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DOE OE- Energy Storage Safety Panel

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Energy Storage Safety: A Growing Need



During the commissioning hearings of Dr. Moniz to head US DOE, Senator Wyden requested a strategic plan for grid energy storage.

DOE Published the report in December 2013

Four Critical Challenges were identified in the report

- Cost Competitive Energy Storage Technologies
- **Validated Reliability and Safety**
- Equitable Regulatory Environment
- Industry Acceptance



The Need for Validated Safety

Challenges

- Continuing evolution of technologies for energy storage
- Rapid increase in deployment of energy storage systems
- Changing application environment
 - Larger to smaller/complex systems unitary 'plug and play'
 - Scale of deployment range 3 orders of magnitude (tens of kW to tens of MW)
 - Public, private individual and corporate ownership models (and maintenance responsibilities!)
 - Many entities involved in safety regulation
- A few safety incidents can adversely affect the entire industry

Key Findings from DOE OE Energy Storage Safety Workshop

Deployment of Energy Storage is ahead of codes, standards and regulations - Each deployment is addressed uniquely.

- Increases installations costs
- Delays commercial projects
- Becomes a reason to seek other technology solutions



Three root causes:

1. Lack of standardized methods and the scientific basis necessary to validate system safety,
2. Need to update codes, standards and regulations (CSR), and
3. Incident preparedness is not fully developed or standardized for the new technologies.

A strategic plan for energy storage system safety is needed.

Path Forward for Energy Storage Safety



1. Develop and issue the *DOE OE Strategic Plan for Energy Storage Safety*.
2. Collect, organize and disseminate information on codes, standards, regulations and best practices for energy storage safety.
3. Develop and implement process to continually engage the community.
 - Workshops
 - On-line resources (Forums, databases, etc.)



Introduction to Panelists

Dave Conover,
Pacific Northwest
National Laboratory

*Addressing need for
updated CSR*

- The role of CSR and their impacts
- The current status
- What is needed to create standardized CSR

Rick Fioravanti,
DNV-GL

*Discussing safety
validation techniques*

- Current processes utilized by DNV-GL to evaluate battery system safety, testing, and functionality

Ken Willette,
National Fire
Protection
Association

*Presenting the overall
need and challenges in
incident preparedness*

- Safety challenges to first responders
- Gaps in safety validation
- Risk assessment