Improving Equity Outcomes for New Federal Investments in Clean Energy Infrastructure

The Infrastructure Investment and Jobs Act (IIJA), which passed Congress in 2021 with bipartisan support, makes a historic and necessary $1.2 trillion investment in modernizing America's infrastructure. Of that total investment, nearly $400 billion will be directed to clean energy infrastructure including initiatives for transportation, power and grid systems, technology demonstration programs, modernized permitting, and climate resilience. The American Association of Blacks in Energy (AABE) and the Bipartisan Policy Center (BPC) are working together to explore the opportunities and challenges inherent in these new federal investments.

Public investment has a poor record of keeping pace with infrastructure needs, and infrastructure disparities persist for many disadvantaged Americans, including low-income, rural, Black, Latino, Asian, and Indigenous communities. AABE and BPC believe that the IIJA, if implemented carefully and effectively, offers a once-in-a-generation opportunity to create jobs, accelerate the clean energy transition, and grow the U.S. economy in ways that are both sustainable and equitable.

Our organizations convened a series of conversations with environmental justice advocates, government officials, and business and industry leaders to discuss options for ensuring that IIJA investments create direct value and economic opportunity in underserved communities, support the build-out of an inclusive clean energy workforce, and address the negative effects of past infrastructure decisions. Building on these discussions, AABE and BPC identified three categories of clean energy investment—**foundational investments, remedial investments, and resilience investments**—that can support more equitable outcomes for communities in distinct and important ways. By addressing communities' investment needs in each of these categories, federal officials, private sector executives, and state and local leaders can help ensure that IIJA-funded projects improve equity outcomes.

1. Foundational Investments: Targeting areas of historic underinvestment with the aim of modernizing energy infrastructure and supporting communities' full economic participation and well-being.

In many historically underserved communities, a basic level of energy and technology infrastructure and service either doesn't exist, isn't affordable, or isn't accessible to a large portion of residents. For example:

- Black, Latino, Indigenous, and low-income households pay two to three times more for energy than the national average as a share of their monthly income.[1]
- Over 24 million Americans, 80% of which live in rural and Tribal communities, lack access to fixed broadband services at threshold speeds.[1]
- Rural, low-income, Island, and Indigenous communities pay some of the highest costs for electricity and heating fuel in the country. At the same time, many of these households face geographic, financial, and access barriers that limit their ability to use clean energy technologies, like rooftop solar or efficiency improvements to reduce their energy bills.[2]

Foundational infrastructure investments at both the system and household level are needed to alleviate energy burdens and equalize clean-energy-related economic opportunities. Examples of system improvements include expanding electricity transmission and distribution infrastructure and bringing high-speed internet to rural and other underserved areas to support advanced energy technologies. Foundational investments for low-income households and multi-family buildings may include the improvement to housing quality and the installation of new behind-the-meter water, gas, and electrical equipment to support energy-efficiency, expand clean-energy access, and create positive economic and health outcomes.

A CLOSER LOOK:
Expanding access to high-speed internet in rural communities can deliver economic and climate benefits.

The IIJA makes a historic investment of $65 billion in high-speed internet infrastructure. Funds will go toward making connectivity affordable and expanding broadband access in rural, Tribal, and underserved communities. Access to high-speed internet facilitates digital energy efficiency, more weather-resilient electric systems, increased reliability, and lower energy costs. It also supports precision land management strategies that use web-enabled

measurement and data analytics to improve and optimize the performance of agriculture and forestry producers. These practices can reduce fertilizer use and lower production costs while abating emissions and improving water quality. It has been estimated that expanding broadband access in underserved communities could reduce residential electricity bills by as much as 20% while creating $47–$65 billion in annual economic benefits. Read more.

2. Remedial Investments: Aiming to correct for or eliminate existing infrastructure deficiencies resulting from neglect, harm, or obsolescence.

Low-income, rural communities, and communities of color disproportionately contend with the economic, health, and environmental impact from the inadequate or polluting legacy of energy infrastructure, leaving them underprepared for the clean energy transition. Remedial investments can address these burdens and remove barriers to access new clean infrastructure. For example:

- Black Americans are more likely than others to be exposed to harmful air pollutants from electricity generation, especially by "peaker" power plants.[2] Such plants run infrequently, typically during periods of high (or peak) electricity demand and are generally less efficient and more polluting than other power plants. Energy storage facilities (e.g., battery storage systems or solar-plus-storage projects) are being proposed and built in some regions to replace peaker plants and meet peak electricity demand while minimizing local air pollution impacts.[3]
- Most climate-change mitigation strategies call for the widespread adoption of clean distributed energy resources (DERs) such as household solar panels and battery storage. Yet local infrastructure that is in disrepair or has not been upgraded can be a barrier to siting DERs or interconnecting new residential solar projects. Local electric grid capacity limits have been found to limit low-income, Black, and Asian households' access to DERs in California.[4] Investments to expand DER hosting capacity in underserved communities can enable more equitable participation in and benefit from clean energy.

