



Private investment key to SMR growth at SRS



IN PRINT: With large sections of the Savannah River Site cleaned up and old nuclear operations decommissioned, there's room for several small modular reactor prototypes to be operated at SRS, the site manager said.

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David Moody returned to his home state following decades in the U.S. government's nuclear weapons operations in the western states to run a federal institution that may play a big role in boosting the economy of central South Carolina.

As the Department of Energy's manager for the Savannah River Operations Office, the Florence native implements U.S. government policy and has the biggest federal construction budget in the state.

But he also brought with him a vision that could make SRS a leader in developing energy resources for the next generation.

At the height of the Cold War, SRS operated a half dozen first-generation nuclear reactors, making plutonium and tritium for thermonuclear weapons. Those reactors are shut down now, sealed with concrete to protect future generations.

The site continues a decades-long cleanup process that already has cost billions of dollars, and will go on for years to come. Just in the past two years, SRS has spent \$1.6 billion in Recovery Act funds, to decommission three reactors, move radioactive waste out of the state and make infrastructure improvements on the 300-square-mile site. The cleanup of the Cold War era weapons program is expected to continue until



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Moody said SRS, like all other federal agencies, will face spending cuts as the federal government grapples with debt and revenue issues.

But he expects spending at the site to remain in the billions of dollars annually for years to come.

The two biggest construction projects will transition to operations from construction.

MOX will have an operating workforce of about 1,000, varying with the number of customers that emerge for the MOX fuel.

The Salt Waste Processing Facility will have an operational work force of 400-500 people.

The rise of biomass

The most promising business model for the future of SRS may involve no federal outlays of cash for construction at all.

One such project began operations in January, and was built at SRS with about \$950 million of private capital.

the 2028-2030 time period.

Many such sites around the nation have been cleaned up and closed, sealed off to protect people from dangerous radioactive residue, or turned over to other entities for reuse. SRS is not one of those.

“This is not a closure site,” Moody said.

Last year, at least two-thirds of the almost \$1 billion of federal construction funding in South Carolina was spent at SRS. Some of it continues to be spent on cleanup activities, particularly the Salt Waste Processing Facility, which aims to seal waste from plutonium extraction in concrete.

Already, the footprint of the 60-year-old Cold War complex has been reduced by 75%, and 90% remains undeveloped. Moody sees the sprawling site as ideal for new missions. One of those is already under construction.

A major portion of the spending is for the mixed oxide fuel, or MOX, facility that will recycle weapons-grade plutonium from other nations and blend it into fuel for commercial nuclear reactors.

Over the life of the construction project, the MOX facility will cost \$4.8 billion to build and make operational. Its construction was started in 2007 and it is scheduled to be finished in 2016.



David Moody is the Department of Energy's manager for the Savannah River Operations Office. (Photo/Provided)

It is the new biomass power plant that uses wood chips to produce steam for the SRS complex as well as 20 megawatts of electricity.

The plant, built by the energy generating company Ameresco, will recoup its investment by selling energy to SRS under a 20-year contract.

That public-private model is one that Moody hopes to use to attract companies who want to build prototype small modular reactors.

"Cooperative agreements with private industry will bring new missions and opportunities," Moody said. "I feel SRS is the key to the future of the nuclear energy industry in the United States."

Moody reports to the environmental management side of the Department of Energy.

But he said he's had "nothing but support" from Washington for his efforts to find new missions for SRS and use its expertise and experience to support emerging industries in the region.

Moody said he's currently in talks with eight companies that want to build small modular reactors, including NuScale, which was recently purchased by Fluor Corp.

Fluor is the lead partner in Savannah River Nuclear Solutions, a partnership with Honeywell and Newport News Nuclear that manages the sprawling federal complex.

"We told the others we will give everyone the same treatment," Moody said.

Establishing an 'energy farm'

With large sections of the 300-square-mile site cleaned up and old nuclear operations decommissioned, there's plenty of room for several prototypes to be operated at SRS, Moody said. As many as 10 such units might be installed and still maintain a five-mile buffer zone around the experimental units.

The Department of Energy is currently soliciting comments about a "funding opportunity" of as much as \$452 million in matching grants for one or two companies to build small modular reactors. But Moody said he doesn't necessarily expect all of the SMR companies to seek federal subsidies.

He cited the example of the Ameresco biomass plant, for which the company took all the risk on the energy plant, borrowing money from banks to build it. Moody thinks some of the SMR designers can attract private capital to build their demonstration reactors.

Meanwhile, Moody envisions an "energy farm" comprising as many as 6-8 small modular reactors concentrated at SRS, providing all the power for the federal reservation, and perhaps even putting surplus power into the regional grid.

Moody said based upon his discussions, he thinks SRS could attract three to five SMR projects "when the dust settles." And he sees no problem with hosting competing SMR developers at the site.

And Moody also has another vision for the nuclear energy park. With the University of South Carolina engaged in cutting-edge research on hydrogen fuel cells, Moody said he believes the energy park could have a secondary mission of generating hydrogen in quantities large enough to support development of fuel cell power in the region.

Hydrogen for fuel purposes must be separated from other elements, such as the oxygen that it bonds with in water.

There are just a few ways to isolate hydrogen in commercial quantities, and many experts believe the most economical method is in cogeneration with nuclear power.

“As we encourage SMRs here, we’re interested in helping that industry develop at light speed,” Moody said.

An entrepreneurial spirit

Moody believes every organization at SRS must be entrepreneurial for the site to be successful for decades to come, he said.

One such service, he said, is a nuclear forensics laboratory that the Savannah River National Laboratory established to train federal authorities to identify and trace radioactive substances that might be used as weapons of mass destruction. Some 700 FBI agents already have been trained there.

SRNL also is working on several classified programs with the Department of Homeland Security, Moody said.

“We are looking for ways to earn other dollars from other federal agencies,” he said.

“We have a very aggressive vision for SRS,” Moody added. “We’re in partnership with the community. Their research shows that for every job on the site, there are 2.5 jobs created off the site.”

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