



March 29, 2023

The Honorable Michael Regan  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Mail Code 1101 A  
Washington, DC 20460

Acting Director Jahi Wise  
Greenhouse Gas Reduction Fund  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Mail Code 1101 A  
Washington, DC 20460

**Re: Pairing Energy Efficiency with Solar**

Dear Administrator Regan and Acting Director Wise:

The Alliance to Save Energy and the undersigned business, trade association, environmental, and energy efficiency advocates write to urge prioritization of energy efficiency when implementing the Greenhouse Gas Reduction Fund (GGRF or Fund). Leading with energy efficiency reduces carbon emissions, decreases energy capacity buildout, leads to greater energy affordability and reliability, and results in positive health impacts in low-income and disadvantaged communities.

As the EPA prepares to implement the first \$7 billion tranche of the GGRF for deploying solar technologies, it should lead with energy efficiency. According to the International Energy Agency (IEA), energy efficiency alone has the ability to achieve 40% of the emission reductions required under the Paris Agreement.<sup>1</sup> In fact, the U.S. already avoids 343 million metric tons of carbon emissions each year just through energy efficiency standards and labeling.<sup>2</sup> More broadly, in 2021, the U.S. would have experienced 78% higher carbon emissions, or an additional 3,810 million metric tons of CO<sub>2</sub>, but for energy efficiency investments.<sup>3</sup>

When identifying the value of energy efficiency when coupled with solar investments, energy efficiency positively impacts cost. According to a recent study entitled *Building Residential Rooftop Photovoltaics with Energy Efficiency Upgrades: Does it Really Pay Off?*, “when efficiency retrofits are performed immediately before PV installation, the upfront cost of PV installation will be lower.”<sup>4</sup> This occurs “because the optimal PV size to meet the lower demand will decline.”<sup>5</sup> The author concludes that “households which combine energy efficiency and solar are expected to have higher savings because they can reduce electricity usage using [energy efficiency] and use [solar] to serve the lower energy demand.”<sup>6</sup>

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<sup>1</sup> <https://www.iea.org/commentaries/how-energy-efficiency-will-power-net-zero-climate-goals>.

<sup>2</sup>

<https://www.iea.org/reports/achievements-of-energy-efficiency-appliance-and-equipment-standards-and-labelling-programmes/executive-summary>.

<sup>3</sup> <https://energyefficiencyimpact.org/general-insights/#Section2>.

<sup>4</sup> Fikru, G., Mahelet, (2021). *Building Residential Rooftop Photovoltaics with Energy Efficiency Upgrades: Does it Really Pay Off?*, 15.

<sup>5</sup> *Id.*

<sup>6</sup> *Id.*

As an additional rationale for leading with energy efficiency, solar like wind is a variable energy resource, meaning that if the sun isn't shining then the energy resource may not be available. According to reports, although solar panels still work on cloudy or rainy/snowy days, they are only 10% to 25% effective. There are also concerns about effectiveness in high temperatures and in high-humidity climates as well.<sup>7</sup> Storage capacity can play a role in mitigating intermittent availability, however significant time limitations still exist— and the cost to maximize storage capacity could be prohibitive for many low-income families.

Energy efficiency investments will also reduce demand during evening consumption peaks after the sun has set,<sup>8</sup> which is usually when the costliest and most polluting generation feeds the grid.<sup>9</sup> Energy efficiency paired with PV investments will increase the usefulness of both clean technologies and limit the need for peaker generation.

In addition to reducing emissions and costs, energy efficiency also provides direct benefits to residents by alleviating health concerns often associated with poorly insulated homes and low-income communities. According to Fikru, “air sealing, high-efficient windows, and insulation can reduce drafts and make temperatures more even throughout the home, as well as help prevent mold, mildew, fungal growth, and dust mites. Such benefits cannot be achieved by using solar alone.”<sup>10</sup>

Policymakers and program implementers should exercise considerable care when providing prescriptive solutions in low-income and disadvantaged communities, particularly when tied to potential debt creation for low-income residents. The various solar financing models, even when supplemented by the GGRF, have the ability to place low-income homeowners in long-term contracts that could negatively impact their economic security. Although state net metering policies can be helpful, net metering is not ubiquitous across all states, and where fully available, there is no guarantee that net metering policies will continue in perpetuity.

Energy efficiency investments— including insulation, sealing the building envelope, installing high efficiency equipment, appliances, and smart energy savings controls, replacing windows and doors,

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<sup>7</sup> See <https://www.solaralliance.com/how-do-clouds-affect-solar-panels/>; <https://www.solarreviews.com/blog/do-solar-panels-work-on-cloudy-days-or-at-night>; <https://www.ecowatch.com/solar/do-solar-panels-work-cloudy-days>.

<sup>8</sup> See, e.g., Lawrence Berkely National Lab, “Peak Demand Savings from Efficiency: Opportunities and Practices” (Dec. 2020), available at: <https://emp.lbl.gov/publications/peak-demand-savings-efficiency>; EPA, “Energy Efficiency as a Peak Electricity Demand Resource (2016), available at: [https://archive.epa.gov/epa/sites/production/files/2016-03/documents/background\\_paper\\_5.pdf](https://archive.epa.gov/epa/sites/production/files/2016-03/documents/background_paper_5.pdf).

<sup>9</sup> See, e.g., Clean Energy Group, “The Peaker Problem: An Overview of Peaker Power Plant Facts and Impacts in Boston, Philadelphia, and Detroit” (July 2022), available at: <https://www.cleangroup.org/ceg-resources/resource/peaker-problem/>; RMI, “Cut Costs, Reduce Carbon, and Improve Health with Demand Flexibility” (Sept. 202), available at: <https://rmi.org/cut-costs-reduce-carbon-and-improve-health-with-demand-flexibility/>; Green Energy Consumers Alliance, “Summer Is Coming: Time To Shave The Peak” (June 2019), available at: <https://blog.greenenergyconsumers.org/blog/shave-the-peak-2019>.

<sup>10</sup> Fikru, G., Mahelet, (2021). *Building Residential Rooftop Photovoltaics with Energy Efficiency Upgrades: Does it Really Pay Off?*

and LED technology conversions, will provide additional lifetime savings for homeowners, tenants and businesses. This is particularly important in low-income and disadvantaged communities where energy burden is highest. These investments will also provide the added benefit of reducing health concerns often connected with inefficient housing as well.

We thank EPA for its leadership on these important issues and your support for solar technologies as you begin to implement the \$7 billion tranche. However, to best protect low-income and disadvantaged communities and to achieve the desired emissions, affordability, reliability, and health outcomes, EPA must lead with energy efficiency as part of solar installations. Moreover, pairing energy efficiency retrofits with solar directly addresses the climate urgency recently highlighted by the Intergovernmental Panel on Climate Change (IPCC).

We look forward to our continued work together on GGRF implementation, and if you have questions or need additional information, please do not hesitate to contact Vincent Barnes of the Alliance to Save Energy at [vbarnes@ase.org](mailto:vbarnes@ase.org).

Sincerely,