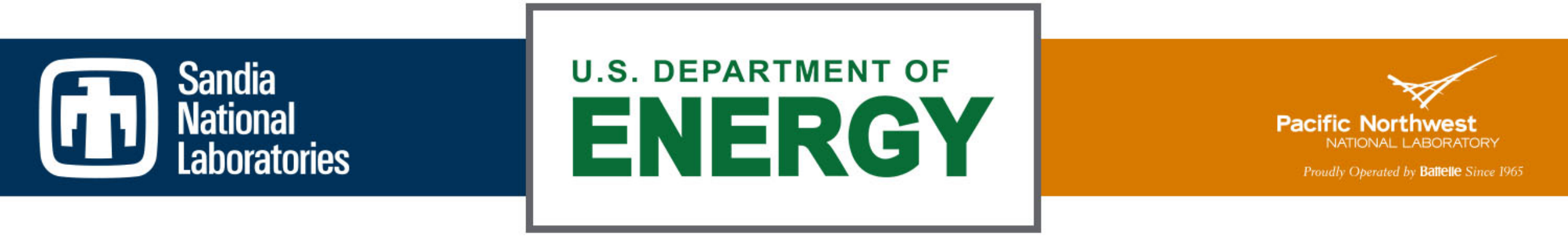
A Roadmap to ESS Safety and Reliability



Tuesday May 16th, 2017

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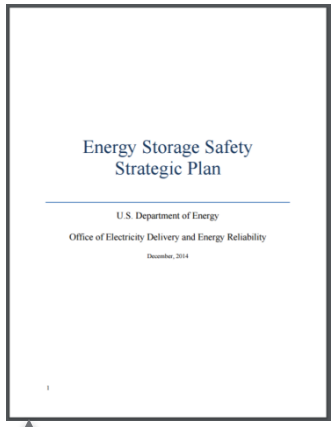
Purpose and Expected Outcome of Today's Webinar:

Purpose – To provide an introduction to and overview of the DOE OE ESS Safety Roadmap.

Expected Outcomes

- An understanding of past efforts leading up to the development of the roadmap.
- Knowledge of and support for the goal, objectives and tasks envisioned under the roadmap.
- An increase in communication and collaboration on ESS safety using the roadmap as a focal point.
- Foster feedback and participation moving forward from all of you on the call.
- Outline proposed next steps.

DOE OE Energy Storage Safety Initiative



Activities performed in CSR, R&D, and EO&IR

ESS Safety Roadmap

2013 → 2014 → 2015 → 2016 → 2017

DOE OE Workshop for Grid Energy Storage Safety

Working groups formed

Meeting the Challenge: 2017 ESS Safety Forum, Santa Fe NM

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Roadmap to ESS Safety and Reliability

GOAL

Foster confidence in the safety and reliability of energy storage systems.

OBJECTIVES

Research and Development

Ensure that the most needed research is identified, prioritized, and communicated Facilitate collaboration, information and results sharing.

Codes and Standards

Identify, stay current on status, and comment on codes, standards, and regulations related to ESS Safety to enable the safe implementation of energy storage systems.

Collaborative Resources

Create a conduit for effective communication using traditional and evolving media that will serve as a forum for involvement, information sharing and collaboration.

Roadmap to ESS Safety and Reliability

Goal: Foster confidence in the safety and reliability of energy storage systems.

