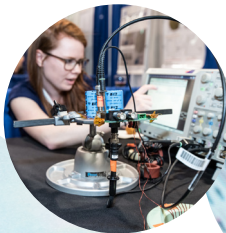


## 2019 NOTABLE ACHIEVEMENTS

# ONE INCREDIBLE YEAR

On behalf of the American people, DOE has compiled an impressive list of accomplishments for 2019. Highlights are here and the full report can be found [ENERGY.GOV](https://www.energy.gov).



These are just a few of our strides in 2019. For a more comprehensive look at what we accomplished this year, visit [ENERGY.GOV](https://www.energy.gov)

## ADVANCED RESEARCH PROJECTS AGENCY – ENERGY (ARPA-E)

### Hosted 10th Annual Energy Innovation Summit

Background: In July, ARPA-E hosted its 10th Energy Innovation Summit in Denver, Colorado, which drew more than 1,600 attendees.

### Released Updated Impact Numbers

Background: In March, ARPA-E announced that since 2009, 77 companies have been formed by ARPA-E projects, 145 teams have attracted \$2.9 billion in private follow-on funding, and teams have published 2,489 peer-reviewed journal articles and been issued 346 patents.

## ARTIFICIAL INTELLIGENCE AND TECHNOLOGY OFFICE (AITO)

### Established the Artificial Intelligence and Technology Office

Background: In September, former Secretary Rick Perry announced the establishment of AITO to serve as the central point for the coordination and development of broad and extensive artificial intelligence (AI) capabilities for the Department and its national laboratory complex.

### World Leader in Supercomputing

Background: DOE houses two of the world's fastest supercomputers, Summit at Oak Ridge and Sierra at Lawrence Livermore, and four of the top ten, enabling us to quickly analyze massive data sets and envision new possibilities putting us at the tip of the spear of America's AI revolution.

## BOARDS AND COUNCILS

### Activated the Secretary of Energy Advisory Board (SEAB)

Background: In 2019, DOE stood-up the SEAB. It has 16 members including leaders of industry, science, academia and society. At the Secretary's request, SEAB working groups have been established on Innovation and Artificial Intelligence.

## CYBERSECURITY, ENERGY SECURITY AND EMERGENCY RESPONSE (CESER)

### Advanced Cybersecurity Research and Development for Energy Delivery Systems

Background: CESER's Cybersecurity for Energy Delivery Systems division awarded \$36.9 million for thirteen projects to improve the cybersecurity and resilience of the nation's energy critical infrastructure.

### Led Emergency Response

Background: In 2019, CESER's Infrastructure Security and Emergency Response (ISER) division led successful responses to multiple catastrophic hurricanes and typhoons, supported National Special Security Events, and monitored major wildfires.

## ELECTRICITY (OE)

### Developed the North American Energy Resilience Model (NAERM)

Background: OE developed a static NAERM to understand risks to infrastructure and identify needed investments to improve system resilience across Canada, the U.S., and Mexico. It is a first-of-its-kind model that will enhance situational awareness across multiple critical sectors, including electric and gas.

## ENERGY EFFICIENCY AND RENEWABLE ENERGY (EERE)

### Announced DOE Energy-Water Desalination Hub

Background: As part of the White House Water Security Grand Challenge, DOE announced nearly \$100 million for the National Alliance for Water Innovation to lead a DOE Energy-Water Desalination Hub, which will address water security issues in the United States.

### Initiated the Plastics Innovation Challenge

Background: In November, DOE launched a comprehensive program to accelerate innovations in energy-efficient plastics recycling technologies. The Challenge will draw on fundamental and applied research capabilities within the National Laboratories, universities, and industry.

## ENVIRONMENTAL MANAGEMENT (EM)

### Made Significant Cleanup Progress

Background: Over the past year, DOE has made significant progress in the treatment and disposal of nuclear waste, and in the fulfillment of its promise to do so. Highlights include completing transfer of K Basin radioactive sludge at Hanford to safer on-site storage away from the Columbia River and issuing the Department's interpretation of the term high-level radioactive waste, which could open up additional pathways to address tank waste and expedite cleanup of DOE sites across the country.

