

# ATLAS RAILCAR

The U.S. Department of Energy (DOE) has developed special railcars for future large-scale DOE transport of used nuclear fuel (UNF)\* from nuclear power plants. The designs include the Atlas railcar (designed to transport UNF containers), new buffer railcars, and a new escort railcar for security personnel that was developed in collaboration with the U.S. Navy.



## RAILCAR DESIGN PROCESS

Atlas is a 12-axle railcar designed to carry 23 different UNF transportation packages (also known as “casks”) weighing between 82 tons and 210 tons. The design process included extensive dynamic computer modeling to simulate how the railcar would perform with various railcar components, attachment mechanisms, and container weights.

## SAFETY STANDARDS AND TESTING

The Association of American Railroads (AAR) is the standard-setting organization for North America’s

freight railroads. In May 2024, DOE’s three railcar designs were officially approved under AAR’s S-2043 standard, which is specific to railcars used to transport high-level radioactive material such as UNF.

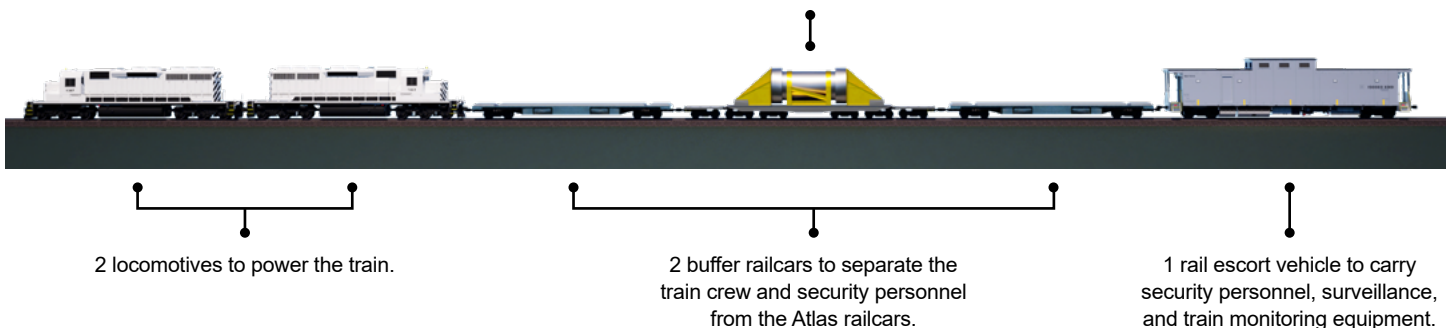
To gain AAR approval under the rigorous S-2043 standard, railcars must undergo individual testing and multiple-railcar testing as part of a full train with other S-2043 railcars. The Atlas railcar took 10 years of development and testing to meet AAR standards.

## TRANSPORTING UNF BY RAIL

DOE transport of UNF by rail will look similar to the graphic below, with flat-deck buffer railcars providing physical separation from radioactive materials in the cask-carrying Atlas railcar(s). A rail escort vehicle (REV) will transport armed escorts along with security and safety monitoring equipment for each shipment. DOE and the U.S. Navy collaborated on the design and testing of the REV.

For more information, contact [asksnf@nuclear.energy.gov](mailto:asksnf@nuclear.energy.gov)

About 1-7 Atlas railcars to transport the used nuclear fuel casks.



\*The term “used nuclear fuel” is intended to be synonymous with the term “spent nuclear fuel” as used and defined in the Nuclear Waste Policy Act of 1982, as amended, and the Standard Contract for the Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (10 CFR Part 961).