

# NRC BY THE NUMBERS

## ***U.S. Electricity Generated by Commercial Nuclear Power***

NRC-licensed nuclear reactors generate about 18.6 percent of U.S. gross electricity, or about 779 billion kilowatt-hours.

## ***Nuclear Power Reactors***

- 94 commercial nuclear power reactors operating in 28 States at 54 sites
  - Palisades (Holtec Decommissioning International) has requested approval to restart in 2025.
  - Three Mile Island Station, Unit 1 (Constellation Energy Generation) has requested approval to restart in 2028, renamed as the Crane Clean Energy Center.
  - Duane Arnold Energy Center has expressed interest in restarting.
- 63 pressurized-water reactors and 31 boiling-water reactors
- Three reactor fuel vendors
- 21 parent operating companies
- About 80 different designs
- About 5,960 total inspection and assessment hours at each operating reactor in FY 2024

## ***Reactor License Renewal***

Commercial power reactor operating licenses are valid for 40 years, and a renewed license of up to 20 years may be requested.

- 96 reactors have been issued initial renewed licenses, including 11 reactors now permanently shut down.
- Eight reactors operate under their original licenses.

## ***Subsequent License Renewal***

This type of licensing allows a plant to operate for an additional 20-year term beyond its initial license renewal, permitting it to operate from 60 to 80 years.

- Seven reactors at four sites have been issued subsequent renewed licenses.
- 16 reactors at 8 sites have subsequent license renewal applications under review.
- 19 sites with a total of 26 reactors have submitted letters of intent to request subsequent license renewals. Reactors at four sites have subsequent license renewal applications under review.

## ***Early Site Permits for New Reactors***

- Six early site permits have been issued:
  - System Energy Resources, Inc., for the Grand Gulf site in Mississippi
  - Exelon Generation Co., LLC, for the Clinton site in Illinois
  - Dominion Nuclear North Anna, LLC, for the North Anna site in Virginia
  - Southern Nuclear Operating Co., for the Vogtle site in Georgia
  - PSEG Power, LLC, and PSEG Nuclear, LLC, for a site in New Jersey
  - Tennessee Valley Authority for two or more small modular reactors at the Clinch River Nuclear Site in Tennessee.

## ***Combined License—Construction and Operating License for New Reactors***

- Since June 2007, the NRC has received and docketed 18 combined license (COL) applications for 28 new, large light-water reactors.
- The NRC suspended or canceled 10 COL application reviews at the request of the applicants for Bell Bend, Pennsylvania; Bellefonte, Alabama; Callaway, Missouri; Calvert Cliffs, Maryland; Comanche Peak, Texas; Grand Gulf, Mississippi; Nine Mile Point, New York; River Bend, Louisiana; Shearon Harris, North Carolina; and Victoria County Station, Texas.
- The NRC has issued COLs for 14 reactors at Fermi, Michigan; Levy County, Florida; North Anna, Virginia; South Texas Project, Texas; Turkey Point, Florida; V.C. Summer, South Carolina; Vogtle, Georgia; and W.S. Lee, South Carolina.
- At the licensee's request, six COLs have been terminated at three sites: Levy County Units 1 and 2 (on April 26, 2018); South Texas Project Units 3 and 4 (on July 12, 2018); and V.C. Summer Units 2 and 3 (on March 6, 2019).

## ***Construction Permit***

- One commercial nuclear power plant construction permit is under review for TerraPower Kemmerer Unit 1.

## ***Reactor Design Certification***

- Seven reactor design certifications (DCs) and one amendment have been issued. One standard design approval application is currently under NRC staff review.
  - General Electric-Hitachi Nuclear Energy's Advanced Boiling-Water Reactor (ABWR)
  - Westinghouse Electric Company's System 80+
  - Westinghouse Electric Company's Advanced Passive 600 (AP600)
  - Westinghouse Electric Company's Advanced Passive 1000 (AP1000)
  - South Texas Project Nuclear Operating Company's ABWR amendment
  - General Electric-Hitachi Nuclear Energy's Economic Simplified Boiling-Water Reactor (ESBWR)
  - Korea Electric Power Corporation's Advanced Power Reactor 1400 (APR1400)
  - NuScale US600 (DC) (12 module small modular reactors)
- Two DC applications for the U.S. versions of the Evolutionary Pressurized-Water Reactor (U.S. EPR) and Advanced Pressurized-Water Reactor (US-APWR) are suspended at the request of the applicants.

