NUCLEAR ENERGY:

DOE advanced test reactor necessary to keep U.S. leadership -- experts

Katherine Ling, E&E reporter
Published: Thursday, May 14, 2015

The Energy Department should create a test reactor that is open for private-sector companies to experiment on new materials and technology that will lead to the next generation of nuclear energy, a panel of experts told members of the House Science, Space and Technology Committee yesterday.

"Right now, nuclear has remained stagnant because the research is lacking," said John Parmentola, senior vice president of energy and advanced concepts at General Atomics, during the Energy Subcommittee hearing.

Parmentola urged members to fund a new user facility for a highly neutron-rich fast reactor that could test materials and concepts for several advanced technologies, including molten salt, liquid metal and a gas-cooled fast reactor -- the last of which is a technology General Atomics is pursuing. He added that cost-share agreements with industry actually worked against innovation, as companies tend to focus on low-risk research instead of high-risk ideas if the cost is split with the government.

But that would provide only support for one type of nuclear energy -- fission. Nathan Gilliland, CEO of General Fusion Inc., a company creating a nuclear technology based on a different atomic reaction -- fusion -- asked lawmakers to keep an open mind on the next nuclear breakthrough.

"This is not a 'winner-take-all' industry we are developing," Gilliland said.

With additional DOE support for less-expensive "middle ground" fusion research, "the viability and efficacy of these alternative approaches can be demonstrated for less money. ... Dollar-for-dollar progress or failure can be determined much more quickly," he said in his testimony.

Gilliland explained that "middle ground" fusion technology being developed by General Fusion, Helion and other startups, as well as at national labs, is trying to split the difference between two grander, more expensive DOE fusion experiments -- using a powerful laser at the National Ignition Facility and the supermagnetic field of the multinational ITER project.

A DOE demonstration facility could have both fusion and fission test capabilities, Gilliland said. "It would be beneficial for us all to have it at one location," Gilliland said. Providing additional funding and support for the accelerated development of a regulatory framework at the Nuclear Regulatory Commission, he added, "could be helpful for all of us."

The House is set to consider two bills next week that contain provisions that would require DOE to report its capability of hosting a privately funded fusion or non-light-water nuclear reactor up to 20 megawatts for testing and demonstration. DOE would need to address related safety, oversight, contractual and infrastructure issues, as well as the possibility of a demonstration up to 2 gigawatts (E&E Daily, May 13).

The price tag for such a facility or facilities was not discussed at yesterday's hearing, but it would certainly not be cheap. Subcommittee Chairman Randy Weber (R-Texas) floated a less expensive idea of creating a national laboratory "library" for advanced nuclear companies to draw from as a way to help leverage federal resources for private companies.

In a rare admission, Rep. Dana Rohrabacher (R-Calif.) conceded that environmental groups had been right about current light water reactor technology.

"Nuclear energy as we are now using it is very dangerous," he said. "And now there is leftover waste to deal with nuclear today. So that is a big concession for me."

Rohrabacher agreed the answer was to push funding and developing of the next generation of reactors. "This idea of having an open access facility is perhaps the most important thing we could do for the long-term U.S. interest," he said.

But fusion companies need not apply, he added. The fact that after billions of dollars companies are only able to say fusion is "possible," rather than ready in two to three years, makes it a poor use of limited taxpayers’ funds, he said.

Subcommittee ranking member Alan Grayson (D-Fla.) had the opposite point of view, urging greater support for fusion that
5/14/2015  --  NUCLEAR ENERGY: DOE advanced test reactor necessary to keep U.S. leadership -- experts -- Thursday, May 14, 2015 -- www.eenews.net

does not have the radioactive waste and proliferation issues, which even more advanced fission-based reactors still must address to some extent.

With regulations and the need for further testing, none of these advanced nuclear technologies could be commercial in at least the next five years regardless.

Mark Peters, associate laboratory director at the Argonne National Laboratory, did not pick a side in the fusion versus fission fight, but he did sound the alarm about the consequences if the United States failed to boost its overall nuclear energy research efforts and maintain a superior research infrastructure.

"It is very important to have a seat at the table having that nuclear [science and technology]," he said. "It can't do anything but help international leadership."

Twitter: @lingkate6