Whirlwind overview of Federally Funded Research & Development Centers (FFRDCs), the Management & Operation Model (M&O) and an overview of the Department of Energy (DOE) and the 17 DOE National Lab

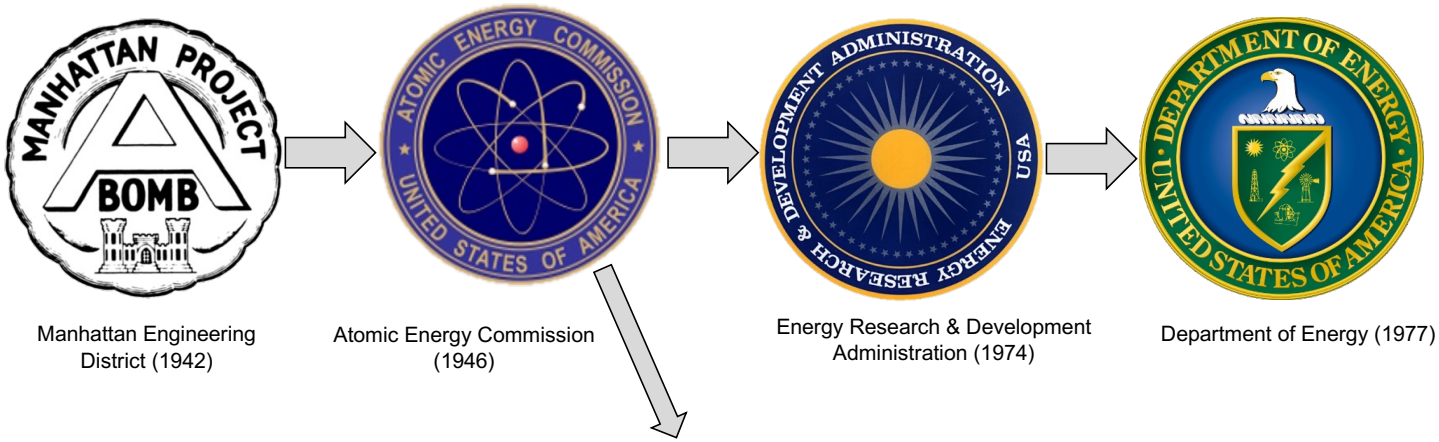
presented by Douglas Higinbotham (Jefferson Lab)

CLAS Collaboration Meeting, 25 June 2024

Special Thanks To Kevin Doran and the Oppenheimer Program

National Laboratory Director’s Council (NLDC) Oppenheimer Science & Energy Leadership Program (OSELP) Cohort 7

From the Manhattan Project to the Department of Energy



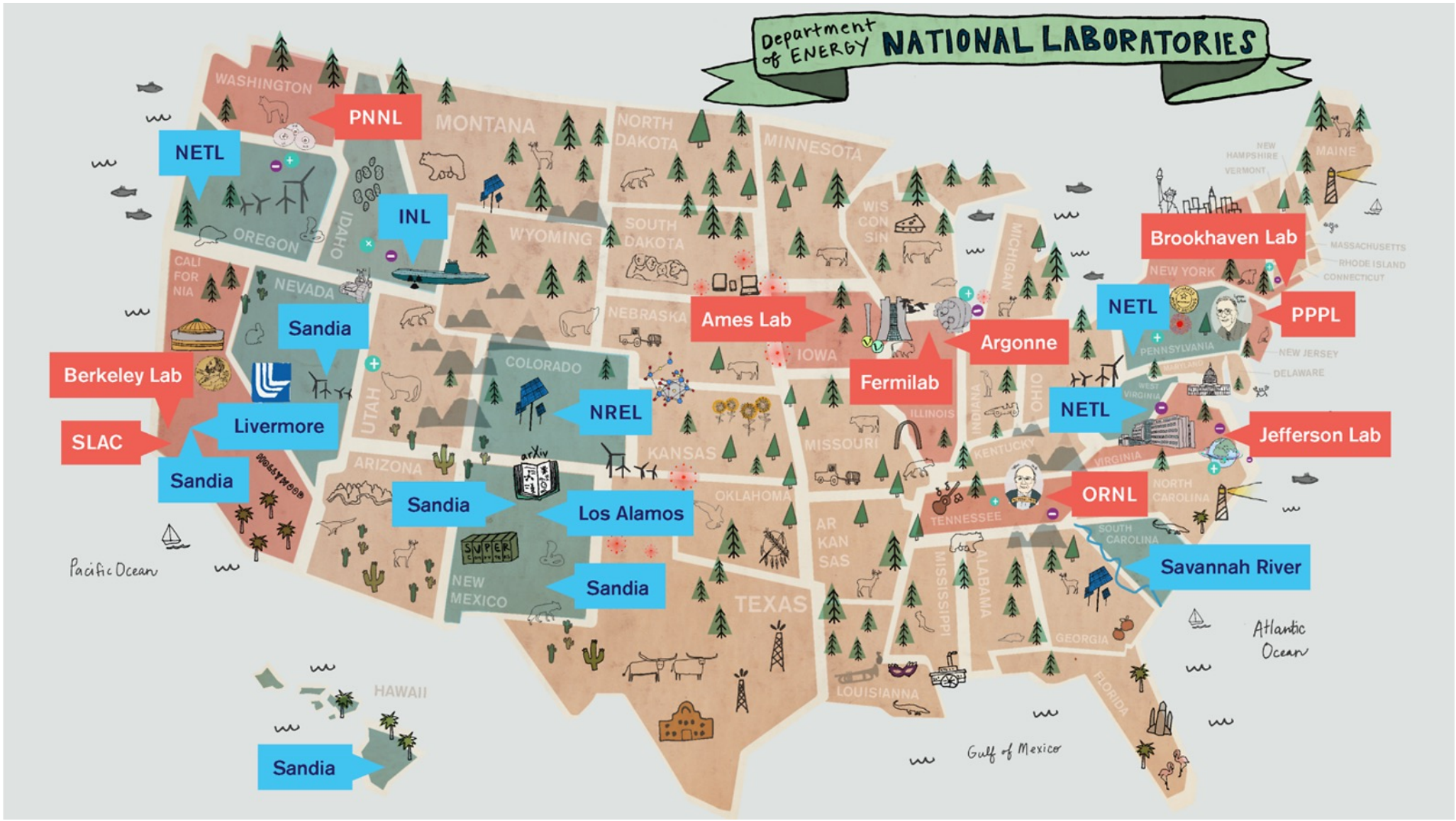
Manhattan Engineering District (1942)

