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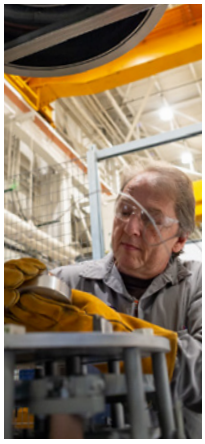
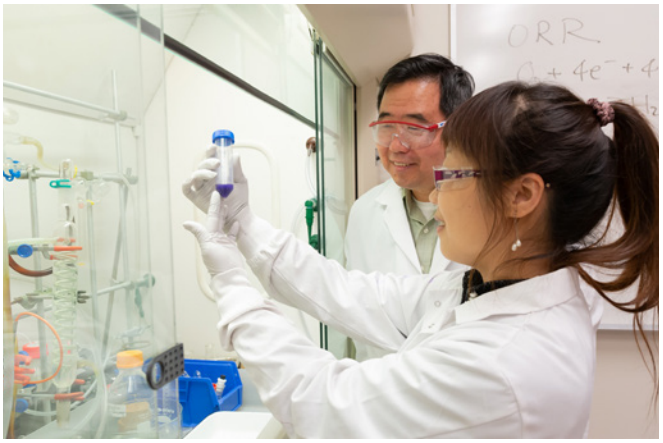
Argonne NATIONAL LABORATORY



OUR PATH FORWARD

Argonne's strategy for 2022–2023



UChicago Argonne, LLC

U.S. DEPARTMENT OF ENERGY

Argonne National Laboratory is a U.S. Department of Energy laboratory managed by UChicago Argonne, LLC.

It has been 76 years since Argonne was founded as our country's first national laboratory. Since then, our mission has evolved from pioneering development of nuclear reactors to a broad portfolio of scientific discovery and technological innovation. Today, in particular, we are drawing on the full spectrum of our capabilities to advance global goals for clean energy and sustainability.

Argonne's research makes a difference. We are recognized internationally for groundbreaking discoveries and innovations. Our strategy for the future will extend our impact as we support the missions of the U.S. Department of Energy and other federal agencies in partnership with a wide range of academic and nonprofit institutions, companies, and communities. As has been the case since our founding, our research and operations partnership with the University of Chicago will enrich our strategy.

Our commitment to leadership in science and technology is matched by an equal commitment to operational excellence and an inclusive world-class community of talent. Argonne's culture rests on a solid foundation of five core values: Impact, Safety, Respect, Integrity, and Teamwork.

The following pages summarize the strategy we presented to the U.S. Department of Energy as part of the Department's 2022 planning process for national laboratories, which guides our work through 2023 and beyond. We refine these goals on an ongoing basis. I am excited to work with our staff and our partners across the country and around the world as we continue to expand our scientific impact.

Paul K. Kearns

PAUL K. KEARNS
Laboratory Director

Leadership in Science and Technology

Argonne is distinguished as a national laboratory by the breadth, depth, and impact of our research.

We are proud to make five signature contributions to science and society:

- Scientific discoveries that solve the deepest mysteries in the physical and life sciences
- Energy and climate solutions that improve the quality of human life and preserve our planet
- Global security advances that protect society from diverse natural and anthropogenic threats
- Cutting-edge research facilities that support thousands of scientists and engineers from around the world
- Development of the STEM workforce and its leaders

We continually refine and extend Argonne's contributions in response to society's needs. Our future contributions will be grounded in our core capabilities in the six broad domains described below.

Physical science: Our research in fundamental chemistry, materials, and physics will shed new light on the essence of matter and energy. Our discovery science will lay the foundations for innovations ranging from quantum computers to new power sources and new catalysts that convert waste to useful products.

Environmental and biological science: We will advance understanding of atmospheric, terrestrial, and biological processes, leading to outcomes such as healthier ecosystems, drugs to combat viruses, and use of microbes to support energy and food production.

Engineering: We will apply our capabilities in biological, chemical, materials, nuclear, and systems engineering to develop, demonstrate, and deploy new technologies that provide clean, sustainable energy.

Computing: We will drive breakthroughs in scientific computing, artificial intelligence, and cyber security through our work in applied mathematics, computational and data science, visualization, and cyber and information science.

Decision science: We will equip public- and private-sector leaders with sophisticated methods to inform complex policy and operational choices in areas including critical infrastructure, supply chains, the spread of disease, and lifecycle impacts of new technologies.

