



Energy Supply Chain Strategic Plan

January 2021

Changing the World's Energy Future

Amy Rene Lientz



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**Idaho National Laboratory
Idaho Falls, Idaho 83415**

<http://www.inl.gov>

**Prepared for the
U.S. Department of Energy
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14517**



LABORATORY Supply Chain SUSTAINABILITY PLAN

2021



*providing solutions to supply the talent, materials,
and services needed for INL's energy mission
and to grow the energy industry*



Idaho National Laboratory



Amy Lientz

Director, INL Energy Supply Chain
September 2020
Idaho National Laboratory
Energy Supply Chain
Idaho Falls, Idaho 83415

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INL SUPPLY CHAIN

With energy demand rising and the desire to reduce carbon emissions becoming more prominent, government and industry are increasingly interested in developing an emissions-free, power generation source that is safe, resilient and dependable. The world is looking to expand clean energy capabilities and develop the next generation of nuclear reactors. Not only is building next-generation energy systems Idaho National Laboratory's opportunity, it is also Idaho's opportunity. With this in mind, INL launched Supply Chain Initiative to leverage INL's energy projects to build an energy talent pipeline and develop a robust business ecosystem to support current and future projects.

As INL takes on first-of-a-kind, large-scale energy demonstrations, the world is also increasing its demand for clean energy, electric vehicles and battery storage technologies. This creates an unprecedented demand for energy resources. Resource needs include minerals, fuels, talent, construction materials, etc. The goals of the Supply Chain Initiative align to Idaho National Laboratory's (INL) critical outcomes and establish a program to support supply chain needs nationally.

GOALS

INL will first focus on its own energy supply chain needs to ensure mission success, secondarily will determine if it supports strengthening Idaho's energy industry, and then will connect Idaho's energy supply chain to national needs. To get there, INL's Supply Chain program focuses on three main strategic goals:

1. Develop and build a future energy workforce.
2. Expand supplier availability- develop businesses to support energy project needs.
3. Foster national, state and regional networks to implement supply chain solutions.

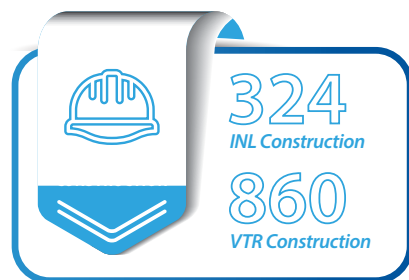
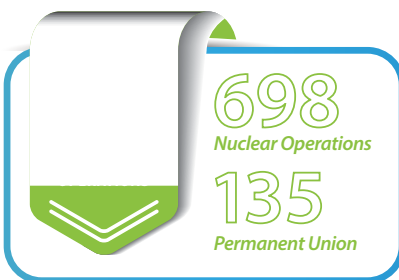
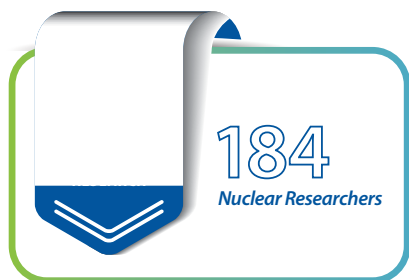




DEVELOP & BUILD A FUTURE WORKFORCE

First-of-a-kind energy technologies require first-of-a-kind education and training approaches. For education institutions to invest resources in building new curriculum, recruiting teachers, and advocating career opportunities for students and people who desire new opportunities, it is important for industry to provide projection information. Strategic workforce planning has become more critical each year as the transformation of the industry impacts the timing, skills and number of jobs that are needed in the future. To understand the landscape of workforce need, it is important that INL's strategic workforce planning efforts are combined with projections and insights from other regional contractors and subcontractors that have similar needs. The Nuclear Contractor Consortium co-chaired by INL and the Regional Economic Development for Eastern Idaho (REDI) was launched to assess the industry's future landscape.

Understanding workforce projections fall into three main buckets: Research, Operations and Construction



INL plans to hire of 2,200 employees by 2024 to support nuclear projects.



Naval Reactors Facility, Idaho Cleanup Project, INL and the NuScale Small Modular Reactor project a combined need of over 5,000 total construction workers by 2027.

Long-term Nuclear Positions in Highest Demand

- Nuclear Engineers
- Mechanical Engineers
- Electrical Engineers
- Nuclear Facility Operators
- Nuclear Reactor Operators
- Health Physics Technician
- Instrumentation and Calibration Specialists
- Electricians
- Laborers
- Pipefitters

Construction Positions in Highest Demand

- Pipefitters
- HVAC Mechanics
- Carpenters
- Iron Workers
- Laborers
- Electricians
- Welders

Anticipated skilled craft to meet construction demands will mostly come from outside the local area. Over 70% of the non-skilled craft will come from the local area.