Atomic Energy Commission (1946)

Energy Research & Development Administration (1974)

Department of Energy (1977)

Nuclear Regulatory Commission (1974)


Department of ENERGY NATIONAL LABORATORIES
PNNL
NETL
INL
Sandia
Berkeley Lab
SLAC
Livermore
Sandia
Sandia
Los Alamos
Sandia
Sandia
NREL
Ames Lab
Fermilab
Argonne
Brookhaven Lab
NETL
PPPL
NETL
Jefferson Lab
ORNL
Savannah River
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANNA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
NEW JERSEY
DELAWARE
MARYLAND
CONNECTICUT
RHODE ISLAND
MASSACHUSETTS
VERMONT
NEW HAMPSHIRE
MAINE
HAWAII
Pacific Ocean
Atlantic Ocean
Gulf of Mexico

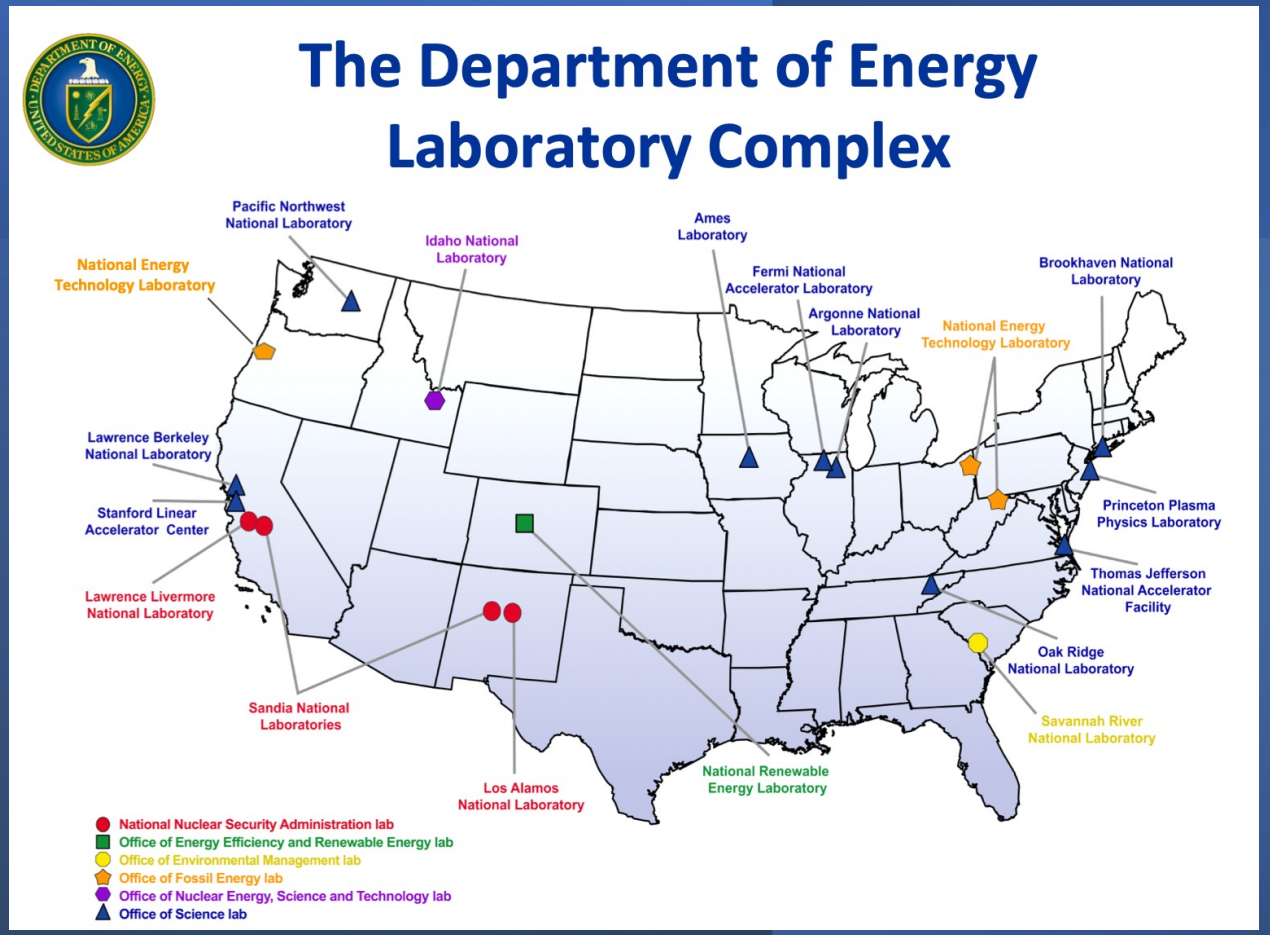
FFRDCs

- Federally Funded Research and Development Centers:
  - Meet special long-term national research and development needs of considerable complexity that cannot be met as effectively by in-house government or contractor resources;
  - Have access to information beyond what is common to the normal contractual relationship;
  - Cannot use special access to compete with the private sector;
  - Are required to operate in the public interest, free from organizational conflict of interest;
  - Anticipate a long-term relationships with the government;
  - Provide the continuity that will attract high-quality personnel;
  - Maintain currency in field(s) of expertise;
  - Maintain objectivity and independence;
  - Preserve familiarity with the needs of its sponsor(s);
  - Provide a quick response capability.
