Stacking Different Colored Legos – Providing Homeowners with Incentives to Build Equitable Decarbonization

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ABSTRACT

The Inflation Reduction Act (IRA) marked the historic $8.8 billion in funding for residential retrofits rebates with new and expanded tax incentives that together have the potential to help low- and moderate-income households better heat and cool their homes, decarbonize, save money, and increase resiliency to extreme weather. The IRA and the Infrastructure Investment and Jobs Act (IIJA) also provided funding to leverage new financing opportunities to address the expected project balances not covered by the incentives. But policymakers are struggling to marry their existing state and utility programs with these new incentives, worrying about financing for low-income families, and preparing for the inevitable audits of the funding streams with divergent requirements; utilities and regulators are wondering about the impact on their programs and duty to ratepayers; contractors are preparing to discount their bills without submitting re- bates if the rules are too cumbersome. As policymakers work to braid their programs, contractors are hoping that they will have access to simple incentives that will go together without complication. The "color of money" (each federal dollar may have different requirements attached to it, like a different color of **Lego** that needs to stack but cannot be blended) to the states may be different from a requirement, workforce, oversight, and evaluation perspective. However, to the contractor developing the energy efficiency solution for a homeowner, the incentives need to stack like different colored Legos – clearly separate but uncomplicatedly combined on a bill. This paper will explore the incentive stacking from the viewpoint of policymakers and contractors, with the goal of ensuring these federal, state, and utility investments reach their full potential for homeowners and prioritize equitable decarbonization pathways.

Introduction

New federal funds for residential energy efficiency and electrification projects present an unprecedented opportunity to deliver energy and carbon savings to households across the United States while improving the quality of our housing stock, making homes more comfortable, and generating local jobs. Some $25 billion in funding from the 2021 Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act of 2022 (IRA) is intended to boost home efficiency and electrification projects and enable longer-term market transformation so that efficiency gains continue post federal subsidy. By effectively braiding federal funding with existing and new state, local, and private sector resources, policymakers can address the climate crisis along with the challenges of improving housing affordability, energy equity, and resilience. Solutions to these challenges often conflict (such as electrifying an inefficient home that has access to high electric rates and low gas rates), making braiding complicated.

Good program design and implementation are critical to the success of these federal funding initiatives. Policymakers and program implementers engaged in program design and

administration can support the development and growth of a robust market infrastructure (e.g., workforce, affordable financing) to deliver retrofits throughout their communities.

Funding whole-house retrofits is often too expensive for homeowners without access to deep pockets of capital, leading them to defer energy efficiency investments or undertake partial upgrades that don't optimize a home's efficiency (i.e., relacing an HVAC system without upgrading ducts or insulation). Residential retrofit programs can help optimize home performance investments, whether an HVAC replacement or larger home retrofit project by making the combination of these resources easier to understand and simpler to braid. While policies are complicated and have different requirements, contractors sitting across the kitchen table from homeowners have a small window of opportunity to make a high efficiency upgrade make financial sense to the homeowner – and the rebates, tax credits, utility programs, and financing structures need to stack like Legos on the customer invoice or the opportunity will be lost.

IIJA And IRA Funding for New and Existing Federal Programs

An array of federal programs expanded or introduced by the IIJA and IRA provide funding to support residential retrofits through financing, incentives, installation of efficiency measures, workforce training, and program support. Many existing programs received significant additional funding while other new programs were created by these laws, bringing tens of billions of dollars in new funding for residential energy efficiency.

The IIJA and IRA allocated funds for residential retrofits and electrification projects through several new and existing programs to be administered by the Departments of Energy (DOE), Housing and Urban Development (HUD), Health and Human Services (HHS), Interior (DOI), Treasury (specifically the IRS), and the Environmental Protection Agency (EPA). Table 1 summarizes some of the new and existing residential-focused programs, as well as respective funding amounts and issuing agencies.

Table 1. IIJA and IRA funding available for new and existing residential retrofit activity

Program	Funding amount	Agency	New or existing
IRA Sec. 50121: Home Efficiency Rebates (HER, formerly HOMES)	$4.3 billion	DOE	New
IRA Sec. 50122: High-Efficiency Electric Home Rebates (Home Electrification and Appliance Rebates, HEAR)	$4.5 billion	DOE	New
IRA Sec. 50123: Energy Efficiency Contractor Training Grants (HOPE)	$200 million	DOE	New
IRA Sec. 13301: 25C Energy Efficient Home Improvement Credit	Unlimited	IRS	Existing

