



Office of Electricity Delivery & Energy Reliability



DOE Electric Infrastructure Challenges and Opportunities

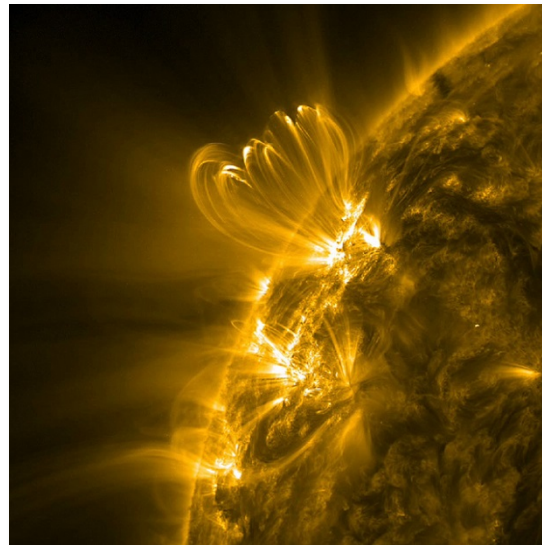
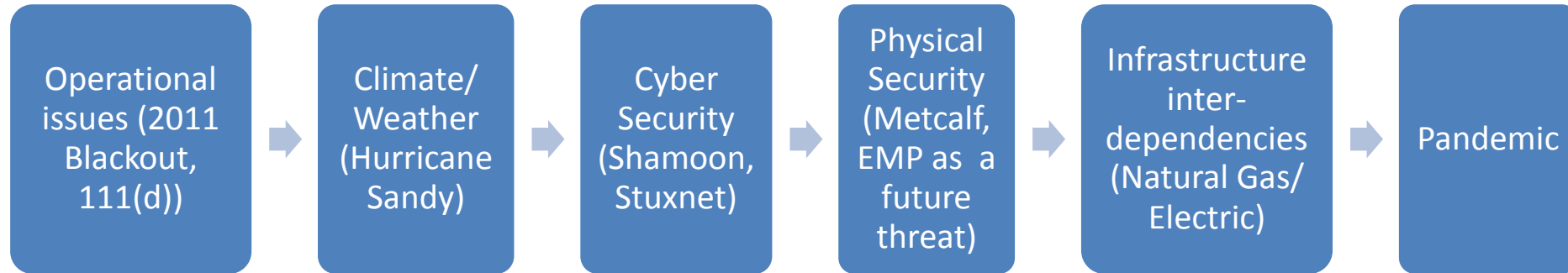
Jeff Miller