Experimental facilities: We will design and operate large-scale facilities that enable groundbreaking computational and climate science, nuclear physics discoveries, and exploration of physical and biological systems using x-rays and nanoscience.

We are convenors and collaborators.

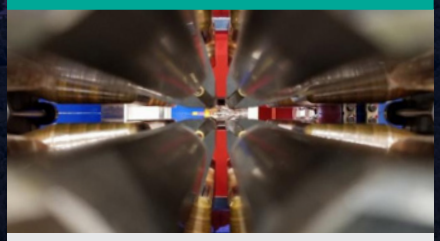
We will continue to bring academia, industry, national laboratories, government agencies, and community leaders together to overcome shared challenges. The exceptional teams we lead will spur discovery, ignite innovation, and promote energy and environmental justice.

- On the global scale, we will work with other nations to decarbonize their energy systems and replace highly enriched uranium used in older research reactors with safer fuels.
- Through U.S. public-private partnerships, we will meet specific research and technology deployment needs in energy storage, advanced nuclear and renewable energy, quantum information science, and advanced materials.
- In the Midwest, in addition to our long-standing research collaborations with leading universities in our region, we will work to understand climate change impacts across the Chicago metropolitan area and drive equitable economic growth on the city's South Side, catalyzed by science and engineering.

In achieving our ambitious goals, we will accelerate science and technology to drive American prosperity and security.

MAJOR RESEARCH INITIATIVES

We are extending our capabilities to boost our impact on science and society through nine initiatives.



Hard X-ray sciences
Developing experimental methods to enable users to fully capitalize on the capabilities of the upgraded Advanced Photon Source

AI for science
Creating an AI framework to dramatically expand the classes of computational problems researchers can pursue

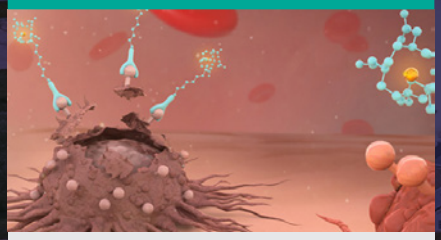
Autonomous discovery
Combining AI and robotics to revolutionize experimental biology, chemistry, and materials science

Climate action
Predicting local climate impacts and empowering communities and businesses to build resilience

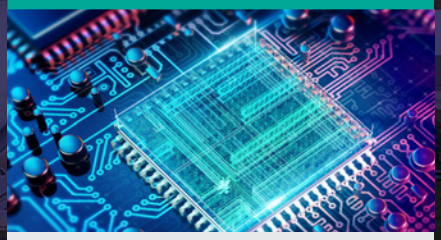
Clean energy and sustainability
Inventing novel pathways to deep decarbonization and a circular economy

Quantum information
Driving progress in distributed quantum computing simulation, sensing, and networking

Detection and imaging of signatures
Advancing observations of phenomena important to discovery science and national security



Radioisotope discovery
Developing novel methods to produce advanced radionuclides for nuclear medicine



Microelectronics
Accelerating the development of energy-efficient and environmentally benign microelectronics

MAJOR USER FACILITY UPGRADES NOW UNDERWAY

Advanced Photon Source

Starting in 2024, an upgraded Advanced Photon Source will deliver vastly more powerful x-ray beams that will transform researchers' ability to understand and manipulate matter at the atomic level.

Argonne Leadership Computing Facility

Beginning in 2023, the Argonne Leadership Computing Facility will operate Aurora, an exascale supercomputer with an unprecedented suite of capabilities in AI, modeling, and simulation that will propel computational science and engineering.

Operational Excellence

Exemplary operations support will advance our leadership in science and technology.

The Laboratory's operations team is committed to being the best partner to advance Argonne's impact, by applying the principles of customer satisfaction, simplification, transparency, and accountability.

Our goals in Laboratory operations will continue to be to:

- Balance safety, security, and risk
- Modernize Argonne's infrastructure
- Optimize business and information systems
- Instill quality, effectiveness, and efficiency

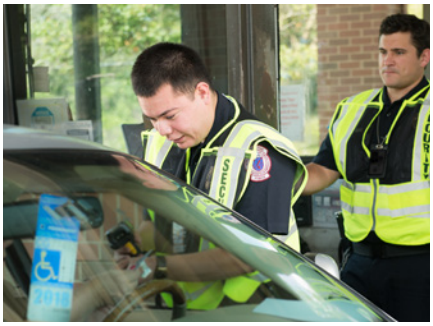
In partnership with Argonne researchers, the operations team will increasingly use AI tools to help achieve those goals. We also will move forward with a major project to establish a new site-access registration system that will simplify our management of facility users and others who visit our campus.

