6/15/2017 Prepared Remarks by M. V. Ramana re: TVA Clinch River ESP – SACE/TEC Tele Press Conference

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TVA's ESP application makes various unsubstantiated claims about SMRs that make it seem more like an advertisement brochure rather than an examination of the environmental impacts of constructing these reactors. This includes claims about safety and security that Dr. Lyman talked about. Apart from the technical reasons mentioned by Dr. Lyman, there are also historical reasons to be skeptical about SMRs.

The idea of small reactors is not new and a belief in the power of small nuclear reactors to energize different communities that were not currently served by atomic energy dates back to the 1950s and 1960s, but the early experiments were mostly failures. Although a few small reactors were constructed in the first round of nuclear construction, most countries quickly progressed from those to larger sizes, primarily because of the hope that through economies of scale they would manage to lower their generation costs to a stage where they could compete with other cheaper sources of electricity, such as coal. Many of the expenses associated with constructing and operating a reactor do not change in linear proportion to the power generated. For instance, a 400-MW reactor requires less than twice the quantity of concrete and steel to construct as a 200-MW reactor, and it can be operated with fewer than twice as many people.

Although that hope of competing with other power sources was never really fulfilled completely, and today large reactors are finding it extremely difficult to compete economically without extensive government support, and sometimes even with such support, the nuclear industry today and supporting governments around the world are placing their hopes on what is sometimes called economies of serial production as well as promises of quicker construction periods. The history so far offers little evidence that such hopes will be realized but the nuclear industry practices a selective kind of remembrance, choosing to forget or not emphasize earlier failures. The experience so far with small nuclear reactors suggests that they would be less economical than full-size ones.

SMRs also have other impacts that are greater than large reactors on a per kWh basis. This includes the amount of water they would require and the amount of fuel that they will need. Of course, at this point, all these reactors are just theoretical designs and we have to see how they will perform when—and if—they are actually constructed. SMRs will certainly fare worse than renewables when it comes to environmental impacts.