



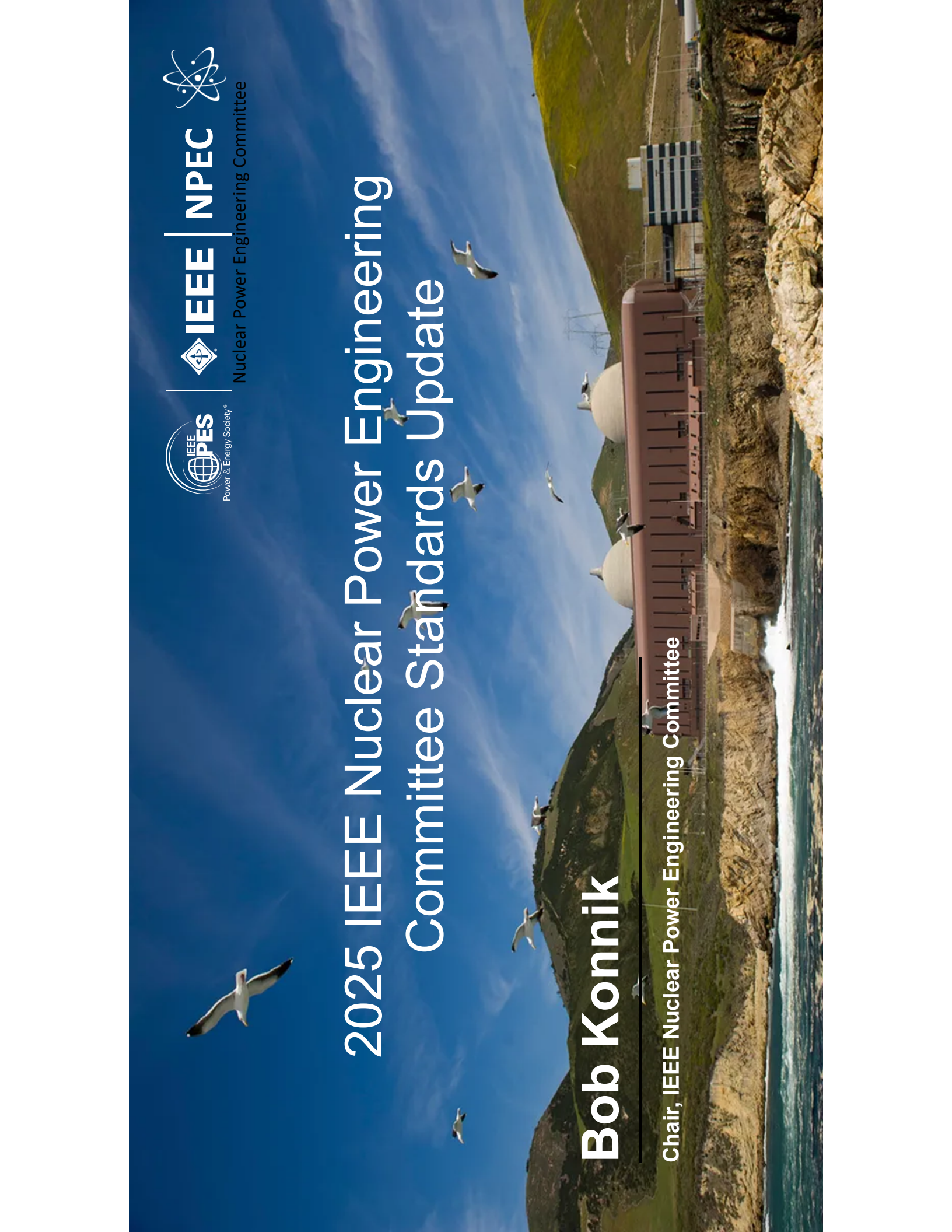
IEEE | NPEC

Nuclear Power Engineering Committee

2025 IEEE Nuclear Power Engineering Committee Standards Update

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Chair, IEEE Nuclear Power Engineering Committee





