Aligning Community Benefits with Decarbonization Goals: Lessons Learned from Development of Community Benefit Plans for IRA Funds

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ABSTRACT

Funding through the Inflation Reduction Act (IRA) of 2022 affords a unique, once in a generation opportunity to decarbonize buildings and industrial sectors. Several other goals such as social equity, improved community air quality, and local workforce development can also be met along the way to reducing greenhouse gas emissions, providing larger benefits to underserved communities. This paper examines how a Community Benefit Plan (CBP) can function as an important tool to enable these co-benefits, through effective community engagement during key decision making. Examples include how to improve public health for historically disadvantaged and disproportionately impacted communities; how to increase investment in communities most impacted by climate change, pollution, and environmental hazards; and how to share prosperity with communities through building community infrastructure like roads, transportation, and clinics. These equity and community co-benefits are the foundation of a just transition to a clean economy. In this paper, we discuss lessons learned from developing community benefit plans and present strategies to enable successful community engagement, amplifying the impact and benefits beyond the IRA.

Introduction

The Inflation Reduction Act (IRA) of 2022 directed close to $370 billion towards rebuilding the U.S. manufacturing base and standing up clean energy infrastructure within the next decade. This is a unique opportunity to reimagine our nation's buildings, grid, and civil infrastructure to meet performance, climate, equity, and sustainability goals. To achieve these green transition goals, construction markets and building practices will need to transform, especially as increasing clean technology adoption leads to subsequent compounding growth in the buildings sector.

The industrial and buildings sectors can meet decarbonization goals and fulfill Buy Clean[1] procurement policies by addressing a key metric—embodied carbon. Embodied carbon is defined as the carbon emissions across the lifetime of the product, from raw material extraction, transportation, manufacturing, to recycling or disposal (excluding carbon emitted from useful life which is known as operational carbon). Lowering embodied carbon is a main driver for the adoption of new, more sustainable technologies in high carbon intensity sectors like cement,

[1] Executive Order 14057 of December 8, 2021: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability (see https://www.federalregister.gov/documents/2021/12/13/2021-27114/catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability).

steel, and aluminum, which yields additional benefits such as reductions of air-pollution, water use, and waste. Manufacturing low-embodied-carbon materials represents a key opportunity to not only decarbonize the buildings and industrial sectors simultaneously but to also prioritize frontline communities while minimizing negative environmental and public health impact (Srinivasan et. al. 2022).

Previous eras of expanding manufacturing and industrial investment have too often ignored the very communities hosting the facilities. While the historical context of poor community engagement is discouraging, federal initiatives are joining the growing collective movement to find workable and actionable solutions together with communities. The White House issued the Justice40 Initiative in January of 2021 as an intentional effort to pursue environmental and energy justice (White House 2021). Justice40 requires that 40% of overall benefits of clean energy and other green transition projects flow to disadvantaged communities (DACs), as defined by the Executive Order. The Department of Energy (DOE) has been tasked to distribute much of the IRA funding to support emerging clean technologies, and the federal government has recognized that incorporating community engagement for each project is imperative to ensure that impacted communities are not left behind.

In the latest funding opportunities, the DOE requires that each project includes a comprehensive Community Benefits Plan (CBP). The CBP is a scored requirement within applications for IRA and Bipartisan Infrastructure Law (BIL) funding that requires applicants to detail their strategies for 1) engaging communities and labor throughout the project lifetime, 2) developing a workforce and providing good, quality jobs, 3) advancing diversity, equity, inclusion, and accessibility (DEIA) throughout the project's activities, and 4) achieving Justice40.

In this paper, we will discuss the lessons learned from developing community benefit plans to meet the Justice40 goals. The American Council for an Energy-Efficient Economy (ACEEE) hosted a webinar in 2023 to facilitate information exchange (ACEEE 2023). Over the course of the past year, DOE and other organizations developed various forms of resources to support CBP development. This paper draws on key points from ACEEE and other stakeholders that can be used to draft a holistic CBP that supports projects in meeting just transition goals.

