Updating the State Energy Program to Promote Regional Manufacturing and Economic Revitalization

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Summary

Congress, the White House, and federal agencies are growing increasingly concerned about the decline in U.S. industrial leadership. The emergence of China's industrial dominance and the supply chain challenges exacerbated by the Covid pandemic have opened a political window of opportunity. With the Infrastructure Investment and Jobs Act, as well as pending U.S. competitiveness legislation, Congress and the White House are poised to direct significant investments to regions that have suffered from the decline of legacy industries, ranging from the Rust Belt to coal communities. Innovative energy technologies are at the center of this effort. Not only will clean energy supply chains be necessary for the U.S. to rise to the climate challenge, but they have emerged as the main battleground in global industrial competitiveness, as major economies around the world make significant investments in renewables, electric vehicles, and emerging technologies like clean hydrogen.

There are a range of interventions underway across federal agencies to strengthen U.S. manufacturing and promote regional economic and workforce development. The Department of Energy (DOE) is a key player in fostering innovative manufacturing ecosystems around clean energy technologies and low-carbon industries.

For nearly half a century, DOE’s State Energy Program (SEP) has supported state leaders as they plan for a clean energy future. However, a resilient, secure, and prosperous clean energy economy increasingly demands investments in advanced energy manufacturing and supply chains. This memo proposes that the Administration update SEP to the State Energy and Manufacturing Program (SEMP), and outlines a specific set of reforms — many of which fall within existing program authorities — that will empower states and regions to foster a strong clean energy manufacturing base and enhance U.S industrial leadership.

Challenge and Opportunity

This Administration and Congress have identified regional innovation as a critical area to advance U.S. competitiveness and economic revitalization. This regional approach is woven throughout the bipartisan Infrastructure Investment and Jobs Act (IIJA), which includes regional hubs for clean hydrogen and other emerging technologies; the U.S. Innovation and Competition Act (and its House companion, the America COMPETES Act), which includes funding for regional innovation clusters; the Build Back Better Regional Challenge funded under the American Rescue Plan, which devotes $1 billion to revitalizing regions suffering from disinvestment; the Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization; and the White House's supply chain and industrial decarbonization efforts.

These investments also recognize that global growth sectors align with decarbonization. Despite U.S. leadership in R&D for solar photovoltaics, electric vehicles, advanced nuclear reactors, and more, the U.S. has failed to retain significant domestic manufacturing capacity for the energy technologies of the future, posing risks to middle-class jobs, energy security, and climate action in the years ahead.
Today, China owns 80 percent of the solar supply chain, produces roughly half the globe’s electric vehicles, and leads the world in clean energy investments, spending more than double that of the U.S. While major announcements from U.S. automakers in the past year have brought hope of American electric vehicle leadership, other clean energy industries are struggling in the absence of U.S. manufacturing incentives.

DOE’s recent supply chain report highlights the need to “leverage regional assets, including resources and workforce development, to support the creation and expansion of industrial clusters” and identifies a range of avenues to provide regional technical assistance. It also states that DOE should “consider whether new authority is needed to enable federal awards, matching grants, direct loan, and loan guarantees to support creation of these clean energy manufacturing clusters and leverage existing public programs (federal, state, local) for regional innovation and manufacturing ecosystems.”

One existing program which could be leveraged in this effort is the State Energy Program (SEP). SEP was authorized by the Energy Policy and Conservation Act of 1975, passed in response to the energy crises of the 1970s. The program has historically provided cost-shared technical assistance to states to aid in energy conservation planning, as well as some limited financial assistance (i.e., revolving loan funds) for states to increase energy efficiency and clean energy in public operations, such as municipal buildings and schools. The program has five goals:

- Increase the energy efficiency of the U.S. economy;
- Implement energy security, resiliency, and emergency preparedness plans;
- Reduce energy costs and energy waste;
- Increase investments to expand the use of energy resources abundant in states; and
- Promote economic growth with improved environmental quality.

SEP is considered highly effective, with a leverage ratio of 1:11 between federal and non-federal (including private) funds, annual energy cost savings of $7 for every $1 spent, and hundreds of thousands of students educated in energy efficiency.