WHO WE ARE

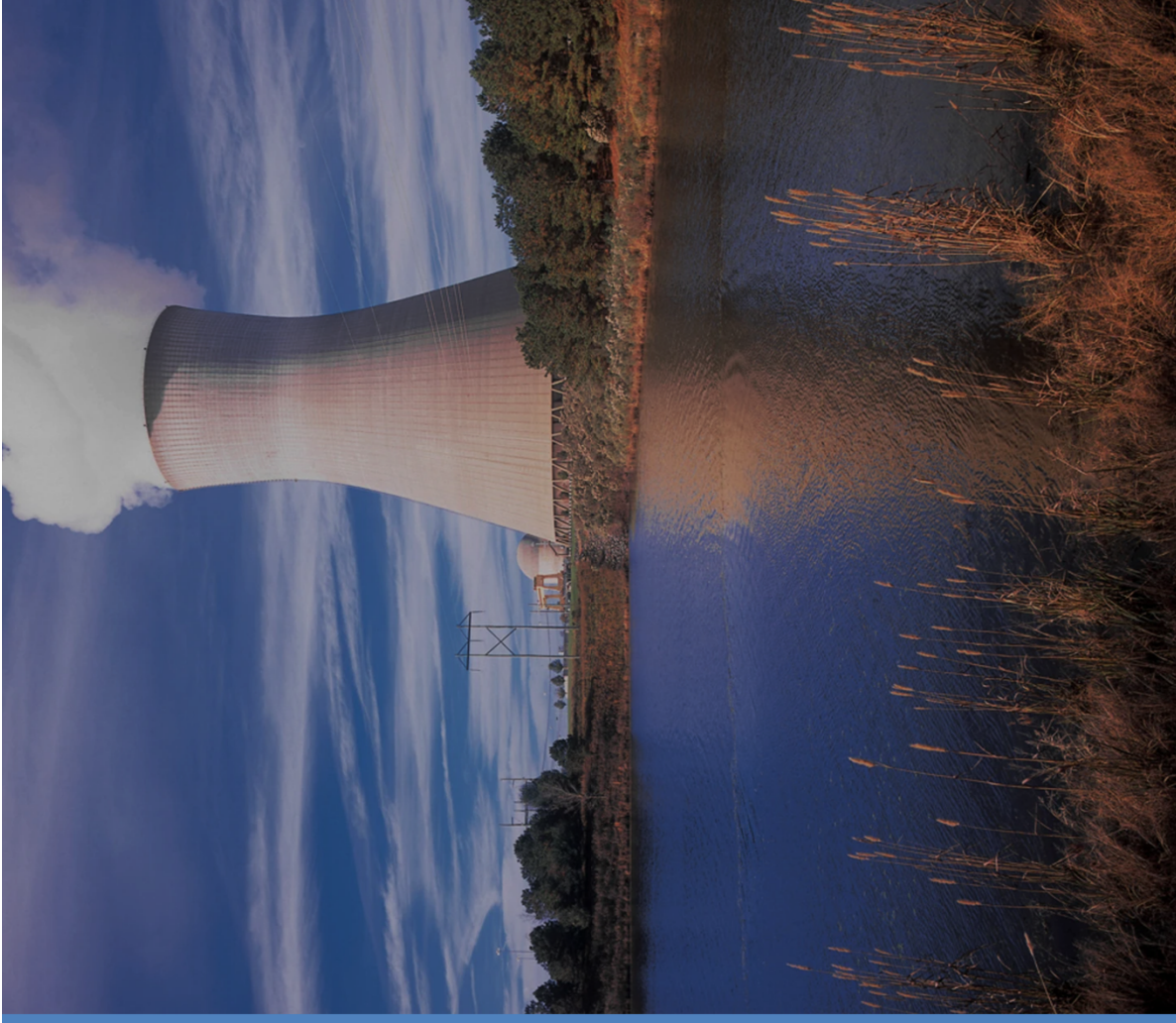
IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

OUR SCOPE

All nuclear power related technical and standards writing activities within the IEEE, including research, development, and advancement of nuclear engineering.

