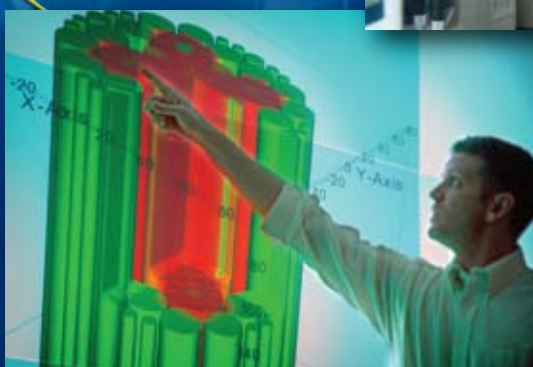


Strategic Plan



FY 2009-2018

Introduction



It has been three years since the creation of Idaho National Laboratory (INL). In that time, we have made substantial progress toward transforming INL into the preeminent nuclear energy research, development, and demonstration laboratory with synergistic multiprogram capabilities and partnerships.

To understand the magnitude of the transformation that is required of our laboratory, we must look ahead to the end of the first decade for the new INL. We will see nuclear energy and national and homeland security leadership highlighted by achievements such as demonstration of Generation IV reactor technologies, creation of national user facilities based on the Advanced Test Reactor and the Critical Infrastructure Test Range, piloting of advanced fuel cycle technology, the rise to prominence of the Center for Advanced Energy Studies, and recognition as a regional clean energy resource and world leader in safe operations.

This transformation will include new and refurbished infrastructures; supporting networks involving universities, industries, and other national laboratories; key research centers driven by our distinctive signatures; leading scientists and engineers conducting world-class research in state-of-the-art facilities; commercialization of key technologies; and a long series of significant contributions to America's energy security.

We're further defined by the unique attributes of our geographic location, public support of our endeavors, and community and governmental leaders who recognize and value the INL's contributions.

Proudly, at the new INL in 2015:

- We solve America's nuclear energy challenges
- We're the largest, most diverse research, testing, and demonstration site in the Department of Energy (DOE) laboratory system
- We're the provider of choice for national and homeland security testing and demonstration
- We're respected and valued by industry and technology end users
- We operate with commercially competitive practices
- We work safely and protect the environment
- We value and respect our employees
- We improve the quality of life in our communities.

We'll pursue simultaneous excellence in science and technology, laboratory operations, environment, safety, and health (ES&H), and contribute to our communities, making them a better place to live. With the creativity and initiative of all who work at the INL, we will earn the support of our many stakeholders.

Sincerely,

A handwritten signature in black ink, appearing to read "John J. Grossenbacher". The signature is fluid and cursive.

John J. Grossenbacher
Director, Idaho National Laboratory

INL: Leading the Renaissance in Nuclear Energy

Unique facilities and innovative scientists and engineers have long kept INL at the forefront of nuclear energy research, development, and demonstration (RD&D). INL will exploit these assets to support our government's role in leading the revitalization of the nation's nuclear power industry and re-establishing U.S. world leadership in nuclear science and technology. Creating technically and economically competitive nuclear energy technologies that are publicly acceptable is a grand challenge worthy of the talents and capabilities of the INL. Successfully meeting this challenge will reshape the world's energy economy and is essential to our nation's energy security. Building upon its nuclear legacy, infrastructure, expertise, and distinctive signatures (in separations and actinide science; materials and fuels; and instrumentation, control, and intelligent systems), INL will be at the forefront as the nation develops and implements integrated strategies for advanced fuel cycles, advanced reactor options, and nuclear energy research.

We will focus and leverage our basic and applied research capabilities to advance the laboratory's mission and achieve its 2015 vision.

INL's 3,900 scientists, engineers, and support staff work with national and international governments, universities, industry partners, and other laboratories to research, develop, demonstrate, and deploy technologies for nuclear energy, national and homeland security, and energy security. Synergistic programs in these key areas will deliver critical technology solutions and provide indispensable prototyping and testing capabilities.

The foundation guiding our mission, vision, and this plan is DOE's strategic direction for INL and Battelle's philosophy of simultaneous excellence in science and technology, laboratory operations, environment, safety, and health, and community service (reflected in INL's principal priorities).

