



# Proton Power Upgrade: Twice the Power to Enable Unique Neutron Science

The Spallation Neutron Source (SNS) is doubling the power of its proton beam, from 1.4 to 2.8 megawatts, through the Proton Power Upgrade (PPU) project. The upgrade will enable new types of scientific discoveries that are essential to sustaining US leadership in industrial, military, national security, consumer, and other sectors vital to our nation's economy.

## Benefits of the Proton Power Upgrade

- Accelerate the pace of scientific discovery across a wide range of materials and technologies
- Enable novel neutron experiments in more extreme environments using smaller samples
- Leverage existing ORNL facilities and capabilities for maximum cost-effectiveness
- Power the Second Target Station to provide the world's brightest "cold" neutrons, enabling studies of more complex materials

## Neutrons: An Essential Research Tool for Technology, Industry, and More

ORNL has pioneered neutron research since 1944. Today, the laboratory operates the SNS (the most intense accelerator-based pulsed neutron source in the world) and the High Flux Isotope Reactor (a reactor-based neutron source that provides the brightest continuous neutron beams for research in the United States). With their unique properties, neutrons have helped improve many technologies, including computers, cell phones, transportation, batteries, medical devices, energy production, cancer treatments, and airport shipping and security.

**Delivers  
more**

Neutrons in shorter pulses  
to permit more and  
faster experiments

**40%**

More power to the  
existing First Target  
Station

**2.8 MW**

Doubles the power of  
the existing  
proton beam

**Enables**

Building the  
future Second  
Target Station

January 2020

"The PPU is the next step in keeping the US  
at the forefront of the neutron sciences."

**John Galambos,**  
*Proton Power Upgrade Project Director*

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