

## Quadrennial Energy Review Public Meeting April 25, 2016

### Cyber and Physical Security and Resiliency of the Grid

As one of the four Power Marketing Administrations in the Department of Energy, the Western Area Power Administration is dedicated to our mission of marketing and delivering clean, renewable, reliable, cost-based federal hydroelectric power and related services.

- 320 substations
- 17,000-plus circuit miles of transmission
- 15-state footprint here in the West
- Operate 24/7/365

Providing power across a 1.7 million square mile territory requires us to have access to our facilities at all times. Because of this level of demand and response, at Western, it is imperative we maintain our focus on providing a reliable and efficient system, ensuring the value it brings for years to come.

But what is the best approach?

Janus, the symbol of looking both backward and forward, is symbolic of our vantage point today. Will we walk down a path of business, technology and policy as usual paved with a patchwork of solutions, or will we walk down a path of transformation in terms of business, technology, and policy supporting a forward-to-fundamentals approach

related to electricity's critical role providing for societal health, prosperity and overall quality of life?

- Repair, Replace, Rebuild vs. Investing in Innovation?

As we prepare our organizations for an uncertain future, we face difficult choices. With significant investment at stake, uncertainty is difficult. We are tempted to reach for the low-hanging fruit, making the easier decisions, ensuring stability and steady, if slow, progress. While this approach has served us well, the issues of today demand broader thinking:

- Today's markets cannot exist without cyber—our information technologies (IT) have merged with our operating technologies (OT)
- Cyber is being used as a strategic weapon
  - Often combined with physical security (*i.e.* loss of service + shooter)
  - Response is not just about availability
    - Security, quality, reliability and availability (SQRA)
- There are different competitive advantages and understandings:
  - Systems are changing
  - Digital loads
  - Volatility of non-conforming generation vs. non-conforming load

It is incumbent upon those of us in the energy industry to come together and support the work necessary to protect our assets now and into the future.

- Tradeoffs between practicality and cost
  - Employing Asset Management for physical and cyber security systems and overall resiliency
  - System physics:
    - Real time access to real time information
    - Reality of response
- Balance between politics and policy
  - Education on all levels regarding the underpinning nature of the electric system
    - Who knows what, who is connected to whom
    - Who has black-start capability and what that requires
  - Proper chain of communication
    - We need real time, real actionable information
    - Right alignment of resources to prepare and respond
    - Must have tools that travel at the same speed of light as the electrons
- Need to invest in new technology
  - Collectively, determine who pays for upgrades in a financially shared structure
  - Be proactive as we move into the future and build resiliency into our design
    - Strategic Transformer Reserve
  - Need preparedness for battle with unknown adversaries who have an asymmetrical advantage

We can only accomplish these things by continuing to work directly with our all of our customers. That is why feedback and input for plans like the QER are so important.

At Western, and across the industry, we need to make sure we stay robust in this era of change, working to keep costs low while recognizing sound business practices for physical and cyber security resiliency.

We, as an industry and as a nation, must look forward in order to continue powering the energy frontier.