Congress and DOE have proposed expansions to the scope, scale, and targeting of SEP in the past (see FAQ #2). These increases in funding and prioritization for low-income and environmental justice communities are well-warranted given the SEP’s strong track record and high return-on-investment, but so too should the scope of funds be updated to reflect our modern supply chain challenges. Energy supply chains and clean U.S. manufacturing have become bipartisan priorities and critical elements of meeting U.S. climate goals.
In the absence of additional support for regional clean energy supply chains, it is highly likely that the U.S. will continue to cede ground to foreign competitors in the energy technologies of the future and grow increasingly reliant on materials manufactured abroad. This poses risks to our ability to mitigate climate change, ensure energy security and national security, and capture the economic benefits of the clean energy revolution. It also is likely to inhibit energy innovation, as regional manufacturing clusters promote “learning-by-doing” and drive advances in material sciences and processes that are simply not possible to achieve in the lab. Finally, maintaining a narrow focus on energy conservation could limit the ability for all states to plan effectively for the clean energy future and develop comparative advantages; even after accounting for population, states do not participate evenly in all aspects of the program based on their needs, interests, and capabilities (see ORNL program evaluation, Figures 3-32). An expanded mandate could increase uptake of the program among states that may have a strong manufacturing base but have been unable to maximize the benefits of a program with a more narrow scope.

Therefore, DOE should leverage its existing authority to rename the program to the State Energy and Manufacturing Program (SEMP) and expand technical and financial assistance to include clean energy supply chain planning. At the same time, Congress should reauthorize, update, and increase funding for the program to ensure states have the ability to develop robust regional clean manufacturing hubs. As domestic clean energy supply chains emerge as a critical element of the national climate, manufacturing, and jobs agenda, this remains pursuant to the program's goals of promoting energy security, resilience, and economic growth.

**Plan of Action**

The following action plan includes both executive and legislative actions to update SEP to enable states to plan for and develop a strong U.S. manufacturing base for clean energy. These actions should be implemented in Program Year 2023, with new program guidance issued in early 2023.

**Recommendation 1. Make manufacturing an explicit goal of SEP and begin providing technical assistance for clean energy supply chain and manufacturing planning.**

Manufacturing is critical to the program goals of energy security, resilience, and economic growth. To indicate its expanded mission, DOE should update the name of SEP to the “State Energy and Manufacturing Program (SEMP)” and begin providing technical assistance to support local and state clean energy supply chains and manufacturing capacity. While Congress should codify this goal, DOE can begin today by leveraging existing authorities like the Energy Technology Commercialization Services Program (42 U.S. Code § 6322(f)). This optional program helps small businesses and start-ups manufacture clean energy technologies (see FAQ #1). DOE can also consider whether to reinstate Renewable Energy Market Development programs, which covered efforts to “develop or expand existing manufacturing capacity for renewable..."
energy equipment and components and support development of specific renewable energy facilities."

**Recommendation 2. Extend eligibility of technical assistance to consortia of states to support regional planning.**

SEP is an arrangement between DOE and designated state energy offices. DOE should foster regional clean manufacturing ecosystems by issuing new program guidance that enables states to submit collaborative energy plans, particularly for optional plan components.

**Recommendation 3. Increase scale of funding and expand funding mechanisms.**

To enable more robust utilization of existing programs and expansion to manufacturing activities, Congress should increase overall funding for core SEMP activities to roughly $400 million per year (not including additional funding for challenge grants), commensurate with levels proposed by Congress in the CLEAN Future Act (see FAQ #2). Additionally, Congress should explicitly include clean energy and low-carbon manufacturing planning within the core SEMP planning and technical assistance process, and create a new revolving loan fund, the State Advanced Energy Manufacturing Fund, to provide additional financial support to states to use on manufacturing projects. As with SEP’s existing revolving loan fund for building efficiency, these funds could be distributed once the state has “demonstrated a commitment” to promoting clean energy manufacturing through state and private efforts.

