CENTER FOR CLIMATE AND ENERGY SOLUTIONS

REGIONAL ECONOMIC DEVELOPMENT

Regional Clean Economies Initiative Impact Report

September 2025

SUMMARY

Since 2020, the Center for Climate and Energy Solutions has engaged key stakeholders in communities around the country to explore the specific, local economic opportunity of building out low-carbon solutions alongside federal and state policy recommendations to enable communities to access this opportunity. Through deep engagement with leaders of business, government, academia, and communities, the C2ES Regional Roundtable Program has produced more than 200 recommendations promoting the development, deployment, utilization, and optimization of advanced energy solutions. This impact report summarizes the outcomes and learnings from the program over the period 2020-2024, analyzes the impact of the program on real-life policy and programs, and explores common themes across the roundtables.

Contents

Introduction

The United States and the world are poised for a clean energy boom. Next-generation energy technologies like electric vehicles and batteries are transforming industries and supply chains, with game-changers like advanced nuclear and carbon removal on the horizon. As a result, the advanced energy future is no longer hypothetical. For the first time, communities across the country are seeing tangible benefits from the low-carbon economy, in factories and clean energy facilities that are attracting investment and creating good-paying jobs. Some communities will realize these gains as new industries build production facilities or clean energy projects in their backyard; others, particularly those that provided conventional energy to the country over the past century, will need to proactively develop new strategies to sustain their economies as fossil fuel production wanes in the face of a changing global energy landscape.

Supportive federal and state policies are crucial to providing communities with the tools and resources they need to navigate the transition and take advantage of the new opportunities the low-carbon economy brings. While communities themselves are often best positioned to identify the opportunities, challenges, and needs that would support them in the transition, they are often not heard in federal climate policy conversations.

The Center for Climate and Energy Solutions (C2ES) champions policies and technologies that will foster thriving economies and shared prosperity, founded on abundant, affordable, and reliable clean energy and a safe climate. Our Regional Clean Economies initiative is central to achieving that vision. We elevate the perspectives of key community stakeholders to inform state and federal policy needs and identify concrete next steps to bring home the economic opportunity of investing in the low-carbon transition. Through interactive group discussions, educational programming, and informative sessions—supplemented with research and analysis—C2ES's regional roundtable program brings together leaders of business, government, and communities to explore these opportunities and develop collaborative policy solutions.

By working with communities to secure policies that align markets with clean energy and industry, C2ES aims to create a flywheel that builds momentum in the low-carbon transition. By demonstrating the tangible economic and social benefits of the advanced energy future, we will foster durable support for climate action—amassing the political will do to more, faster.

When we are successful, we will have supported thriving local economies around the country, accelerated the advanced energy technologies of the future—and reshaped the political context around climate and clean energy to ensure lasting change.

The Regional Roundtable Process

Our approach includes four phases, outlined in **Figure 1**:

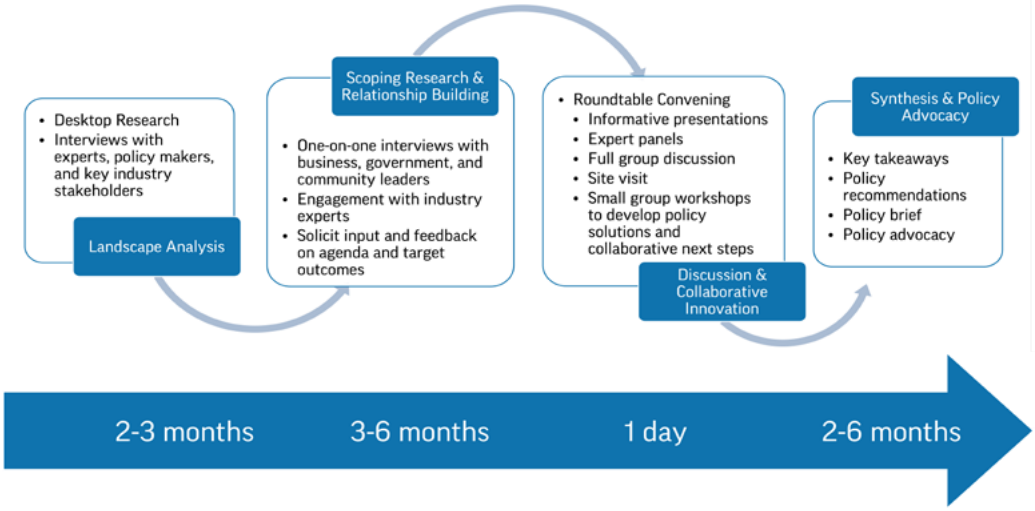
1. **Landscape Analysis:** The C2ES team performs research and analysis on federal and state level technological, economic, and policy opportunities to support low-carbon technology production and deployment in a target region. These may include: research, development, and demonstration of emerging low-carbon technologies; scaling manufacturing and production of low-carbon energy inputs and products; preparing the workforce to build out low-carbon infrastructure; or engaging in live regulatory and policy conversations to support decarbonization.

2. **Scoping Research and Relationship Building:** Our team engages directly with a variety of stakeholders across local government, businesses, nonprofits, academia, and labor to identify local opportunities for economic development in the low-carbon transition. This includes months of relationship building, one-on-one interviews, and ongoing discussion with local experts and leaders. Additionally, we meet with congressional offices to identify their priorities and where we can be most supportive when engaging with their constituents. Simultaneously, we perform detailed research and information on technologies, existing policies, and relevant case studies.

3. **Discussion and Collaborative Innovation:** We convene a full day, discussion-oriented roundtable event to explore insights, perspectives, and recommendations from these key local stakeholders, as well as to develop collaborative, actionable, near-term solutions. The agenda is developed in collaboration with local stakeholders and often includes informational programming to help answer questions and build knowledge among participants. In addition to discussion and solution development, roundtable convenings are opportunities for stakeholders to develop cross-cutting networks with other like-minded members of their community who may be able to offer new insights or partnerships. Often, roundtable discussions are paired with site visits to local facilities to tangibly demonstrate the opportunity of the focus technology.

4. **Synthesis and Policy Advocacy:** In collaboration with roundtable participants, the C2ES team synthesizes the key insights from the discussion and develops policy recommendations. These often either reflect direct recommendations made during the discussion or address challenges and gaps identified in the discussion as needing policy solutions. We publish these recommendations in a policy brief, alongside a summary of the discussion, as well as the research and case studies developed ahead of and during the roundtable. We then share this information and the recommendations with relevant federal and state policymakers. For two roundtables, we have brought participants from the event directly to Capitol Hill to meet with their members of Congress to advocate for the recommendations developed in the event.