This plan is structured to provide (1) a glimpse into INL's desired end states in 2015, (2) ten strategic objectives that advance INL toward those end states, with focus on outcomes that collectively execute the strategic objectives over time, and (3) a timeline that highlights key outcomes for INL's transformation. Beginning on page 5, our strategic objectives are color coded to correspond to the three principal priorities below.

Mission

Our mission is to ensure the nation's energy security with safe, competitive, and sustainable energy systems and unique national and homeland security capabilities.

2015 Vision

INL will be the preeminent nuclear energy laboratory with synergistic world-class, multiprogram capabilities and partnerships.

Principal Priorities

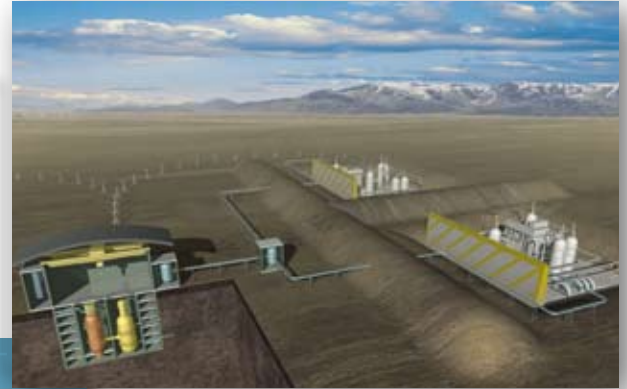
- Mission accomplishment
- Respect and caring for our people
- World-leading safety behavior, safety performance, and environmental stewardship.

Looking Ahead to 2015

In achieving our mission and vision, we envision the following end states for the laboratory in the year 2015.

Next Generation Nuclear Plant

INL develops and implements technologies to commercialize a new generation of advanced nuclear plants, particularly high-temperature, gas-cooled reactor technology. This Next Generation Nuclear Plant (NGNP) will supply clean, economical, heat to generate electricity and clean burning hydrogen. NGNP will also supply source heat to domestically produce clean-burning hydrogen and improve technologies for application to petrochemical and other industries.



Advanced Fuel Cycle Technologies

INL leads fuel system development for Generation IV reactors and advanced fuel cycle technologies. These technologies will greatly reduce the quantity of long-lived, highly radiotoxic, transuranic isotopes while reclaiming valuable energy from spent fuel. These technologies will also provide economical, proliferation-resistant, and sustained nuclear energy production.



Regional Clean Energy Resources

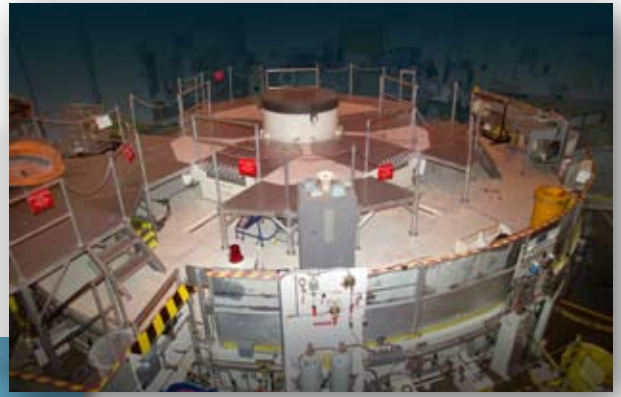
INL leads research to develop clean energy technologies through practical integration of nuclear, fossil, and renewable energy systems. INL provides leadership and expertise for clean and sustainable energy development within the “Western Inland Energy Corridor” which contains world-class energy resources strategic to U.S. energy security. INL is using innovative hybrid energy and carbon management approaches in this binational regional endeavor.

A significant role of this national laboratory is to reduce the technical risk associated with deployment of new clean energy technologies and systems. Demonstration of novel components and hybrid, integrated energy systems moves technologies from the realm of scientific feasibility through to economically scalable solutions. The INL continues its long history of first-of-a-kind system development and testing to provide industry and the nation the knowledge and tools to shift to a clean energy economy.



Advanced Test Reactor National Scientific User Facility

INL's user facility offers university, laboratory, and industry researchers premier resources and state-of-the-art facilities for high-impact, collaborative investigations of nuclear fuels and materials. Researchers engage in experimental irradiation testing and post-irradiation examination, and obtain technical assistance in design and safety analyses of reactor experiments.