Lesson 1: Prioritize projects that deliver benefits to local communities in addition to carbon reductions

The green transition and IRA funding provides an opportunity to better align localized community needs and potential benefits with the broader goals of industrial decarbonization. Economic, health, and environmental benefits, also known as co-benefits, tend to accrue primarily to local communities. Social determinants of health can be used as a basis for community benefits (e.g., opportunities for education access, healthcare, built environment social and community context, economic stability) to build thriving communities through CBPs in the context of decarbonization efforts (Health.gov 2024).

The central problem with making the green transition a just one is that while everyone is going to benefit from deep cuts to carbon emissions, net zero emissions goals and roadmaps do not specify where and when technology investments should be prioritized. This is because industry clusters tend to be unevenly distributed across the country so defining what benefits mean to communities gets a lot more complex. Communities located near heavy industrial facilities tend to have a higher average proportion of lower income populations around the

facilities. These same communities often disproportionately experience the negative environmental impacts from polluting industry such as poor air quality and greater air toxic cancer risk.

To illustrate this pattern, ACEEE published an interactive map and a policy brief on the intersection of industry and emissions, specifically for two heavy industries – iron and steel manufacturing and cement and concrete manufacturing (Johnson and Eisen 2023). The policy brief explains how industrial project planners can strategically improve air quality while retrofitting or standing up cleaner industrial facilities, and the map illustrates convergence between CO_2 emissions and particulate matter (e.g., PM2.5), revealing the locations with the greatest opportunity to simultaneously address both types of emissions. Because of the dispersion of industrial facilities to different regions and their various impacts, different benefits are also going to accrue at different rates. There must be intentional efforts to ensure that benefits are going to the underserved communities that have been exposed to the negative impacts of industry (e.g., improving public health for historically disadvantaged and disproportionately impacted communities), especially as the U.S. revitalizes its manufacturing base.

Historically, industry represented a trade-off between the benefit of new jobs for pollution, which led to a widespread perception that health benefits of industrialization only come from closing industrial facilities. The IRA can help change this narrative because new technology can now decouple industrial productivity from environmental pollution (e.g., cleaner, more efficient technology like industrial heat pumps to replace fossil fuel boilers at scale). Clean, renewable energy like solar, wind, and battery storage are becoming more affordable than coal powerplants. With over $80 billion in federal funding and other government initiatives (e.g., Justice40) as resources, implementing clean technologies to decarbonize industry while centering equity are not only technically possible but achievable. Yet while the financial and policy resources are now available, broader social support for cleaner and more productive industry is still sometimes missing, especially from communities that are going to be most directly affected by industrial projects. The strategies to build or rebuild community trust while making progress towards deep industrial decarbonization are listed and discussed below (ACEEE 2023):

Strategy 1: Clarify primary local stakeholder concerns well in advance of proposals for technology investments.

Identification and assessment of community needs means working with community-based organizations (CBOs) is crucial. In engaging CBOs and leaders within the community, specific concerns can be discussed and prioritized (e.g., visible air pollution, smell, noise, land use conversion, etc.), which can help to de-risk large industrial projects. For example, establishing project labor agreements with workforce groups well in advance of construction does not increase costs for companies and can lead to faster projects and smoother relationships (Manzo and Bruno 2024). Similarly, establishing relations with communities and identifying agreed upon community goals can smooth project permitting and hiring. It is never too early for the project team to learn and perhaps make changes to their plan as needed to minimize negative

impact, and for the community to become aware and start preparing for an industrial project's impact.

Strategy 2: Quantify and communicate local benefits to the community.

Technology analyses and decision-making tools focus heavily on economic and carbon reduction benefits. An economic case could be made stronger by incorporating "non-technical" benefits such as quality jobs and careers and reduced deaths and healthcare services due to cleaner technology. Greenhouse gas emissions reductions do not provide targeted benefit to fence-line communities but criteria air pollutant reduction (e.g., PM2.5) does have a greater benefit locally because it lowers other health risks.

Strategy 3: Link industrial and community benefits by collaborating across Environmental Protection Agency (EPA) and DOE efforts.

