DOE OE
Energy Storage
Safety
Strategic Plan
– Status and Need to Update

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David Conover
Scientist/Engineer Emeritus
Purpose and Expected Outcome

- **Purpose** – to review the results of efforts undertaken over the past 5 years in response to the DOE Energy Storage Safety Strategic Plan

- **Expected Outcome** – to create a point of reference from which to move forward in updating the Energy Storage Safety Strategic Plan and fostering a more robust stakeholder collaboration
Overview of 2014 Energy Storage Safety Strategic Plan

- To successfully increase ES deployments safety must be instilled and maintained at every level
- Released in December 2014 in response to the 2013 DOE Grid Energy Storage Strategy
- Based on input received at an ES safety forum in early 2014
- Focused on grid-side safety but recognizing what is undertaken also applies to ensuring the safety of customer-side ES installations
- Different stakeholders have different motivations to develop and deploy ES that drive the level of attention to and their efforts associated with safety
Technology Safety – Desired End Status Associated with the 2014 Plan

- ES systems and their components must be designed, engineered and validated to the highest level of safety possible
- Benchmarks to measure and express what is and is not safe must be established in codes and standards which are then adopted and enforced
- Proven techniques and processes to address safety-related incidents must be recognized and readily accessible

Focal areas for DOE’s efforts to support ESS safety
- Safety of ES technology
- Risk assessment and management
- Incident response
- Codes and standards
Safety Plan Goals in 2014 to Support Achieving the End State

- The scientific and technical basis for ensuring ESS safety is well established and ESS stakeholders are incorporating new technologies that further enhance ESS safety or enable achievement of safe ESS at lower cost.
- Codes, standards and regulations enable the deployment of safe ESS in a comprehensive, non-discriminatory and institutionally efficient manner.
- The framework and methodologies for assessing and managing deployment risk for ESS are accepted and adopted by industrial and regulatory stakeholders.
- First and second responders (including on-site staff) are well informed and equipped to address hazardous incidents regarding ESS, at all life stages, with no health impacts and minimal property loss.
2014 to 2020 – Filling Gaps in Response to the Plan

• New standards such as UL 9540 and UL 9540A that provide a basis for testing ESS to measure and express safety-related performance

• New codes/standards such as NFPA 855, ASME TES-1 and updates to existing codes/standards such as NFPA 1 and 70 and the ICC IFC and IRC that cover the safety of ESS installations

• New content and media resources to support safety-related education

• Availability of newly conducted and ongoing research results

• Communication and collaboration
2020 Status

- A scientific and technical basis for ensuring ESS safety exists
- We have a framework and approaches to assess and manage risk
- Training and resources are available for first and second responders
- Relevant codes and standards have been developed and adopted and are being applied

- Are they robust enough?
- Do they address today’s ES technology and applications?
- Have they been adopted and are they being applied?
- What enhancements are needed?
Why Update the Safety Strategy Now and on a Continuing Basis

- ES technologies have evolved and will continue to evolve
- The implementation of new ES applications is very dynamic
- We will continue to secure more relevant and accurate safety-related data
- We have more relevant ways to measure and express safety
- The depth, breadth and number of stakeholders has and will continue to increase
Topical Areas to Cover in Updating the Plan – Addressing Need on a Continuing Basis

- Collect and organize safety-related research – what do we know, how to apply what we know and how to identify and fill gaps associated with what we do not know
- Apply research data and experiences associated with testing to update standards associated with measuring and expressing ES safety-related performance
- Apply research data and experiences associated with ES installations and incident responses to update codes and standards focused on ES applications and use
- Bring together all relevant stakeholders to update the plan and collaborate in its fulfillment
- Communicate on a regular basis with all entities who have a direct or indirect impact on ES safety

Research

Communication

Update Codes

Update Standards

Collaboration
Next Steps – ES Collaborative

- Technical Advisory Committee comprised of representatives of organizations playing a pivotal role in realizing ES safety
- ES Collaborative comprised of all affected parties interested in supporting the development and implementation of an enhanced safety plan
- Ongoing outreach and support to all those having a role in ensuring ES safety
Thank you