Center for Advanced Energy Studies

The Center for Advanced Energy Studies (CAES), enables academic and industrial research collaborations, develops and enhances capabilities, and advances INL's reputation in leading nuclear energy research. CAES provides education, influences decision processes, conducts research, and engages industry toward achieving competitive, secure, and sustainable energy systems. Employing synergistic capabilities, the Center for Advanced Modeling and Simulation offers access to state-of-the-art computational and visualization tools for developing advanced energy systems like those needed for the Next Generation Nuclear Plant.



Critical Infrastructure Test Range and Nuclear Nonproliferation Capabilities

INL researches and delivers critical technology solutions to identify and defeat threats to our nation's security. INL operates a dedicated control system and cyber security testing center that addresses critical infrastructure protection, nuclear nonproliferation, and defense systems and technology. Researchers provide prototyping and testing services to develop technologies for nuclear materials security, signatures, and detection; advance nuclear energy safeguards, training, and testing; and evaluate policy, solutions and services.

INL operates a comprehensive explosives test range for ballistic impact and structural integrity testing and the National Nuclear Security Administration's Center of Excellence for Vulnerability Analysis, and routinely conducts performance testing on emerging security infrastructure protection technologies, such as advanced radar systems and unmanned autonomous vehicles.



Strategic Objectives

INL's 2015 vision and end states will be achieved through outstanding execution of the following ten strategic objectives. Progress on these objectives will in turn be achieved through focused delivery of annual outcomes. The color of the key categories corresponds to our three principal priorities (page 2).

Leading Nuclear Energy

Objective 1: Lead advanced nuclear reactor and fuel cycle RD&D

Objective 2: Develop, demonstrate, and promote nuclear energy technology through public-private partnerships



Multiprogram Excellence

Objective 3: National and Homeland Security – Build leading roles in nuclear non-proliferation and critical infrastructure protection

Objective 4: Energy and Environment – Become a leading clean energy laboratory valued as a regional resource



Modern Facilities and Capabilities

Objective 5: Build and equip facilities that advance our nuclear energy and other programmatic missions using innovative approaches and maximizing existing assets

Objective 6: Focus investments in distinctive areas to advance nuclear and multiprogram research

Objective 7: Build strategic partnerships and leverage their influence and market knowledge



Outstanding People

Objective 8: Build an organization that attracts and retains key nuclear and other scientific researchers/engineers, enabling INL to reach higher levels of laboratory performance



Excellence in Operations & Community Service

Objective 9: Implement business and operational practices that reduce bureaucracy and promote safe, efficient, and secure mission accomplishment