- The National Science Foundation keeps a list of FFRDCs by name, sponsoring agency, administrator type, location, and activity type.

GOGOs and GOCOs

- GOCO (Government Owned/Contractor Operated) operated laboratories are owned by the Federal Government, but managed by contractors.
- Contractors may be individual universities, university consortia, private companies, or nonprofits. GOCO dates back to the original laboratories of the Manhattan Project.
- Most Federal laboratories are GOGOs (GovernmentOwned/Government Operated); all but one of DOE's laboratories (NETL) are GOCOs.
- GOCO researchers are not Federal employees and have more freedom than GOGO scientists. GOCO employees can assert copyrights, consult with industry, and participate in start-ups based on technology developed at the laboratory.

17 DOE National Labs: 16 GOCO, & 1 GOGO



DOE's M&O Contracts

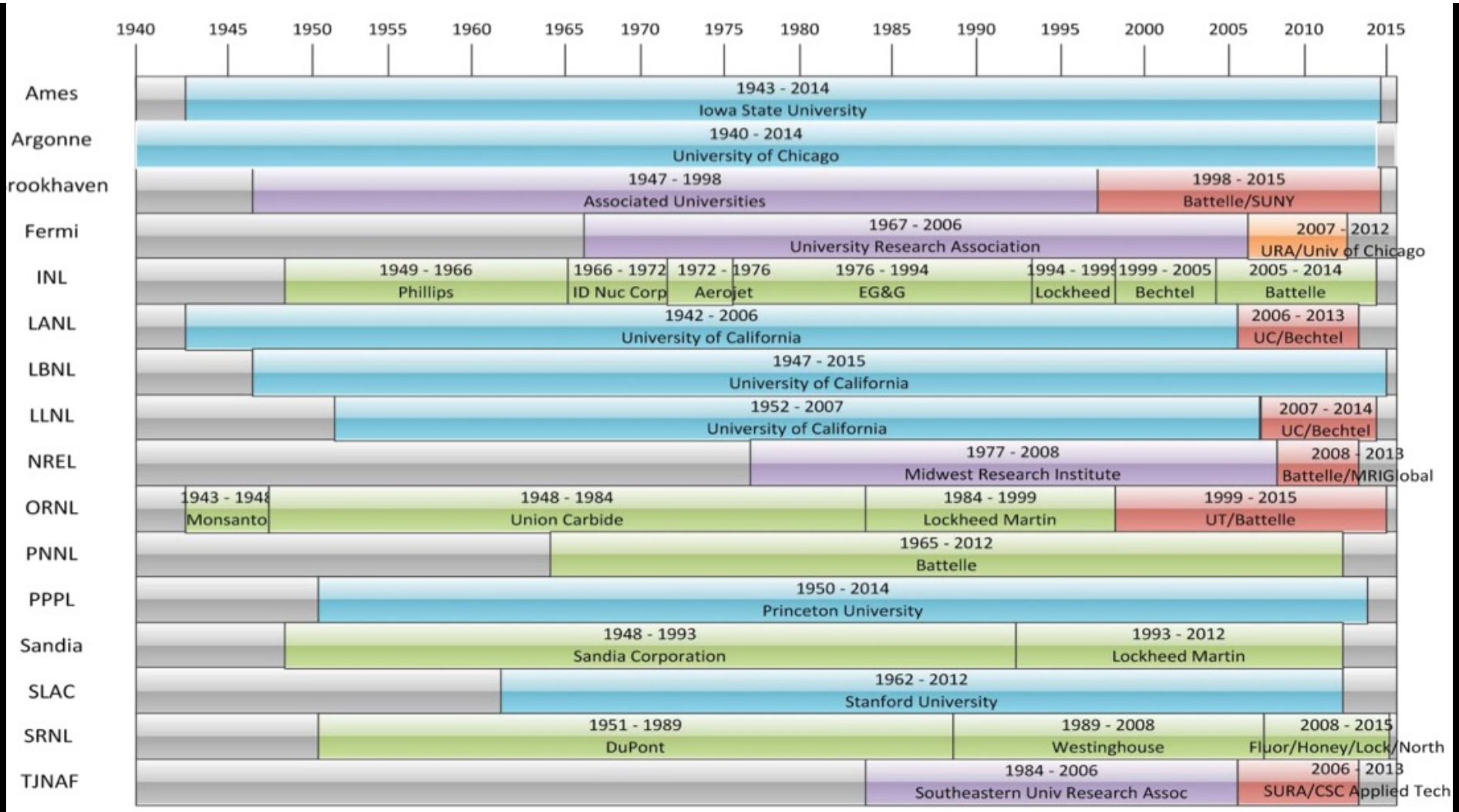
- DOE's FFRDCs operation under M&O contracts – a special Federal Acquisition Regulation (FAR) designation for GOCO facilities
- Origin is in character of work done through the Manhattan Project, but designation dates back to a Secretary of Energy Memo in 1983
- M&O contracts are "an agreement under which the Government contracts for the operation, maintenance, or support, on its behalf, of a Government-owned or –controlled research, development, special production, or testing establishment wholly or principally devoted to one or more major programs of the contracting federal agency." (FAR 17.601)