74%
Local



26%
Non-Local



BUILD THE TALENT PIPELINE IN PARTNERSHIP WITH EDUCATION LEADERSHIP

INL focuses on national solutions to creating a diverse, qualified talent pipeline that can be implemented regionally and locally. Over the past several years, INL has built tools that not only help our needs but that benefit other employers. These are tools that focus on inclusion and diversity, career roadmaps and guides, online and video resources, and connecting nationally to learn from others. INL is also at the table with educators to build curriculum and assist in hiring faculty.

INL is on a journey with education leadership to:

- Fill the gaps of what skills are needed to support future workforce needs.
- Build faculty and teacher capacity and obtain resources needed to support growth.

Fill the Gaps

Projection information and identification of skill information provide national, regional and state views of the workforce and the demands identified by INL for future

employees and are used by federal and state government agencies as input into workforce training and development programs. In Idaho, the Workforce Development Council and the education institutions use the data to determine what type of and how many programs will be needed to meet the demand for a new workforce. Through the efforts of the Nuclear Contractor Consortium, other similar organizations, such as the Naval Reactor Facility, the Small Modular Reactor project, and the Idaho Cleanup Project, also have

been asked to share their projection information, so a full picture of need is better understood. The information collected at INL was also shared with national organizations such as the Nuclear Energy Institute, the American Nuclear Society, and Center for Energy Workforce Development (CEWD). We learned that our challenges are not unlike what others in the energy industry face. CEWD results are like INL's. The information indicates that the age of the workforce is starting to flatten, showcasing that there are younger people being hired and that



retirements are reaching levels from the pre-2008 recession. Closer to home, INL did an inventory of the energy-related degrees and certifications offered from Idaho schools. INL is now working with several higher education institutions to determine what additional programs need to be offered to fill the gaps.

A successful pool of job applicants is dependent on partnerships between energy companies, educators and other training providers to ensure that youth, military veterans and transitioning adults can successfully enter energy careers. INL has launched a cross-contractor training and education subcommittee led by Idaho State Sen. Dave Lent and INL Training Manager Shayne Eyre. The first task of this subcommittee was to identify skill needs of future energy positions for all contractors.

Build Capacity

With gaps identified and an inventory of available courses and degrees complete, a FY-21 goal is to partner with interested institutions to support their strategic plans to add or modify courses to support future needs.

To achieve the goal of increasing the available pool of talent to support growing energy jobs, it is important that INL help our education partners to develop meaningful curriculum; find, train or mentor instructors; find facilities and equipment to support new and expanding programs; and partner to obtain the funds necessary to support the growing needs.

INL is **KEEPING TABS** on the following opportunities where we can partner to obtain grants to support growing energy worker needs:

- INL Grants: Tech-Based Economic Development and STEM
- Non-INL Energy industry resources
- Department of Labor Workforce Economic Development
- Department of Energy Solicitations
- Department of Defense Solicitations
- Others as identified by education partners