Objective 10: Develop public trust and confidence in INL and nuclear energy



STRATEGIC OBJECTIVE	OBJECTIVE DESCRIPTION	FY 2009 OUTCOMES
Leading Nuclear Energy		
<p>Objective 1 Lead advanced nuclear reactor and fuel cycle RD&D</p>	<p>Future nuclear energy systems need to be increasingly safe, economical, proliferation-resistant, and sustainable. While evolutionary technologies provide some incremental progress, significant achievements will only occur with focused and consistent RD&D programs. INL, as the lead nuclear energy laboratory, will initiate and organize these programs and lead their execution.</p>	<ol style="list-style-type: none"> 1. Complete irradiation of transmutation fuel in the French fast reactor, Phenix 2. Provide radioisotope power system for the Mars Science Laboratory mission 3. Demonstrate new irradiated fuel examination capability 4. Demonstrate methodology for advanced systems analysis code 5. Establish INL's reputation as a National Scientific User Facility by hosting university experiments in Advanced Test Reactor (ATR) 6. Conduct international summer school on modeling, experiments, and validation 7. Establish modern post-irradiation fuel examination capability
<p>Objective 2 Develop, demonstrate, and promote nuclear energy technology through public-private partnerships</p>	<p>The development and demonstration of advanced technology and large, advanced energy projects is central to establishing the U.S. as the leader in development and commercialization of future nuclear energy technologies. INL will work in close collaboration with commercial industry end users and nuclear system suppliers to develop NGNP performance requirements, foster rebuilding the U.S. nuclear infrastructure, and contribute to making U.S. industry self-sufficient for nuclear energy production needs.</p>	<ol style="list-style-type: none"> 1. Initiate industry-government Light Water Reactor (LWR) extended life technology program 2. Perform first NGNP graphite experiment in ATR 3. Define NGNP research and development requirements 4. Initiate the NGNP Environmental Impact Statement 5. Continue NGNP conceptual design
Multiprogram Excellence		
<p>Objective 3 National and Homeland Security - Build leading roles in nuclear non-proliferation and critical infrastructure protection</p>	<p>National and international events – from the War on Terrorism to the threat of nuclear weapons – have increased the daily challenges faced by our military, law enforcement, and homeland security communities and elevated the need for preventing or reducing proliferation of nuclear materials. INL will leverage its scientific expertise, engineering discipline, and unique infrastructure assets to develop solutions for nuclear nonproliferation, counter proliferation, chemical defense, and critical infrastructure protection—kinetic and non-kinetic vulnerabilities. INL's non-kinetic work will capitalize on the Process Control System, Cyber Security, and Wireless Communications Test Beds for vulnerability assessments and mitigation based on field-scale systems.</p>	<ol style="list-style-type: none"> 1. Convert University of Wisconsin nuclear reactor from high-enriched uranium to low-enriched uranium in support of the Global Threat Reduction Initiative 2. Develop blast mitigation armor technology for national security application 3. Identify/test pulse effects on critical infrastructures such as electric grid and communications systems 4. Advance the modularization and portability of active interrogation technology for detection of heavily shielded nuclear materials 5. Develop a Center of Excellence for Electric Grid Reliability
<p>Objective 4 Energy and Environment - Become a leading clean energy laboratory valued as a regional resource</p>	<p>To enable continued economic growth and environmental sustainability, our nation has increased the focus on developing its energy security. Shifting from high-carbon, unsure energy supplies to lower-carbon, clean, local alternatives will make this vision a reality. The INL will address the nation's energy needs through this transition by becoming a leading clean energy RD&D laboratory and resource that:</p> <ul style="list-style-type: none"> • Integrates nuclear energy research and its application with other bio and fossil energy systems • Develops alternative, clean energy systems and resources • Provides science- and engineering-based solutions to meet environmental and water resource management challenges • Develops science and engineering capability while delivering RD&D that enables and accomplishes INL's primary missions in nuclear energy and national and homeland security. 	<ol style="list-style-type: none"> 1. Achieve leadership recognition for the Spent Nuclear Fuel and Challenging Materials areas for Environmental Management Technology Development 2. Complete INL demonstration of the Yucca Mountain Waste Package Closure System prototype 3. Establish key productive partnerships that lead to future demonstrations in advanced energy systems areas with Western Inland Energy Corridor entities (WY, MT, UT, Alberta), emphasizing the integration of nuclear, fossil, and renewable energy into complementary energy systems 4. Extend leadership of biomass feedstock program to total carbon management (bio-catalysis, gasification, and systems efficiency) research