**Recommendation 4. Direct states to consider opportunities to coordinate with the Department of Commerce, Regional Commissions, and other DOE-led manufacturing initiatives.**

Several federal government programs, including the Economic Development Administration and Appalachian Regional Commission, already focus heavily on regional development strategies, which tend to consider advanced manufacturing opportunities. There are several existing DOE-led and DOE-adjacent initiatives that contribute to this mission as well, including DOE’s Advanced Manufacturing Office, the National Institute of Standards and Technology’s Manufacturing Extension Program (MEP), the Manufacturing USA institutes, and DOE battery manufacturing grants and hydrogen hubs authorized in IIJA. IIJA also authorized a new State Manufacturing Leadership program to provide competitive financial assistance to states that develop smart manufacturing programs. This program is fundamentally different from SEP – it provides short-term competitive assistance rather than long-term block grants, and focuses on advanced manufacturing techniques regardless of sector rather than clean energy supply chains specifically. However, it could be merged with an expanded SEMP, or at least closely coordinated. Additional legislation, such as the COMPETES Act — which contains funding for regional innovation hubs,

1 "Smart manufacturing” is defined as: “advanced technologies in information, automation, monitoring, computation, sensing, modeling, artificial intelligence, analytics, and networking that..." (see 42 U.S.C. 18811)
microelectronics research centers, and direct grants for solar and semiconductor manufacturing — could build upon these regional ecosystems.

SEMP can and should complement these efforts by providing consistent, long-term support directly to state governments, rather than specific projects or companies, to effectively plan and coordinate regional development strategies focused on clean energy technologies. This will enable states to develop and execute on regional manufacturing roadmaps over the course of decades. To do so effectively, SEMP should coordinate with related programs and agencies to identify strategic opportunities for clean energy manufacturing, particularly during the guidance development process.

**Recommendation 5. Direct states to dedicate at least forty percent of funds to low-income, environmental justice, and energy communities.**

Under the Biden-Harris Administration's Justice 40 commitment, forty percent of DOE funds are to be directed to underserved communities. Clean manufacturing can be a crucial tool for promoting economic revitalization and environmental justice in these communities, including those that have historically hosted emissions-intensive manufacturing facilities or fossil fuel production. DOE's Office of Economic Impact and Diversity should help to connect states with tools, such as its energy justice dashboard and the funding clearinghouse from the Interagency Working Group on Coal & Power Plant Communities, and provide technical assistance to identify and prioritize these communities in SEMP-supported initiatives.

**Frequently Asked Questions**

1. Are these reforms to the State Energy Program within statutory authority?

Yes. Under existing authority, SEP technical assistance and funds support state energy plans that include a series of mandatory components focused on efficiency, but may also include additional measures to promote renewable energy commercialization, manufacturing, and deployment. During the ARRA-era expansion of SEP, more than $250 million in assistance went to the purpose of “Renewable Energy Market Development,” which aimed to “develop or expand existing manufacturing capacity for renewable energy equipment and components and support development of specific renewable energy facilities.” Three specific provisions that may support manufacturing efforts are 42 U.S. Code § 6322(d)(11), “programs to promote energy efficiency as an integral component of economic development planning;” 2 42 U.S. Code § 6322(d)(7), “programs to promote the adoption of integrated energy plans which provide for . . . evaluation of a State’s . . . available energy resources . . . and . . . energy supplies;” 3 and 42 U.S. Code § 6322(f), the Energy Technology Commercialization Services Program. Under the latter, states can devise plans to:

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2 “Energy efficient, next-generation materials and innovative process technologies” align with DOE's efforts on advanced manufacturing. See DOE Advanced Manufacturing Office, Research & Development.

3 Integrated resource planning often addresses fuel (e.g., coal, natural gas) availability, and with the 21st century's rapid deployment of renewable energy and battery storage facilities, it is now additionally critical to analyze and promote plans to strengthen the supply chain for renewable energy and battery storage components.
A. aid small and start-up businesses in discovering useful and practical information relating to manufacturing and commercial production techniques and costs associated with new energy technologies;

B. encourage the application of such information in order to solve energy technology product development and manufacturing problems;

C. establish an Energy Technology Commercialization Services Program affiliated with an existing entity in each State;

D. coordinate engineers and manufacturers to aid small and start-up businesses in solving specific technical problems and improving the cost effectiveness of methods for manufacturing new energy technologies;

E. assist small and start-up businesses in preparing the technical portions of proposals seeking financial assistance for new energy technology commercialization; and

F. facilitate contract research between university faculty and students and small start-up businesses, in order to improve energy technology product development and independent quality control testing.