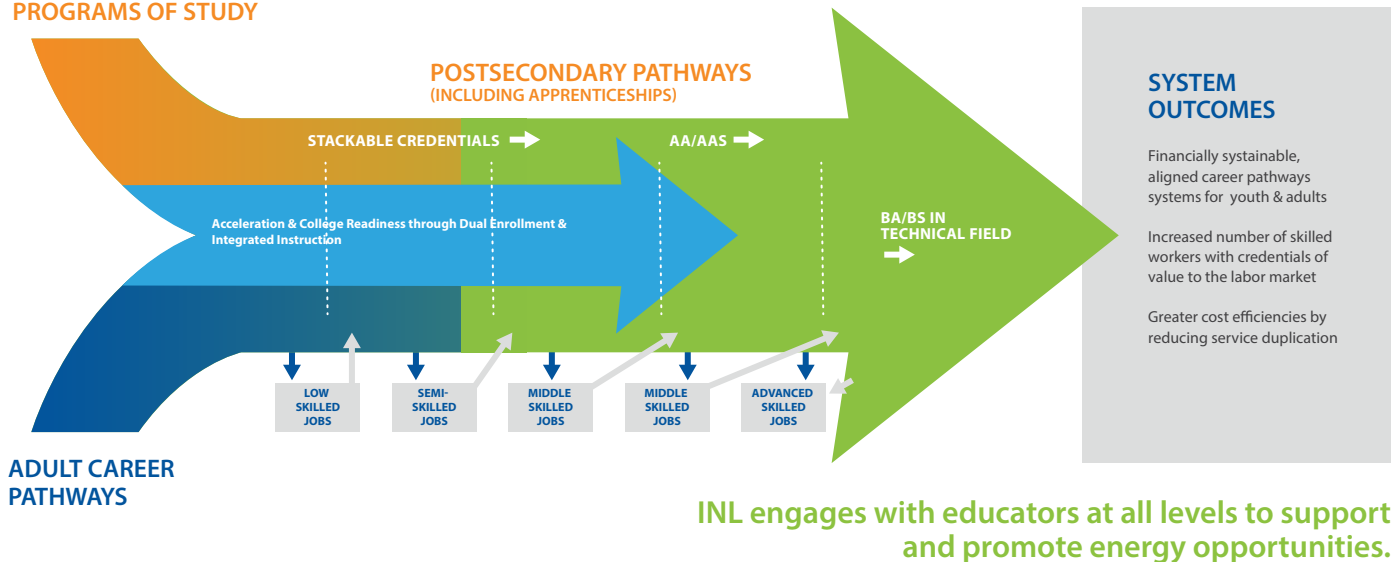


INCREASE AWARENESS OF ENERGY CAREERS OF THE FUTURE

Supply Chain partners across INL and with external partners to build awareness about the energy profession, especially initiatives directed at youth, low-income students, women, veterans and transitioning workers. It is important to make it easier for students and jobseekers to find and understand energy jobs and recognize which education pathways will lead to rewarding opportunities.

Supply Chain efforts led to an inventory of what energy jobs exist in Idaho. This brings career opportunity awareness to students, teachers and parents. Supply Chain has also completed an inventory of what types of energy-related degrees and certifications are offered at Idaho academic institutions.

SECONDARY TO POSTSECONDARY PROGRAMS OF STUDY



WORKFORCE GOALS 2021

Identifying and Responding to INL's Most Critical Workforce Needs

- Complete projection information for energy-supporting organizations. This includes Facilities and Site Services and Environment, Safety, Health and Quality. Completing Cybersecurity projections will also help determine supporting needs in energy.
- Review INL construction projections with other INL site contractors.
- Share projection information with Education leadership.

Build the Talent Pipeline with Education Leadership

- Launch new programs at College of Eastern Idaho and Energy Systems Technology & Education Center to support INL energy workforce needs
- Review and modify, as appropriate, existing curriculum to support opportunities of highest need
- Build a strategy with INL STEM, with other contractors and with education institutions to increase programs in high school tied to energy pathways
- Support CEI's construction programs to expand availability of crafts in Eastern Idaho
- Develop content with education partners to support grants and proposal opportunities that may become available in 2021.

Increase Awareness of Energy Careers of the Future

- Partner with INL STEM to provide resources on areas of highest need
- Share stories and feature employees in energy careers to inspire youth to consider energy careers
- Join with the efforts of the state and educators to increase outreach to career counselors, students and parents





