th>Relevance to Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally, more difficult execution will increase risk profile for financing projects</td>
<td>Variety of contract terms impact financing costs</td>
<td>Projects that are relevant to the mission may allow for contract terms helping limit financing costs</td>
</tr>
</tbody>
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Change in Utility Bond Yields & Prime Rates (’16-’18)

- S&P 500 Utilities Corporate Bond Index YTM
- Historical Prime Rate

Source: S&P Global, Federal Reserve
Minimizing UESC Financing Costs and Performance Risks

UESCs are attractive because there are many actions available to minimize the financing costs and the performance risks.

Minimize Cost
- Competition improves results
- Participate in financing discussions with utility partner
- Include reasonable prepayment clauses if acceptable to parties
- Ask for details on transaction/financing fees

Mitigate Performance Risk
- Work with experienced reliable partners
- If necessary, subcontract to DOE-approved list of ESCOs
- Minimize and be aware of contract conditions and risks for financing party
Designing Bankable Resiliency Projects

Designing bankable resiliency projects and determining an acquisition model has three phases from the base assessment, the analysis, to the outputs.

**Internal Needs Assessment**
- Load requirements
- Current and projected O&M, fuel costs
- Environmental permits and planning
- Cost and technical impact for closing gap
- Resiliency benchmarking

**External Market Assessment**
- Competitive vs. regulated markets
- Third party market expertise
- Resource availability

**Project Cost/Benefit Feasibility Analysis**
- Analysis of project structuring options
- Potential cost savings
- Value of assets contributed

**Initial project scope**
- Savings and term
- Financial analysis

**Project structure**
- Pre-qualified bidders
- Reality check

**Project ROI**
- Repayment term
- Cost and savings
Energy Security in the UESC Context

The DoN conceptualizes energy security supported by three pillars with clear mission goals.

Reliable
Staying online

Resilient
Recovering from a disturbance

Efficient
Using the minimal amount of energy needed

Utilities are challenged with designing creative ways to structure projects to support each pillar and the DoD mission of energy security.
Projects Support Energy Security
Different project-types support each of the 3 pillars of energy security.

Efficiency supports resiliency and reliability by doing more with less

- **Efficiency**
  - LED Lighting
  - EE Windows
  - Solar water heaters

- **Resiliency**
  - Fuel storage
  - Transfer switch

- **Reliability**
  - Smart Meters
  - CHP, Batteries
  - Micro-grids
  - Redundancy

Some projects support multiple pillars simultaneously
Keys to Financially Successful Projects

Financiers consider projects to be bankable if they have long-term stability, transparent risks, durable and predictable revenue streams, and are adaptable to changes.

Long-term contract stability
The repayment period is adequate and are the projections are realistic

Durable revenue and predictable cash flows
Offtakers must be dependable and customer demand reliable

Project supports the mission
Project is mission critical and a force multiplier

Risks that are transparent
Contracting risks, environmental risks, and termination clauses are clear

Adaptability to evolving markets
Relationships must be nimble to adapt to rapidly evolving markets and policy frameworks

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