To link industrial and community benefits, a first step could be to develop improved educational materials that clarifies costs/benefits/risks of new transformative industrial technologies and proactively share them with communities through the Environmental Protection Agency (EPA) technical assistance programs. For example, projects can pair community technical assistance for fence-line air pollutant monitoring with installation of new industrial technologies. With EPA's Climate Pollution Reduction Grant (CPRG), states, cities, and tribes can leverage both CPRG funding and DOE funding to maximize benefits to their communities by applying for all financial opportunities dedicated to industrial decarbonization.

Building trust early on is important and will depend on transparency of communication. Talking through environmental/public health impacts and what mitigation techniques will be pursued (beyond proposal requirements) may be difficult, so finding a trusted partner between the project team and the community would help facilitate education and communication. Educating to the level of the community is also important; for example, a technical project member may have to explain certain acronyms that the general public may not know (e.g., BACT stands for best available control technology). Key project decisions should be made with recognition of historical, cultural, and institutional dynamics and structures that have routinely advantaged certain privileged groups in the project locations and regions and resulted in chronic, cumulative disadvantage for other communities. There could also be several decision points that should create flexibility in projects and be influenced by community preferences. For example: 1) **Project Siting** where sites could potentially be adjusted based on community concerns within the physical, geologic, or other constraints of the project. 2) **Emissions Monitoring** to not only be conducted at all facilities in compliance with all regulatory standards and emissions abated using BACTs, but project leads to work with communities to invest in additional air quality solutions if desired by the communities. 3) **Workforce training investments** to be tailored to regional needs as the project lead is willing to invest in broader manufacturing training certifications, engineering programs, and other partnerships with local workforce and educational institutions.

Lesson 2: Fully utilize existing resources and assistance

The Office of Clean Energy Demonstrations (OCED) and the Industrial Efficiency and Decarbonization Office (IEDO) at DOE announced a number of large funding opportunities in 2023 to advance decarbonization within the buildings and industrial sectors. Some of these opportunities have already been awarded, with the remainder finalized by the end of 2024—the universal requirement: all funding applicants were required to create a CBP.

When applying for IRA funding, applicants should recognize the weight given to the CBP in the funding opportunity's merit review. Some CBPs account for up to 40% of the application and review, so it is imperative that time and effort is dedicated to writing a strong CBP, not only for scoring full points in the application stage but more importantly to ensure that the project will actually benefit surrounding communities. These requirements are a new development for industrial companies, and the company's project development team may need to consider adding staff and modifying the structure of their team to craft a comprehensive CBP with engagement from the community. The additional staff needed to develop the CBP is another incentive for applicants to leverage the work of active community-based organizations in the proposed project area and bringing those groups on as partners, as mentioned in the community engagement section.

Review of Community Benefits Plan Resources

DOE guidance and resources. As the IRA funding opportunities are announced, the DOE publishes multiple guidance resources and documents to help applicants write a well-rounded CBP. The Clean Energy Infrastructure guidance covers the main components of a CBP (i.e., community engagement, workforce development, DEIA, and Justice40) and frequently asked questions (DOE 2023f). The website also includes a webinar in which several federal agencies highlight the importance of the above elements, providing an introductory 101 to the public who may be unfamiliar with CBP writing. DOE also released a Pathways to Commercial Liftoff report on the Overview of Societal Considerations & Impacts which provides more guidance on the concept and is a living document to which DOE hopes to continue to update as the topic may evolve with implementation of IRA and other initiatives that impact communities (DOE 2023b).

DOE's IEDO recently published a brief overview to address how to write CBPs specific to IEDO funding opportunities (DOE 2024a), gathered from the review of CBPs submitted to multiple IEDO funding opportunities since CBPs became a standard requirement. The website includes tips to develop milestones that are specific, measurable, achievable, relevant, and time-bound (SMART), partnerships that go beyond the project team, workforce training, a comprehensive analysis of pollution impacts, improvement and distribution of generated materials, and life cycle assessment—techno-economic analysis integration informed by community engagement. The CBP should not be a standalone activity; all of the above should be integrated within the research, development, and demonstration (RD&D) project over its various phases. The website also lists guiding questions and examples for writing three components of the CBP: DEIA, energy equity, and workforce.

