



America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition

Summary

Demand for clean energy technologies such as wind turbines and batteries for electric vehicles has increased significantly as technology costs have plummeted over the last decade and countries seek to diversify their energy systems with more reliable clean energy sources to lower costs for businesses and consumers. The global clean energy market is expected to grow exponentially — reaching \$23 trillion at a minimum by 2030. Without new domestic raw materials production and manufacturing capacity, the U.S. will continue to rely on clean energy imports, exposing the nation to supply chain vulnerabilities while simultaneously losing out on the enormous job opportunities associated with the energy transition. Yet, in many cases, the United States has untapped potential to support greater domestic production.

“America’s Strategy to Secure the Supply Chain for a Robust Clean Energy Transition” is the first comprehensive plan to build the U.S. Energy Sector Industrial Base (ESIB) that will be required to support

the rapidly accelerating transition to clean energy. The report is part of a whole of government approach to chart a course for revitalizing the U.S. economy and domestic manufacturing by securing the country’s most critical supply chains. This strategy will lead to stronger, more resilient, and diverse energy supply chains that will help the nation meet our climate change goals, establish the United States as a global leader in clean energy innovation and manufacturing, and create millions of family-sustaining jobs for American workers.

Developed by the U.S. Department of Energy (DOE) in response to [President Biden’s Executive Order 14017 on America’s Supply Chains](#), the strategy summarizes the crucial elements of the energy supply chain, examines key technologies and crosscutting topics, and includes actions the U.S. government is employing or will soon employ to strengthen domestic clean energy supply chains.

The policy strategies and actions lay out a comprehensive government approach to create new programs and build on existing programs, and the

report includes more than 60 actions both the federal government and Congress can take to help the United States capture the economic opportunity inherent in the energy sector transition. DOE will work with several other federal agencies and Congress to accomplish the energy supply chain strategy.

Deep-Dive Assessment Report Topics

- Carbon capture materials
- Electric grid including transformers and high voltage direct current
- Energy storage
- Fuel cells and electrolyzers
- Hydropower including pumped storage hydropower
- Neodymium magnets
- Nuclear energy
- Platinum group metals and other catalysts
- Semiconductors
- Solar photovoltaics
- Wind
- Commercialization and competitiveness
- Cybersecurity and digital components

The analysis is supported by 13 deep-dive supply chain assessments covering everything from solar energy to semiconductors to cybersecurity. The report also builds upon a [100-day review](#) of the supply chains of critical products, including semiconductor manufacturing and advanced packaging; large capacity batteries; and critical minerals and materials.

Key Findings & Opportunities

Meeting national climate goals of 100% clean electricity by 2035 and achieving net-zero emissions economy by 2050 will involve a massive domestic build-out of clean energy technologies and an accompanying scale-up in its supply chains, both domestically and globally.

This energy transition creates significant opportunities for the United States to establish global leadership

in the clean energy market, especially in several technologies poised for exponential growth including solar, wind, nuclear, grid and battery storage, batteries, and hydrogen. Taking action now to address risks and vulnerabilities and maximize opportunities, will enable America to:

- Reinvest in our manufacturing base and create millions of good paying, high-quality jobs for American workers
- Strengthen our energy supply chains by making them more resilient, robust, diverse, and competitive
- Increase access to clean and affordable energy for all Americans, including those who have been historically left behind
- Build a clean energy economy that protects our climate, drives economic growth, and improves public health in communities across the country

Through the deep-dive assessments, DOE identified ways to increase our productivity through **seven areas of action**. Together, they create the strategy that DOE is already working with other federal agencies to implement.

Seven Areas of Action to Address Supply Chain Risks and Vulnerabilities and Maximize Strategic Opportunities:

- 1) Increasing raw material availability
- 2) Expanding domestic manufacturing capabilities
- 3) Supporting formation of and investment in diverse, secure, and socially responsible foreign supply chains
- 4) Increasing the adoption and deployment of clean energy
- 5) Improving end of life energy-related waste management
- 6) Attracting and supporting a skilled workforce for the clean energy transition
- 7) Enhancing supply chain knowledge and decision making

Policy Next Steps

DOE will implement a full suite of existing and new U.S. government policy tools within and outside of the agency to address the nation's energy supply chain challenges and opportunities. "America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition" lays out nearly 40 policy strategies that the Executive branch of government will employ, and two dozen recommendations for congressional action to build a resilient, secure, and robust energy supply chain. These sector-wide actions include:

Executive Strategies

- Support innovation for environmentally sustainable and next generation critical mineral and material extraction, processing, and refining activities.
- Raise awareness, coordinate, and expand manufacturing programs to support the clean energy transition. Examples of specific actions include expanding competitive grants, direct loans, and loan guarantees that support domestic manufacturing capabilities and job creation.
- Leverage foreign direct investment in U.S.-based clean energy technology manufacturing by using targeted Select USA tools.
- Increase federal government financial support to eligible U.S. companies investing in or exporting to foreign countries to secure supply chain inputs that fill challenging domestic gaps and support growth of other domestic segments of the supply chain.
- Promote adoption and implementation of traceability standards to improve global supply chain mapping capabilities, instill integrity of product custody, promote social responsibility, and support carbon footprinting of energy supply chains.

- Leverage federal purchasing power to provide a sustained demand signal for both domestic clean energy products and the capability to manufacture them domestically.
- Embed strong labor standards and support for organized labor in federal funding for the energy sector industrial base, such as supporting unionization across technologies to facilitate the ability of workers to switch jobs without losing union benefits or taking wage or benefit cuts.

Congressional Actions

- Enact legislation to provide tax incentives to support domestic clean energy manufacturing and deployment, including incentives for building new facilities and for the ongoing operation of those facilities.
- Appropriate funding to DOE for use of Title III of the Defense Production Act to support domestic critical material supply.
- Broaden the innovation requirement under Title XVII of the Energy Policy Act 2005 to include supply chain investments that support innovative clean technologies.
- Appropriate funds to establish regional and state-level sector partnerships and Registered Apprenticeships to recruit, train, and place workers into careers needed for domestic supply chains. This would include expanding scholarships for associate degrees and other technical certificates as well as advanced degrees in areas like mining and engineering with requirements to work domestically for five years after degree completion.
- Prioritize financing of offshore wind ports and vessels utilizing existing DOT Maritime Administration (MARAD) programs and DOE LPO Advanced Technology Vehicle Manufacturing Loan Program.

- Fund investment of upgrades and expansion of historical grid systems and utility undergrounding as appropriate. ■

Download the full document and the corresponding other documents that are part of the DOE response to the supply chain executive order at:
www.energy.gov/policy/supplychains