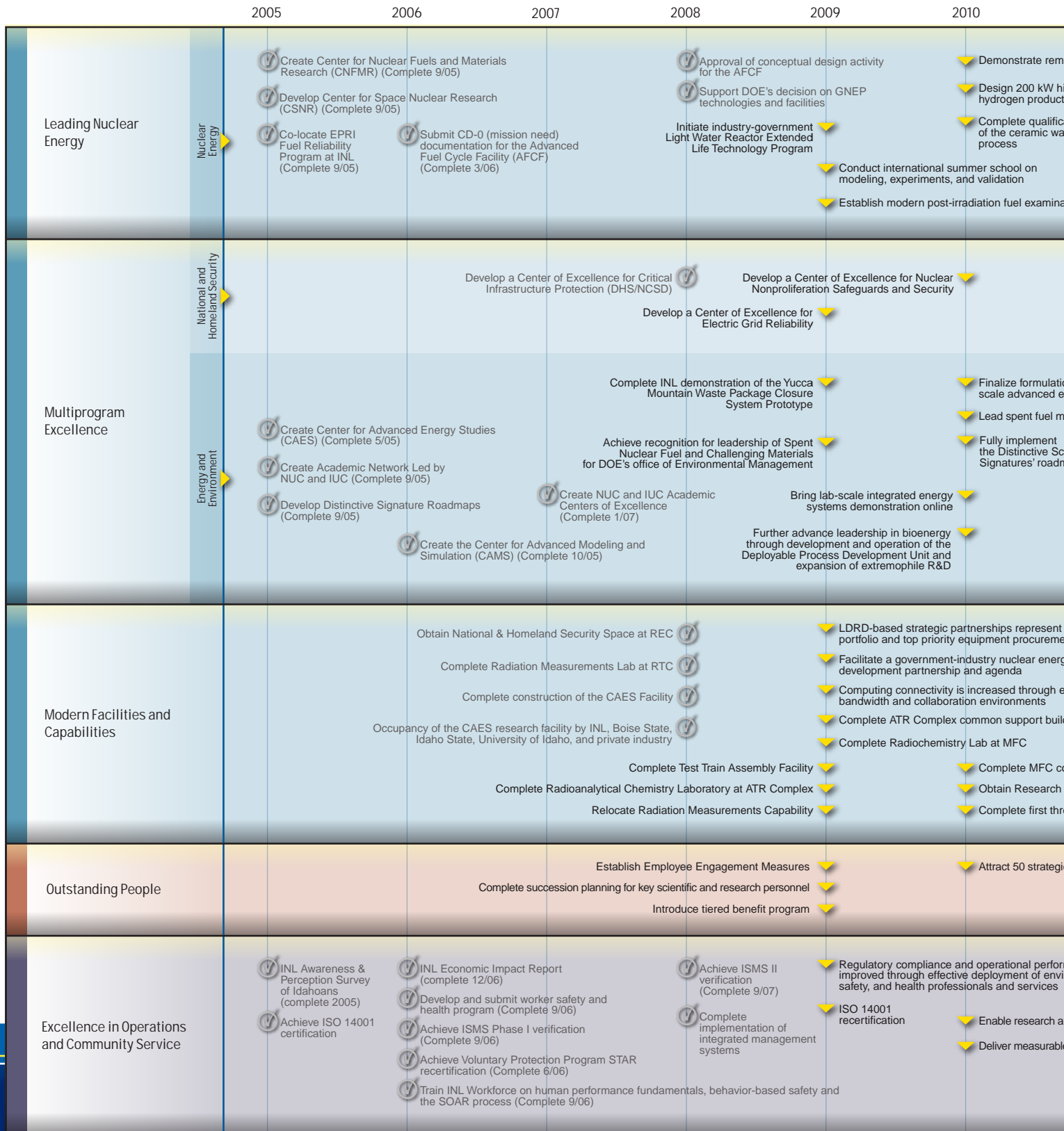
Strategic Objectives



STRATEGIC OBJECTIVE	OBJECTIVE DESCRIPTION	FY 2009 OUTCOMES
Modern Facilities and Capabilities		
<p>Objective 5 Build and equip facilities that advance our nuclear energy and other programmatic missions using innovative approaches and maximizing existing assets</p>	<p>To achieve INL's mission and attract and retain leading researchers, critical INL infrastructure needs to be modernized with state-of-the-art facilities and equipment. Modernization efforts will focus on INL's integrated and interdependent campuses and complement them with appropriate complex-wide capabilities.</p> <p>Capital improvements will be obtained through General Plant Project construction, key facility refurbishment, and facility leases. Line-item construction projects will be pursued at both the Materials and Fuels Complex and the ATR Complex to enable significant improvements to utilities, research office, and service capabilities. Partnerships and collaborations will be established with programs and other potential sponsors that may provide opportunities to accelerate infrastructure transformation.</p>	<ol style="list-style-type: none"> 1. Complete first phase of post-irradiation examination equipment installation in support of nuclear fuel and material research and the ATR National Scientific User Facility 2. Provide "Less than Hazard Category 3" radiochemistry laboratory space to continue R&D on advanced nuclear fuel separations at Materials and Fuel Complex 3. Support the ATR National Scientific User Facility by contracting an environmentally controlled area to assemble test trains; retrofitting existing space to ensure counting and analytical laboratory capabilities continue; and constructing a new wet chemistry laboratory at the ATR Complex 4. Occupy national and homeland security offices in support of program growth 5. Complete Test Train Assembly Facility 6. Relocate Radiation Measurements Capability 7. Complete Radiochemistry Laboratory at Materials and Fuel Complex 8. Complete Radioanalytical Chemistry Laboratory at ATR Complex 9. Complete initial occupancy of the high-performance CAES research facility and commission multi-institutional research and educational efforts 10. Prepare conceptual design report for Component Test Facility and initiate DOE Conceptual Design one review
<p>Objective 6 Focus investments in distinctive areas to advance nuclear and multiprogram research</p>	<p>To advance nuclear and multiprogram research and ensure mission accomplishment, INL's science and engineering capability base will be matured and extended through Laboratory Directed Research and Development (LDRD) and equipment investments. Distinctive signatures and advanced computation, modeling, and simulation will be focused and enhanced to underpin the laboratory's RD&D activities. And, revitalization of nuclear science and engineering education will be emphasized as a critical attribute for INL's success.</p>	<ol style="list-style-type: none"> 1. Develop LDRD-based strategic partnerships that represent greater than 15% of the annual portfolio 2. Complete top priority equipment procurements 3. Ensure distinctive signatures are strategically focused and signature-based communities are fully functioning 4. Ensure INL impact on energy work force grows
<p>Objective 7 Build strategic partnerships and leverage their influence and market knowledge</p>	<p>Strategic collaboration with industry, academia, other national laboratories, and government agencies is fundamental to the INL mission. To improve technical opportunities and bring about a better result for DOE, other customers/sponsors, and the nation, INL is committed to and will excel at building key partnerships and developing opportunities for technology transfer and commercialization.</p>	<ol style="list-style-type: none"> 1. Facilitate a government-industry nuclear energy development partnership and agenda 2. Provide leadership for the State of Idaho's Renewable Energy Initiative 3. Increase mission-specific industrial partnerships and collaborations 4. Increase university involvement in mission R&D activities

