Chairman Lamar Alexander Opening Statement
Committee on Appropriations Subcommittee on Energy & Water Development

Hearing to Examine the Future of Nuclear Power: Advanced Reactors Funding

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(*As prepared for delivery*)

Every week, Senator Whitehouse of Rhode Island goes to the Senate floor to deliver warnings about climate change.

Last year, he and I wrote a New York Times op-ed together saying that if you care about climate change, it makes no sense to shut down nuclear power plants because nuclear power provides 60% of our carbon-free electricity.

But the real prospect exists that the United States, which has led the world in the peaceful use of nuclear technology, may find itself in the near future without these emission-free nuclear reactors.

This warning comes from the Center for Strategic and International Studies and also Bill Gates and a group of investors who want to build advanced reactors.

This hearing is to discuss perhaps the most promising way to assure a nuclear industry for America's future, and that is to accelerate the development of advanced reactors. And specifically, to deal with the single biggest obstacle facing this development, which is one word—cost.

One of the most intriguing ways to reduce cost is with 3D printing, which is a conceptually simple process of using a computer model to join materials, one layer at a time, to make complex objects.

In other words, a computer program can create an auto part, a tool to make an auto part, or even a replica of a Ford Shelby Cobra. In fact, in May 2017, the Secretary of Energy Rick Perry drove a 3D-printed Ford Shelby Cobra at the Oak Ridge National Laboratory.

The tantalizing question is, what if this 3D printing process were used to build nuclear reactors? Could it significantly reduce the cost enough to make nuclear reactors competitive with natural gas?

For fiscal year 2019, Congress appropriated $30 million to Oak Ridge National Laboratory to begin work to demonstrate that we can build an entire nuclear reactor with 3D printing. This project is called the Transformational Challenge Reactor. I look forward to hearing Dr. Zacharia from Oak Ridge National Laboratory tell us more about that today.

Let's address for a moment the question of cost.

Our existing 98 reactors are large, pressurized water reactors and boiling water reactors; they have the capacity to generate between 600 and 3900 megawatts of electricity; and they are licensed to run for 40 years, with the possibility of continuing to run some for 80 years.

Right now, we know that 12 of our 98 nuclear reactors plan to shut down early by 2025—within 6 years—before their licenses expire. And the reason they are shutting down early is primarily because of cost—they cost too much to operate in competition with natural gas and, to some extent, government subsidized wind power.

Chances are, these reactors won't be replaced with nuclear power for the same reason—cost.

Only 2 reactors are currently being built in the United States (the Vogtle reactors in Georgia), while China is currently building about 15 reactors, with a plan to construct an additional 43.

The cost of constructing the two reactors in the United States is $25 billion. But by comparison, constructing two natural gas plants to produce the same amount of electricity would cost less than $2 billion.

TVA recently built the Allen Natural Gas Plant in Memphis for $975 million, and it produces about the same amount of electricity as one of the new Vogtle reactors will. (Each has a capacity of about 1,100 megawatts.)

The big nuclear reactors cost more than ten times to build. They last longer and their fuel is less expensive over time, but the cost of construction is a massive barrier.

Advanced reactors, which use different fuels and different coolants than today's existing light water reactors, provide the opportunity to address some of these issues: They are smaller and can be built at lower cost; they cost less to operate; and they are potentially safer and generate less nuclear waste.

The stakes are very high here. We have seen what happened in Japan and Germany for different reasons. There, major industrialized economies similar to ours lost their emission-free, low-cost, reliable electricity. Prices went up, pollution went up, and manufacturing became less competitive in the global marketplace. And that is where we are headed in the next 10 years unless something changes.

The bottom line is—in order to expand nuclear power in this country, we need to solve 2 problems:

First, we must solve the nuclear waste stalemate, which we have been stuck in for the past 30 years.

I want to resolve the nuclear waste stalemate this year. I support funding Yucca Mountain and proceeding with plans to allow used nuclear fuel to be stored at interim storage sites and at private facilities. I expect President Trump will continue to request funding to restart the

licensing process for Yucca Mountain, and I look forward to moving forward on all tracks at the same time.

Second, we must address the high cost to build a new nuclear plant. I believe advanced reactors give us a chance to do that.

Today we will look at: what types of advanced reactors are being developed; how advanced reactors will be different than existing reactors, and how those differences will help overcome some of the challenges nuclear power faces today including size and the cost of construction; how continuing to support existing reactors and small modular reactors can help sustain our current nuclear capabilities until advanced reactors can be built; what the Department of Energy, our 17 national laboratories, and the nuclear industry are doing to develop and build advanced reactors; and what additional steps the federal government needs to take to help develop and build advanced reactors that exist today.

In other words, can advanced reactors that cost less to build and operate help us avoid the higher cost of electricity that Germany and Japan are seeing, while at the same time offering a form of electricity that is emission free?

Nuclear power must be part of our energy future if we want a future with clean, cheap, and reliable energy that can create good jobs and keep America competitive in a global economy.

We hope to learn from the witnesses today what Congress can do to support advanced reactors and help grow the nuclear industry in the United States.

With that, I would like to recognize Senator Feinstein, our subcommittee's ranking member, for her opening statement.

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