Director, DOE Japan Office

US Embassy Tokyo

August 25, 2015

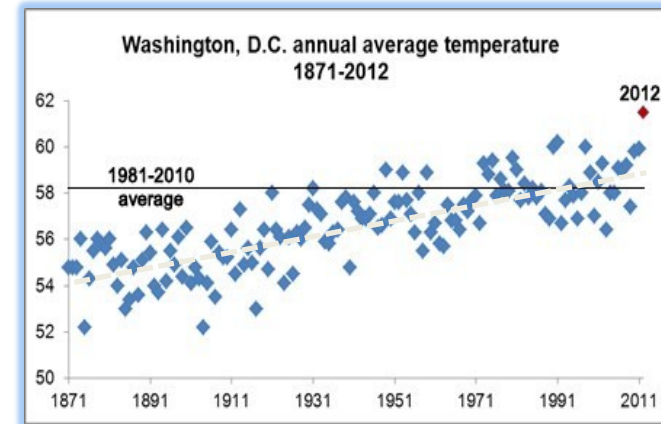
Risks



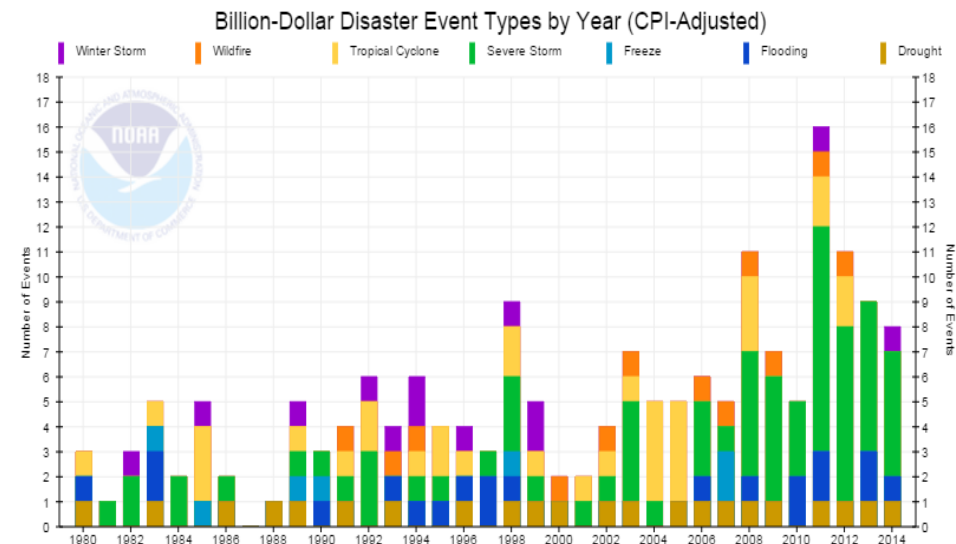
Resilience combined with modernization would define success

Climate Change and Extreme Weather Resilience

Every \$1 on protection measurements can prevent \$4 in repairs after a storm.



Trends indicate the situation will get worse, not better.





Grid Modernization Vision

*The future grid provides a critical platform for U.S. prosperity, competitiveness, and innovation in a global clean energy economy. It must deliver **reliable, affordable, and clean electricity** to consumers where they want it, when they want it, how they want it.*

Enhance the Security of the Nation through Mitigating Risks

- Extreme weather
- Cyber threats
- Physical attacks
- Natural disasters
- Fuel and supply diversity
- Aging infrastructure

Sustain Economic Growth and Innovation

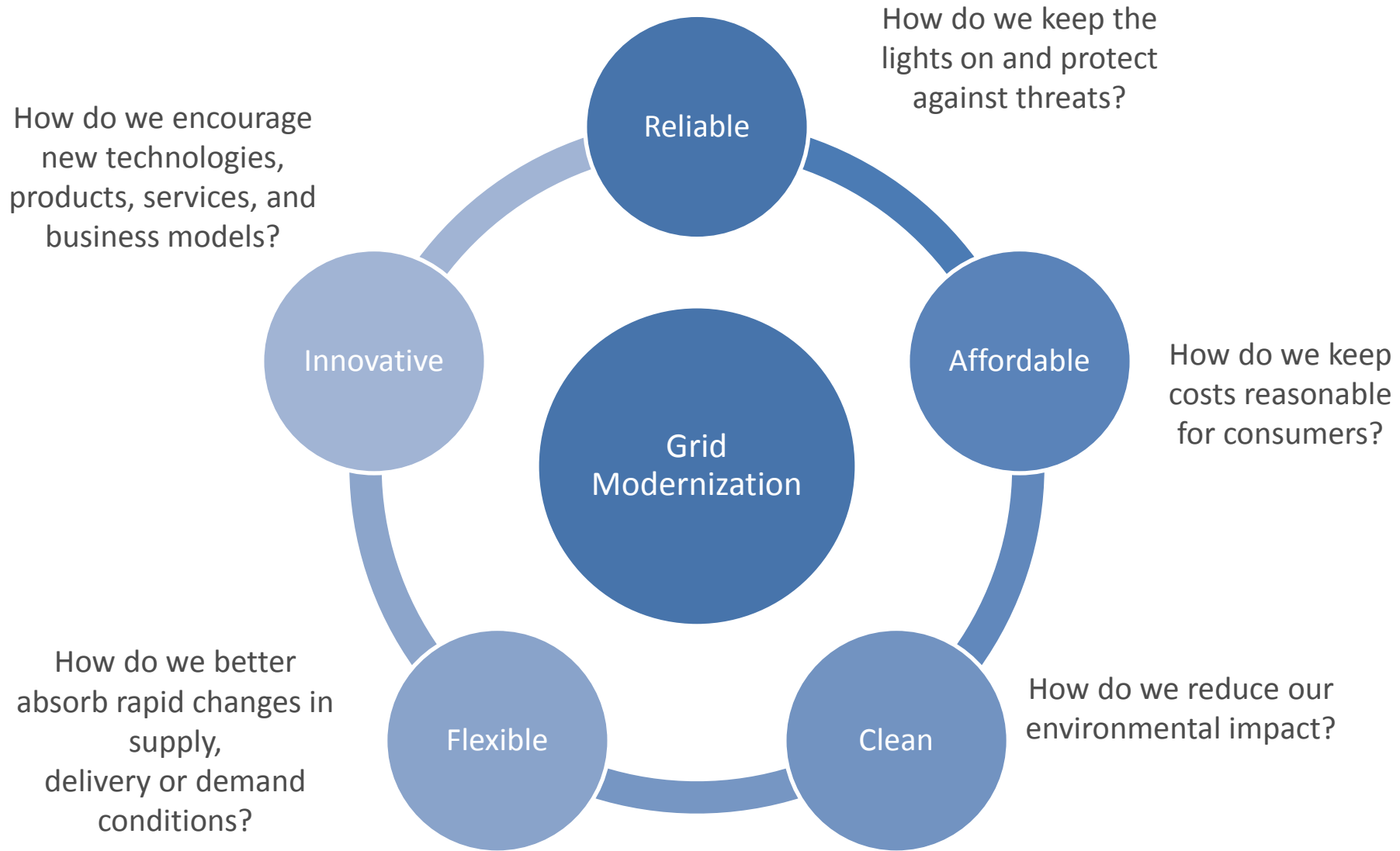
- New energy products and services
- Efficient markets
- Reduce barriers for new technologies
- Clean energy jobs