FIGURE 1: C2ES ROUNDTABLE PROCESS



Case Study: Building the case for clean hydrogen policy in Texas

In June 2023, we hosted an in-person regional roundtable on *Firing Up Clean Hydrogen* in Texas, which brought together around 40 participants to explore opportunities to accelerate the development, deployment, and utilization of clean hydrogen (that is, hydrogen produced through a process that releases significantly fewer emissions than hydrogen produced with unabated fossil fuels)*. This discussion engaged not only prospective applicants for DOE Hydrogen Hubs, designated later that year under the Bipartisan Infrastructure Law, but also companies, subject matter experts, and leaders of environmental justice communities in the Houston area.

Houston represents an opportunity to leverage existing fossil fuel energy infrastructure and expertise into new clean fuels production and is an example of a community with entrenched, historic environmental injustices against communities of color. Our conversation provided one forum (among many other concurrent efforts) to recognize the challenges and opportunities the confluence of both of these characteristics creates for the future of the clean energy industry. Although not all of our participants agreed on all points throughout the discussion, companies and community leaders were able to share their perspectives openly in the conversation and engage productively.

Together, participants identified a top priority of localizing positive impacts from clean hydrogen development to ensure communities and the local workforce benefit from it. This included recommendations for Congress and federal agencies to promote education, outreach, and community engagement, as well as to support equitable workforce development. Additionally, participants agreed that the resources invested to develop and deploy clean hydrogen should be done in a way that maximizes their climate benefit. They supported expanding the 45X advanced manufacturing production tax credit to include electrolyzers and other clean hydrogen infrastructure, as well as additional funding and guidance for research, development, demonstration, and deployment of clean hydrogen. Other recommendations supported the transportation and distribution of clean hydrogen, including through clarifying federal authority on hydrogen pipelines, and ways to accelerate clean hydrogen demand.

Following the roundtable and policy recommendation development process, we brought a subset of participants to Capitol Hill in October 2023 for a fly-in to meet with their Congressional representatives and advocate for the policies developed through the roundtable. We heard strong feedback from Democratic and Republican offices alike that hearing directly from their constituents—some of whom had never yet advocated for policies at the federal level—was informative and beneficial to federal clean hydrogen efforts.

* U.S. Environmental Protection Agency, "About the Greenhouse Gas Reduction Fund," accessed January 28, 2025, https://www.epa.gov/greenhouse-gas-reduction-fund/about-greenhouse-gas-reduction-fund.

Accomplishments to Date

Since 2020, we have hosted 22 roundtable events, engaged 1,146 participants representing 724 organizations across 18 states, and produced 230 recommendations for federal, state, and local policymakers (See **Figures 2 and 3**). Through two fly-ins, we brought participants to meet with 21 House and 7 Senate offices to advocate for recommendations developed through the roundtable process.

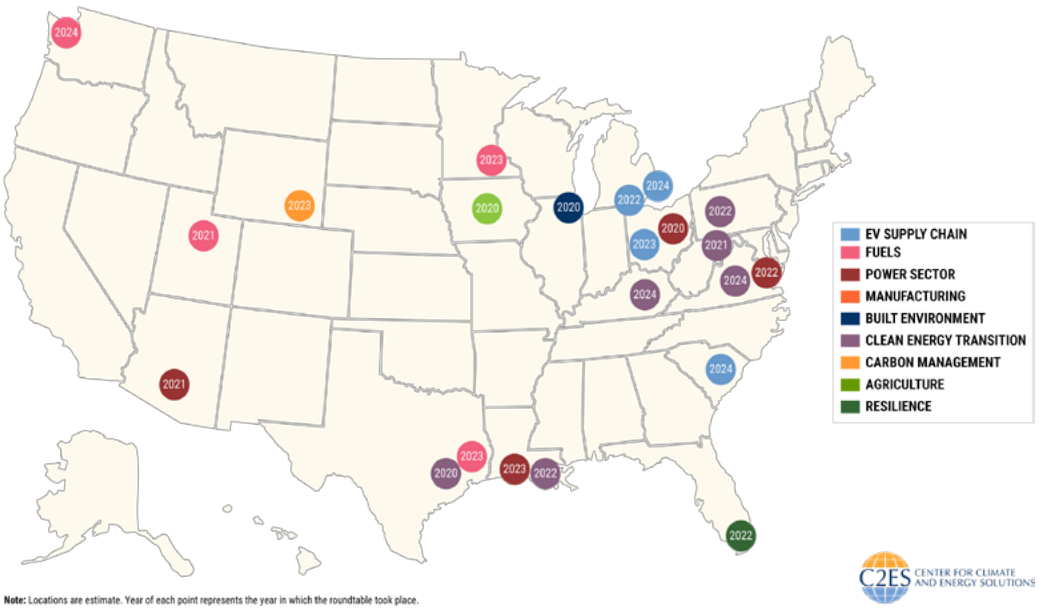
Many of the recommendations stemming from these roundtables are reflected in real-life policy change, including through the passage of the Bipartisan Infrastructure Law of 2021 and the Inflation Reduction Act of 2022 (See **Figures 4 and 5**). Others have been reflected in proposed legislation, often at the state level, though additional action is often needed to get them across the finish line and signed into law.

"Many participants have shared positive feedback that highlights the broad cross-section of stakeholders participating in roundtables..."

- For example, nine recommendations made from 2021 roundtables were ultimately reflected in the Inflation Reduction Act. The Greenhouse Gas Reduction Fund's Clean Communities Investment Accelerator, for instance, led to Appalachian Community Capital establishing the Green Bank for Rural America[1].
- During two regional roundtables on offshore wind—one in Virginia in 2022 and the other in Louisiana in 2023—participants recommended that the Bureau of Ocean Energy Management (BOEM) expedite the leasing process to build a reliable project pipeline and promote investment certainty. In 2024, BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) finalized new rules streamlining regulations for offshore wind permitting, and BOEM announced a timeline of lease sales through 2028[2].
- Following our regional roundtable on long duration energy storage (LDES) in Virginia in 2024, state legislators introduced a new bill to integrate specific LDES procurement targets and model safety ordinances into the state's existing energy storage procurement requirement under the Virginia Clean Economy Act of 2021[3].

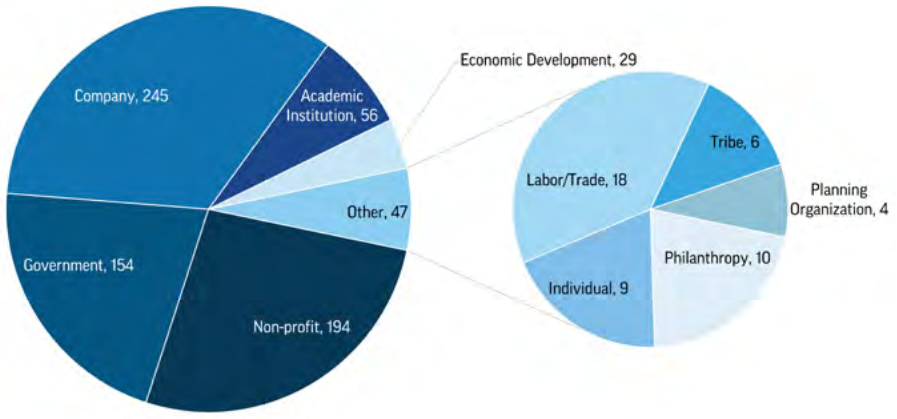
In addition to producing policy outcomes, roundtables foster relationships among

FIGURE 2: ROUNDTABLE LOCATIONS



Note: Locations are estimate. Year of each point represents the year in which the roundtable took place.