Recent M&O Bid Processes

- SNL
  - On 1 May 2017, Sandia National Laboratories acquired a new administrator (National Technology and Engineering Solutions of Sandia, LLC, a subsidiary of Honeywell International, Inc.). The previous administrator was Sandia Corporation, a subsidiary of Lockheed Martin Corp.
- LANL
  - On 9 June 2018, Los Alamos National Laboratory acquired a new industrial firm administration (Triad National Security, LLC). Between June 2006 and June 2018, Los Alamos National Laboratory was administered by Los Alamos National Security, LLC. Prior to June 2006, the administrator was the University of California.
- SRNL
  - On 22 December 2020, Savannah River National Laboratory acquired a new nonprofit administrator, Battelle Savannah River Alliance, LLC. The previous administrator, Savannah River Nuclear Solutions, continues to administer the Savannah River Site.
- Fermi (in progress, Jan 2025)
- Jefferson Lab (in progress, Jun 2025)

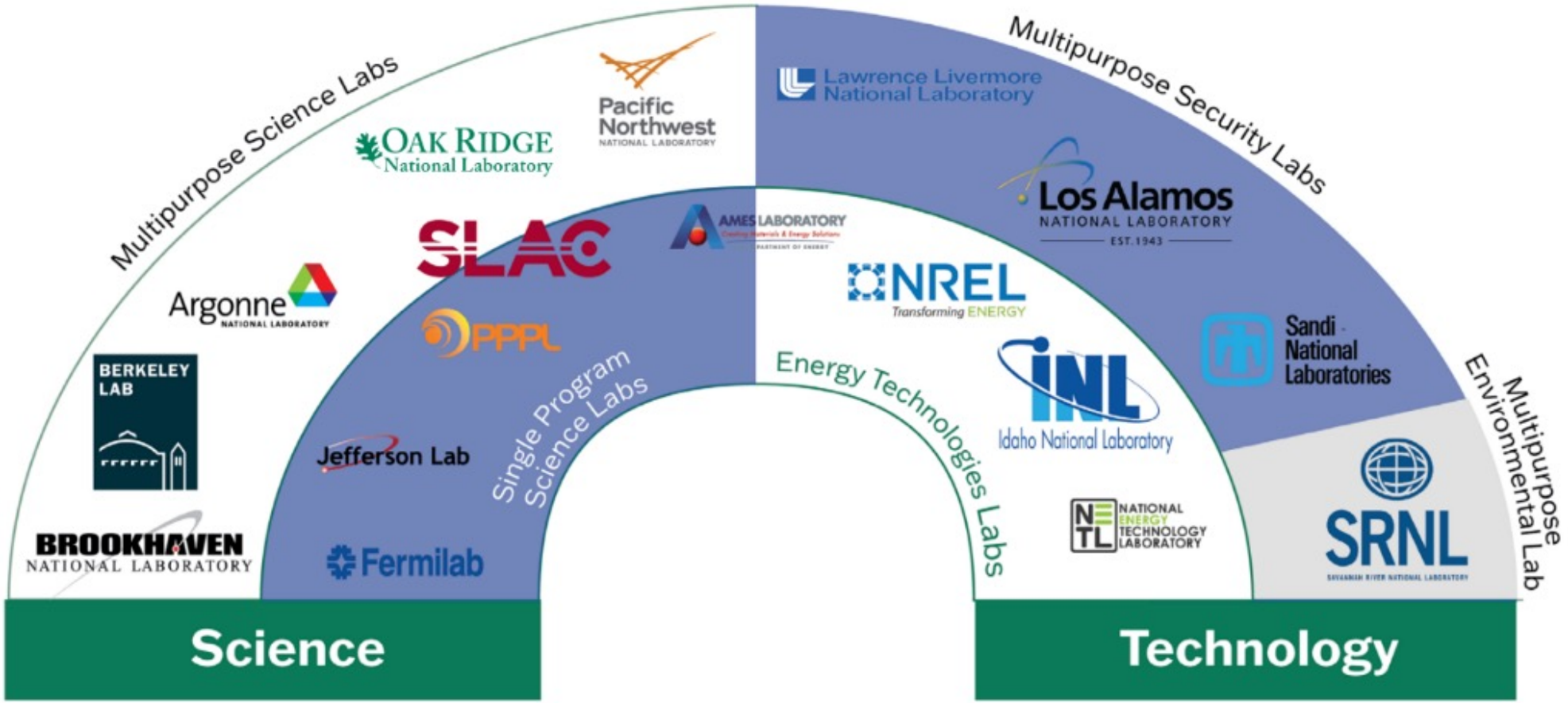
Reference: https://science.osti.gov/Acquisition-Management/M-and-O-Competitions