OUR COMMITTEE

We are an international group of technical experts from nuclear utilities, power plants, equipment vendors, engineering companies, and regulators.



OUR STANDARDS

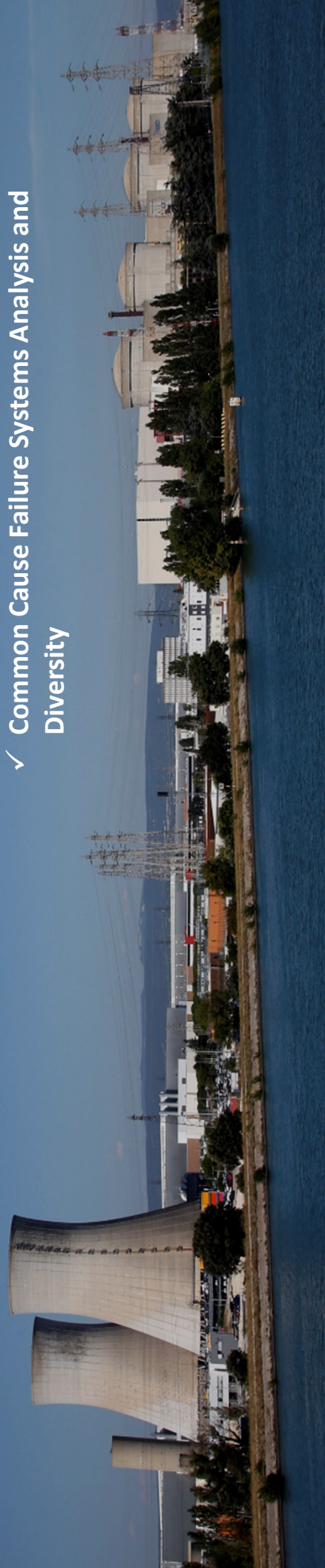
NPEC maintains 51 existing standards, 23 of those standards having full or partial NRC endorsement. NPEC standards are organized within these technical areas:

- Equipment Qualification
- Operations/Maintenance/Aging/Testing/Reliability
- Auxiliary Power Systems
- Human Factors and Control Facilities
- Safety-Related Systems

STANDARDS DEVELOPMENT

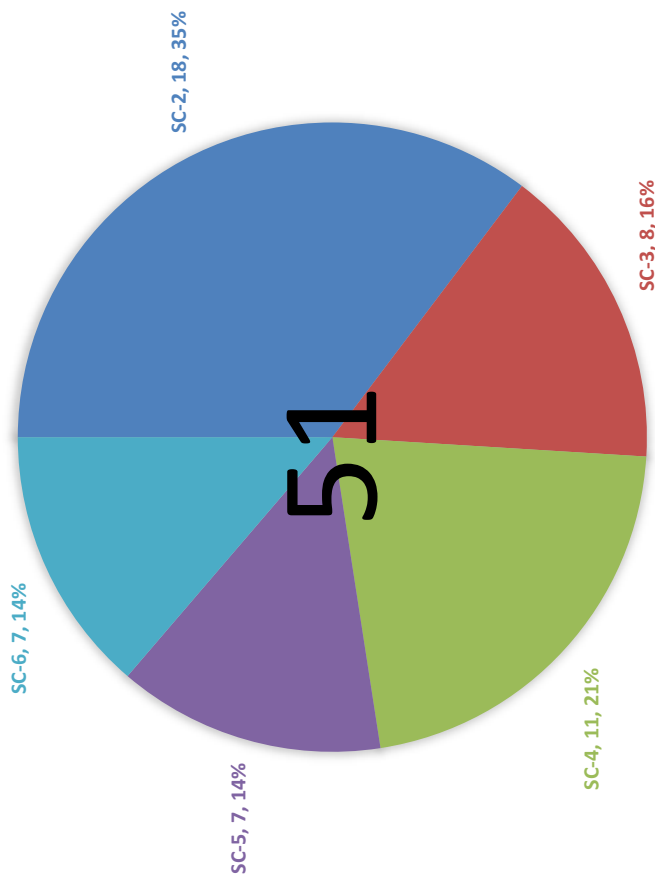
NPEC has a total of 25 standards projects currently underway, including 5 new standards:

- ✓ EMC Testing of Electrical and I&C Equipment
- ✓ Computer Based Displays for Monitoring & Control
- ✓ Application of the Single-Failure Criterion
- ✓ Classification of I&C and Electrical Systems
- ✓ Common Cause Failure Systems Analysis and Diversity



5 Technical Subcommittees

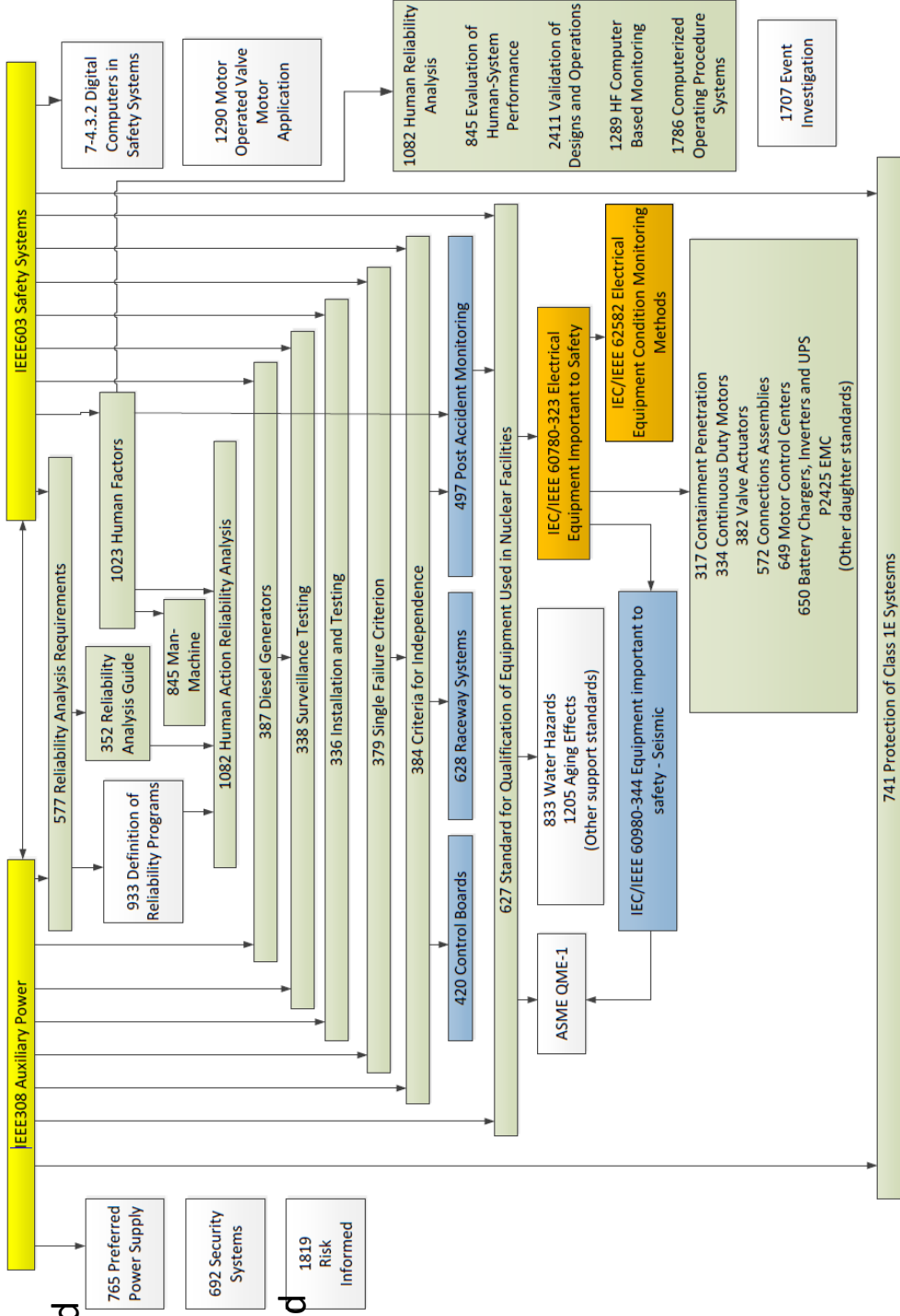
- **Qualification (SC-2)**
- **Operations, Maintenance, Aging, Testing & Reliability (SC-3)**
- **Auxiliary Power (SC-4)**
- **Human Factors, Control Facilities and Human Reliability (SC-5)**
- **Safety Related Systems (SC-6)**