FIGURE 3: ROUNDTABLE PARTICIPATION BY ORGANIZATION TYPE



local stakeholders, often reaching across sectors and political lines of difference. These relationships can produce both political alignment in support of pro-climate policies, while sowing the grounds for future partnerships, and creating networks for regional collaboration.

- For example, participants in our 2021 West Virginia roundtable went on to host a subsequent convening focused on economic development and clean energy opportunities in the state, bringing together many of our original participants to further the objectives of accelerating clean energy manufacturing and deployment.
- Two regional roundtables were later reflected in U.S. Economic Development Administration tech hubs designations. Following our 2022 roundtable on resilience and economic competitiveness in south Florida, the region received a ClimateReady Tech Hub award, and the Gulf Louisiana Offshore Wind (GLOW) Propeller received a Tech Hub award to foster and enhance regional collaboration following our 2023 roundtable on the offshore wind supply chain and workforce in Louisiana[4].
- In 2024, our Michigan roundtable on electric vehicle (EV) workforce development predicated the White House's declaration of Michigan as an EV Workforce Hub, recognizing the efforts of a breadth of stakeholders across the state[5].

Finally, engagement in roundtable convenings can empower local leaders to raise their voices in support of pro-climate policies. A participant in one of our 2021 roundtables later ran for office and shared with our team that she was inspired to run by many of the issues elevated in the roundtable that she believed she could address as an elected official. A state representative who participated actively in one of our 2022 roundtables was later elected to Congress, and provided plenary remarks at another roundtable in 2024 as a U.S. Representative. Anecdotally, many participants have shared with our team that participating in events has helped energize their work and build excitement and momentum for pro-climate policies and initiatives among local leaders.

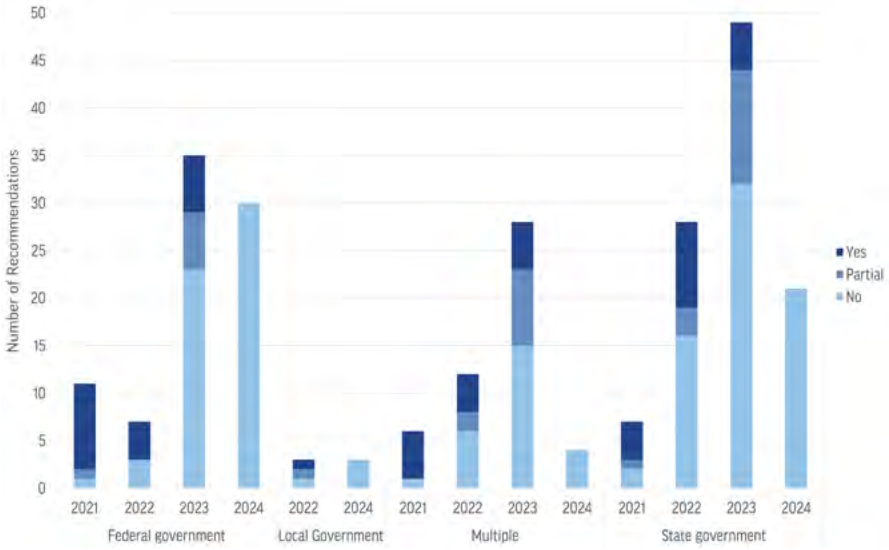
Many participants have shared positive feedback that highlights the broad cross-section of stakeholders participating in roundtables; we believe this approach enables voices that may not always be heard in policy development contexts to help produce unique insights influence policy. One participant shared that the neutral-but-supportive convening role C2ES plays in the conversations allows the group to engage on issues that may be difficult for certain participants to bring forward on their own for political or other reasons. Another participant in

our Wyoming roundtable shared appreciation at our creation of a platform for them to share their perspective, noting they felt that "no one comes to listen to what we have to say."

One participant in our 2024 Michigan roundtable wrote:

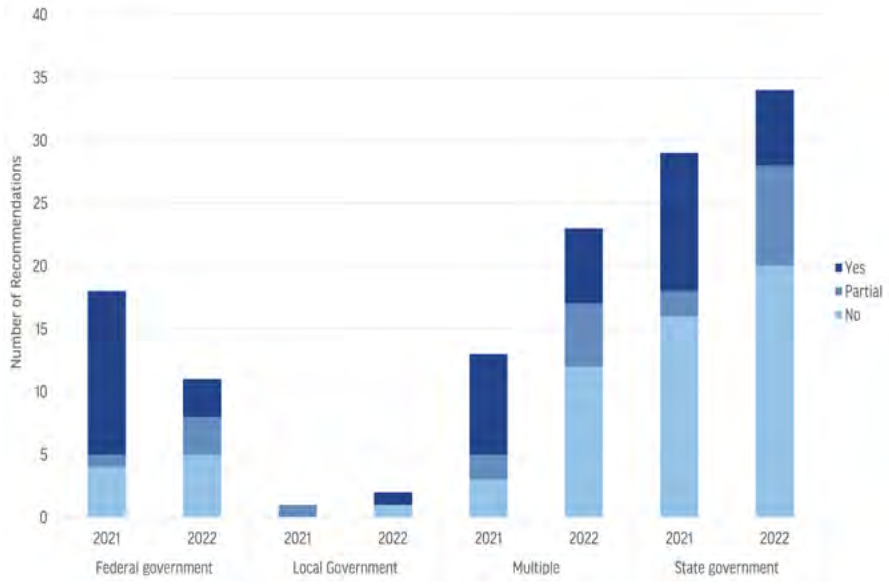
> *Usually conversations like these are led and dominated by the folks who are part of the formal workforce system. This was a room of folks largely adjacent to that system – some of them had deep expertise in the federal-state-local partnership that funds and administers the federal and state workforce programs, but most of them didn't. The types of issues they raised and concerns they voiced all spoke to the quality of our workforce but touched on programs and issues that were beyond the formal system's reach. Really valuable to hear that perspective and raises a really critical challenge that will require some thought and policy innovation to address.*

FIGURE 4: RECOMMENDATIONS BY LEVEL OF GOVERNMENT (2021–24)



From 2021–24, the Roundtable program has published recommendations for all levels of government, this chart shows how many recommendations C2ES published each year, by the level of government.

FIGURE 5: RECOMMENDATIONS BY LEVEL OF GOVERNMENT (2021–22)



From 2021–22, the Roundtable program has published recommendations for all levels of government, this chart shows how many recommendations C2ES published each year, by the level of government.

