



The majority of the homes in this neighborhood near Golden, Colorado, have rooftop solar installations. *Photo by Werner Slocum, NREL 66336.*

# Case Study: Forging the Path for Solar in WAP and LIHEAP in Colorado

## Pathways: Rooftop Solar as an Eligible Weatherization Measure in WAP and in LIHEAP

### Solar in WAP

In 2016 the Colorado Energy Office (CEO) began a rooftop solar photovoltaic (PV) pilot with the Weatherization Assistance Program (WAP) Subgrantee Energy Resource Center (ERC) in Colorado Springs. The requirement for U.S. Department of Energy to approve a pilot prior to program-wide approval of solar in WAP has since been replaced by the approval process outlined in Weatherization Program Notice 23-6. As part of this pilot, the U.S. Department of Energy approved CEO to allow ERC to use WAP funds for up to \$1.35/watt for solar installations. The remaining system costs were covered by a \$1/watt upfront incentive from Colorado Springs Utilities. The pilot resulted in four rooftop solar systems installed on WAP client homes.

Following pilot completion, CEO requested and received U.S. Department of Energy approval in 2017 to include rooftop solar PV as a WAP measure statewide.<sup>1</sup> Under Colorado's approval of solar as a WAP measure, rooftop solar PV systems may be up to 7 kW in size. However, after receiving statewide

approval, CEO decided not to use WAP funding for rooftop solar and instead prioritized state and utility funds for solar installations over WAP funds due to availability and relative simplicity of administration.

Currently, WAP Subgrantees use the client intake process to identify homes for solar installations.<sup>2</sup> During intake, rooftop solar may be offered to clients whose homes have adequate solar potential and a roof that requires minimal readiness work to accommodate solar.<sup>3</sup> WAP Subgrantees may use in-house crews or subcontractors to install solar. Colorado allows for Subgrantees to return to homes previously weatherized since 2017 to add rooftop solar, if WAP funds are not used for the solar installation. As trusted community partners, WAP Subgrantees can address client concerns around solar, especially regarding consumer protection. As of 2023, CEO is again exploring the use of WAP funds for solar.

### Solar in LIHEAP

In 2017, Colorado received approval for rooftop solar as a Low Income Home Energy Assistance Program (LIHEAP) weatherization measure.<sup>4</sup> Colorado's annual LIHEAP plan allows for rooftop PV to be an approved weatherization measure under LIHEAP rules and mandates that solar costs may not exceed 25% of LIHEAP funds allocated to weatherization.

<sup>1</sup> Cook, Jeffrey J. and Monisha Shah. 2018. Reducing Energy Burden with Solar: Colorado's Strategy and Roadmap for States. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-70965. <https://www.nrel.gov/docs/fy18osti/70965.pdf>.

<sup>2</sup> CEO, 2023 survey response

<sup>3</sup> CEO, April 7, 2022, interview.

<sup>4</sup> LIHEAP "Detailed Model Plan." [https://liheapch.acf.hhs.gov/sites/default/files/webfiles/docs/CO\\_Plan\\_2017.pdf](https://liheapch.acf.hhs.gov/sites/default/files/webfiles/docs/CO_Plan_2017.pdf).



## Current Program Status

Since 2018, a total of 2,094 kW of rooftop solar has been installed on 846 homes through WAP Subgrantees. CEO planned for 160 homes to receive solar in Program Year 2023, utilizing \$1,832,000 from investor-owned utility benefit service charge funds, and \$310,900 from utility rebates.<sup>5</sup>

Since 2017, a total of 176 homes have received rooftop solar either partially or entirely funded by LIHEAP.

Colorado has found that roughly 10%–20% of WAP homes are suitable for rooftop solar installations, due to factors such as electrical conditions, roof quality, building orientation and shading, and ownership status.<sup>6</sup> The average system size is approximately 4.5 kW, resulting in an average of \$457 electric bill savings.<sup>7</sup> Among Colorado WAP Subgrantees, ERC has installed 70% of WAP rooftop solar projects through 2023.<sup>8</sup>

## Key Takeaways

- Diverse funding sources bring different strengths to a weatherization solar project. Utility funding can be negotiated through regulatory processes, and annual plan provisions for use of LIHEAP and WAP funds for solar can be complementary.
- The flexibility to work with either in-house crews or solar installers provides flexibility for program design. In-house crews can be trained using WAP training and technical assistance (T&TA) funds, and solar creates an additional career development opportunity that supports staff retention.
- Solar installations may involve different subcontractors from the rest of a weatherization job and require interconnection approval from the utility. Both factors can contribute to misalignment between program year closeout and the timeline for completing a job.<sup>9</sup>
- Implementing solar with a limited number of service providers allows for program refinement before expanding to all Subgrantees.

<sup>5</sup> CEO, 2023 survey response.

<sup>6</sup> Energy Resource Center, April 11, 2022, interview.

<sup>7</sup> Energy Resource Center, 2022 survey response.

<sup>8</sup> Energy Resource Center, April 11, 2022, interview.

<sup>9</sup> CEO, April 7, 2022, interview.