

# American Nuclear Society Report on SMR Generic Licensing Issues

## Abstract

The US has licensed and built small reactors since the 1950's with numerous land-based and sea-based platforms. These efforts proved the safety and security of light water cooled, gas cooled, and metal cooled reactor technologies. In the past decade, there has been evolving dialogue between Small and Medium Sized Reactor (SMR) designers, project developers, and the Nuclear Regulatory Commission (NRC). Of particular note was the 2009 NRC SMR workshop, which encouraged dialogue between SMR developers and the NRC prior to license application. The NRC was clear in their message:

For each issue... "the SMR community should provide a consensus approach"

Recognizing the potential for SMRs to change the social and energy supply paradigms, the American Nuclear Society (ANS) President established a Special Committee for SMR Generic Licensing Issues in 2010. The ANS SMR Special Committee led the nuclear science and engineering community in organizing a forum for technical dialogue on SMR licensing issues. Committee members were associated with over three dozen organizations representing government, universities, national laboratories, reactor designers, industry consultants, technical service providers, law firms, and electric power companies.

The ANS SMR Special Committee developed solutions to SMR generic licensing issues by being

- Issue driven and focused on technology neutral solutions
- Inclusive with crosscutting participation from ANS members with every SMR perspective
- Collaborative with the Department of Energy (DOE), the Nuclear Energy Institute (NEI), Electric Power Research Institute (EPRI), and International Atomic Energy Agency (IAEA) and other SMR programs

Two dozen SMR generic issues were identified. The output from the ANS SMR Special Committee is a set of "white papers" that, as an ANS product, could be used by the entire SMR community. An interim report issued in August 2010 contains the first set of white papers completed by the ANS SMR Special Committee.

A clear trend emerges in the conclusions and recommendations of the completed white papers, namely that the current US nuclear reactor regulations are focused on the safety and security of large Light Water Reactors (LWRs). The papers illustrate the incompatibilities of the current licensing rules with SMR designs. In the near-term, applicants would have to rely on exemptions to current regulations in order to license a SMR. This approach would not result in the stable regulatory framework necessary for large-scale deployment of SMRs. As a result, longer-term solutions, which would involve either NRC rule making or Legislative changes, are evaluated and the recommended approaches are discussed in the Committee's report.