In the legend of Figures 4 and 5, "**yes**" represents a recommendation that was implemented; "**partial**" represents recommendations that were in part implemented; and "**no**" represents recommendations that were not implemented.

Case Study: Build Back Better in West Virginia

In June 2021, C2ES hosted a virtual roundtable on *Investing in West Virginia's Future: Aligning Climate and Economic Development*, which brought together more than 50 stakeholders to consider ways to leverage West Virginia's strengths to support a vibrant and diversified economy that can thrive in a low-carbon future*. Discussion participants representing companies, nonprofit organizations, state and federal government, economic developers, academia, and philanthropy recognized the transition of the global economy toward lower carbon intensity, and shared optimism that West Virginia's assets can be leveraged to help the state thrive in the transition to a low-carbon economy. However, they also recognized that poor physical infrastructure and a lack of policy support were significant barriers to success. With support from participants, C2ES produced a series of policy recommendations to address infrastructure needs, support the workforce, and capitalize on sectoral opportunities like carbon capture, utilization, and sequestration, low-carbon products manufacturing, and the circular economy.

Ultimately, of the 11 federal policy recommendations stemming from the discussion, ten were implemented by either federal agencies or Congress, with many of the legislative recommendations reflected in the Bipartisan Infrastructure Law and Inflation Reduction Act, which were passed shortly after we hosted the roundtable with one of the deciding votes from West Virginia's Senator Joe Manchin III. For example, participants supported reinstating the 48C manufacturing investment tax credit to provide incentives for low-carbon investment, which the IRA did in 2022†.

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in competitive awards under the Greenhouse Gas Reduction Fund to launch three programs making up a National Clean Energy Finance Network.

Additionally, some of the recommendations roundtable participants supported ultimately provided direct benefit back to the state and its communities. Participants supported funding community development financial institutions (CDFIs), with particular focus on loans to local small businesses and organizations to support investments in renewable energy and low-carbon infrastructure. Following the passage of the IRA, EPA announced $20 billion in competitive awards under the Greenhouse Gas Reduction Fund to launch three programs making up a National Clean Energy Finance Network. One of the funded programs is the $6 billion Clean Communities Investment Accelerator, which provides funding to five nonprofit financing hubs that will rapidly expand the clean finance ecosystem, including Appalachian Community Capital, which supports projects in West Virginia‡.

Following our roundtable, local stakeholders later hosted a conference that included many of our same participants and highlighted similar themes such as economic diversification and low-carbon investment. This subsequent conference took forward the work C2ES helped to catalyze through the June roundtable.

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* Stephanie Gagnon, Spinning the Mid-Atlantic Offshore Wind Industry into Economic Opportunity (Arlington, VA: Center for Climate and Energy Solutions, 2023), https://www.c2es.org/document/spinning-the-mid-atlantic-offshore-wind-industry-into-economic-opportunity/.

† Mahmoud Abouelnaga and Stephanie Gagnon, Setting the Stage for Direct Air Capture in Wyoming (Arlington, VA: Center for Climate and Energy Solutions, 2023), https://www.c2es.org/document/setting-the-stage-for-direct-air-capture-in-wyoming/.

‡ Center for Climate and Energy Solutions, "Detroit, Michigan Roundtable on the Future of Mobility Workforce," accessed January 28, 2025, https://www.c2es.org/detroit-michigan-roundtable-on-mobility-workforce/.

Common Themes Across Roundtables

Roundtable discussions can vary widely depending on the topic, level of technological readiness of the solution under discussion, local political context, and even the makeup of participants in the room. However, across all 22 roundtables to date, several common threads have emerged.

Broad support for pro-climate policy transcends partisan divide

Roundtable participants representing companies, local policymakers, and communities agree that policies to support decarbonization and incentivize investment in low-carbon solutions produce positive economic and social benefits. Participants of all partisan affiliations support some level of federal, state, and local policy intervention to accelerate the transition to a low-carbon economy.

General principles shared among participants for good policy design include strong federal funding programs that incentivize and support investment in low-carbon solutions, while allowing for sufficient flexibility and adaptability so that states and local governments can direct them to best serve their local contexts. For example, programs like the Greenhouse Gas Reduction Fund promote flexible funding mechanisms that can be directed to address specific, local needs[6].

While participants generally support incentives over mandates, they often generally, and conditionally, support federal regulation as a means of leveling the playing field among different companies and states. For example, many participants have expressed support for emissions limits on power plants and/or fuels, as long as they are set consistently across the nation rather than a patchwork of state policies. Often, participants point to an economywide carbon price as an opportunity to promote decarbonization without playing favorites among companies and technologies. In a global economy where countries are increasingly enacting policies to promote reductions in carbon emissions and emissions intensity, federal regulations promoting lower carbon intensity production in the United States can help American-made products be more competitive in global markets.

Examples of corresponding roundtable key takeaways can be found in Appendix A.

Investing in climate solutions supports local economic growth.

Opponents of climate action often accuse clean energy and decarbonization of being a "job killer." However, regional roundtable participants from across sectors expressed optimism about the new opportunities that the clean energy economy provides to create good jobs, attract investment, promote local economic growth, enhance local resilience, and improve livability. This local economic development will not necessarily happen on its own—proactive planning, preparation, and policy are necessary to enable communities to capitalize on this opportunity.

Across different geographic regions, participants highlighted the community-oriented economic benefits of new projects to manufacture clean energy products, install clean energy infrastructure, and/or generate clean energy.

For example, participants in our 2022 roundtable on offshore wind in the Mid-Atlantic highlighted the transformational job creation and port community revitalization benefits the Coastal Virginia Offshore Wind project brought to the Hampton Roads region[7].

Participants in our 2023 roundtable on direct air capture (DAC) in Wyoming shared concerns about the future of the state's skilled mineral extraction workforce, but demonstrated optimism for the potential to monetize the state's geologic resources for carbon sequestration. To access this opportunity, they highlighted the need to proactively invest in training and workforce development, as well as the need to promote state-level policies to enable access to clean power and infrastructure development needed to facilitate the development of a carbon sequestration industry in the state[8].

Similarly, participants in our 2024 roundtable on the future mobility workforce in Michigan took great pride in the state's historic leadership in the internal combustion engine automotive industry, but identified significant workforce development and community infrastructure needs to enable the state to lead in the electric vehicle industry[9].

Examples of corresponding roundtable key takeaways can be found in Appendix B.

Workforce development is crucial to the success of decarbonization efforts.

The availability of adequately prepared workers, in sufficient numbers to fill employment needs, is a universal bottleneck to building out a vibrant, low-carbon economy. With low average unemployment rates across the United States, most industries are facing challenges to hire enough workers with the appropriate skills and qualifications[10]. Significant anticipated growth across the clean energy sector, coupled with the ever-evolving technologies and needs of the sector, will strain the clean energy workforce beyond its current capacity in the coming decades.

