

Environmental Justice Educational Series

Renewable and Sustainable Energy (RSE) Equity Challenges with Decarbonization

[What is Decarbonization?](#)

Put simply, decarbonization is “the process of reducing or completely eliminating carbon emissions from products, services, and systems.” In many definitions, it also includes capturing carbon from the atmosphere. The process follows three major steps for most sectors, but is not applicable to all:

1. [Energy Efficiency](#): Using less energy to perform the same task or produce the same result. This can be in the systems used to heat and cool buildings, the processes used to manufacture goods, or the lighting in your own home.
 2. [Electrification](#): Converting an energy-consuming device, system, or sector from non-electric sources of energy to electricity.
 3. Renewable Energy: Generate electricity from renewable or zero-carbon sources like geothermal, wind, hydroelectric, solar, and nuclear.
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[Why Decarbonization?](#)

- Lower emissions, costs, noise, and increase flexibility.
- Reach US’s Paris climate agreement goals.
- Decreases emissions to avoid extreme effects of climate change.
 - Extreme heat
 - Droughts - water security
 - Wildfires
 - Extreme Precipitation and inland flooding
 - Sea Level Rise and coastal flooding
 - Hurricanes etc.
- Support sustainable resource management.
 - BUT, the opportunity to decarbonize is not equally distributed across people.

[Photo Link](#)

Challenge #1: High-cost efficiency and electrification upgrades

[Low-income households spend](#), on average, 17.8% of their income on energy bills and transportation fuel, more than 3x the national average. There are a myriad of intersectional reasons behind this, but high costs of increasing home efficiency and investment in electrification is one of them.

- [Weatherization](#) - protecting buildings and their interior from outside elements - reduces energy costs. This includes switching to LED lighting, sealing air infiltration, increasing insulation, switching to high-efficiency appliances, and more.
 - Like it sounds, this process costs money.
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Challenge #2: High costs of rooftop solar installation and maintenance

[For the average home](#), installing a 6 to 8 kW system costs between \$15-20,000. High-income homes can invest in this, especially with tax credits available, but for many low- and middle-income homes this is not an option.

- This issue compounds since solar energy is cheaper, and energy companies offer cheaper rates when using solar vs. fossil fuels from the grid.

Hence, low and middle-income homes take on the higher electricity costs from the grid, which is only increasing in price annually from necessary updates.

Challenge #3: Renewable Energy Projects in Low-Income Neighborhoods

[Despite the current presidential](#) administration providing incentives to create renewable energy projects in low-income neighborhoods with the Inflation Reduction Act (IRA), adoption is sluggish. Most companies receive 50-70% of their funding from banks and tax investors, who want to be confident they will have a return on investment, which often requires checking credit scores.

- Since many low- and middle-income households have lower or no credit scores, investors do not want to invest and projects will not be built in these neighborhoods until “safer” investments are developed.
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Other Challenges within Decarbonization:

- [EVs and charging](#)
 - Charge EV at home, which, as we saw above, can create insurmountable costs on top of many homes not having a designated parking spot nearby.
 - [Workforce Development](#)
 - The clean energy transition needs a wide spectrum of specialized professionals to assist. With the increasing demand of skilled workers, proper workforce development and incentives to join the field are crucial to ensure a diverse workforce.
 - [Education](#)
 - With so much information on incentives, rebates, and tax credits out there, compiling and understanding all of this is a full-time job. Often, there is not enough time in a day to invest in understanding options. It is crucial for local governments to provide resources and outreach for communities bearing the weight of high-energy costs.
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Resources for decarbonization:

1. Federal:
 - a. [Residential Clean Energy Credit](#)
 - i. Equals 30% of the costs of new, qualified clean energy property for your home installed from 2022-2032.
2. State:
 - a. [Colorado's Weatherization Assistance Program \(WAP\)](#)
 - i. Helps qualified Coloradans weatherize homes
3. Boulder County:
 - a. [EnergySmart](#)
 - i. Assists Boulder County residents in decarbonizing their homes.