## ***Nonpower Production and Utilization Facilities***

- Research and Test Reactors (RTRs)
  - 29 licensed research and test (nonpower) reactors operate in 21 States
- Medical Radioisotope Irradiation and Production Facilities
  - One construction permit has been issued to SHINE Technology, LLC
  - One operating license application is under review (SHINE)
- Advanced Research and Test Reactors  
Four construction permits have been issued:
  - Three for Kairos test reactors and one for the Abilene Christian University Molten Salt Research Reactor.
  - One construction permit application has been issued, for Kairos Hermes 2 advanced reactor, Units 1 and 2.

## **NUCLEAR MATERIALS**

### **Materials Licensing**

- *The NRC and the Agreement States have more than 17,000 licensees for medical, academic, industrial, and general users of nuclear materials.*
  - *The NRC regulates more than 2,000 licenses.*
  - *The 39 Agreement States regulate more than 15,000 licenses.*
- *Connecticut, Indiana, and West Virginia submitted letters of intent to become Agreement States and are on track to become Agreement States by 2025, 2026, and 2027, respectively.*
- *The agency issues approximately 1,400 new licenses, renewals, or amendments for existing materials licenses annually. The NRC conducts 600 to 800 safety and security inspections of materials licensees each year.*

### **Nuclear Fuel Cycle**

- *Three uranium recovery sites are licensed by the NRC.*
- *The NRC licenses nine active fuel cycle facilities:*
  - *One uranium hexafluoride conversion facility,*
  - *Six uranium fuel fabrication facilities, and*
  - *Two gas centrifuge uranium enrichment facilities (one operating and one under construction).*
- *One depleted uranium deconversion facility (construction decision pending).*
- *The NRC issues about 40 fuel cycle facility licensing actions per year, including amendments; renewals; new licenses; and safety, environmental, and safeguards reviews.*

### **National Source Tracking System**

The National Source Tracking System, also known as NSTS, tracks more than 80,000 sources held by about 1,100 NRC and Agreement State licensees. Of those sources, about 53 percent are Category 1 sources and 47 percent are Category 2. The majority are cobalt-60, the most widely used isotope in large sources.

### **Domestic Safeguards**

The NRC and the DOE use the Nuclear Materials Management and Safeguards System (NMMSS) to track transfers and inventories of source and special nuclear material. Licensees must report their inventories, transfers, purchases, and sales (including import and export of these materials) to the NMMSS. More than 300 licensees report to the NMMSS database, verifying their inventories at least annually by reconciling their transactions against the previous year's inventory. The database supports U.S. participation in the Treaty on the Non-Proliferation of Nuclear Weapons.

## **RADIOACTIVE WASTE**

### **Low-Level Radioactive Waste**

- *10 regional compacts*
- *Four state-licensed disposal facilities*

## **HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT**

### ***Spent Nuclear Fuel Storage***

- The NRC has issued 85 licenses for independent spent fuel storage installations in 37 States:
  - 17 site-specific licenses (two of these facilities are licensed but were never built or operated), and
  - 68 general licenses.
- Approximately 10–20 new, renewed, or amended certificates for spent fuel storage systems are reviewed annually.

### ***Transportation—Principal Licensing and Inspection Activities***

- Approximately 1,000 safety inspections of fuel, reactor, and materials licensees are conducted annually.
- Annually, 40–50 new, renewed, or amended container-design applications are received for the transport of nuclear materials.
- Approximately 150 license applications for the import and export of nuclear materials from the United States are reviewed annually.
- More than 3 million packages of radioactive materials are shipped each year in the United States by road, rail, air, or water. This represents less than 1 percent of the nation's yearly hazardous material shipments.

### ***Decommissioning***

- Approximately 100 materials licenses are terminated each year. The NRC's materials decommissioning program focuses on the termination of licenses that are not routine.
- 23 nuclear power reactors are in various stages of decommissioning (DECON or SAFSTOR).
- Three research and test reactors are permanently shut down and in various stages of decommissioning.
- Eight complex materials sites are in various stages of decommissioning.
- One fuel cycle facility is in partial decommissioning, and one is undergoing decommissioning.
- Five NRC-licensed uranium recovery facilities are in various stages of decommissioning.

## **SECURITY AND EMERGENCY PREPAREDNESS**

- Every 2 years, each operating nuclear power plant performs a full-scale emergency preparedness exercise inspected by the NRC and evaluated by the Federal Emergency Management Agency.
- Plants conduct additional emergency drills between full-scale exercises to maintain their preparedness and proficiency in responding to emergencies.
- The NRC spends about 15,000 hours a year scrutinizing security at nuclear power plants, including 8,000 hours of force-on-force inspections. These inspections include simulated terrorist attacks using a mock adversary force, and are conducted at each site every 3 years.
- The NRC has implemented a comprehensive cybersecurity oversight program for power reactors, which includes routine inspections and requires licensees to isolate critical systems from the Internet.