Objectives

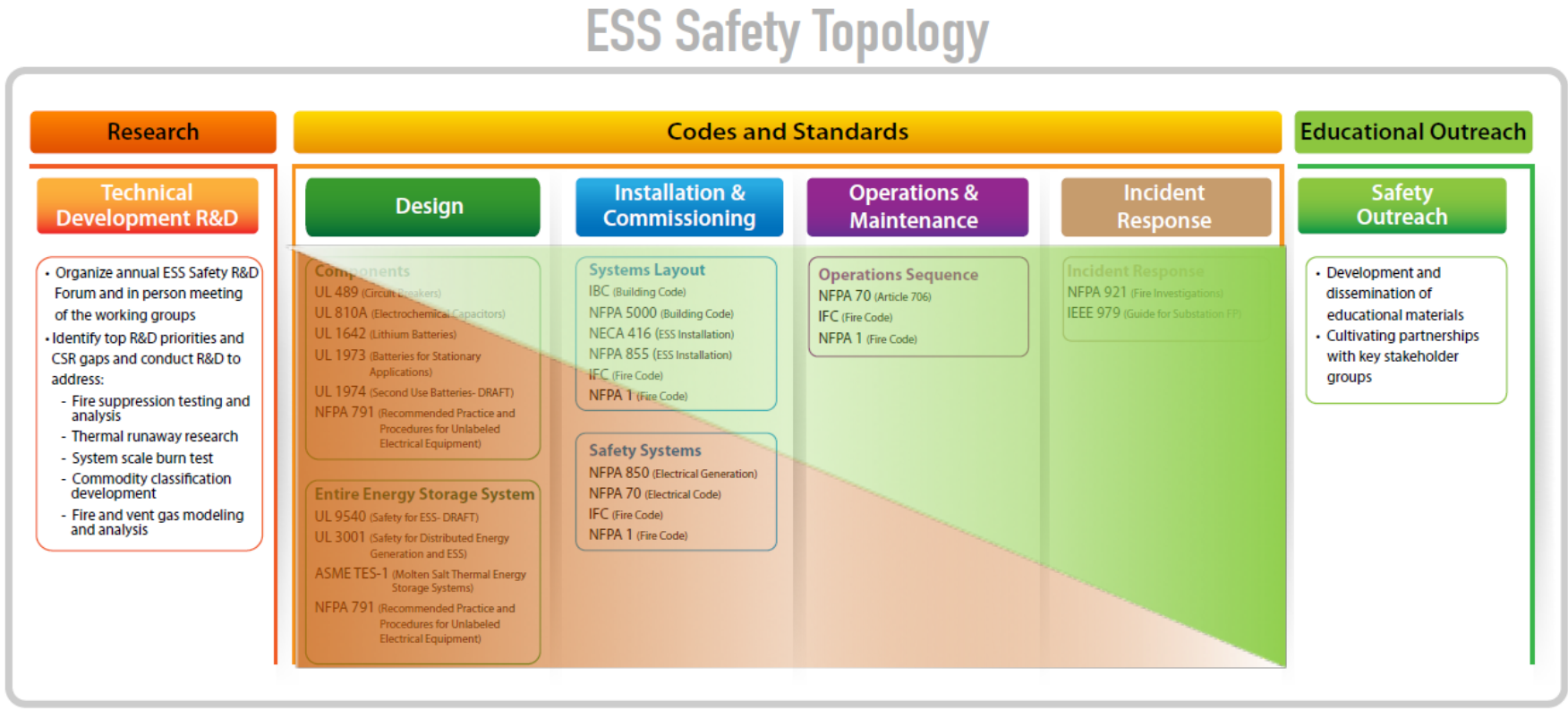
Research and Development: Ensure that the most needed research is identified, prioritized, and communicated so the community can best minimize unintended consequences from potential system failures. Facilitate collaboratation, information and results sharing.

Codes and Standards: Apply research and development to support efforts in the private sector that are focused on ensuring that codes and standards are available to enable the safe implementation of energy storage systems in a comprehensive, non-discriminatory and science-based manner.

Collaborative Resources: Create a conduit for effective communication using traditional and evolving media that will serve as a forum for involvement, information sharing and collaboration that allows stakeholders to be informed of activities being undertaken in support of energy storage safety and this roadmap,

How to Successfully Implement the Roadmap

Consolidating what were multiple working groups into a singular 'ESS Safety Working Group'



Roadmap for ESS Safety – Research and Development

Goal: Foster confidence in the safety and reliability of energy storage systems.

