Nuclear Energy Research and Development Act Section-by-Section Summary

Section 1. Short Title.
"Nuclear Energy Research and Development Act"

Section 2. Definitions.
Amends the Energy Policy Act of 2005 by adding new definitions used in the bill.

Section 3. Nuclear Energy Research, Development, Demonstration, and Commercial Application Programs.
Reactor Concepts Research, Development, and Demonstration
Authorizes a light water sustainability program and specific technology goals. Authorizes an advanced reactor technologies program focused on proliferation-resistant and passively safe designs, and includes focus areas on materials, modeling and simulation, chemistry, instrumentation and controls, manufacturing, among other areas. Authorizes a hybrid energy systems research and development program, which includes applications such as desalination, hydrogen production, heat for industrial processes, and carbon capture, use, and storage, among others. Authorization of appropriations are included as follows:

- Light water reactor sustainability program: 5% annual funding increases over 5 years, beginning with $55,000,000 in fiscal year 2021;
- Advanced reactor technologies program: $55,000,000 for each of fiscal years 2021 through 2025; and
- Hybrid energy systems program: 5% annual funding increases over 5 years, beginning with $52,500,000 in fiscal year 2021.

Fuel Cycle Research and Development
Authorizes a high-assay, low enriched uranium research and development program, including considerations for fabrication and transportation, with the goal of having the capability of producing amounts needed for advanced nuclear reactors by December 31, 2025. Instructs the Secretary to submit a report to relevant committees in Congress on this program, which will include schedule and cost estimates. Instructs the Secretary to submit an advanced fuel material availability report, to detail nuclear material inventories at the Department other than that containing the uranium-235 isotope. Authorizes a used nuclear fuel program that includes both open and closed fuel cycle technologies. Authorizes an advanced fuels program for both light water and advanced reactors, focusing on proliferation resistance and accident tolerance, and a report on these technologies and how they would impact reactor economics, safety, and the environment, among other areas. Authorization of appropriations are included as follows:

- High-assay, low enriched uranium program: 5% annual funding increases over 5 years, beginning with $31,500,000 in fiscal year 2021;
- Used nuclear fuel program: 5% annual funding increases over 5 years, beginning with $91,875,000 in fiscal year 2021; and

- Advanced fuel program: 5% annual funding increases over 5 years, beginning with $131,880,000 in fiscal year 2021.

Nuclear Science and Engineering Support
Reauthorizes nuclear educational research and development programs, including specific authorization of appropriations for radiological facilities management and support. Authorizes a nuclear energy apprenticeship program. Authorization of appropriations are included as follows:

- University nuclear leadership program: : $15,000,000 for fiscal year 2021 and every year thereafter;
- Radiological facilities management: : $20,000,000 for each of fiscal years 2021 through 2030;
- Nuclear energy apprenticeship program: : $5,000,000 for each of fiscal years 2021 through 2030; and
- Nuclear energy university program: 20% of nuclear energy research and development programs funds annually.

Versatile Neutron Source
Authorizes appropriations for the versatile test reactor for five years as follows:

- $450,000,000 in fiscal year 2021;
- $565,000,000 in fiscal year 2022;
- $680,000,000 in fiscal year 2023;
- $755,000,000 in fiscal year 2024; and
- $735,000,000 in fiscal year 2025.

Advanced Nuclear Reactor Research, Development, and Demonstration Program
Authorizes an advanced reactor demonstration program with goals of demonstrating two concepts by December 31, 2025, and entering into agreements for up to five more by December 31, 2035. Establishes research goals and selection requirements for the demonstration projects, including an optional demonstration project structure authority that is milestone-based. Authorizes appropriations for this program for five years, with $520,000,000 for fiscal year 2021, and $670,000,000 for each of fiscal years 2022 through 2025.

International Nuclear Energy Cooperation
Authorizes an international research, development, demonstration, and commercial application coordination effort on nuclear energy. Includes coordination goals and considerations.

Section 4. Nuclear Energy Budget Plan.
Amends the Energy Policy Act of 2005 to include a biennial budget plan update which shall be reported to relevant Congressional committees.

Section 5. Organization and Administration of Programs.
Instructs the Secretary to coordinate cross-cutting programs among other relevant Federal agencies and national laboratories, collaborate with specific entities on programs, disseminate results of projects as practicable, create an education and outreach program to promote public understanding and support of nuclear energy, and establish a nuclear energy technical assistance program. It also instructs the Nuclear Energy Advisory Committee to perform an annual review of all programs.