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[The Legal Rights and Liabilities of Underground CO₂ Storage \(1017647\)](#)

This report investigates key issues related to the transport and storage of CO₂ and provides background for future studies on managing CO₂ liability. The report provides a base of information on current regulatory practices, reviewing and analyzing the rules of local, state, and federal agencies that have or will have jurisdiction over legal and regulatory aspects of CO₂ storage. In addition, the study identifies gaps that must be addressed in important areas, such as the permitting of CO₂ injection wells, pore space ownership, methods for securing injection rights, options for liability management, and requirements for well closures and post-injection care.

[Amorphous Metal Transformer: Next Steps \(1017898\)](#)

Amorphous metal transformers (AMTs) were developed in the United States in the early 1980s by EPRI and General Electric Company. U.S. demand for these highly efficient units disappeared in the late 1990s with the onset of deregulation, and over 90% of global production and use of AMTs is now located in Asia. With today's concerns over energy costs and climate change, U.S. recommercialization of AMTs could make sense, helping utilities improve distribution system efficiency and reduce emissions. This white paper traces the technology's history, documents the current state of AMT product globally, discusses the Department of Energy's ruling on minimum efficiency of distribution transformers, and lays out the AMT value proposition under the current environment.

[The Potential to Reduce CO₂ Emissions by Expanding End-Use Applications of Electricity \(1018871\)](#)

Replacing fossil-fueled end-use technologies with more efficient electric technologies can both save energy and reduce CO₂ emissions. This report identifies and quantifies opportunities in the residential, commercial, and industrial sectors where such substitution could make a considerable difference between 2009 and 2030. Results show that the residential sector holds the greatest technical potential for energy savings and emissions reductions, and that the cumulative technical potential across all three sectors represents a 4.7% decrease in CO₂ emissions relative to the Energy Information Administration's 2030 baseline forecast. The report

presents technical and realistic potential values for energy savings and CO₂ reductions by technology, region, and end-use sector.

[Materials Reliability Program: Technical Bases for the Chemical Mitigation of Primary Water Stress Corrosion Cracking in Pressurized Water Reactors \(MRP-263\) \(1019082\)](#)

Two methods of chemical mitigation are considered especially practical for reducing primary water stress corrosion cracking (PWSCC) in thick-walled components of Alloy 600: zinc injection and hydrogen optimization. This report reviews available experimental and plant data on such chemical mitigation, assesses the statistical confidence in these results, and quantifies the benefit of each mitigation technique. This information defines the technical bases for improvements in asset preservation and for potential changes to current inspection requirements for pressure boundary components susceptible to PWSCC.

[Modularization of Equipment for New Nuclear Applications \(1019213\)](#)

The next generation of nuclear plants is expected to take significant advantage of modular construction techniques, which can save time, improve quality, and reduce the number of construction personnel required for a project. To ensure the quality and practicality of this approach, equipment modules should be thoroughly shop-tested before installation. This report describes the results of benchmarking visits to three companies to investigate the methods used to test and inspect a module before shipment to the construction site. This work will provide a basis for specific recommendations for module applications in new commercial nuclear plant construction.

[Program on Technology Innovation: Advanced Control Room Information Management Strategies \(1020361\)](#)

In modern power plants, operators rely on distributed control system (DCS) graphical displays to convey the critical, moment-by-moment flow of information required to assess plant status. But while digitization has improved the reliability and accuracy of a plant's control systems, there has been little emphasis on human factors engineering. The data are there but are often not easily assimilated by the operator, the result being reduced situational awareness. This report examines opportunities to improve the interface between plant and operator, ranging from relatively low-cost solutions for existing systems to suggested design features that could be included in the next generation of DCS displays. The evaluation tools described allow engineers and designers to quantify the situational awareness quality of their systems.