## FOSSIL ENERGY (FE)

### Led Substantial Increases in LNG Exports

Background: In 2019, DOE granted 11 new long-term LNG export approvals. Two new large-scale terminals came online, and the U.S. is now exporting two cargoes of LNG nearly every day, enough to support the daily combined natural gas needs of up to a half dozen European countries.

### Launched Coal FIRST (Flexible, Innovative, Resilient, Small & Transformative) Initiative

Background: FE launched the Coal FIRST initiative to develop the coal plant of the future needed to provide secure, stable, reliable power, with near zero emissions, including carbon dioxide capture.

## INTERNATIONAL AFFAIRS (IA)

### Advanced the Partnership for Transatlantic Energy Cooperation (P-TEC)

Background: DOE hosted two successful P-TEC Ministerial meetings with partner countries from Central and Eastern Europe (CEE), who are on the front lines of Russian malign influence.

## LEGACY MANAGEMENT (LM)

### Resumed Activities in the Uranium Leasing Program (ULP)

Background: ULP manages 31 lease tracts covering approximately 25,000 acres in southwestern Colorado. It is preserving our nation's ability to provide uninterrupted domestic uranium production.

## LOAN PROGRAMS (LPO)

### Supported the Advancement of U.S. Nuclear

### Leadership at Vogtle

Background: LPO has continued to work closely with the owners of Vogtle Units 3 & 4 as they advance the only new nuclear construction underway in the U.S. today, and has guaranteed a total of up to \$12 billion in loans for the project.

## NATIONAL NUCLEAR SECURITY ADMINISTRATION (NNSA)

### Completed the W76-1 Life Extension Program

Background: The W76 1 Life Extension Program was completed under budget and ahead of schedule, strengthening U.S. safety and security by extending the warhead's service life from 20 years to 60 years.

### Advanced Exascale Computing

Background: NNSA signed a \$600 million contract for its first exascale supercomputer, El Capitan, slated for delivery in 2022 at Lawrence Livermore National Laboratory to support NNSA's weapons programs.

## NUCLEAR ENERGY (NE)

### Established the National Reactor Innovation Center (NRIC)

Background: Led by Idaho National Laboratory, the National Reactor Innovation Center (NRIC) provides a platform for private sector technology developers to assess the performance of their reactor concepts through testing and demonstration.

### Supported Advanced Nuclear Technology Development and Microreactor Deployment

Background: DOE has invested more than \$170 million over the last two years to accelerate the development of advanced nuclear reactor technologies. DOE is also working with the Department of Defense to demonstrate and deploy microreactors as early as 2023

### SUPERCOMPUTING

DOE's Summit and Sierra are now the two fastest supercomputers in the world.



### ENERGY DOMINANCE

The U.S. is now the world's top producer of crude oil and natural gas.

## OFFICE OF TECHNOLOGY TRANSITIONS (OTT)

### Hosted Three InnovationXLabs

Background: OTT forged new connections with the private sector in 2019 by hosting Innovation XLab Summits on Grid Modernization, Advanced Supercomputing and Artificial Intelligence.

### Won 41 R&D 100 Awards

Background: DOE researchers won 41 R&D 100 awards for exceptional new products and processes that were developed and introduced into the marketplace last year. Since the competition began, DOE's National Labs have won more than 900 R&D's.

## SCIENCE (SC)

### Won Nobel Prize

Background: The 2019 Nobel Prize in Chemistry was awarded to John B. Goodenough, M. Stanley Whittingham, and Akira Yoshino for the development of lithium-ion batteries. Both Goodenough and Whittingham are longtime DOE Office of Science-supported researchers.

### Led in Supercomputing, Artificial Intelligence and Quantum Computing

Background: Summit at Oak Ridge National Lab remained atop the TOP500 list of the world's most powerful computers, and researchers at the lab also teamed with Google on a proof-of-concept project in quantum computing that demonstrated quantum supremacy.

SEE MORE AT **ENERGY.GOV**