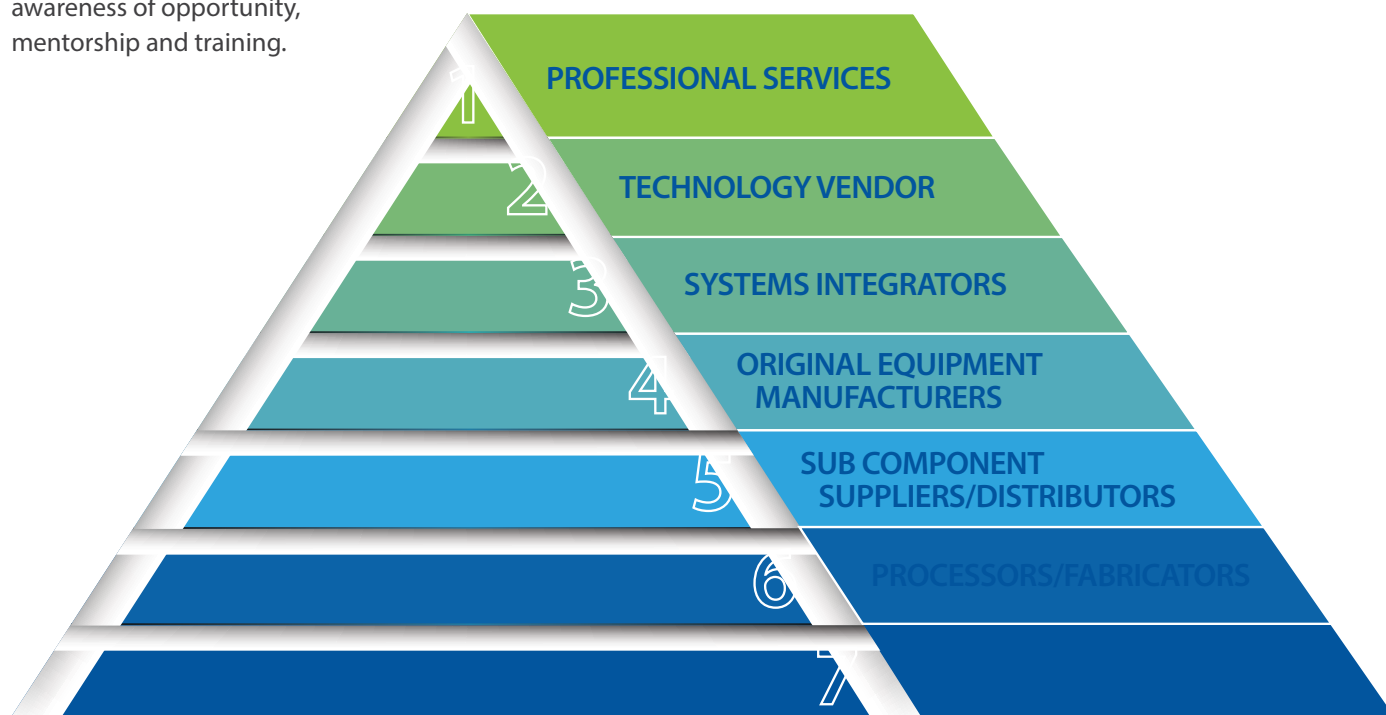
EXPAND SUPPLIER AVAILABILITY

Leading first-of-a-kind energy technologies and systems requires a robust and available supply chain that is often also first of a kind. The goal is to focus on a framework that encourages suppliers to invest, innovate and improve to meet the regulatory, quality and operational expectations to support advanced energy technology demands. A critical step to build and strengthen an available supply chain is to identify the gaps in order to implement solutions that have an impact.

Build robust local supply chains to support INL and state energy industry needs

Once gaps have been identified in what is needed from a local and regional supply chain to support a growing energy industry, then focus can be directed to these main actions:

1. Assist existing regional business step-up to fill the gaps through awareness of opportunity, mentorship and training.
2. Recruit new businesses to Idaho to support supply chain gaps.
3. Prepare content and the process to quickly respond to site selector or industry interests in relocating or expanding business to Idaho.
4. Partner internally to assist in creating new business startups and developing entrepreneurship that may lead to new suppliers to support growing or first-of-a-kind energy needs.



PROVIDE THOUGHT LEADERSHIP AND SUPPORT TO IMPROVE SUPPLY CHAIN PROCESSES AND REDUCE RISK

Strategic planning discussions in 2020 with directors and key INL leaders revealed opportunities where supply chain processes could be improved to provide a solid foundation for growth. Based on this input, the key areas of improvement for 2021 include the following:



1. **Increase number of qualified bids for key INL projects.** This requires tight partnership with the Small Business and others in Acquisition and Contracts Management. It also involves working closely with the Project Management Office and the mission leads to have early notice on opportunities. Externally, it is critical to devote time to communicating to the external suppliers on opportunities and future INL goals.



2. **Review standards.** The development of procedure standards reduces error within the supply chain and saves both time and money. This requires a focus on the reduction of probable variation in areas such as receiving, quality control, shipping, shift scheduling and facilities management. This is one of the many ways to increase collective productivity and establish procedure standards. Groups should also look for ways to streamline ordering processes through standardization.



3. **Assess and share vendor performance.** Continuous improvement to supply chain productivity depends on where employees and managers focus their time and attention when working with suppliers. INL should focus reviews and performance indicators that drive business— for example, safety, service/on time delivery, inventory accuracy/turns, productivity, cost per unit/total landed cost, product damage/claims, and customer satisfaction. This forms the basis of a list of tried-and-true suppliers that others are comfortable using. Share results internally.



4. **Develop appropriate training programs:** Formulate a comprehensive plan to increase productivity, reduce costs, and improve customer service and satisfaction levels. This could result in constructive training that could be delivered internally and to suppliers that may drive a successful organization and improve supply chain productivity.



5. **Reduce supply chain risk.** Not only is managing, facilitating and advocating for the appropriate flow of the supply chain in and out of the region important for the energy programs at INL and in Idaho, but it is also important to manage the risk. Risk considerations tie to national security, economic, environmental, health and safety integrity of the supply chain. Facilitating the flow of goods and services and supporting INL's growth will be critical. However, threading an effective risk management framework into this program will ensure INL's expansion is both secure and compliant to existing and new federal requirements as we change the world's energy future. If we have a solid framework for supply chain risk management, it will maximize INL's competitive advantage and gain the confidence of our customers when seeking to capture work for others and sensitive programs. This effort is being led by Barbara Siciliano and will be a part of robust discussion and consideration in 2021.