IRA Sec. 13302: 25D Residential Clean Energy Tax Credit	Unlimited	IRS	Existing
IRA Sec. 13303: 179D Energy Efficient Commercial Buildings Deduction	Unlimited	IRS	Existing
IRA Sec. 60103: Greenhouse Gas Reduction Fund	$27 billion	EPA	New
IRA Sec. 60114: Climate Pollution Reduction Grants	$4.85 billion	EPA	New
IRA Sec. 60201: Environmental and Climate Justice Block Grants	$3 billion	EPA	New
IRA Sec. 80003: Tribal Electrification Program	$145.5 million	DOI	New
IRA Sec. 30002: Green and Resilient Retrofit Program	$1 billion	HUD	New
IIJA Sec. 40502: Energy Efficiency Revolving Loan Fund Capitalization Grant Program	$250 million	DOE	New
IIJA Sec. 40552(a): Energy Efficiency and Conservation Block Grant Program	$550 million	DOE	Existing
IIJA Sec. 40503: Energy Auditor Training Grant Program	$40 million	DOE	New
IIJA Sec. 40107: Smart Grid Investment Grant Program	$3 billion	DOE	Existing
IIJA Sec. 40551: Weatherization Assistance Program	$3.5 billion +annual budget ($366M for FY23)	DOE	Existing
IIJA Sec. 40109: State Energy Program	$500 million + annual budget ($66M for FY23)	DOE	Existing
IIJA Div. J, Title VII: Low Income Home Energy Assistance Program	$500 million + annual budget ($5B for FY23)	HHS	Existing

Source: Saul-Rinaldi and Wiltshire-Gordon, 2024.

Other Funding Sources

In addition to the federal funding from the IRA and IIJA, public and private funding sources are also available for residential retrofit programs and projects. These funding streams can braid with the new funds to expand the number of homes retrofitted, support program delivery, and improve overall program performance and outcomes.

Many of these funding sources are within programs that have extensive experience and can offer technical assistance alongside financial support. Their expertise may cover specific segments of the housing market, different financial tools and services, or address particular retrofit types (e.g. multifamily or single family, whole-house or single-measure). They are also a

diverse set of potential partners for states to work with as they create and expand retrofit offerings. Table 2 provides a summary of some of these retrofit program funding sources.

Table 2. Non-federal funding for residential retrofits

Funding source	Type	Amount	Description
Green banks	Public	$1.5 billion (2021-22)	Flexible financing structures designed to leverage private capital to address gaps in market funding
State/local programs	Public	>$1 billion	Rebates, loans, grants, permit fee waivers, or other incentives offered through state and local programs to encourage efficiency improvements
State/local tax incentives	Public	>$2 billion/year	Income tax credits or deductions, sales tax exemptions, property tax reductions
Utility programs	Private	>$2 billion/year	Customer rebates, financing support, and other incentives account for a reported 55% of roughly $4 billion annual residential and low-income program budgets (CEE 2021)
Health care funds	Public and private	>$1 billion/year	State and local healthy housing initiatives and preventive health funds (including state cost share of federal program dollars); private health insurance and hospital funds
Finance institutions	Private	>$40 billion/year	Private financing from lending institutions (banks, CDFIs, etc.) that must be paid back but can be leveraged for residential upgrades. They may also offer low-interest loans or incentive programs for green improvements.

Source: Amann and Saul-Rinaldi, 2024

Stacking Legos for Residential Retrofit Programs

The funding sources identified above provide resources – different colored Legos – for residential retrofits. But the connective tissue, the requirements for the program (audit procedures, labor sources, reporting timelines, data requested) can be different. Understanding how each of these funding sources can be used and combined with other funding can be challenging.

At the foundation of the Lego stack for a low-income homeowner, every state receives federal funding for WAP and LIHEAP programs; both programs received an infusion of added

funds under the IIJA. For market rate (non-low income qualifying) homeowners, building owners, renters, and builders can pursue federal tax credits. Some states have additional state and local programs supporting residential retrofits and other efficiency upgrades that are a different color of block. All states have access to funding for programs emerging from the IRA and IIJA. As states work to expand or modify their use of existing funds to braid in new resources, the new report *Retrofitting America's Homes: Designing Programs to Leverage Historic Federal Climate Investments with Local, State, and Private Funds to Transform the Existing Housing Stock* recommends starting with the following five steps (Amann and Saul-Rinaldi 2024):