Similarly, DOE's Office of Manufacturing and Energy Supply Chains (MESC) published their guidance in early 2023 which breaks up a CBP into four main components: Community and Labor Engagement, Investing in the American Workforce, DEIA, and Justice40 Initiative (DOE 2023e). The MESC guidance reviews definitions relevant to each component, process to

compose a strong response to the component, and lays out elements or subsections that help the applicant think thoroughly about each component. The subsections include background; community agreement statements; workforce development and related topics like workers rights and quality jobs; strategies, milestones, and timelines; and assessment of negative impacts and benefits.

DOE's OCED has also published similar guidance documents specific to several OCED funding opportunities. The most recent document contains extensive information for their Industrial Demonstrations Program (IDP) funding opportunity (DOE 2023c). The five sections required for the IDP CBP were: Community and Labor Engagement, Workforce Development, DEIA, Greatest Benefit for the Greatest Number, and Justice40. The layout of this OCED document is similar to the MESC guidance but expands on the subsections which included essential elements such as: background and experience of the project team; analysis of stakeholders, community history and dynamics including barriers, gaps, and needs, and potential negative impacts and benefits to surrounding communities; existing community and labor support; two-way engagement plans; workforce development; implementation strategies, methods, and timeline; and resource summaries. In each section, example activities are provided for applicants who can use those examples as a blueprint to engage communities. OCED also published a template that could be used to submit for their funding opportunities that covers all the required sections (DOE 2023d). The extensive guidance document for IDP was an update to OCED's CBP guidance from their Energy Improvements in Rural or Remote Areas funding opportunity and to OCED's standalone CBP guide for Regional Clean Hydrogen Hubs (DOE 2023a; DOE 2022).

Non-governmental resources. Other organizations have also published resources since the CBP became a standard funding opportunity requirement, including nonprofit/non-governmental organizations (NGOs), CBOs, and some research or academic institutions. After the announcement of the hydrogen hub awardees, Rocky Mountain Institute (RMI) published a research report and held a webinar on the CBPs that were developed in response to the funding opportunity (Sheerazi et. al. 2024, RMI 2024), highlighting key best practices such as stakeholder mapping, community benefit agreements (CBAs), and Justice40 policy alignment. The report also presents case studies on two communities who decided that the hydrogen hub was not in their interest and the learnings from engaging with those communities.

It is essential to any project that not only stakeholders but their relationships to each other are mapped out clearly to understand the different dynamics at play between project partners and other entities who will be involved in the project. This analysis is especially important for CBPs, which include more than just the technical or financial organizations involved in a project. For example, there may be multiple local environmental justice (EJ) groups who may have important context or perspectives that could potentially affect selecting a project's location. Labor unions and other labor organizations must also be included as they will impact workforce and workers rights. Other supply chain companies will also affect whether materials for the project or construction can be locally sourced once the project is under way. In their report, RMI developed a stakeholder mapping tool that helps display stakeholders and their relationships which could be especially helpful in the community and labor engagement part of a CBP.

In the RMI webinar, Angelina Galetiva from one of the awarded hydrogen hubs acknowledged that each community is different: "Some communities want a very specific legally binding document, [while] other communities want a more fluid, flexible agreement that can be adapted over time to reflect changing conditions" (RMI 2024). The report shares how a CBA

could be useful in ensuring two-way engagement and accountability between the project team and impacted and surrounding communities. The report also provides examples of Justice40 metrics that could be used in CBPs to ensure that Justice40 priorities are being tracked and met. The guiding principles and environmental/energy justice (EEJ) considerations found in the RMI report and webinar are based on experiences of successful awarded project partners and provides a good starting point for those who are new to CBP development.