Some occupations, particularly those in the trades, are also facing a retirement cliff. For example, in the electrical trades, more than 40 percent of the workforce was eligible to retire in 2021 or will be in the next decade[11]. Skilled electricians play a key role in building out the clean energy industry, installing solutions from charging stations to home electrical panel upgrades for heat pumps and induction stoves. It will be necessary to invest in attracting new workers to become electricians, while also ensuring they have the additional skills and certifications necessary to work with emerging technologies like EV chargers.

Participants across roundtables agreed that we need coordinated, accessible, flexible, and stackable workforce development programs to promote skills development for new entrants to the labor force and mid-career workers alike. Additionally, training providers and educators state it is often difficult to identify the specific skills and competencies workers need to succeed in emerging industries. More direct coordination with employers is needed to produce consistent, transparent understandings of what the skills necessary for future success are and how training and education curricula can help workers develop them. Participants often advocate for "stackable" credentials that can be developed over multiple training programs to provide flexibility for people to work while they study and build toward a career.

With such low unemployment, participants also highlighted that companies can look to recruit from populations that may historically have been prevented from

accessing good jobs. This includes formerly incarcerated workers, workers from racially or economically marginalized communities, single parents, immigrants, and others that face additional barriers to entering the workforce. Wraparound support can help workers to access jobs and be fully present while at work. This can include transportation to and from work, childcare access, affordable housing, paid training time, and other services, which companies and policymakers can both be responsible for offering.

Finally, roundtable participants often emphasized that there are many pathways to good jobs in the clean energy industry, and they do not all require a traditional four-year degree. Community colleges, career and technical education, registered apprenticeship programs, short-term certifications, and other programs can be productive pathways to succeed in building the low-carbon economy of the future.

Examples of corresponding roundtable key takeaways can be found in Appendix C.

"Community colleges, career and technical education, registered apprenticeship programs, short-term certifications, and other programs can be productive pathways to succeed in building the low-carbon economy of the future."

Access to low-carbon power is central to companies' investment decisions.

Increasingly, companies are setting carbon emissions reduction targets. By the end of 2023, more than 500 global companies had set net-zero targets through the Science Based Targets Initiative's (SBTi) Corporate Net-Zero Standard, with an additional 2,000 companies committing to setting a net-zero targets by the end of 2025[12]. These targets have a significant impact on companies' investment decisions, particularly in siting new facilities.

Across roundtable events, company representatives consistently invoke net-zero emissions or 100 percent carbon-free electricity targets when discussing decisions to build new clean energy and low-carbon products facilities. As access to clean energy can vary widely across states, this can be a significant factor in determining an individual state's competitiveness with its neighbors for these investments, which can total in the billions of dollars.

This played out recently in Wyoming, where our roundtable in 2023 on direct air capture had identified access to carbon-free power as a major barrier to the build out of carbon removal projects in the state[13]. Participants recommended state- and federal-level policy solutions to promote low-carbon power access. However, ultimately, the first project—Carbon Capture Inc.'s Project Bison—was canceled due to its inability to source the necessary amount of carbon-free power to support its planned operations[14]. Losing this project meant the loss of many potential jobs, as well as a breaking of trust with the local community that had prepared for several years for the project's arrival.

Examples of corresponding roundtable key takeaways can be found in Appendix D.

Proactive, authentic, and comprehensive community engagement is paramount to successful development.

Even before the U.S. Department of Energy began requiring companies to submit community benefits plans to receive funding, stakeholders across roundtables were unanimously calling for companies to perform comprehensive, proactive community engagement ahead of developing new clean energy infrastructure and low-carbon products facilities. From companies' perspectives, this early engagement can help to build buy-in among community members, which can prevent delays and obstructions in the permitting process from community opposition. Additionally, engaging at this level can help promote better facility design that better reflects the local conditions. Community benefits tools like project labor agreements (PLAs) can ensure the workforce is familiar with the local conditions.

For communities, authenticity of community engagement efforts is key. In some communities, developers have engaged with a limited number of community leaders who, in the community's eyes, do not represent the interests of the rest of the community. This can undermine communities' support for a project and their willingness to facilitate permitting processes and project development, as well as exacerbate negative impacts of new development. Roundtable participants recommended making community engagement activities as varied and accessible as possible—in other words, hosting both virtual and in-person events, making materials easily readable in multiple languages, offering sessions at varying times during and outside of regular nine-to-five working hours, providing child care during sessions to enable participants to give their full attention to the matter at hand, and building relationships with local leaders deeply embedded in their communities.

Many participants representing environmental justice communities or organizations expressed frustration that they are often tokenized to provide surface-level feedback on projects that are already planned. They called for companies to involve them early on in a decision-making capacity to ensure their time is valued and their input is reflected in the final outcome.

It can be challenging for developers to engage early enough with communities for their input to inform the ultimate site selection of a project, particularly when community engagement efforts conflict with the need to protect proprietary information. However, whenever possible, roundtable participants emphasized that developers should communicate these challenges and provide as much transparency as feasible.

Examples of corresponding roundtable key takeaways can be found in Appendix E.

Communities need increased local capacity to help them access federal programs and implement economic development initiatives.

The IIJA and IRA have offered unprecedented levels of funding to communities across the country to support clean energy development. However, to many small, under-resourced, and often rural communities, accessing these new funding opportunities can be daunting. Many local governments have very few paid staff, and these staff may not always be experts at submitting federal funding applications. Technical assistance, broad funding for local capacity building, reduced cost-share requirements, and public-private partnerships can alleviate the extra burdens for these small communities to access highly valuable federal funds and programs.

Examples of corresponding roundtable key takeaways can be found in Appendix F.

Case Study: EV workforce development in Michigan

In early 2022, we hosted a virtual roundtable on *Accelerating Vehicle Electrification in Michigan*, which brought together more than 70 stakeholders to explore themes relating to accelerating the deployment of charging infrastructure and building the future of the manufacturing and installation workforce*. As the historic birthplace of the automotive industry, Michigan is at the center of discussion surrounding the transition to electric vehicles and the implications of this transition for the communities and workers that had historically built their livelihoods on the internal combustion engine industry.

A major area of focus in this discussion was the future of the automotive workforce, and one four-hour virtual workshop was not enough time to cover all of the most important aspects of the discussion. Thus, two years later, we returned to Michigan—this time in-person—for a conversation focused specifically on *Energizing the Future Mobility Workforce in Michigan*.

Since the first roundtable, both the Inflation Reduction Act and the Bipartisan Infrastructure Law had gone into effect, pouring billions in funding for electric vehicle and battery manufacturing and EV charging installation into the state and catalyzing the announcement of more than $114 billion in manufacturing investments in Michigan. Our February 2024 roundtable convened more than 40 participants representing companies, government, workforce development organizations and educational institutions, workers, and communities to harmonize existing workforce development efforts across the state and identify opportunities to better support workers in transition. In particular, participants had identified coordination among a plethora of individual programs across the state as the highest priority in advancing workforce development objectives.

