Samples of Sandia energy research

Grid resiliency: Sandia uses its expertise in complex and critical systems and system integration to support a comprehensive modernization of the U.S. electric grid, with a focus on cybersecurity and resiliency. Its "smart grid" programs aim to help utilities better manage loads, to enable increased use of carbon-neutral energy. Through an assessment of Hoboken's electric grid, Sandia will help East Coast communities devastated by Hurricane Sandy boost the resiliency of their electric grids, so they can be better prepared for future natural disasters. Sandia's Energy Surety Design Methodology (ESDM) is a quantitative, risk-based assessment approach that has been applied at more than 25 sites nationwide, primarily military facilities, in cooperation with more than 20 local and regional utilities. Sandia also has released a new edition of an internationally known electricity storage resource for utilities, regulators and others interested in energy storage and power generation. The free handbook, "DOE/EPRI Electricity Storage Handbook in Collaboration with NRECA," is available on Sandia's Energy Storage Systems website.

Solar RTCs: Sandia is advancing viable, low-carbon power through five U.S. Regional Test Centers (RTCs) where industry can assess the performance, reliability and bankability of large-scale photovoltaic energy systems. Sandia has a long history of measuring and modeling performance of PV systems, from single panels to multi-megawatt arrays. The RTCs will develop protocols and test and analyze systems to give investors concrete data with which to assess risks. One of the first five RTCs is located at Sandia

Solar glitter: Sandia researchers are working to transform the basis of photovoltaics from primitive, brick-like units to high-tech, millimeter-sized components. The invention, termed "solar glitter," uses one-thousandth the silicon of ordinary panels, creating economy in materials and transportation costs. With its flexible support layer, additional applications for the technique could include powering tents and personal electronics. The marriage of relatively low-tech solar techniques with proven high-tech computer fabrication processes should cut the cost of solar panels in half while doubling their efficiency.

Wind: Wind farm optimization: DOE, Sandia and Texas Tech University recently commissioned the DOE/Sandia Scaled Wind Farm Technology (SWiFT) facility in Lubbock, TX, the first public facility of its kind to use multiple wind turbines to measure how wind turbines interact with one another in a wind farm. Partners include DOE's Wind Program, Vestas Wind Systems, Sandia and Texas Tech. Sandia also has partnered with GE on quieter wind turbines with increased power generation capacity.

Geothermal: Nearly two-thirds of U.S. oil comes from wells drilled using polycrystalline diamond compact (PDC) bits, developed decades ago to lower the cost of geothermal drilling. Sandia and the U.S. Navy recently brought the technology full circle, showing how geothermal drillers might use the original PDC technology and incorporate decades of subsequent improvements by the oil and gas industry.

MONIZ 9/3 Visit: Possible media questions *(federal questions in boldface)*

1. **Why hasn't NNSA announced anything about Sandia's contract renewal or RFP? When will something happen?**
2. **How many Sandia and Los Alamos workers will be laid off with sequestration? What programs do you expect to get cut?**
3. **Why does the B61 LEP cost $10 billion when Sen. Feinstein says it should cost $1.5 billion? What will happen at Sandia if Congress either delays or severely curtails that program?**
4. **Why has DOE has cut funding for energy-related work at Sandia?**
5. **Why doesn't DOE redirect Sandia away from nuclear weapons work and into missions more beneficial to mankind?**
   A: (proposed) Sandia doesn't set its work agenda. It's set primarily by policy and funding decisions from Congress, based on the President's budget recommendations. Sandia performs national security work that private industry can't do (unique facilities), won't do (not profitable), or shouldn't do (national security/classified). As the nation's engineering laboratories for the entire nuclear enterprise, our primary mission is national security through maintenance of the nuclear stockpile. Our other work, including the important energy work, benefits from the expertise, facilities and unique approach to difficult problems that characterizes our nuclear weapons mission.

6. Why isn't Sandia putting its engineering know-how into protecting Albuquerque's groundwater from the jet fuel spill on the flight line at Kirtland Air Force Base?
   A*: Sandia is confident the Air Force understands the situation and is applying the best engineered solutions to the problem.*

7. Citizen groups have warned Albuquerque for years about dangerous waste at Sandia's Mixed Waste Landfill, classified landfill and the chemical landfill. Why haven't you cleaned all that up?
   A: Sandia complies with all requirements set forth by the New Mexico Environment Department, and assures NMED of its adherence through a rigorous monitoring and reporting process.

8. Is it true that your Annular Core Research Reactor could melt down and result in more death and injury than Chernobyl and Fukushima?
   A: The Annular Core Research Reactor has safely operated for more than 45 years. It is similar to a university research reactor, and is not like a commercial nuclear power plant, which operates 24 hours a day, seven days a week, to produce electricity. Because of the short duration of operations at ACRR, the small amount of decay heat generated does not require emergency core cooling systems. DOE, NNSA and multiple independent safety groups have thoroughly analyzed ACRR operations. They found that they comply with all applicable federal laws and present no unacceptable risks to the public and environment.