Tools to Support Community Needs Assessment

To start the process of developing a comprehensive CBP, initial research must be done on the communities that will be potentially affected by the project. Understanding the context and history of the affected communities by collecting data from a variety of sources is a great starting point. Special attention should be focused on the underserved communities, and there are many resources such as the Climate and Economic Justice Screening Tool (White House 2022), EPA's EJScreen (EPA 2024a), and other mapping tools (Energy Justice Dashboard, state specific mapping tools e.g., Maryland Department of the Environment Environmental Justice Screening Tool) (DOE 2024b; MDE 2024). Other sources should also be considered such as databases with commuter, demographic, labor shed, and other Census data. Based on these preliminary results, the project team should brainstorm solutions on how to overcome potential disparities. Solutions could include using the project resources to provide broadband services, health clinics, educational programs, closing the wage gaps between different racial groups if there are any, etc. Initial assessments identify broad themes and serve as "first steps" of the CBP.

Lesson 3: Conduct meaningful community engagement

Authentic, on-the-ground community engagement is key to begin understanding community needs and preferences of today and in the future. This process should be two-way and entail active listening, asking CBOs and other local leaders who were identified during stakeholder mapping how they prefer to be engaged and what they see as being important in their context (Schomburg, Britton, and Dowdy 2024). With the historic neglect of communities surrounding industrial sites, the importance of authenticity cannot be stressed enough – a project team should begin community engagement as early in the project lifecycle as possible. Of course, teams sometimes cannot predict the timelines of federal funding opportunities, but project teams should prioritize transparent local engagement even during the application process. Engagement at the beginning stages could be meetings to introduce the project, to gain initial reactions from the community, and to learn their needs. Conducting more in-depth scanning of these communities and identifying the trusted local organizations and leaders prior to the project proposal submission will help the project team develop a community engagement plan with their participation and input and mitigate overall risk to the project.

Step 1: Understand the Challenges that Communities are Facing

Historically and even today, community concerns regarding air quality or land use have been overlooked, yet data reveals that some companies that provide jobs for fence-line communities are also the same companies that contribute to local pollution and cancer risk clusters. Industrial companies have also often hired highly educated outside workers for the

facility's high-paying jobs rather than hiring and training up a local workforce (Greater Houston Partnership 2024).

The technical industrial side often knows more about technologies than community members do, including information about how they work and how benefits of the technology can flow to the surrounding community. Furthermore, the information is typically not presented well to the community throughout a project's lifetime. Sometimes confidentiality or intellectual property concerns about the project plan or phases further exacerbates this information imbalance, which creates distrust.

Finally, many industrial players have limited community engagement, often only in the form of philanthropic giving mandated by the company's corporate social responsibility policies, which means they have little to no experience in actual two-way engagement with communities. Developing a framework and new relationships usually takes longer than the application timelines allow for before a CBP is due (about two months between concept paper and full application deadlines).

Step 2: Recognize the Community as a Unit

The project team must put aside their preconceived notions of the community that they will be entering and depend on community members to define for themselves what their community is. Going beyond geographic or racial identity or even the federal government's definition of a DAC will communicate to the community that the project team values their voices. Although Justice40 and mapping tools can give some context, it is important to realize that people have lived, worked, and thrived in their community long before the project team decided on a proposed site for their activities. Instead of starting with a deficit mentality that highlights problems or challenges that may be shown by environmental justice indicators, project teams should start engagement with the mindset that community members have a wealth of knowledge through lived experiences and resources from which the project team can learn. Showing the community that the project team is open and willing to learn sets a foundation for collaborative and equitable partnerships.

Step 3: Leverage Expertise in Communities

Environmental justice leaders and organizations have worked for decades to pave the way towards more just systems in industrial settings and have set a strong foundation. A large buildout of clean energy infrastructure cannot be done without the support of environmental and other groups who may have been opposed to industrial development. Having those who had previously opposed industrial buildout on the same side as industrial players for this second industrial revolution will ensure that benefits truly flow to communities. Industrial players must rethink engagement methods and what community benefits of industrial decarbonization means, and need to understand that money may not be the benefit that a community needs nor wants.