Across the Laboratory's operations, we will continue to enhance the effectiveness of the processes we use to make decisions; work safely; steward our resources; procure goods and services; and communicate internally and externally.

Resiliency and sustainability are guiding principles for our infrastructure.

We will continue to modernize Argonne's physical infrastructure to meet the evolving needs of our research programs. By 2023, we will have a fully redundant power supply to our main campus to increase capacity by 70% and improve reliability.

We also are working with the U.S. Department of Energy to complete, by 2030, a major upgrade of the chilled water, domestic water, steam, sewer, electrical, and mechanical utility systems on our campus. In parallel, we seek to achieve net-zero carbon emissions from our campus by 2050, informed by a "digital twin" of Argonne's infrastructure.



World-Class Community of Talent

Our people are everything.

We are building an equitable, diverse, inclusive, and accessible work environment grounded in our core values, as we implement recommendations from an independent review of our workplace community. We will continue to recruit broadly to increase diversity in our workforce.

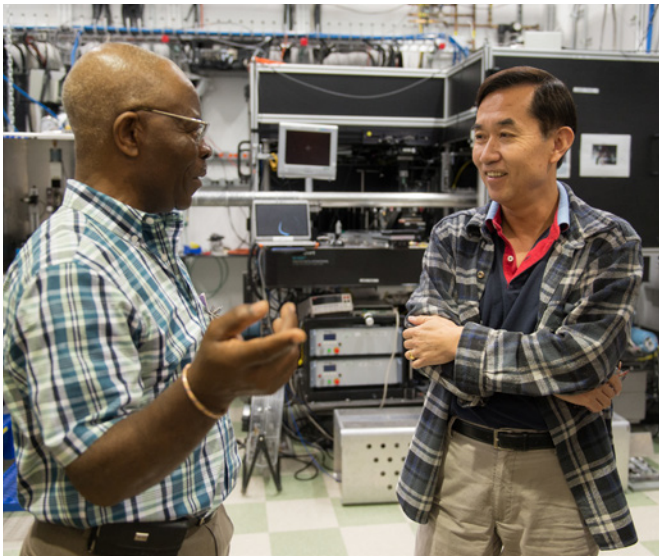
We will create more opportunities for advancement, for all employees, through expanded mentoring and succession planning as well as professional development programs. Examples include support for staff members who are developing new strategic directions for Argonne, exploring commercial pathways for technologies they have developed, or seeking to grow as innovators and leaders.

We are acting to build a climate in which all employees feel valued, supported, and included. We will celebrate employees' successes and work with our employee resource groups to strengthen our sense of community.

We are building the nation's future STEM workforce and leaders.

Looking beyond Argonne, we will continue to ramp up our efforts to grow the wider STEM community to maintain America's global competitiveness. Our learning programs for students of all ages will expand their outreach to historically underserved groups. Overall, we will provide ever-increasing opportunities for university students and post-doctoral researchers.

Through our Chain Reaction Innovations program for "hard tech" entrepreneurs, we will continue to bring innovators from start-up companies to Argonne for two years of intensive mentoring and access to research facilities to help them mature their technologies and create jobs. We also will expand an internship program launched in 2022 that enables underserved college students from the Chicago area to work side-by-side with these innovators. Our commitment to develop the STEM workforce includes support of Chicago-based Duality, the nation's first business accelerator devoted to supporting start-up companies in quantum information technology.



Argonne is managed by UChicago Argonne, LLC, for the U.S. Department of Energy Office of Science.

We are one of 17 U.S. Department of Energy national laboratories that together form a world-leading research system. Each laboratory leverages its unique capabilities to solve particularly difficult problems that individual companies or universities cannot address alone, with a focus on national priorities. Argonne employs more than 3,500 people, drawn from scores of scientific, technical, administrative, and operations fields. We also provide national scientific user facilities that support 6,000 researchers. Our current annual budget is just over $1 billion, nearly 90% of which comes from the Department of Energy and the balance from the Departments of Homeland Security and Defense, other government agencies, and the private sector.

FOR MORE INFORMATION
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