

## **Energy & Water Appropriations Testimony**

**March 8, 2017**

- Good morning and thank you to Chairman Simpson and to Ranking Member Kaptur for holding this Members' Day and to the members of the Subcommittee for allowing me to testify here today.
- I am here today to thank you for your past support for the Department of Energy's Office of Science and to urge you to continue to prioritize and invest in science.
- The United States has been at the forefront of innovation and progress largely due to the investment in scientific research.
- It has helped raise the standard of living for millions of Americans.
- This scientific progress requires us to take a long view.
- Discoveries aren't made over night, and experiments need sustained attention and resources for us to learn from them.
- Similarly, our scientific infrastructure requires long-term, sustained funding to ensure opportunities are not missed.
- I have heard from a number of my colleagues in the scientific community who are worried about what the incoming administration could mean for scientific progress in this country.
- I would urge this subcommittee to seize the opportunity to put our researchers at ease by providing funding levels that support the critical work of the Department of Energy's Office of Science.
- There are two projects in particular that I want to highlight here today; Argonne's Advanced Photon Source Upgrade and the Long-Baseline Neutrino Facility and Deep Underground Neutrino Experiment – or LBNF/DUNE – which represents a collaboration between Fermi National Accelerator Laboratory in Illinois and the Sanford Underground Research Facility in South Dakota.
- Experiments conducted at Argonne National Laboratory's Advanced

Photon Source, or APS, support both discovery science and market-driven research.

- Pharmaceutical research at the APS has yielded lifesaving new drugs for HIV, melanoma, and renal cell carcinoma.
- Industry chemists have used the APS to develop energy-saving solar shingles, while combustion researchers have developed a process that has led to cleaner diesel engines.
- And research conducted at the APS lead to a Nobel Prize in Chemistry in 2012 for work on G-protein coupled receptors which is helping us develop more effective medications to aid in our fight against opioid addiction.
- The APS needs to be upgraded to ensure American scientists and companies continue to have access to the best scientific equipment in the world.
- The APS upgrade will use next-generation technology to make the APS hundreds of times brighter, opening up scientific frontiers at the nanoscale that are completely inaccessible today.
- The upgrade leverages the existing infrastructure valued at \$1.5 billion while applying a new technology to create a world leading facility at substantially less cost than a new facility.
- With this upgrade, the APS will become the ultimate 3D microscope; without it, the United States will lose its global leadership in x-ray science to Europe, Japan, and China.
- Robust funding for the Department of Energy (DOE) Basic Energy Sciences (BES) Major Items of Equipment (MIE) account will enable the APS upgrade to continue on schedule and more importantly on budget.
- A funding delay will add millions of dollars to the total cost of the project.

- Another critical opportunity to support America's scientific leadership is with the LBNF/DUNE project which is critical to maintaining U.S. leadership in High Energy Physics and fundamental science.
- This facility, located at Fermi National Accelerator Laboratory in Batavia, Illinois and the Sanford Underground Research Facility in Lead, South Dakota, will be the first major international world class facility to be hosted by the United States.
- Neutrinos are among the most abundant particles in the universe and understanding their nature may provide the key to answering some of the most fundamental questions about the nature of our universe.
- LBNF/DUNE would be the most powerful tool in the world to study these particles and would help solidify the Department of Energy's High Energy Physics program as a world-leader.
- I am hopeful the project will receive \$55 million for FY 2017 to start construction.
- LBNF/DUNE will need even higher levels of funding as the project enters the full construction phase in FY 2018.
- More than 770 scientists from 150 institutes and 26 countries stand ready to contribute scientifically to LBNF/DUNE and I urge this subcommittee to provide full and robust funding for the Department of Energy's High Energy Physics account.
- Investment in these projects and in our broader scientific infrastructure is the only way to ensure that America remains an international leader.
- Thank you again and I yield back the balance of my time.