Together, using a framework called the "Innovators' Compass," participants worked in small groups to identify a vision for success, develop shared principles for policy development, and then collaboratively develop policy recommendations and next steps that could be implemented in the near term†. Some of these recommendations included creating an anchor organization that could coordinate across the state's many different programs, and providing technical assistance to communities.

Following the roundtable, in April 2024, the Biden Administration designated Michigan an Electric Vehicle Workforce Hub, which will provide federal support to facilitate collaboration among local partners and supporting local capacity, directly supporting the objectives of recommendations raised by roundtable participants‡.

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* Stephanie Gagnon, Accelerating Vehicle Electrification in Michigan (Arlington, VA: Center for Climate and Energy Solutions, 2022), https://www.c2es.org/wp-content/uploads/2022/10/Accelerating-Vehicle-Electrification-in-Michigan.pdf.

† Innovator's Compass, "Innovator's Compass," accessed January 28, 2025, https://innovatorscompass.org/.

‡ Michigan Department of Labor and Economic Opportunity, "Electric Vehicle (EV) Workforce Hub," accessed January 28, 2025, https://www.michigan.gov/leo/bureaus-agencies/wd/industry-business/mobility/electric-vehicle-workforce-hub.

The Road Ahead

Across the geographies and sectors, American companies and communities alike stand to benefit from the low-carbon transition, with opportunities to grow local economies through the deployment of advanced energy technologies, create jobs through low-carbon products manufacturing, and create prosperity for communities through the benefits of decarbonization and air pollution reduction. As public and private sector competition to lead the new clean energy economy intensifies, communities that are prepared to attract, accelerate, and host new projects will stand to benefit the most. To support them, additional policy at the federal and state levels is needed across the United States—and, as our regional roundtable program demonstrates, it will be most durable and effective when designed in collaboration with the companies and communities most deeply affected.

"As public and private sector competition to lead the new clean energy economy intensifies, communities that are prepared to attract, accelerate, and host new projects will stand to benefit the most. "

Looking ahead to 2025 and beyond, the Trump administration and Republican-controlled Congress have set an agenda to pull back federal investment in these critical solutions. However, as we have seen across our 22 roundtables, broad support for these investments abounds in both Republican and Democratic districts, and among all key constituencies. We aim to provide a vehicle for leaders across the regions to demonstrate support for these policies, and to leverage their voices to demonstrate the economic case for continued, ambitious climate investment.

Appendices: Key Roundtable Takeaways

The following appendices outline the key takeaways from each of the C2ES roundtables from 2021–24. They cover various aspects of how climate policy can be beneficial for communities and foster investments.

APPENDIX A: BROAD SUPPORT FOR PRO-CLIMATE POLICY TRANSCENDS PARTISAN DIVIDE

	Flexible, adaptable federal regulations and funding programs	Consistent, federally mandated emissions limits	Pro-climate incentive programs
Investing in West Virginia's Future (2021)	The energy, industrial, and manufacturing sectors are evolving rapidly and state-level incentives must be flexible and/or updated frequently to address barriers to investment and deployment.	Carbon capture, utilization, and storage (CCUS) is a key growth opportunity. However, there is an insufficient regulatory framework to facilitate projects, exacerbating uncertainty and risks —real and perceived—that inhibit investment. West Virginia can learn from the successes of other states that have begun developing these frameworks.	Policies like the 48C manufacturing investment tax credit would help to grow domestic manufacturing, including EV production. Other policies that can support the viability of domestic supply chains will be critical to onshoring domestic manufacturing.
Spinning the Mid-Atlantic Offshore Wind Industry into Economic Opportunity (2022)	Technological solutions to protect ecosystems can be developed at the lowest cost and with the greatest flexibility if regulators set performance standards based on target protections and enable the market to innovate to meet them.		To attract major investment from developers and manufacturers of inputs, states and municipalities must invest capital up front in preparing sites—preferably redeveloped brownfields—for new manufacturing and support facilities. Early investments can demonstrate readiness and help regions successfully compete for grant applications to make further improvements.
Fueling a Low-Carbon Future in Minnesota (2023)	Any policy supporting the reduced carbon intensity and expanded deployment of low-carbon fuels must be both comprehensive and specific enough to allow for the greatest compliance flexibility while addressing issues including climate pollution, air quality impacts, upstream environmental impacts, and equity.	Companies shifting infrastructure from traditional fuel pathways to low-carbon pathways must make significant, time-intensive up-front investments to replace equipment and supporting infrastructure. Long-term policy certainty supports companies' ability and willingness to invest in new low-carbon fuels production capacity.	The current limited supply of low-carbon fuels is being funneled to the market with the most favorable policy environment. Today, most low-carbon fuels like sustainable aviation fuel are used in California due to the incentives for their use under the state's low-carbon fuel standard. In Minnesota, a state-level policy like a clean transportation standard could support the development of a market to reward the use of these fuels within the state.
Fueling a sustainable aviation future in Washington State (2024)	SB 5447 is the only SAF tax credit in the United States that provides the flexibility to claim the credit by either the producer, blender, or end-user. Stakeholders cite the importance of the credit remaining adaptable to changing conditions as the alternative jet fuel market develops.		Fueling Aviation's Sustainable Transition (FAST) is a federal grant program that provides $244.5 million to invest in projects that will build out SAF related infrastructure (FAST-SAF) and $46.5 million to develop and demonstrate new low-carbon aviation technologies (FAST-Tech).

