

SAME Federal Business Opportunities Symposium

National Security and Resiliency *MWTC Bridgeport – A Case Study*

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November 15, 2018



Defining Resiliency

- The term resilience is as ambiguous and broad as “going green”, and acquiring “renewable resources”.
- Develop a vision, mission, and goals that detail what it means for an installation to be resilient. Utility Resilience can be defined multiple ways as:
 - Defaulting to a “dumb grid”,
 - Run in island mode for 2 weeks with no outside interaction via trimming of capability (drop in non-mission essential loads),
 - Run in island mode for 2 years with no loss in capability.
- The key is to define an end state and plan to it. Be prepared to defend your end state!!! A one size fits all solution isn't going to work in this case

Consider all Options

- Resilience is not exclusive to utilities!
- Resilience requires a methodical understanding of the integration and interdependence of all moving pieces.
- Build layers of resiliency
- The weakest link is the strength of the chain.
- Attracting, training, hiring and maintaining quality employees is a significant burden,
 - A strong consideration must be made for not having high end installation requirements, or permanent use of contracted solutions.

Planning for Resiliency at MWTC Bridgeport

- MWTC Bridgeport's end state extends beyond complete independence.
- Small size (a small amount of money can go a long way), and remote location with extreme weather
- MWTC Bridgeport offers a perfect proving ground (R&D lab) for any imaginary concept that can be put to the test on site.
- If it can be done at Bridgeport, it can be done anywhere!



Walking the Talk at Bridgeport – Example 1

- Establishes a ringed medium voltage (16kv) grid with transformers dropping the voltage to distribution centers (480 volts) to power small districts (3-5 buildings/features).
 - At the distribution centers isolate from the grid as required for both powering the small district independently through a plug in generator at the distribution center. Additionally, any new building or major building renovation will require a generator plug to further isolate loads. Plugging in a generator at a building would be our last line of defense, and allows for complete manual mode (dumb grid).sustainable for several days, because the fuel supply already exists on base for supporting training.



Walking the Talk at Bridgeport – Example 2

- Installation of a large battery (can carry base 800 kW load for several hours) with controls. The battery serves several roles (not exclusive to back up power), but from a resilience perspective it allows for us to operate the 510 kW solar array, and the 1MW generator at the same time.
 - Operating these sources of power at the same time extends our island mode from 2.5 days before refuel to 1-2 weeks before refuel. It also, provides for the installation of a smaller energy source to essentially provide a trickle charge as required, which will extend our island mode even further.



Walking the Talk at Bridgeport – Example 3

- Smaller renewable energy sources will be "plugged in" via a test harness that allows for testing of industry solutions for energy storage and renewable generation. This test harness can be loaded by our base load through fixed time periods that enable industry to test their solutions for free in extreme climates.
 - The benefit to BP of course it the power is free, and we learn what works in this environment at an R&D scale first.
- This final scenario both establishes BP as a location with a culture of innovation that attracts industry, and provides continued inertia towards future development.



Developing an Energy Resilience-based Master Plan

- Ensure an energy resilience-based master plan establishes a foundation for which to grow, shrink, maintain, respond, or automate.
- The master plan must be rooted in the understanding that technology innovation is occurring faster than capital investment.
- Make sure the master plan allows for the plugging and playing of any technology, even when you don't know what that technology will be.
- Don't ask how much money you are willing to spend to avoid lost mission.

Key Takeaways

- Every step or phase of the master plan must advance the effort to achieve resilience. The master plan must be defended, used, and routinely updated.
 - Provide room for little projects within a defined function. The master plan should not completely handcuff mission, but make sure it doesn't exceed its boundaries without updating the mission and master plan that it supports.
- Chain of command should not be stuck in a corner they cannot get out of - inform them of the risk associated with a decision that may result in a one way road.
- Don't ask: how much money are you willing to spend to avoid lost mission. Ask: how much capability are you willing to lose?

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