2. Has SEP been expanded in the past?

While annual block funding for states has settled at $62.5 million in recent years, Congress has pursued significant expansions to SEP. ARRA provided more than $3 billion to SEP, with no matching requirements for states, as part of its temporary green stimulus (the program created more than 100,000 jobs). ARRA also temporarily expanded SEP’s activities to broader clean energy market development, including manufacturing. In the current Congress, the CLEAN Future Act proposes an infusion of $3.6 billion over ten years in formula grants to states to enable states, localities, and tribes to reduce emissions, deploy clean energy, and improve efficiency at public facilities. At least 40% of funds would need to be set aside for environmental justice and/or low-income communities. Last year, IIJA authorized a State Manufacturing Leadership program that, while not explicitly a part of SEP, could provide a blueprint for an expanded state block grant program. Finally, DOE’s FY22 budget justification also requested $300 million to enable “Build Back Better Challenge grants to incubate novel approaches to clean energy technology deployment, prioritizing investments that meet energy needs at the local level, and are inclusive in elevating impoverished and disenfranchised communities, and/or communities that have been marginalized or overburdened.” The final FY22 appropriations bill provided $70 million for SEP and $20 million for the challenge grants, per the Senate report.
3. Why are existing SEP funding levels insufficient?

By many measures, the U.S. is not deploying energy efficiency, clean electricity, and other decarbonization technologies at the speed necessary to avoid the worst effects of climate change. According to the International Energy Agency, if we hope to get on track to net-zero emissions by 2050, the global community will need to roughly triple investment in clean technology to more than $4 trillion by 2030. Our top economic competitor, China, is poised to capture a much larger share of this economic opportunity than the U.S., largely due to their proactive work to build out their supply chains. For instance, in the next two years, analysts forecast that China’s manufacturing capacity for wind and batteries will grow 42 and 150 percent, respectively. All of this points to the need for significant additional funding for programs that accelerate deployment of clean energy in the United States.

The ARRA-era expansion of SEP showed that states have the capacity to absorb significantly larger sums while maintaining strong returns-on-investment, leverage ratios, and job creation figures. For instance, ARRA funds amounted to a highly-efficient $14,000 per job created, inclusive of direct, indirect, and induced jobs. The funding levels proposed in this policy brief are an order of magnitude smaller than those in ARRA, but are aligned with recommendations from the Biden Administration’s DOE and the current Congress.

4. Why is SEP funding for manufacturing planning needed on top of related EDA funding and initiatives?

SEP funding provides consistent, direct support to state governments to enable effective long-term planning for clean energy and energy security, of which manufacturing and supply chains are a critical component. As the U.S. looks to strengthen its energy sector industrial base (ESIB), sustained and strategic regional planning efforts will be paramount. Since SEP provides regular block funding to states every year and has enjoyed decades of bipartisan support and a strong evidence base of success, a reauthorized SEMP can ensure that state, local, and Tribal governments have the tools they need to plan effectively over the long haul. While coordination with EDA technical assistance, public works, and other programs will be important, EDA provides more project-based funding at the local level, operates on shorter timeframes, and may or may not be ESIB-oriented.

5. Are state energy offices likely to be enthusiastic about expanded support?

The cost-shared structure of SEMP ensures that states are committed to the projects they undertake, and the historically high leverage ratio of federal to non-federal funds, sustained under a major funding influx through ARRA, suggests that states have an interest in more robust state energy planning and project development, and are therefore likely to welcome additional support. This extends to private actors as well. According to a 2015 program evaluation, “A number of studies of SEP activities have found that sponsors of ratepayer-funded programs collaborated closely with state energy offices to leverage their own resources, especially with the influx of ARRA
funding. This means that, ‘in the absence of the program, the array of resources available to market actors in the [programmatic activity] would have been reduced not only by the absence of the SEP [programmatic] activities, but by a reduction in the level of resources available from other program sponsors.’
About the Authors

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