APPENDIX B: INVESTING IN CLIMATE SOLUTIONS SUPPORTS LOCAL ECONOMIC GROWTH

	Capitalizing on local job creation opportunities	Proactive investments in workforce development	Proactive community infrastructure investments
Spinning Offshore Wind Energy into Economic Opportunity in the Mid-Atlantic (2022)	The growing U.S. offshore wind industry presents an opportunity for workers in the oil and gas industry to transfer skills to new opportunities in offshore wind; project developers and operators can recruit from an existing, highly-skilled talent pool of oil and gas workers.	Companies within the offshore wind industry and its supply chain should act now to identify skills needed in the future workforce and help high school students and recent graduates develop the necessary skills to qualify for jobs in this growing industry.	Policies like the 48C manufacturing To attract major investment from developers and manufacturers of inputs, states and municipalities must invest capital up front in preparing sites—preferably redeveloped brownfields—for new manufacturing and support facilities. Early investments can demonstrate readiness and help regions successfully compete for grant applications to make further improvements.
Direct Air Capture in Wyoming (2023)	Recently, employment for power plant operations technicians in Wyoming has fallen at a faster rate than in the rest of the country, creating a need for jobs requiring similar skillsets at comparable salaries. DAC projects may offer similar employment opportunities to power plants and could present an opportunity for workers to leverage their existing knowledge and skills.	The workforce skills of the future are being developed today in K–12 schools. To compete for workers, future employers should support skills development in schools while demonstrating the opportunities for employment upon graduation.	Access to transportation, housing, and childcare is another element supporting workers' ability to come to work. Especially for projects that may be located far away from populated areas, housing access is a major constraint on the ability of the Wyoming workforce to grow and support growing industries.
Fueling a Clean Hydrogen Future in Texas (2023)	Many of the necessary skills for work in the oil and gas sector are directly transferrable to work on clean hydrogen, not only in engineering and fabrication but also in business administration, construction, operations, and maintenance. There is also an opportunity for growth in relevant fields such as electrochemistry.	Workers and communities must be proactively engaged in discussions and decisions about the energy transition, as they will be building and hosting the energy system of the future.	
Energizing the Future Mobility Industry in Michigan (2024)	Michigan has an opportunity to benefit from the changing economy spurred by the low-carbon transition, but the state must start planning and strategizing now to take advantage of it.	Michigan already has successful workforce development organizations and programs in place. However, the current economic transition—where mobility technology is changing more rapidly than in the state's history—presents different labor market challenges. The state needs innovative solutions, pilot programs, and collaboration to successfully achieve its workforce development goals.	To attract talent, Michigan needs to be an enticing place to live and work. This includes both the existence of high-quality jobs and the existence of other social infrastructure—such as housing, child-care, education, and recreation—that make a place compelling.

APPENDIX C: WORKFORCE DEVELOPMENT IS CRUCIAL TO THE SUCCESS OF DECARBONIZATION EFFORTS

	Coordinated, flexible, stackable training programs	Recruit from historically marginalized demographics	Wraparound support
Accelerating Vehicle Electrification in Michigan (2022))	Employers can better attract and support new workers by designing roles for entry-level workers to build upon foundational skills gained in training and certificate programs to help them develop specialized skills needed to succeed in the industry.	The shifting demographics of the United States indicate an impending shortage of highly experienced workers across many industries, including the manufacturing industry; policymakers and companies should provide incentives and support workforce development to grow the skills of the American workforce while encouraging immigration to attract new workers from the global workforce.	Access to mobility, whether personal car ownership, public transit ridership or other transportation modes, is essential to modern life and incentives should be developed in ways that support affordability.
Securing Louisiana's Role in the Offshore Wind Industry (2023)	While Louisiana's community and technical colleges and universities are a clear asset for training offshore wind workers in the state, a large portion of the population does not pursue higher education. Developing short-term training and certificate programs and allowing for 'stacking' of those certifications toward a degree equivalent can provide opportunities for those in need of near-term employment and recognize multiple pathways for workers' professional development.		
Fueling a low-carbon Future in Minnesota (2023)	Training for new energy workers can take many forms, including an intentional focus on re-deploying existing skillsets in service of clean energy projects; accessible education programs that match skills development in the classroom with skills needed on the job; registered apprenticeship programs; and certifications.		Many low-carbon fuels projects in Minnesota will be developed in rural areas. Developers must work with state and municipal government to ensure any influx of jobs and workers will be accompanied by supporting physical and social infrastructure capacity, such as wastewater infrastructure, school capacity, housing availability, childcare and transportation accessibility, and health services. Interdisciplinary organizations can mediate these needs; developers and policymakers must work closely with them..
Energizing the Future Mobility Workforce in Michigan (2024)	Coordinating agencies, educators, and employers need to be intentional about reaching out to the next generation of workers to support their learning and skills for the future mobility industry. This includes establishing experiential learning programs in PreK–12 schools to provide students with tangible skills and excitement for potential career opportunities.	The industry needs a talent pipeline and connective infrastructure in place where individuals can see the process of how they can be skilled up to ultimately receive a certification or a higher education degree. More innovative and accessible programs are needed to reach pockets of talented non-traditional workers that are often overlooked (e.g., single parents, immigrants, and formerly incarcerated people).	

APPENDIX D: ACCESS TO LOW-CARBON POWER IS CENTRAL TO COMPANIES' INVESTMENT DECISIONS

	Corporate climate and clean energy targets / access to low-carbon power
Manufacturing an Advanced Energy Future in Kentucky (2024)	Companies are driving the development of clean energy generation, as their sustainability and energy procurement targets encourage new and existing facilities to use greater shares of renewable power. States that are best able to affordably accommodate these needs will be the most competitive in attracting and retaining new facilities.
Fueling a low-carbon Future in Minnesota (2023)	Growing numbers of voluntary corporate commitments to emissions reductions are a source of demand for low-carbon fuels. These commitments often rely on the guidance provided by corporate accounting and target-setting standards (e.g., Science Based Targets initiative), which provide guidance on how sustainable aviation fuel may be used to reduce airlines' emissions within their frameworks.
Advancing Resilience and Economic Development in Southeast Florida (2022)	A state and local policy environment holding companies to high standards while providing resources conducive to success in achieving companies' mitigation and resilience goals can make the region more attractive to companies looking to build and expand operations. For example, a low-carbon or carbon-free electricity supply is necessary to support new and developing businesses with 100 percent carbon-free power targets.
Investing in West Virginia's Future (2021)	A carbon-intensive power system is a barrier to investment. As companies look to decarbonize their operations and supply chains, access to clean, reliable, and low-cost electricity is essential to the competitiveness of West Virginia's economy.
Investing in Arizona's Future (2021)	Companies are setting corporate goals around sustainability and the use of clean energy. To continue attracting investments, Arizona will need to ensure that companies can access clean energy—while maintaining reliability and affordability—to help them meet their goals.