DOE Laboratory	M&O Administrator	M&O Members
Ames Laboratory	Iowa State University	Iowa State
Argonne National Laboratory (ANL)	UChicago Argonne, LLC	University of Chicago, Universities Research Association (URA)
Brookhaven National Laboratory (BNL)	Brookhaven Science Associates, LLC	Stony Brook University, **Battelle**, 6 core universities
Fermi National Accelerator Laboratory (FNAL)	Fermi Research Alliance, LLC	University of Chicago, Universities Research Association (URA)
Idaho National Laboratory (INL)	Battelle Energy Alliance, LLC	**Battelle**
Lawrence Berkeley National Laboratory (LBNL)	University of California	University of California
Lawrence Livermore National Laboratory (LLNL)	Lawrence Livermore National Security, LLC	Bechtel, University of California, BWXT, **Battelle**
Los Alamos National Laboratory (LANL)	Triad National Security, LLC	**Battelle**, Univ of California, Texas A&M University
National Energy Technology Laboratory (NETL)	N/A (DOE GOGO)	
National Renewable Energy Lab (NREL)	Alliance for Sustainable Energy, LLC	**Battelle**, MRI Global
Oak Ridge National Laboratory (ORNL)	UT-Battelle, LLC	**Battelle**, University of Tennessee
Pacific Northwest National Laboratory (PNNL)	Battelle Memorial Institute	**Battelle**
Princeton Plasma Physics Laboratory (PPPL)	Princeton University	Princeton University
Sandia National Laboratories (SNL)	National Technology and Engineering Solutions of Sandia, LLC	Honeywell, URA
Savannah River National Laboratory (SRNL)	Battelle Savannah River Alliance, LLC	**Battelle**
SLAC National Accelerator Laboratory	Stanford University	Stanford
Thomas Jefferson National Accelerator Laboratory (TJNAF)	Jefferson Science Associates, LLC	Southeastern Universities Research Association



Historic M&O Management

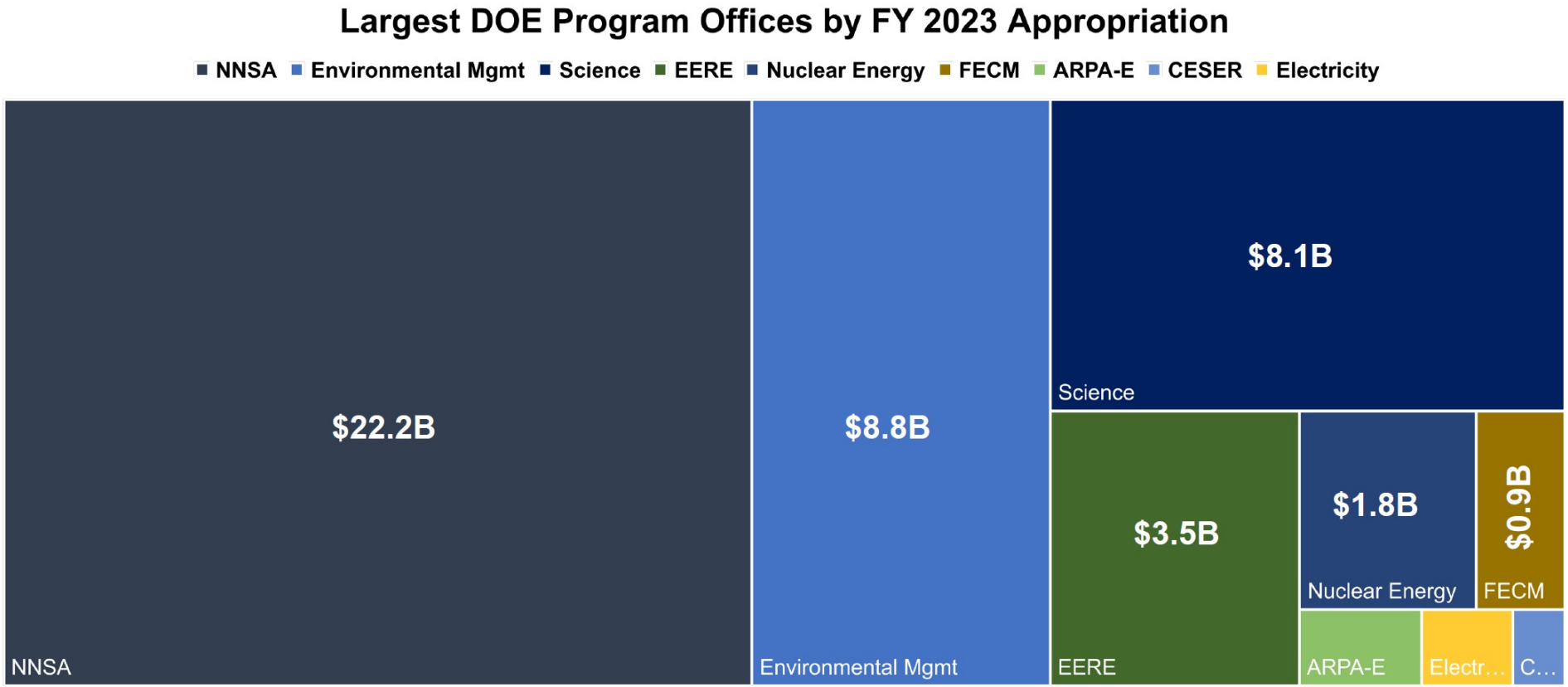
What does it mean JLab is becoming a multi-purpose laboratory?