Objective: Ensure that the most needed research is identified, prioritized, and communicated so the community can best minimize unintended consequences from potential system failures. Facilitate collaboration, information and results sharing.

- Identify gaps in data and methods
- Facilitate collaboration to address these gaps.
- Include relevant information in the ESS Collaborative Repository.

Roadmap for ESS Safety – Codes and Standards

Goal: Foster confidence in the safety and reliability of energy storage systems.

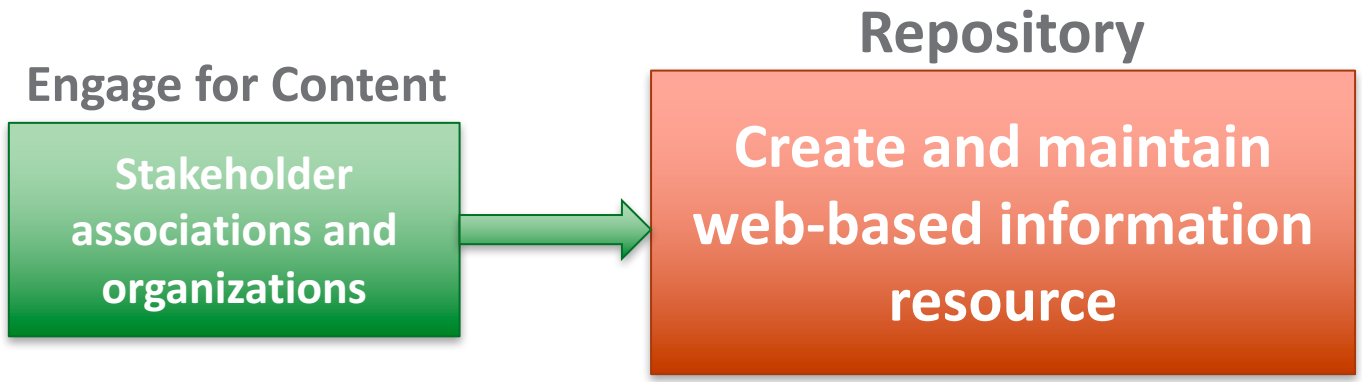
Objective: Apply R&D to support efforts that are focused on ensuring that C&S are available for safe installation of ESS

- Review and assess codes and standards
- Identify gaps in knowledge that require research and analysis
- Identify areas in C&S that are potentially in need of revision or enhancement
- Develop input for new or revisions to existing C&S through collaborative efforts