- Majority of standards focused on design & qualification of electrical and electronic equipment

- Class 1E or not, as determined by IEEE 308, 603, and 497

- Class 1E:** Safety classification of the electrical equipment and systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or are otherwise essential in preventing significant release of radioactive material to the environment.





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Nuclear Power Engineering Committee

SIGNIFICANT ACTIVITIES

- Recent development/revision of several key nuclear power standards, including:
 - ✓ IEEE/IEC 63332-387, Diesel Generator Units Applied as Standby Power Sources
 - ✓ IEEE Std-352, General Principles of Reliability Analysis
 - ✓ IEEE Std-741, Protection of Class 1E Power Systems
 - ✓ IEEE Std-1819, Risk-Informed Categorization and Treatment of Electrical Equipment
 - ✓ IEEE Std-1205, Aging Effects on Electrical Equipment
 - ✓ IEEE Std-317, Electric Penetration Assemblies
 - ✓ IEEE/IEC 62582-1, Equipment Condition Monitoring, General
 - ✓ IEEE/IEC 62582-3, Equipment Condition Monitoring, Elongation at Break



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SIGNIFICANT ACTIVITIES

- Standards in ballot or to be in ballot soon, including:
 - ✓ IEEE 690, Design and Installation of Cable Systems
 - ✓ IEEE/IEC 62671, Selection and Use of Industrial Digital Devices of Limited Functionality
 - ✓ IEEE 1792, Recommended Practice for Preferred Power Supply Reliability
 - ✓ IEEE 2421, Guide for Design and Developing Graphical User Interfaces for Monitoring and Control
 - ✓ IEEE 1786, Human Factors Applications of Computerized Operating Procedure Systems
 - ✓ IEEE 2425, Standard for Electromagnetic Compatibility Testing
 - ✓ IEEE/IEC 60880, Software Aspects for Computer-based Systems Performing Category A Functions
 - ✓ IEEE 7-4.3.2, Standard Criteria for Programmable Digital Devices
 - ✓ IEEE 1707, Recommended Practice for the Investigation of Events
 - ✓ IEEE 497, Standard Criteria for Accident Monitoring
 - ✓ IEEE/IEC 60780-323, Electrical Equipment Important to Safety Qualification
 - ✓ IEEE/IEC 62582-5, Electrical Equipment Condition Monitoring Methods, OTDR
- Coordination with NRC for Standards Endorsement
- Development of Joint-Logo Standards with IEC
- Participation in EPRI/NEI Advanced Reactor Codes and Standards (ARCS) Initiative



Learn More

site.ieee.org/pes-npec/