It is crucial to understand that a community is often already organized and has not only assets but fundamental expertise of the challenges they face and have ideas on how to help solve them. However, capacity building support may be required for adequate community engagement. The first step to build trust is to realize, believe, and respect the lived experiences of a community. The community must also be properly incentivized and compensated for that expertise, which means dedicated portions of the budget should be set aside for hiring trusted CBOs, local government representatives, or environmental justice advisory councils to conduct

outreach and engagement activities. Justice40 calls for new ways to determine success of corporate social responsibility efforts. Ensuring that these partnerships are non-extractive and mutually beneficial is a way to go beyond one-way donations, outreach, or education. Shared accountability can be established by identifying areas where communities can influence the project's development, design, construction, and operations, which creates support structures for participatory decision making. Both defining and delivering benefits to long underserved communities should never be an afterthought. The following framework could be used as a starting point to develop meaningful community engagement (adapted from Minkler et. al. 2012).

Step 4: Build Trusted Relationships via Co-learning

Project teams with community members should establish shared learning space and capacity building among all partners that engages everyone in the exchange of knowledge and skills. A key difference in industrial build out of clean technologies compared to the industrial revolution should be changing from one-way actions from industrial players to two-way engagement that is based on trust between industry and the community. Trust can be built when the community feels that they are on a level playing field, so it is imperative to overcome the inherent imbalance in information and power between industrial actors and community partners. This relationship starts with listening to each other and remembering that all partners bring a wealth of diverse experiences. An example of such a system that is iterative and cyclical could be a roundtable, as shown in figure 1. Both industrial and community players must set the expectations together, allowing for transparent discussions and co-development of solutions to overcome challenges of one-sidedness.

Step 5: Commit to Sustainability

For authentic community engagement, the project team must look for opportunities to extend the benefits beyond a CBP or one federal funding application. This could be through establishing CBAs that outlast project timelines or other long-term processes. The project team with community members can identify other funding or resources to help continue programs that are part of the CBP, intentionally creating sustainable structures past the end of federal project. If programs and benefits can be maintained, constant evaluation and feedback from the community should be incorporated on how to improve or change programs as needed to stay relevant to community needs.

Because industrial decarbonization efforts have objectives that may be completely independent from community needs and preferences and vice versa, the critical work is in finding ways that community and industrial players can collaborate on structuring benefits in mutually beneficial way, which is the main goal of a CBP. The Houston Advanced Research Center (HARC) developed the concept of a Community Benefits Hub (figure 1) to create forums or ecosystems in which communities identify needs, preferences, benefits, and opportunities to engage with industrial decision making through community-wide roundtables. The hub illustrates industrial, labor and workforce, and community players to help define community benefits including environmental justice and health, supported by other ways to coordinate funding across agencies. The Community Benefits Hub framework aims to uplift "disadvantaged communities through capacity building and technical assistance, to empower community

representatives through participation and agency in decision making processes, and to ensure accountability of benefits flowing to those communities" (HARC 2024).

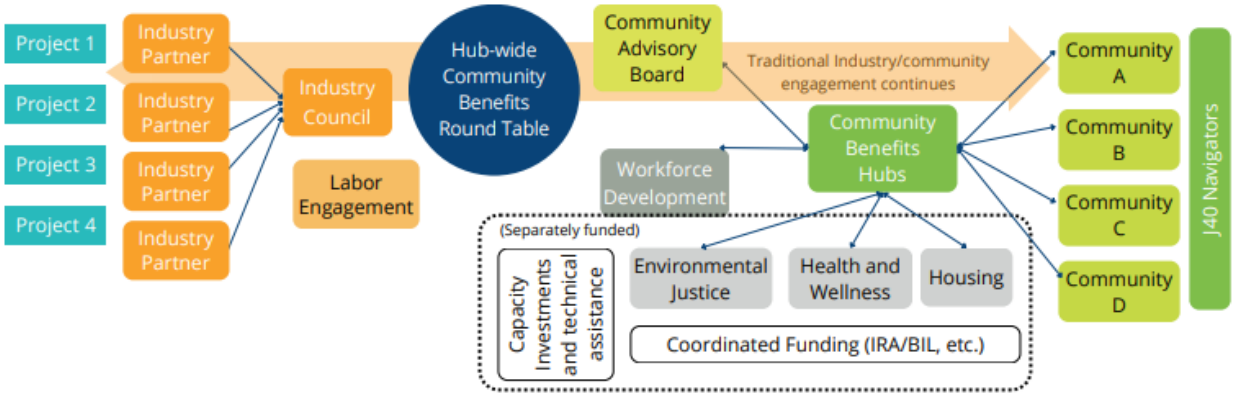

Figure 1. Houston Advanced Research Center Community Benefits Hub Framework. *Source*: HARC 2024.