STRATEGIC OBJECTIVE	OBJECTIVE DESCRIPTION	FY 2009 OUTCOMES
Outstanding People		
<p>Objective 8 Build an organization that attracts and retains key nuclear and other scientific researchers/engineers, enabling INL to reach higher levels of laboratory performance</p>	<p>Leading the revitalization of nuclear energy, achieving significant competitive advantage, and accomplishing INL's mission require attracting, engaging, rewarding, and developing world-class talent. Laboratory initiatives will result in INL becoming an employer of choice for nuclear energy, national security, alternative and renewable energy and environmental research.</p>	<ol style="list-style-type: none"> 1. Implement a total compensation strategy including benefits enhancement as well as expanded incentive compensation programs 2. Initiate phase 2 of the leadership development training introduced in FY-2008 3. Establish laboratory employee engagement survey tool and baseline data 4. Explore implementation of alternative or increased work schedule flexibility 5. Complete succession planning for key scientific and research personnel 6. Introduce tiered benefit program 7. Take aggressive recruiting and retention actions to increase mission success through targeted and broad-based recruiting efforts throughout laboratory, scientific, university, and industry communities
Excellence in Operations and Community Service		
<p>Objective 9 Implement business and operational practices that reduce bureaucracy and promote safe, efficient, and secure mission accomplishment</p>	<p>To advance innovation and productivity, INL business and operation practices will be mission-focused, reduce bureaucracy, and promote appropriately safe and secure RD&D. INL will accomplish this through principle-based application of technology, disciplined methodology, and continued management system maturity.</p>	<ol style="list-style-type: none"> 1. Deploy innovative approaches to improve user interface and information delivery 2. Implement pricing strategies that make it easier to do work with INL 3. Increase computing connectivity through expanded bandwidth and collaboration environments 4. Utilize critical assets (people, facilities, and equipment) more effectively and efficiently through production control methods and tools 5. Improve risk management of nuclear facilities through systematic upgrades to safety analysis documentation and structures, systems, and components 6. Improve management of upset conditions/unplanned events through greater understanding and use of human performance improvement practices and tools 7. Improve regulatory compliance and operational performance through effective deployment of environment, safety, and health professionals and services
<p>Objective 10 Develop public trust and confidence in INL and nuclear energy</p>	<p>Revitalizing nuclear energy in the United States and building and sustaining INL's mission success requires building public trust and confidence. INL is committed to effective public and employee communications, which are open, emphasize safety and concern for the environment, respond to concerns, and highlight INL's value to the cultural, economic, educational, and technological base.</p>	<ol style="list-style-type: none"> 1. Improve the quality of life in our community and region through United Way, Team INL, educational support and contributions, technology commercialization, technical assistance, and other humanitarian and cultural community projects and contributions 2. Initiate partnerships with elected leaders of states in the Intermountain West in order to establish awareness of INL as a regional resource for energy technologies 3. Disseminate strategic messages about INL and its role in the "nuclear renaissance" to media, the general public, and to national and energy industry leadership 4. Complete 25 Team INL community service projects

INL Timeline for Transformation (Key Outcomes)

This timeline highlights key outcomes planned through 2018. Accomplishment of these outcomes will help ensure that DOE's vision for the INL is achieved.