1. Reach out to key constituencies for insights (community members and community-based organizations, contractors working in the field, existing program administrators) into existing gaps to be filled and the strategies needed for successful implementation.
2. Review state policy goals (energy plan, legislative and/or governor initiatives) and identify the existing programs aiming to achieve these goals. Review these programs to determine gaps and where expansion and program coordination are needed to achieve policy goals.
3. Identify what, if any, limitations apply to use of new and existing funds (e.g., labor standards, contractor certifications, income qualification, data requirements) as funds with limitations should not be blended with those with fewer restrictions. Identifying these restrictions or requirements will help to bucket the funds accordingly, being mindful that these requirements need to be met in the program spending.
4. Consider how targeted funds (e.g., training grants) could be used to free up less restricted funds that are currently used for that purpose (e.g., SEP or utility funds) or to fill in a program gap. Coordinating with often siloed agencies – housing, public health, energy, environment, commerce – can also improve outcomes. A set of principles for collaboration and/or formal MOUs can assist agencies in sharing resources.
5. Identify which of the eight elements of successful retrofit programs (discussed in the next section) are already included in existing program design. Identify those not included and determine how each of the available funding streams could be utilized to improve outcomes by addressing gaps in current program offerings (for example, low-income multifamily), allowing for increased participation and/or increased spending per project (e.g. financing opportunities), or creating new options.

These five steps need to take into consideration the funding sources available. While not all of these funding sources are a part of the individual project cost (Lego stack) for the homeowner, they do make up the building of the program that supports that project. Creating ease and opportunity for a homeowner requires the complicated marrying of programs so that what emerges are simple and accessible. There are eight key program elements needed to build the foundation of programs that will allow for useful and efficient project development for a homeowner. These project elements include:

- Providing training and workforce development opportunities;
- Delivering affordable financing;
- Offering rebates and incentives;

- Prioritizing energy equity and environmental justice;
- Addressing health and safety concerns prior to pursuing home upgrades;
- Ensuring secure access to utility data;
- Incorporating grid flexibility in building efficiency; and
- Planning for long-term market transformation.

The IRA, IIJA, and underlying federal, state and utility programs offer primary and secondary funding streams for these program elements as noted in Table 3.

Table 3. Funding sources supporting key program elements

Program Element	Primary Funding Sources	Secondary Funding Sources
Training & Workforce Development	State-Based Energy Efficiency Contractor Training Grants (IRA Sec. 50123) Energy Auditor Training (IIJA Sec. 40503)	WAP (IIJA Sec. 40551, annual federal appropriations) Homeowner Manage Energy Savings (HOMES) rebates (IRA Sec. 50121) Home Electrification and Appliance Rebate (HEAR) (IRA Sec. 50122) Career Skills Training "CST" (IIJA Section 40513) State workforce development programs Utility-funded training
Affordable Financing	EERLF (IIJA Sec. 40502) GHGRF (IRA Sec. 60103) GRRP (IRA Sec. 30002)	EECBG (IIJA Sec. 40552(a)) SGIG (IIJA Sec. 40107) SEP (IIJA Sec. 40109, annual federal appropriations) Green Banks Housing trust funds Utility funds
Rebates/Incentives	HOMES (IRA Sec. 50121) HEAR (IRA Sec. 50122) 25C (IRA Sec. 13301) 25D (IRA Sec. 13302) GRRP (IRA Sec. 30002)	GHGRF (IRA Sec. 60103) EECBG (IIJA Sec. 40552(a)) SGIG (IIJA Sec. 40107) State tax incentives Utility funds
Energy Equity	GHGRF (IRA Sec. 60103) GRRP (IRA Sec. 30002) HOMES (IRA Sec. 50121) HEAR (IRA Sec. 50122) WAP (IIJA Sec. 40551, annual federal appropriations) LIHEAP (IIJA Div. J, Title VII)	EERLF (IIJA Sec. 40502) Housing trust funds Health care funds LIHEAP Utility/State funds

Health & Safety	WAP (IIJA Sec. 40551, annual federal appropriations) WRF (annual federal appropriations) LIHEAP (IIJA Div. J, Title VII)	GHGRF (IRA Sec. 60103) HEAR (IRA Sec. 50122) Health care funds Housing trust funds
Grid flexibility	SGIG (IIJA Sec. 40107) HOMES (IRA Sec. 50121)	WAP (IIJA Sec. 40551, annual federal appropriations) 25C (IRA Sec. 13301)
Data Access	HOMES (IRA Sec. 50121) SGIG (IIJA Sec. 40107)	Utility Capital Expense Utility Operating Expense
Long-Term Success Plan	*ALL SOURCES CAN SUPPORT*	

Source: Amann and Saul-Rinaldi, 2024

Despite the many sources noted here, the rest of the paper will focus on how the new HOMES and HEAR rebate funds can be braided to provide critical stack of capital to a single-family home energy efficiency upgrade (stacked like Legos on the kitchen table).