Lesson 4: Form unconventional partnerships

Potential partners should align with the types of community benefits that the team would like to incorporate for the specific project. Forming a project team with strong technical and market partners (left side of figure 1) may be easier than finding strong CBP partners (right side of figure 1). One foundational element to developing a responsive CBP is that the plan should build on existing relationships and expertise of project partners who have a long-standing history of prioritizing and engaging with communities. A CBP in the context of IRA funded projects should expand partnerships with experienced local, regional, and national organizations and direct investments to address key community needs while scaling clean technologies to meet decarbonization goals. Various partners should be involved to expand community benefits that are relevant to their expertise. For example, Pat Phelan explains their process in selecting partners for DOE projects for which Arizona State University (ASU) was selected, which are mainly focused on workforce development relevant to energy efficient technologies (ACEEE 2023). ASU leads an Industrial Assessment Center (IAC) which is a DOE-supported, university-based center that involves students to conduct energy audits for small- and medium-sized businesses and manufacturers in the community. ASU also leads the Electrified Processes for Industry Without Carbon (EPIXC) manufacturing institute, which is a large project comprised of multiple universities, companies, and other partners such as community colleges. Several mutual benefits from the unconventional partnerships built by the ASU team are summarized below.

Community Colleges

Community college students working with DOE projects can become a trained workforce with relevant skills required for newer, clean technologies. At the ASU IAC for example, community college students are recruited to work in the Energy Efficiency Center (which includes the IAC) during the summers. Students are selected for these internships before the spring, so that the interns can get a head start through online training during the spring using online modules developed by ASU. In the summer, students can apply their learnings from their

online training during their paid internships. After the internship ends, the student can either return to their community college, go on to a career, or transfer to ASU. The success of the IAC internship program for community college students has led two community colleges to apply for their own IACs with ASU as a subcontractor. Community colleges are statewide and often located in rural or underserved communities, which helps extend the reach of DOE project impacts.

Nonprofit Organizations

While for-profit entities are needed for logistical reasons such as cost-share or technical expertise, nonprofits/NGOs should be considered especially for the CBP due to their extensive networks, social focus, and noncompetitive nature. They often have already built up trust over the years with various communities and are connected to the local, state, regional, and sometimes federal government and their respective departments and resources. Many nonprofits have social goals and recently more have adopted sustainability and/or energy equity as a focus, which could be leveraged by a project team if the nonprofit's mission statement aligns well with CBP goals. Climate focused nonprofits can connect the project team with rural communities and businesses interested in energy efficiency. Nonprofits could also be familiar with utility or government programs, which can help some clients such as small to medium businesses implement energy efficiency recommendations by identifying other funding like loans, grants, etc. A good example is Local First Arizona, which not only helps to identify prospective clients to receive free or subsidized energy audits, but also supports rural businesses through Green Business Certification, a Green Business Boot Camp, and in general provides other support for entrepreneurs (Local First Arizona 2024). In addition, Local First Arizona was recently awarded a Technical Assistance Grant from the U.S. Department of Agriculture (USDA) to provide additional support for rural businesses to apply for Rural Energy for America Program (REAP) grants.

Other Federal Agencies

As mentioned above, there are a variety of resources available through the federal government under IRA that could be leveraged in project teams, especially programs that are focused on energy equity. A few examples include EPA's Pollution Prevention (P2) programs or CPRG which help communities, metropolitan areas, and states implement climate action plans, and USDA's REAP which awards grants to rural small businesses and farmers to install energy efficiency or renewable energy technologies. REAP awards fund applicants to conduct energy efficiency audits for small businesses and agricultural producers in rural areas, sharing the benefits with those who are often underserved due to limited resources. Partnering with other federal agencies is strategic because DOE, EPA, and USDA energy goals often overlap and sometimes federal funding sources can be stacked, maximizing reach and impact by having more financial support dedicated to community benefits.