Remedial projects include both front-end and back-end investments. On the front end, assessments of the state of current infrastructure systems (e.g., electric, water, transportation) and impact on the well-being of vulnerable communities will be needed, together with determinations about the readiness of these systems for 21st century upgrades. On the back end, long-term mechanisms to fund the operation and maintenance of new infrastructure are needed to prevent future deficiencies.

A CLOSER LOOK:

Targeted redevelopment with clean energy can address local legacy pollution and reduce carbon emissions.

The IIJA provides $1.5 billion in grants, technical assistance, cooperative agreements, and direct support to states and local and Tribal governments to repair brownfield sites and enable environmental and economic revitalization. The Environmental Protection Agency (EPA) is reviewing a series of broad policy actions to protect communities near industrial sites with water and air quality issues.[5] For example, one EPA initiative, called RE-Powering America's Land, encourages renewable energy development on current or formerly contaminated lands, landfills, and mine sites. When consistent with the host community's vision for future development, clean energy projects on underutilized sites like landfills and brownfields can provide significant economic recovery opportunities. In many cases, these sites already possess existing transmission, distribution, transportation, and other support infrastructure that can be leveraged for renewable energy development, reducing project installed costs by $45–$113 per kilowatt of generating capacity.[6] EPA has identified more than 130,000 sites across the country that are potentially suitable for solar, wind, biomass and geothermal energy development. For example, the developer of a 3.3-megawatt solar project on a former auto salvage yard in Vermont was able to remediate the land beneath the solar arrays with pollinator-friendly ground cover; meanwhile land lease payments made it possible for the site's owners to stay on land that had been in the family for generations. Read More.

3. Resilience Investments: Improving energy infrastructure so that communities can better withstand the impacts of extreme weather and climate-induced hazards.

Economic and infrastructure disparities make low-income communities, rural communities, and communities of color more vulnerable to extreme weather events and other adverse effects of a changing climate. For example:

- Hispanic and Latino individuals are 43% more likely to live in areas with high labor losses due to high-temperature events, impacting both their economic and health outcomes.[7] Island and Tribal communities are more likely to live in areas at the highest risk of sea level rise, endangering the survival of their communities.[7]

- Climate change exacerbates the deficiencies of aging critical infrastructure (e.g., water and sewage systems, roads, bridges, and power plants), and increases exposure to damage or loss from extreme weather. Low-income, Black, and Latino populations in particular experience disproportionate hardships from infrastructure service disruptions.[8]
- Underinvested, low-quality, poorly maintained, or high-density housing infrastructure can make communities more vulnerable to the adverse impacts of climate-change-induced extreme weather events, including storms and extreme heat, and indoor air quality problems.[8]

Resilience investments represent an opportunity to deploy clean-energy and energy-efficiency technologies not only for their climate mitigation and economic benefits, but also to bolster the ability of historically underserved communities to withstand and recover from climate-change impacts. Examples of community-led resilience projects include making climate-smart upgrades to local critical infrastructure, installing microgrids with distributed generation or energy storage to provide electricity during disasters, and weatherizing homes to increase protection from extreme weather and use less energy.

A CLOSER LOOK:
Remote, Island, and Tribal communities can enhance their energy resilience using new building and grid technologies.

The Department of Energy's National Labs have launched several programs to build climate resiliency in local communities. These programs are being undertaken in partnership with residents and regional organizations.

- The National Renewable Energy Laboratory's Energy Transitions Initiative Partnership Project supports remote and Island communities with tailored, community-driven approaches for transitioning to clean and resilient energy systems.
- Pacific Northwest National Laboratory and Sandia National Laboratory are working jointly on the Energy Storage for Social Equity Initiative, which helps urban, rural and Tribal communities assess and plan for energy storage projects.

- A team of national labs is supporting Puerto Rico's Grid Resilience and Transition to 100% Renewable Energy study (PR100). The study will assess prospects for deploying renewable energy and other technologies for energy storage, distributed generation, distribution control, electric vehicles, and energy efficient and responsive loads.
- The National Renewable Energy Laboratory's Cold Climate Housing Research Center is co-developing and deploying 20 culturally responsive, high-performance buildings in Alaska that incorporate resilience to severe climate impacts and local energy generation.

Endnotes

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