

# Science with a Mission

Advancing the Energy, Economic, and National Security of the United States



U.S. DEPARTMENT OF ENERGY

## Scientific User Facilities

The Department of Energy's Office of Science builds and operates the world's finest suite of scientific facilities and instruments that researchers depend on to extend the frontiers of science.

Each year, these DOE Office of Science facilities are used by more than 19,000 researchers and students from universities, private industry, and other government agencies, including the National Science Foundation and the National Institutes of Health.

These very large and complex machines and instruments have enabled U.S. researchers to make many of the most important scientific discoveries over the past six decades, with spin-off technological advances creating entirely new devices and industries.

The Office of Science's state-of-the-art facilities are located at national laboratories and universities, open to researchers on a peer-reviewed basis, shared with the science community worldwide, and feature technologies and capabilities that are available nowhere else.



The \$1.4 billion Spallation Neutron Source (SNS) at Oak Ridge National Laboratory, the largest civilian science project in the U.S., is on track to be completed in 2006 on time and on budget. The SNS will provide the most intense pulsed neutron beams in the world for scientific research and technology development.

### Our Facilities

The DOE Office of Science facilities include:

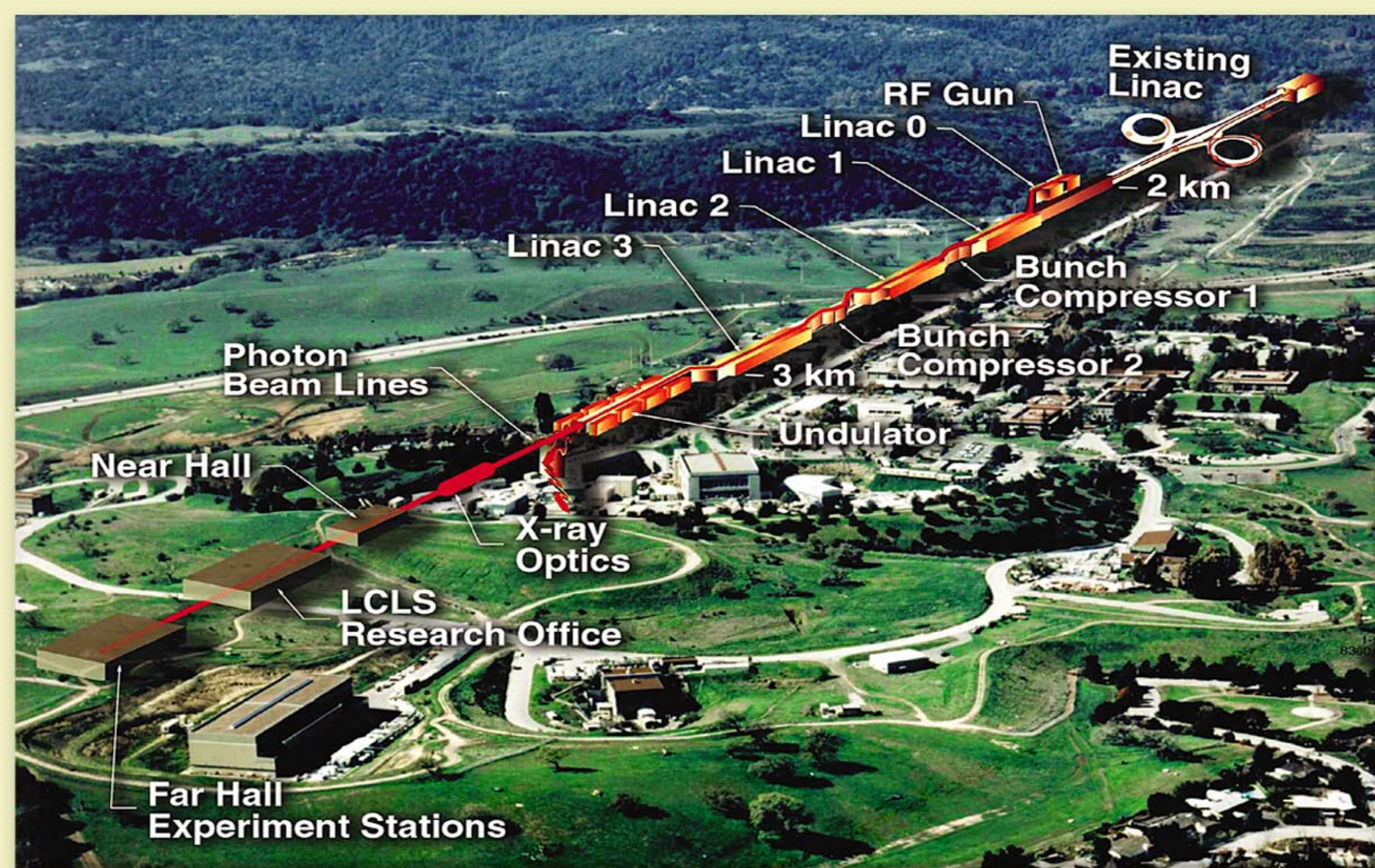
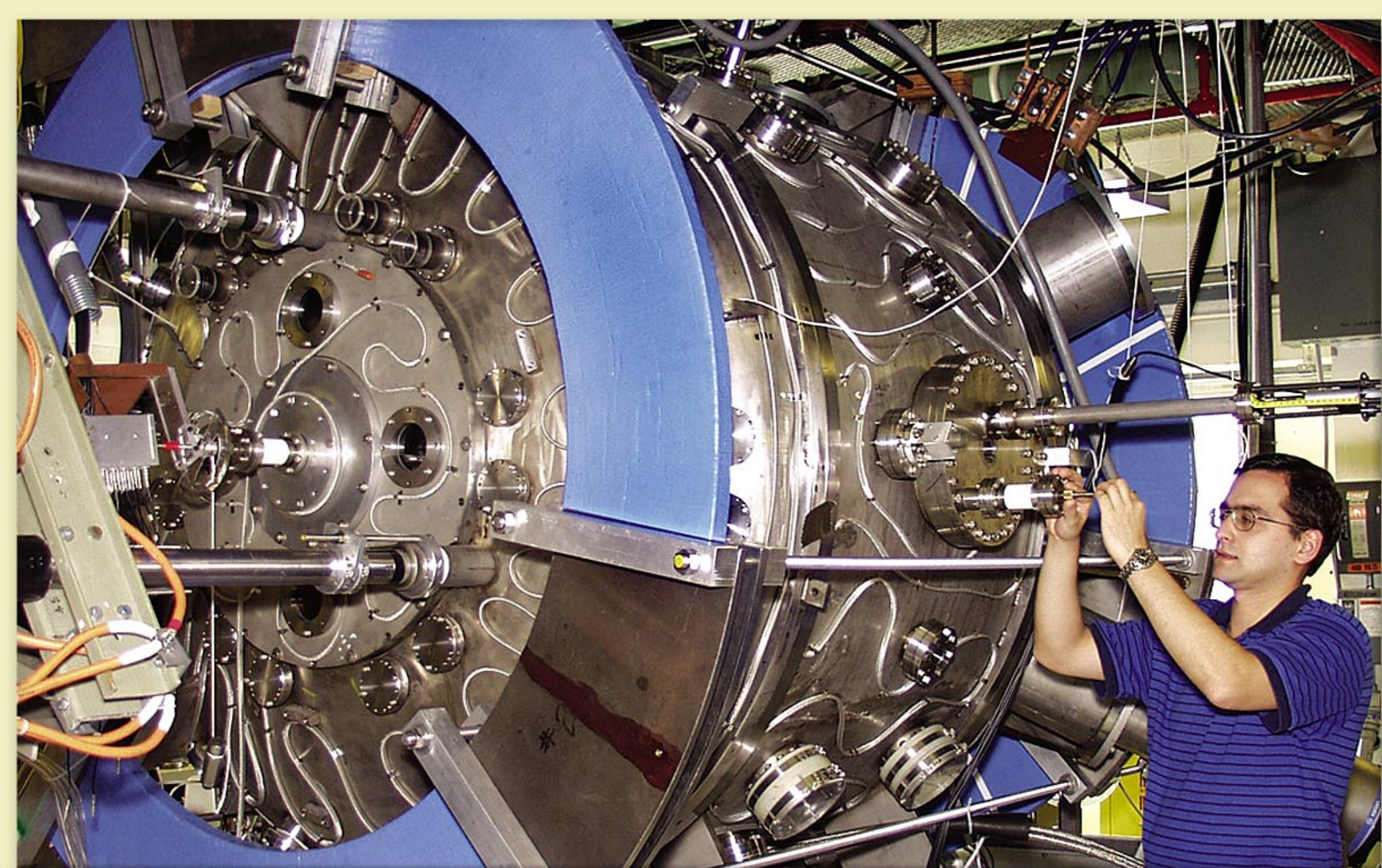
- particle accelerators,
- synchrotron light sources,
- neutron scattering facilities,
- supercomputers,
- high-speed networks, and
- genome sequencing facilities.