Other Organizations

Other partnerships should include tribal communities, state departments and offices, municipal/local government, labor unions and other workforce organizations, trade associations, educational groups or schools, minority serving institutions (MSIs), and other CBOs such as

environmental or youth program organizations. A prominent example is the state offices for Manufacturing Extension Partnerships, which can be found in each state (NIST 2024). All of these and more bring a variety of networks, visions, and resources and can be leveraged into strong partnerships. A project with diverse partnerships is not only better informed but more equipped to address community concerns and spread benefits of a project to groups who may be otherwise overlooked.

A checklist for crafting a strong workforce development plan. With the adoption of new, lower-emissions technologies in the buildings and industrial sectors, there are opportunities for workforce development across the construction industry to train workers on greener construction materials and practices. To ensure a diverse team of partners who can support community benefit goals, below are some helpful steps for local workforce development as an example of forming strategic partnerships.

- **Analyze gaps and identify resources:** Conduct a study of how to upgrade the skills and capabilities of the existing workforce and train them on new skills and capabilities to evolve into the workforce of the future. A wide range of organizations, educational networks, and stakeholders already exist nationally and often locally that are committed to building a well-trained workforce to meet the needs of industry (EPA 2024b).
- **Cultivate local leadership:** Local leaders have already built trust and working systems to serve their community. Expanding on the work of local leadership is a key part of ensuring that the energy transition is equitable and just and can be done through the formation of a workforce development network with local leadership groups. For example, labor unions that have already heavily invested in the industry can recognize the realities associated with decarbonizing the sector and are developing solutions to preserve good jobs in communities.
- **Develop strategies to lower barriers:** With input from local communities, identify the current knowledge or skills gaps, identify issues with wages, benefits, and worker support (e.g., career advancement), and develop strategies to ensure creation and retention of jobs at project facilities and high-road jobs (e.g., in sourcing and using local resources).
- **Establish an equitable decision-making and hiring process**: Ensure structural equity[2] in project planning and development to provide equal access to information and opportunities for underrepresented groups (team members and stakeholders).
- **Inform workforce programming by community and labor input and build off past successful workforce development efforts**: Planning should begin by engaging with stakeholders to create a workforce needs assessment of equity and accessibility gaps within the current workforce, existing training programs, and opportunities for collaboration. An example could be to create a model program for community colleges to partner with nearby universities to participate in federally funded projects and offer additional learning opportunities to their students, like the programs available at ASU (ACEEE 2023).

Conclusion

Technical expertise, financial support, and strategic partnerships can help a project team build organizational capacity for developing and delivering comprehensive CBPs that address

[2] Structural equity seeks to address the historical, cultural, and institutional dynamics that have led to inequalities.

core community needs. Two-way engagement is key to authentic and impactful CBPs that will prioritize decarbonization projects that deliver benefits to local communities. A CBP should utilize already published guidance from the DOE and other organizations as IRA projects are being implemented and more resources that share best practices are becoming available. Building on the existing relationships and previous work of the project team that have been done with communities reveals and reinforces the project team's commitment to prioritize community impacts and engagement. Meaningful community engagement is essential before project start and can be strengthened by unconventional partnerships. Finally, delegating a key role in CBP development to established and experienced partners outside of industry will build a mutually beneficial relationship between the project team and the surrounding community.

Strong and successful CBP implementation can serve as a template for other industrial companies to replicate efforts and deliver measurable and lasting energy and co-benefits across project sites while reducing emissions. CBPs should be used as a tool beyond IRA funded projects as the nation continues to fundamentally reshape its energy systems. The green transition not only provides a great opportunity to decarbonize buildings and industry but also enables other benefits including equity, air quality, and workforce development to be shared with surrounding communities through comprehensive engagement and planning.

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