EXPAND SUPPLIER AVAILABILITY- 2021 GOALS

It is important to understand supply chain challenges to implement effective solutions. In 2021, the Supply Chain program focus is on the following:

- Obtain project information on planned needs in professional services, construction and operations
- Identify possible “pinch points/ bottlenecks” in supply
- Maintain an inventory of available energy suppliers in Idaho
- Determine the market potential for new needs
- Develop a strategy with Procurement to maintain a database that identifies local suppliers, small businesses and specialty companies
- Improve supply chain processes and reduce supply chain risk

Other Additional Areas of Focus for 2021

- Obtain comprehensive list of INL vendor gaps and challenges to feed supply chain recruitment strategy and small business relaunch.
- Further explore opportunity with GAIN for supply chain vouchers/grants
- Improve CEI NQA-1 course delivery





FOSTER SUPPLY CHAIN NETWORKS

For a first-of-a-kind opportunity to be successful, it requires collaboration locally, regionally and nationally. Networks and information must also be shared internally. Effective communications will result in obtaining the goals described above.

Improve Communications for Supply Chain Success

In 2020, INL had several successes to start the communications process on the importance of the supply chain goals to achieve INL mission success.



Launched an Internal Supply Chain Taskforce with representatives from each directorate where challenges and information could be shared.



Partnered with REDI to co-chair the Nuclear Contractor Consortium to work together on workforce, education, housing and infrastructure challenges.



Met with nearly every INL directorate to discuss the supply chain strategy and gain input.



Partnered with Idaho Commerce to develop the Energy Industry information portal and develop a guide for Idaho's Growing Energy Industry.



Shared goals of INL's supply chain with regional and national organizations.



Supported education institutions in the development of their strategies to build a future workforce in high priority needs.



Participated with Idaho Commerce in their Energy Industry Roundtable.



Hosted a forum with local suppliers to introduce supply chain goals and obtain ideas.

The following steps in communications are considered in the Supply Chain Strategy:

- Regularly meet with stakeholders and suppliers. Get together on a regular basis to better understand concerns and learn of opportunities.
- Partner with Acquisition and Contracts Management to hold Supplier Summits. The purpose of a summit is to update suppliers on INL projects and opportunities, brainstorm and share ideas about quality initiatives and process improvements, and allow suppliers to tour and see how they fit into INL plans.
- Visit core supplier facilities. Bring key INL employees on a visit to see key supplier operations and meet leadership.
- Provide training and mentorship. With input from INL project managers, develop training modules or helpful guidance documents to assist suppliers in improving performance and growing opportunities.
- Involve a red-carpet team to engage on site selector requests and opportunities. This was informally launched in 2020 consisting of INL, Idaho Commerce, and Economic Development professionals to answer inquiries from businesses about doing work in Idaho.
- Post energy business-related materials on INL website and on the Commerce Energy website. Information currently posted includes: workforce information, an Energy Business Guide, a Siting Fact Sheet and contact information.



SUPPLY CHAIN NETWORK-2021 GOALS

INL will continue to develop its many partnerships as listed below. Specifically, 2021 will focus on the following actions:

- Support Commerce in Energy Industry rollout
- Host site visits for industry partners
- Launch local supplier's quarterly roundtable
- Strengthen network with Idaho Manufacturers' Alliance, Idaho Clean Energy Association and Idaho Conservation League
- Advocacy and outreach

THE SUPPLY CHAIN PROGRAM IS A CROSS-CUTTING INITIATIVE THAT INVOLVES MANY ORGANIZATIONS



INTERNAL PARTNERS

Small Business Program
Acquisition and Contracts Management
Government and Regional Affairs
Advanced Manufacturing Office
Nuclear Reactor Innovation Center

Gateway for Accelerated Innovation in Nuclear
Versatile Test Reactor
Industry Engagement/Technology Deployment
University Partnerships

EXTERNAL PARTNERS

Idaho Department of Commerce
Idaho Office of Energy and Mineral Resources
Idaho Leadership in Nuclear Energy Commission
Associated General Contractors
U.S. Nuclear Industry Council
Nuclear Energy Institute
Economic Development Organizations

Idaho Technology Council
U.S. Council of Competitiveness
Idaho Manufacturers' Alliance
Utah Governor's Office of Economic Development
CleanTech Alliance
Energy Communities Alliance
Center for Energy Workforce Development