 **Completed**
 **Future Milestones**

	2011	2012	2013	2014	2015	2016	2017	2018
<p>Prototype fabrication of metallic fuel</p> <p>High-temperature electrolysis demonstration pilot plant</p> <p>Simulation capability</p>	<ul style="list-style-type: none"> Release test version of new generation code for nuclear systems analysis 	<ul style="list-style-type: none"> Achieve internationally recognized leadership in nuclear separations science 	<ul style="list-style-type: none"> Establish an LEU Fuel Fabrication Facility Submit construction and operating license application for NGNP Restart TREAT for international transient fuel testing 		<ul style="list-style-type: none"> Demonstrate next generation instrumentation and controls architectures in commercial applications Lead development for U.S. test blanket module for ITER fusion safety 			
<p>Execute demonstrations and testbed projects in environmental forensics and threat mitigation.</p> <p>Establish nationally recognized Blast Effects and Survivability Test and Demonstration Center</p>							<ul style="list-style-type: none"> Grow National and Homeland Security programs to \$205M annually 	
<p>Continuation of Western Regional Partnership for large-energy system demonstration</p> <p>Management and disposition technology development efforts</p> <p>Scientific maps</p>	<ul style="list-style-type: none"> Establish an RD&D center-focused on clean sustainable stewardship of world-class energy resources in the western interior of North America Expand leadership and capability through creation of the Hybrid Energy Systems Testing Laboratory (HYTEST) INL support of DOE-OBP research portfolio enables cost effective, appropriately high volume biofuels production 	<ul style="list-style-type: none"> Recognized leader for DOE waste, fuel, and materials disposition technology 	<ul style="list-style-type: none"> Develop and expand water and CO₂ management research portfolios through formal industrial and university partnerships Develop and expand water research and development portfolio, including energy-water interactions, with JNWI partners Lead advanced hybrid energy systems project(s) in Western-Inland Energy Corridor Complete High-Temperature Gas Reactor Component Test facility to support NGNP 	<ul style="list-style-type: none"> OIT research portfolio results in improved national industrial energy efficiency 			<ul style="list-style-type: none"> Lead DOE national laboratory for PHEV and other unconventional vehicle testing and demonstration Lead large-scale environmental monitoring and demonstration programs Grow energy security programs to \$120M annually 	
<p>Greater than 15% of the annual projects are complete</p> <p>Capacity expanded</p> <p>Building</p>		<ul style="list-style-type: none"> Complete common support building at MFC Provide 44,200 sq. ft. analytical laboratory and experimentation research development and demonstration space Provide 65,000 sq. ft. technical support facility space Obtain Advanced Fuel Cycle Facility 					<ul style="list-style-type: none"> Replace Hot Cell space at ATR Complex Complete high-temperature gas reactor component test facility to support NGNP 	
<p>Common support building</p> <p>Graduate and Education laboratory at REC</p> <p>See PIE upgrade projects</p>								
<p>Recruit new hires into INL</p>	<ul style="list-style-type: none"> Enhance mentoring and knowledge transfer process 	<ul style="list-style-type: none"> Enhance recruitment of global nuclear talent 	<ul style="list-style-type: none"> Make key strategic compensation and benefit enhancements 					
<p>Performance is improved</p> <p>Business development through implementation of effective, efficient management systems and information technology</p> <p>Provide value to the community and region through INL education initiatives and charitable contributions</p>				<ul style="list-style-type: none"> Achieve \$1 billion per year business volume supported by an integrated business planning platform 	<ul style="list-style-type: none"> Achieve 50% reduction in injury and illness case rates Achieve safety performance that places INL among the top quartile of comparable companies Foster public trust and confidence through a national strategy for nuclear outreach 		<ul style="list-style-type: none"> Complete nuclear material consolidation Complete MFC safety basis upgrades 	