APPENDIX E: PROACTIVE, AUTHENTIC, AND COMPREHENSIVE COMMUNITY ENGAGEMENT IS PARAMOUNT TO SUCCESSFUL DEVELOPMENT

	Community Engagement
Decarbonizing Buildings in Illinois (2020)	Community involvement from the beginning in policy discussions is important to understand challenges faced by constituents and how they believe those challenges can be addressed, and to assess available resources.
Manufacturing a Decarbonized Future in Southwestern Pennsylvania (2022)	Organizing meaningful community engagement through regional learning networks (including between urban and rural communities) and resource sharing and capacity building opportunities for disadvantaged communities can promote a coordinated and successful approach to address the region's decarbonization, economic, and equity challenges.
Spinning the Mid-Atlantic Offshore Wind Industry into Economic Opportunity (2022)	Project developers should engage with the community early and often throughout the process. Empowering community members to help make critical decisions (i.e., siting transmission lines) and providing education on the value of the project to the community can help produce buy-in and build long-term community support for the project. A successful community engagement strategy should include a variety of approaches to engage different segments of the population, whether through digital means, in-person convenings and conversations, or direct mail; non-traditional communication channels like social gatherings can help produce more meaningful, authentic, accessible engagement. Demonstrable, good-faith collaboration between companies and grassroots organizations advocating for community interests can help to build trust in the community. Outreach to both allies and opposition groups are equally important; engagement with opposition groups helps to address concerns from likely detractors early and reach positive, collaborative solutions, while engagement with allies helps to build third-party credibility and buy-in.
Direct Air Capture in Wyoming (2023)	Transparency and authentic engagement with communities are essential for building trust between project developers and the communities that can host DAC projects. This includes sharing information about potential impacts, benefits, and risks of these projects. The success or failure of the DAC industry will depend on the ability of developers to authentically engage and invest in communities even before the projects are built, support the current and future workforce, and share the economic benefits with the residents of Wyoming.
Fueling a Clean Hydrogen Future in Texas (2023))	When deploying new clean hydrogen infrastructure, project developers and infrastructure owners should engage with local communities to seek input and build buy-in among the residents and workers who will be directly impacted, with engagement beginning long before any project development starts. Federal funding and guidelines currently encourage community engagement and community benefits, including through the JUSTICE40 initiative, but the guidance must be clarified around several key programmatic parameters.
Creating a Circular Economy in Ohio (2023)	The permitting process, which can include years of delay that prevent a project from getting off the ground, often presents significant headwinds to rapidly building new facilities. Earlier, direct engagement between developers and communities to address concerns, build buy-in, and promote responsible development on a reasonable timeline can mitigate some community opposition.
Deploying Long Duration Energy Storage in Virginia (2024)	Building trust improves community support and will contribute to more successful LDES project outcomes. From working with trusted community voices to providing contacts of communities that have successfully installed batteries, developers can take measures to form meaningful relationships with communities that will ease the permitting process. Earlier engagement, including through the development of community benefits plans, can help resolve downstream impacts of new projects, such as siting, housing, transportation, and energy and water availability.
Manufacturing an Advanced Energy Future in Kentucky (2024)	Community economic development research and planning must utilize participatory action and bring in communities and workers from the very beginning. This can build buy-in among communities and ensure research and planning efforts are reflective of conditions on the ground.

APPENDIX F: COMMUNITIES NEED INCREASED LOCAL CAPACITY TO HELP THEM ACCESS FEDERAL PROGRAMS AND IMPLEMENT ECONOMIC DEVELOPMENT INITIATIVES

	Local Capacity and Resources
Investing in West Virginia's Future (2021)	Many federal grants to support infrastructure investments, including broadband, have matching funds requirements that exceed the financial capacity of local public entities, who often also lack sufficient administrative capacity. A state-operated match fund, public-private partnerships, and flexible match requirements would all help to support infrastructure investments in West Virginia.
Manufacturing a Decarbonized Future in Southwestern Pennsylvania (2022)	Federal legislation has provided significant funding to help communities respond to climate change, but participants raised concern with south-western Pennsylvania's ability to compete for funds given shortfalls in comprehensive regional strategic planning, state and local policies, and local capacity in rural areas.
Energizing the Future Mobility Workforce in Michigan (2024)	Communities need technical support and additional capacity to effectively plan for the coming investments in clean energy and advanced manufacturing projects.

Endnotes

1 U.S. Environmental Protection Agency, "Clean Communities Investment Accelerator," Last updated November 13, 2024, https://www.epa.gov/greenhouse-gas-reduction-fund/clean-communities-investment-accelerator; Green Bank for Rural America, "Celebrating the Green Bank Launch," accessed January 28, 2025, https://greenbankforruralamerica.org/about/.

2 Neil Ford, "US set for faster offshore wind permits under new rules," Reuters, May 3, 2024, https://www.reuters.com/business/energy/us-set-faster-offshore-wind-permits-under-new-rules-2024-05-03/; U.S. Department of the Interior, "Secretary Haaland Announces New Five-Year Offshore Wind Leasing Schedule," press release, April 24, 2024, https://www.doi.gov/pressreleases/secretary-haaland-announces-new-five-year-offshore-wind-leasing-schedule.

3 Virginia HB2537, "Energy storage requirements; Department of Energy, et al., to develop model ordinances, reports," introduced January 9, 2025, https://lis.virginia.gov/bill-details/20251/HB2537.

4 U.S. Economic Development Administration, "South Florida ClimateReady Tech Hub," accessed January 28, 2025, https://www.eda.gov/funding/programs/regional-technology-and-innovation-hubs/2023/South-Florida-ClimateReady-Tech-Hub; U.S. Economic Development Administration, "Gulf Louisiana Offshore Wind Propeller," accessed January 28, 2025, https://www.eda.gov/funding/programs/regional-technology-and-innovation-hubs/2023/Gulf-Louisiana-Offshore-Wind-Propeller

5 Michigan Department of Labor and Economic Opportunity, "Electric Vehicle (EV) Workforce Hub," accessed January 28, 2025, https://www.michigan.gov/leo/bureaus-agencies/wd/industry-business/mobility/electric-vehicle-workforce-hub.

6 U.S. Department of Commerce, "News: Unemployment is at its Lowest Level in 54 years," blog post, February 3, 2023, https://www.commerce.gov/news/blog/2023/02/news-unemployment-its-lowest-level-54-years.

7 Science Based Targets Initiative, "Net-zero ambition 500: companies across the globe committed to leading the science-based net-zero transformation," November 17, 2023, https://sciencebasedtargets.org/blog/500-companies-net-zero-ambition.

8 U.S. Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey (2021)," last modified January 20, 2022, https://www.bls.gov/cps/cpsaat11b.htm.

9 Mahmoud Abouelnaga and Stephanie Gagnon, Setting the Stage for Direct Air Capture in Wyoming (Arlington, VA: Center for Climate and Energy Solutions, 2023), https://www.c2es.org/document/setting-the-stage-for-direct-air-capture-in-wyoming/.

10 Pat Maio, "Giant Wyoming Carbon Capture Project Pulls Plug for Lack of Clean Power," Cowboy State Daily, September 3, 2024, https://cowboystatedaily.com/2024/09/03/giant-wyoming-carbon-capture-project-pulls-plug-for-lack-of-clean-power/.

11 Brad Townsend and Stephanie Gagnon, Investing in West Virginia's Future: Aligning Climate and Economic Development (Arlington, VA: Center for Climate and Energy Solutions, 2021), https://www.c2es.org/document/investing-in-west-virginias-future-aligning-climate-and-economic-development/.

12 See 26 U.S. Code § 48C

13 Adam Kent, "EPA Announces Awards for a National Clean Energy Finance Network," Natural Resources Defense Council blog, April 4, 2024, https://www.nrdc.org/bio/adam-kent/epa-announces-awards-national-clean-energy-finance-network.

14 Stephanie Gagnon, Firing Up Clean Hydrogen in Texas (Arlington, VA: Center for Climate and Energy Solutions, 2023), https://www.c2es.org/document/firing-up-clean-hydrogen-in-texas/.