

SMRs a non-starter

The much hyped “nuclear renaissance” seems over before it began, certainly in the Western World. That’s because of plentiful low-cost natural gas, shifting energy demand, staggeringly large new nuclear plant costs, concerns about nuclear’s unique safety, security, waste, and environmental contamination challenges, and the surprisingly rapid growth of high-tech renewable energy and energy storage technologies.

It’s puzzling then why the Fedoruk Centre’s Neil Alexander so enthusiastically promotes taxpayer-funded research and development into small modular nuclear reactor (SMR) technology.

Consider the following:

- In May 2012, *Forbes* magazine noted that there is no demonstrated market for SMRs, partly because they simply cannot compete with low emission gas-fired power plants.
- SMRs by their small nature are inherently less efficient and more expensive than large reactors per unit of power produced, because they lose the economies of scale, highly speculative economies of modular design notwithstanding.
- Safety parameters for these devices are unknown. Regulations for exclusion zones, emergency evacuation zones, legal liability insurance,

terrorist and criminal security standards, arms proliferation risks, and earthquake regulations would all have to be re-written to suit the nature of SMRs. This could very likely slow down commercial licensing prospects, perhaps for decades, and thus discourage investors

- Unlike conventional models, many SMR designs situate the reactor core underground, aggravating the problems of groundwater contamination, flooding, earthquake vulnerability, and also limiting accessibility in case of emergency and subsequent fuel removal.
- In a scenario with numerous small decentralized nuclear power units, spent fuel management and security would be more complex and expensive. Numerous small units rather than a few big plants add security concerns by supplying more potential targets for terrorist attacks.

Prominent American physicist Edwin Lyman, Senior Scientist in the Global Security Program of The Union of Concerned Scientists, recently dismissed this technology by stating that SMRs are all in the “stage of fantasy” and characterized the public discussion of them as “irrational exuberance.”

In 2013, the respected Washington-based Institute for Energy and Environmental Research (IEER) published a

highly critical report on several light water SMR concepts. Report author nuclear engineer Dr. A. Makhijani, PhD, stated in the summary, “SMRs are a poor bet to solve nuclear power’s problems...”

In 2014, large American nuclear vendors Fluor Corp., Babcock & Wilcox (B&W), and Westinghouse announced drastically reduced development funding for their SMR designs citing poor economics and no foreseeable markets. Westinghouse even laid off 100 workers in its SMR division.

In a 2014 online MIT journal article, *Small Modular Nuclear Reactors and the Future of Nuclear Power*, Mark Cooper, PhD, of Vermont Law School, Yale University, concluded that SMRs are all but dead as demonstrated by the major players B&W and Westinghouse’s scale backs, the technology’s poor economics, and the general lack of customer interest.

Saskatchewan taxpayer’s money should not be wasted on this folly, because the signs are clear—small modular reactors are a non-starter. ■

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OCN, University of Saskatchewan, May 8, 2015, vol. 22, Issue 17.