U.S. DEPARTMENT OF

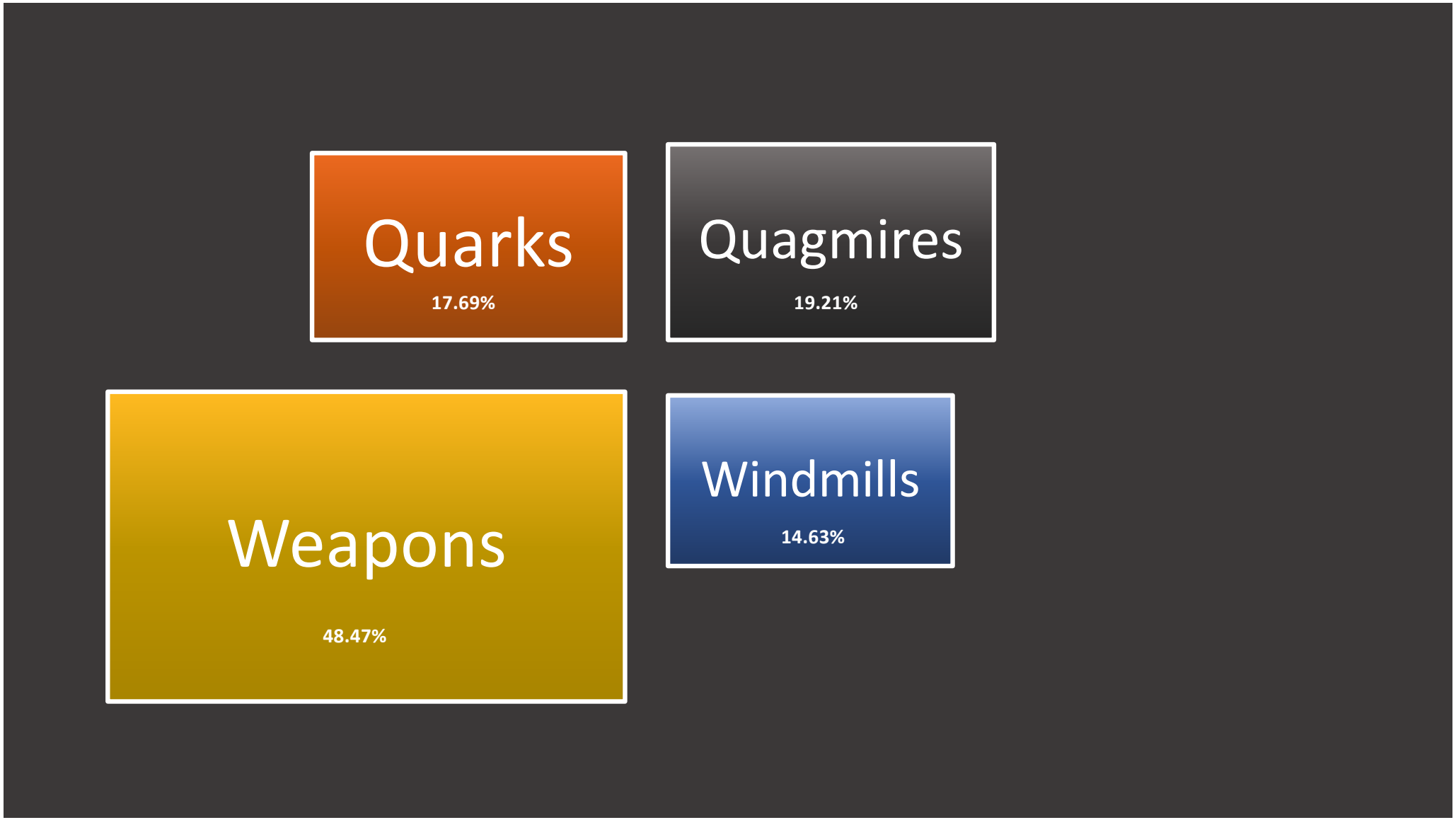
ENERGY

DOE budget perspective: $45.8B in FY 2023

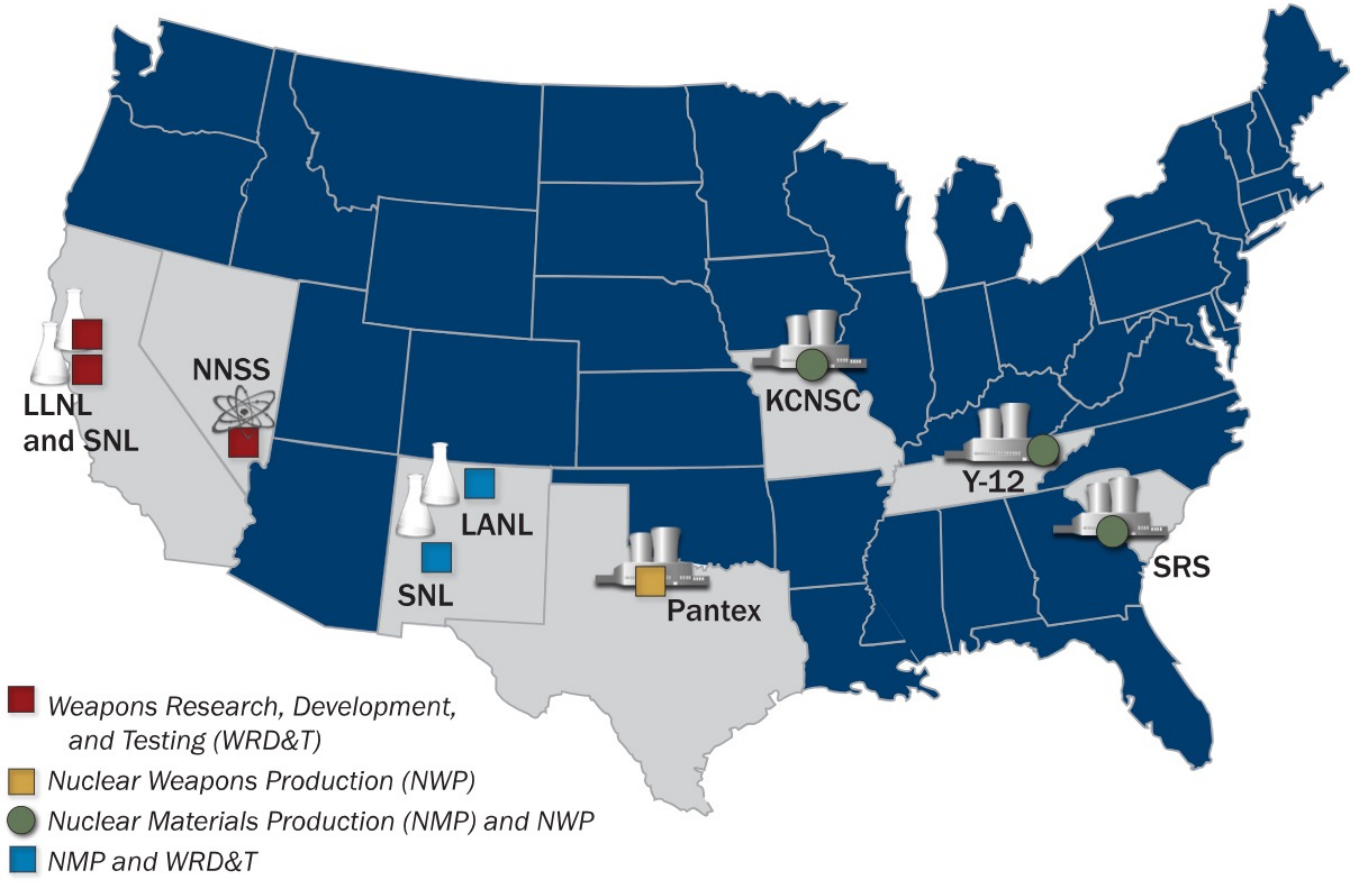


NNSA = National Nuclear Security Administration, EERE = Energy Efficiency and Renewable Energy
FECM = Fossil Energy and Carbon Management, ARPA-E = Advanced Research Projects Agency-Energy
CESER = Cyber Energy Security and Emergency Response

Credit to former DOE Secretary of Energy Ernest Moniz for coming up with this very concise explanation of what DOE does.


Quarks
17.69%
Quagmires
19.21%
Weapons
48.47%
Windmills
14.63%

The DOE NNSA's Nuclear Security Enterprise
(history dates back to the Manhattan project)



A Quick Detour: The system has more than just National Labs . . .