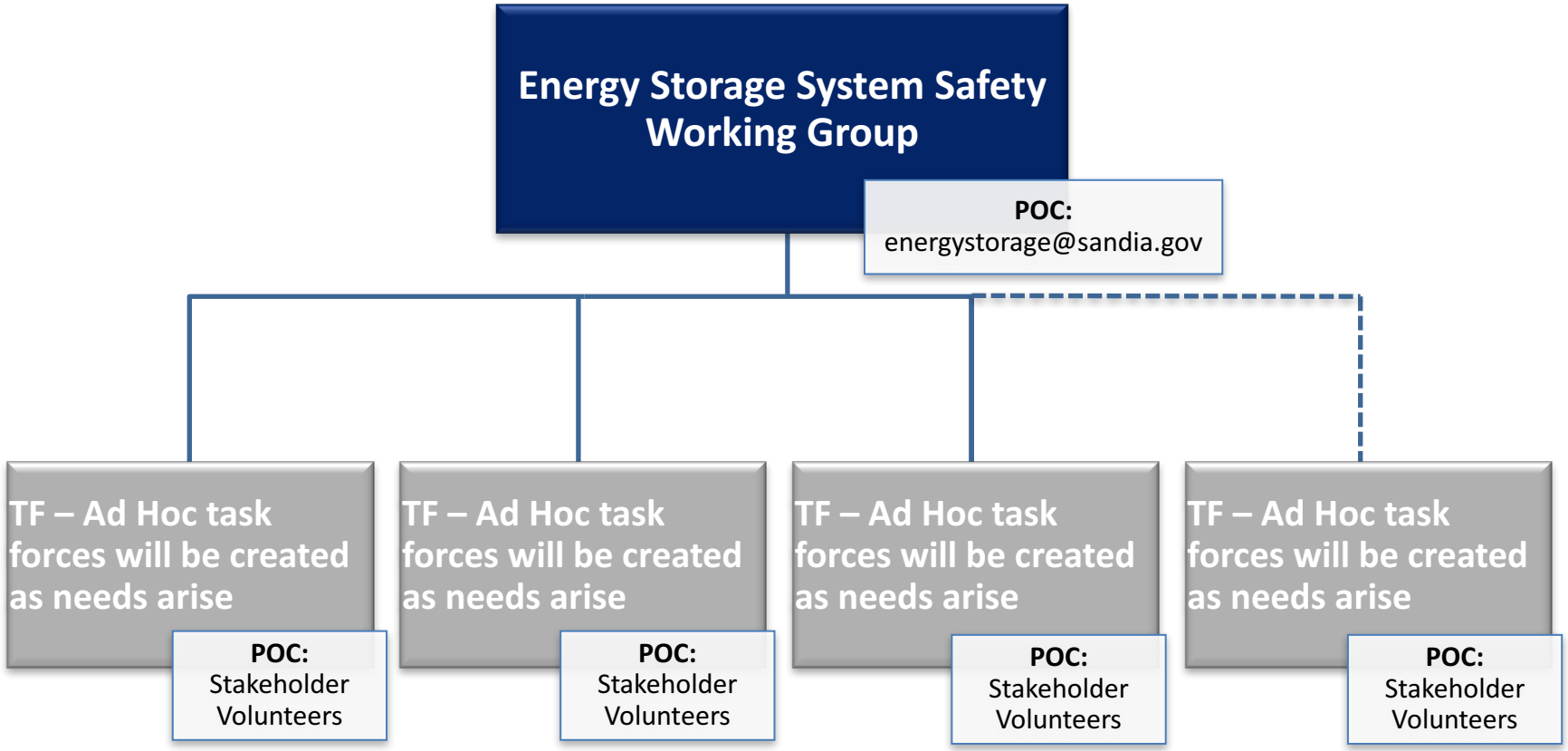
Roadmap for ESS Safety – Collaborative Resources

Goal: Foster confidence in the safety and reliability of energy storage systems.