### What Distinguishes the DOE Office of Science?

The Office of Science fills a unique and central role in the country's scientific endeavor. Our work is complementary to that of other government research agencies.

We distinguish ourselves by our emphasis on research that:

- is driven by the Department of Energy missions,
- takes the long view,
- is open and interdisciplinary,
- requires the use of large-scale facilities, and
- takes risks commensurate with the high pay-offs we expect.



### 20-Year Facilities Outlook

The health and vitality of U.S. science and technology depends upon the availability of the most advanced research facilities.

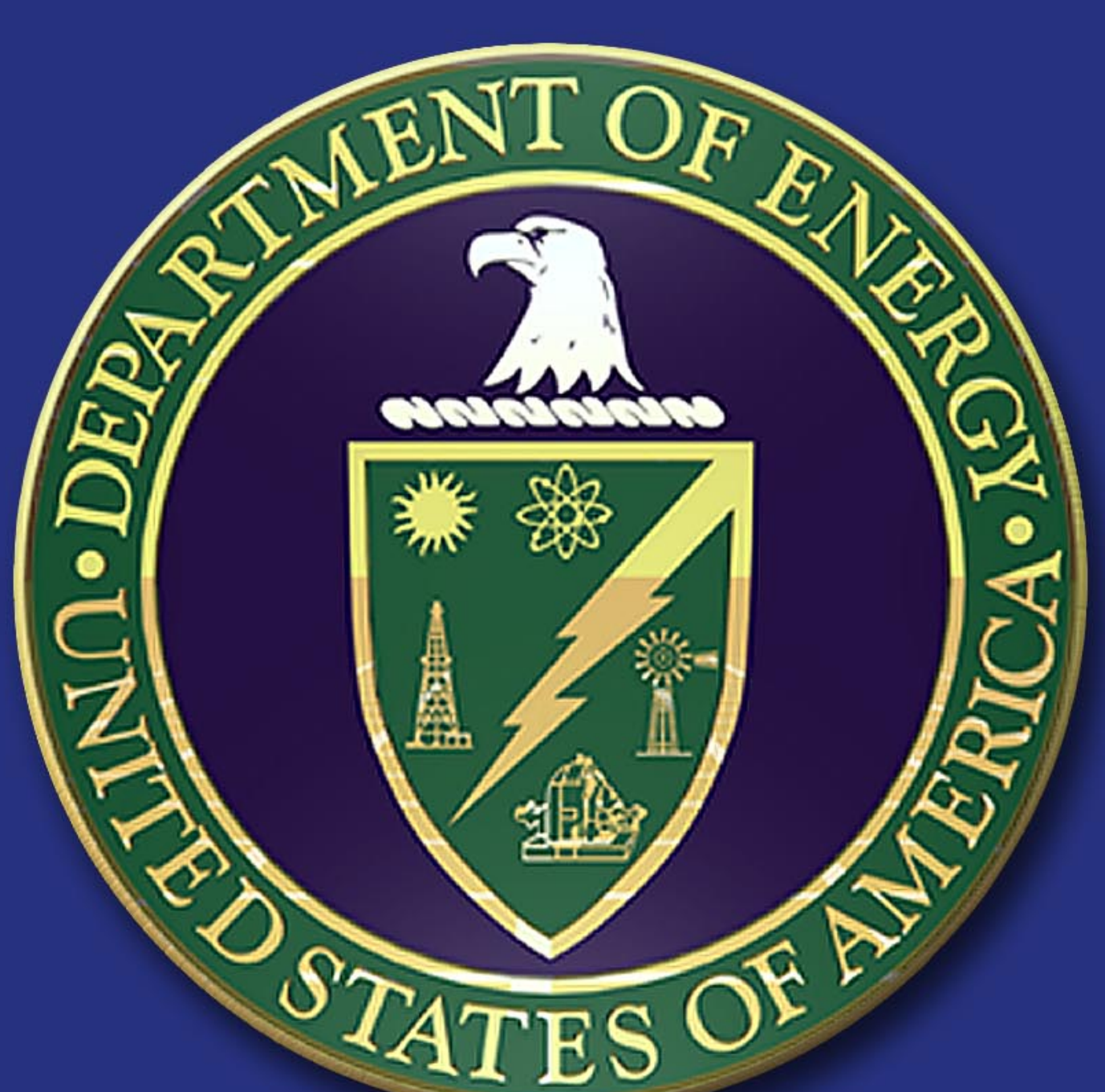
*Facilities for the Future of Science: A Twenty-Year Outlook* lists 28 new large scientific facilities and upgrades of current facilities that will define scientific opportunities across all fields of science supported by DOE over the next 20 years.

Investment in these facilities will yield extraordinary scientific breakthroughs – and vital societal and economic benefits.



Priority	Program	Facility
1	FES	ITER
2	ASCR	UltraScale Scientific Computing Capability
Tie for 3	HEP	Joint Dark Energy Mission
	BES	Linac Coherent Light Source
	BER	Protein Production and Tags
	NP	Rare Isotope Accelerator
	BER	Characterization and Imaging
Tie for 7	NP	CEBAF Upgrade
	ASCR	ESnet Upgrade
Tie for 12	ASCR	NERSC Upgrade
	BES	Transmission Electron Achromatic Microscope
13	HEP	BTeV
Tie for 14	HEP	Linear Collider
	BER	Analysis and Modeling of Cellular Systems
	BES	SNS 2-4 MW Upgrade
	BES	SNS Second Target Station
Tie for 18	BER	Whole Proteome Analysis
	NP/HEP	Double Beta Decay Underground Detector
Tie for 21	FES	Next-Step Spherical Torus
	NP	RHIC II
	BES	National Synchrotron Light Source Upgrade
Tie for 23	HEP	Super Neutrino Beam
	BES	Advanced Light Source Upgrade
	BES	Advanced Photon Source Upgrade
	NP	eRHIC
	FES	Fusion Energy Contingency
	BES	HFIR Second Cold Source and Guide Hall
	FES	Integrated Beam Experiment

Programs:  
 ASCR = Advanced Scientific Computing Research  
 BES = Basic Energy Sciences  
 BER = Biological and Environmental Research  
 FES = Fusion Energy Sciences  
 HEP = High Energy Physics  
 NP = Nuclear Physics



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