Achieve Public Policy Objectives

- 80% clean electricity by 2035
- State RPS and EEPS mandates
- Access to reliable, affordable electricity
- Climate adaptation and resilience



Key Attributes of a Modernized Grid

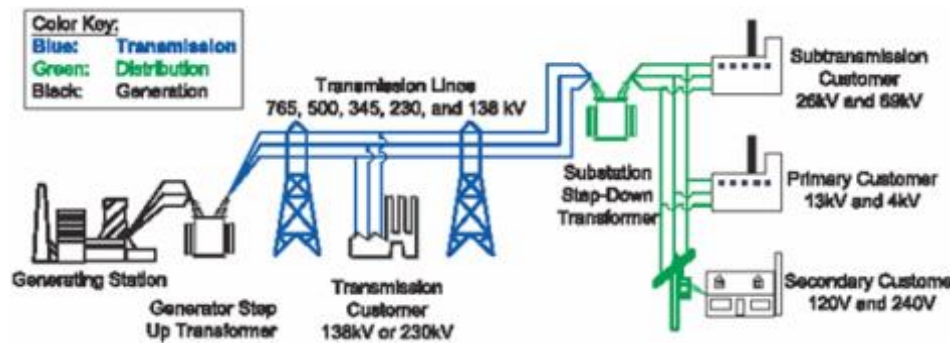




Transforming the Grid

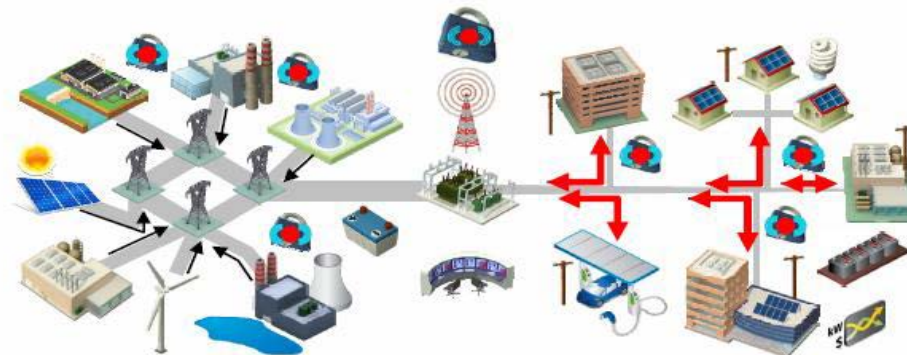
Current System

- Monolithic
- Centralized generation
- Decisions driven by cost
- Catastrophic events
- Limited energy choices
- Vulnerable to new threats



Future Paradigm

- Modular and Agile
- Centralized and distributed generation
- Decisions driven by cost and environmental sustainability
- Contained events
- Personalized energy options
- Inherently secure to all threats





Program Resources

**Office of Electricity Delivery
and Energy Reliability**
<http://www.oe.energy.gov>

Energy Storage
<http://sandia.gov/ess>

International Storage Database
<http://energystorageexchange.org>

Microgrids
<http://energy.gov/oe/services/technology-development/smart-grid/role-microgrids-helping-advance-nation-s-energy-system>

**Recovery Act Smart Grid
Investments**
<https://smartgrid.gov>