NNSA's Nuclear Security Enterprise

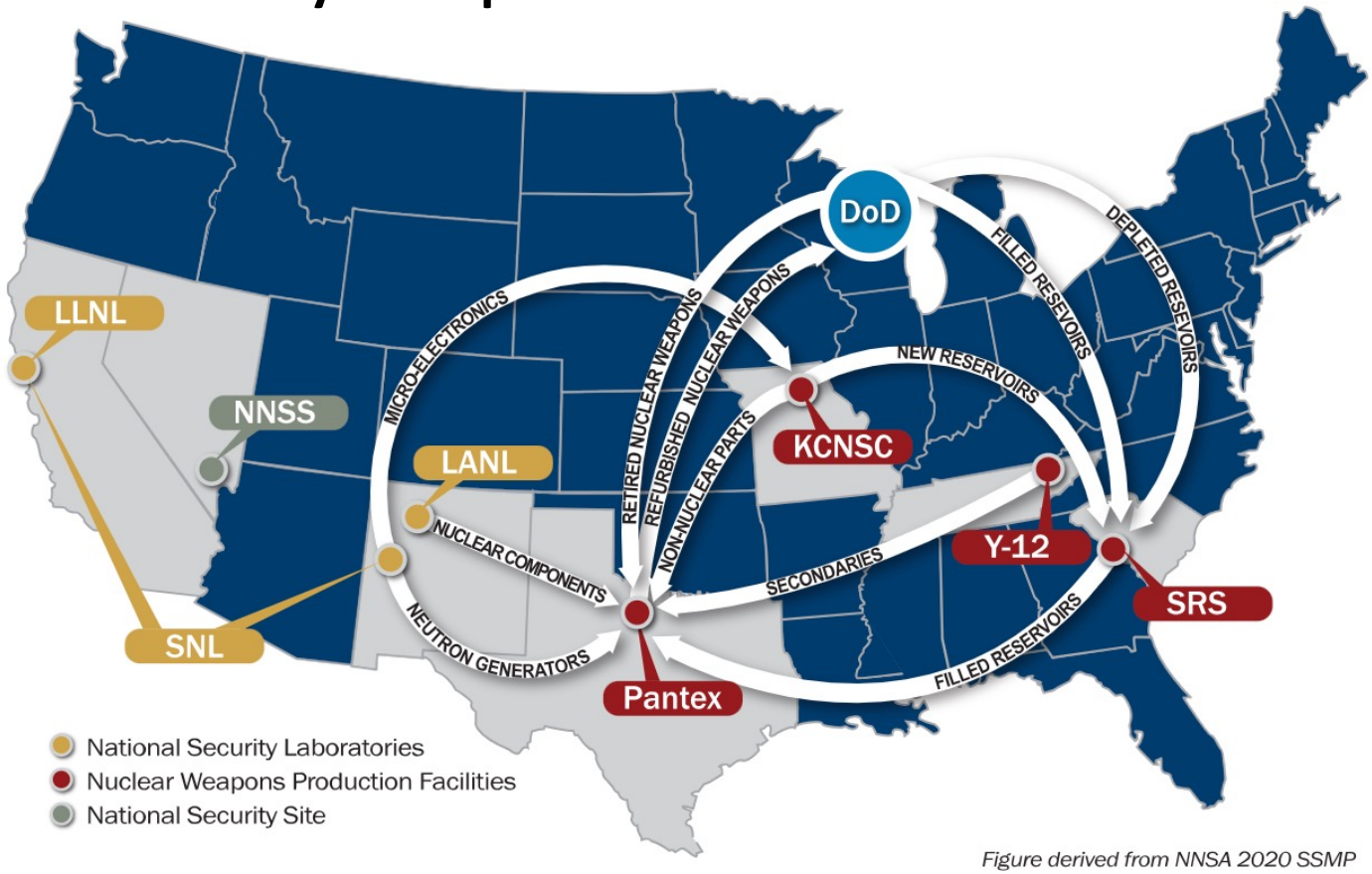
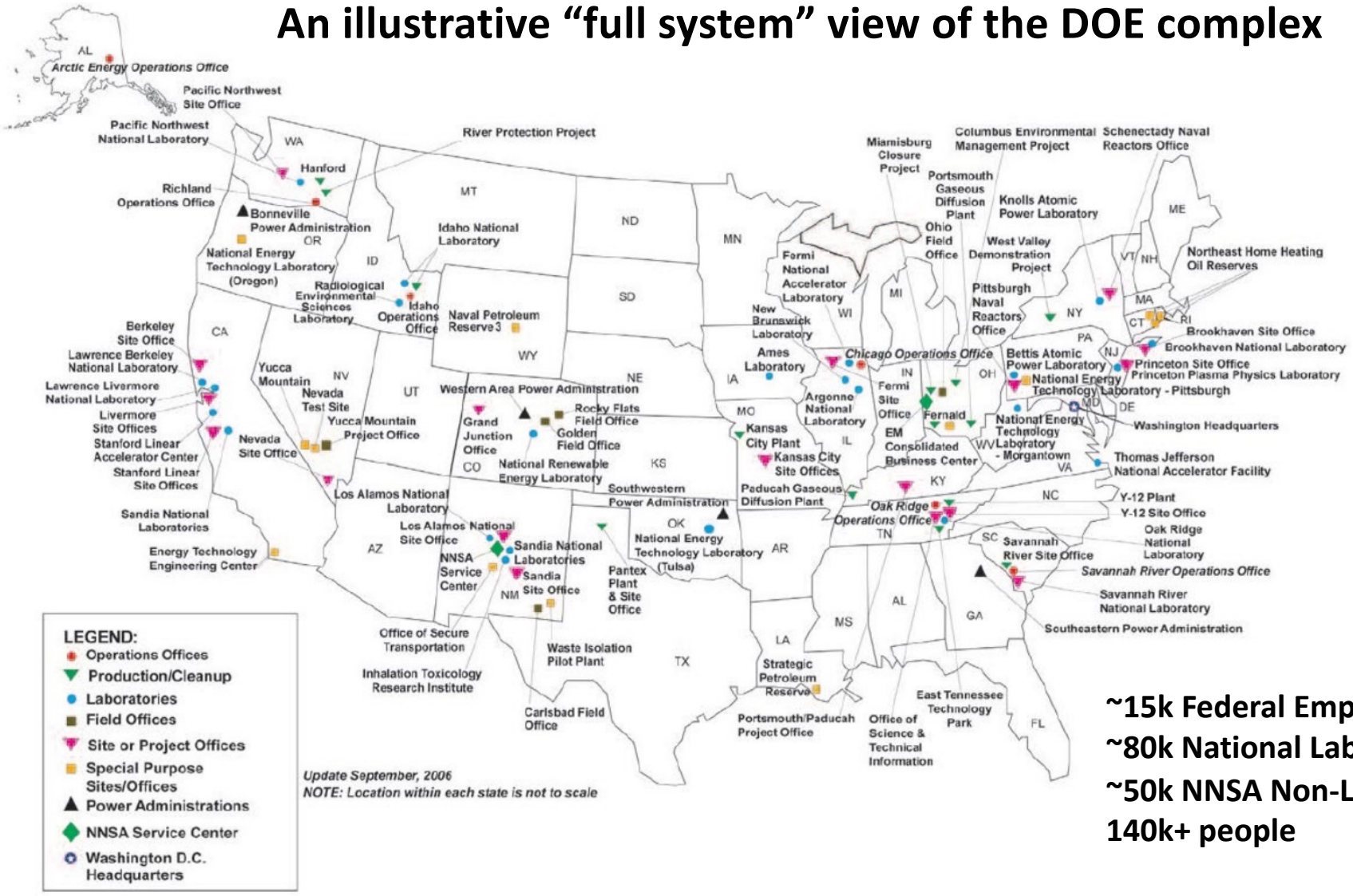


Figure derived from NNSA 2020 SSMP

An illustrative “full system” view of the DOE complex



~15k Federal Employees
~80k National Lab Employees
~50k NNSA Non-Lab Employees
140k+ people


Kansas City Plant
Fermilab
INL
Idaho National Laboratory
Y-12
OAK RIDGE
National Laboratory
Argonne
NATIONAL
LABORATORY
The Ames Laboratory
Creating Materials & Energy Solutions
SRNL
SLAC
NATIONAL
ACCELERATOR
LABORATORY
DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA
Los Alamos
NATIONAL LABORATORY
Jefferson Lab
PANTEX
NREL
NETL
Sandia
National
Laboratories
PPPL
PRINCETON
PLASMA PHYSICS
LABORATORY
BERKELEY LAB
Pacific Northwest
NATIONAL LABORATORY
BROOKHAVEN
NATIONAL LABORATORY
Lawrence Livermore
National Laboratory

Hanford Reactor B which made the Plutonium for both the Trinity device and the Fat Man during WWII.