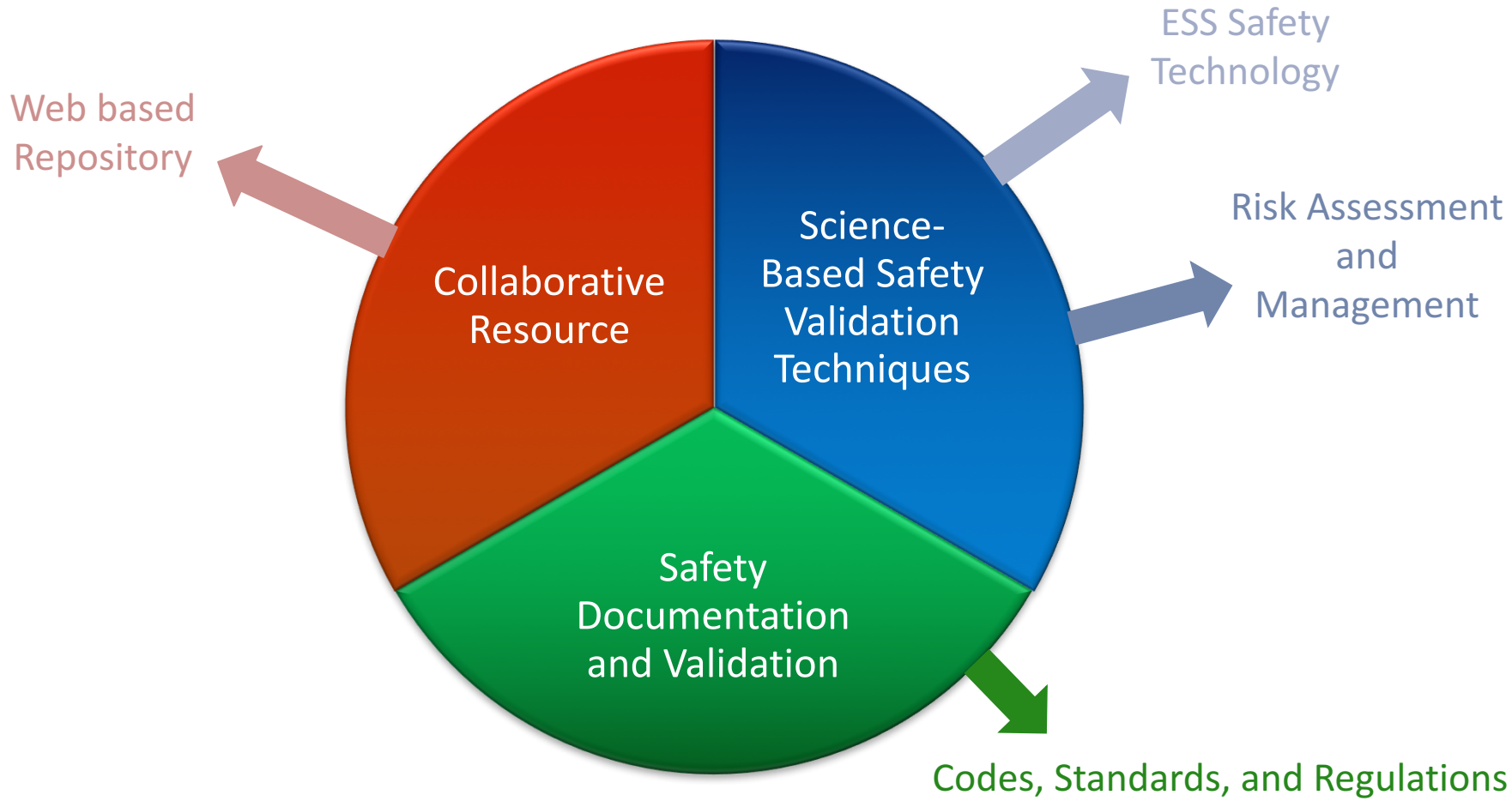
Objective: Create a conduit for effective communication using traditional and evolving media that will serve as a forum for involvement, information sharing and collaboration that allows stakeholders to be informed of activities being undertaken in support of energy storage safety and this roadmap.



New ESS Safety WG Organizational Structure



Interconnected Paths to Safe Energy Storage Systems



Summary

- There is continued interest in addressing ESS safety and reliability.
- While efforts to date have been successful more is needed to ‘keep up.’
- To address ESS safety and reliability we need to increase coordination.
- This roadmap focused on a simple goal supported by relevant objectives with tasks will provide a needed focus.
- Working together we can best ensure safe and reliable ESS.

Next Steps

- Participation from any entity or organization is welcome and encouraged and will comprise the ESS Safety Working Group (ESS SWG)
- Work will commence on the tasks under each of the three objectives
- All on the ESS SWG are invited to participate in those efforts
- As warranted task forces will be created to work on specific and uniquely focused tasks supporting the roadmap
- PNNL and Sandia staff will facilitate the next steps and keep the ESS SWG updated on all work done in support of the roadmap through the website and monthly webinars

Acknowledgment

Dr. Imre Gyuk, DOE-Office of Electricity Delivery and Energy Reliability

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Thanks
We Look for and Welcome your Participation

For more information about DOE OE ESS safety activities contact

energystorage@sandia.gov