HOMES and HEAR – Historic Funding, New Legos

The Home Energy Rebate Programs, enacted in the IRA, provide the largest new funding streams for residential buildings to improve home efficiency and electrification. The historic $8.8 billion in funding for these programs has tremendous potential to reduce residential greenhouse gas emissions, while also helping low- and moderate-income households better heat and cool their homes, save money on their utility bills, and reduce overall energy consumption - – setting the stage for renewables and storage to make grids cleaner and more resilient. While $8.8 billion is only a drop-in-the-bucket to meet the need of the over 140 million housing units in the U.S., these rebates provided critical, directional incentives, a foundational step to helping millions of homeowners make more carbon-friendly choices in their home energy investments.

To ensure these investments reach their full potential, the State Energy Offices that are charged with accessing the funding and implementing the rebate programs must coordinate with other federal, state, and utility funds that are also aimed at supporting residential upgrades, including expanded federal tax credits.

The new $8.8 billion of Home Energy Rebates, managed by DOE but implemented by the State Energy Offices, are split into two rebate programs - $4.3 billion for whole-home, performance-based Homeowner Manage Energy Savings (HOMES) rebates (also called Home Efficiency Rebates in recent DOE guidance) and $4.5 billion for the electrification-focused Home Electrification and Appliance Rebate (HEAR) program (originally High-efficiency Electric Home Rebate, or HEAR in the IRA). More than half of the rebates are focused on low-income, or less than 80% Area Median Income (AMI). While some states may choose to focus all their rebates on low-income homeowners, options for moderate income (80%-150% of AMI) and market-rate homeowners (only allowable in the HOMES rebates), make the "stacking" of rebates with either other low-income programs or tax credits, a critical opportunity. Funding synergistic upgrade measures (e.g., insulation and HVAC) across a home project will unlock

maximum decarbonization outcomes while saving consumers the greatest amount of money. However, the more complicated for the contractor, the less likely they will offer the rebates, or braid them with other state or utility incentives.

In reviewing the options for homeowners, it is important to remember that unlike the building of a "capital stack" for multi-million dollar commercial and industrial projects, these decisions are made in a half hour, at the kitchen table. The project is likely focused not on energy efficiency, but on the lack of heating or cooling in the home, and the situation is not planned out in advance, but a comfort emergency. In these dire situations, when the capital available is often unsecured credit card debt, the contractor and homeowner need to build a funding stack of Legos quickly and efficiently.

While the IRA does not allow HOMES and HEAR to both be used to fund the same single upgrade, the law does allow for stacking of these rebates across federal funding sources, including the Weatherization Assistance Program (WAP), provided that "each Federal grant only funds distinct, separable upgrades." Per The DOE Home Energy Rebate guidance (**Version 1.1, October 2023**)[1], HOMES *Measured* Energy Savings rebates **can** be stacked with HEAR at a single address, but **only** for non-energy-saving measures (electric wiring and load service centers).[2] Meanwhile, HOMES *Modeled* Energy Savings rebates can be stacked with **any** HEAR rebate in a home project – again, provided each rebate covers a separate single upgrade. This is to ensure that the energy savings are not attributable to the same project for both rebates.

However, when it comes to the funding provided by states and utilities, DOE guidance "**strongly encourages**" states to design rebate programs in a way that allows state energy offices to creatively combine and leverage various funding streams, —including state, local, utility programs, or philanthropic support. According to guidance, these non-federal funds can cover "any remaining costs for upgrades and individual components of qualified electrification projects beyond the value of the Federal rebate" under both HOMES and HEAR – provided other funding programs also allow for the combining of resources. DOE urges careful accounting, however, noting that "home energy upgrade packages that use multiple Federal grants must braid the funding in a manner that ensures each Federal grant only funds distinct, separable upgrades"[3] and also does not cover more than 100% of the cost of the project (DOE 2024). When considering how to pair these incentives in the same project, **state programs may rely on household income** to best understand what options are available to each state resident.

Although residential multifamily buildings are a vital market in need of home efficiency upgrades, for the purposes of this brief, included below are examples of how to fully maximize the available capital stack for residential energy efficiency and electrification retrofits in existing single-family homes. Such criteria below are broken into three income categories:

[1] DOE IRA Home Energy Rebates Program Requirements & Application Instructions (Version 1.1) here.
[2] Because HOMES rebates require projects to meet certain energy saving thresholds overall, it is more challenging for non-energy saving measures to qualify for HOMES rebates - making potential stacking with HEAR, which does include non-energy saving measures like electrical wiring and breaker box upgrades, more important.
[3] Indeed, in guidance to states, DOE warns any "attempts to claim multiple Federal rebates for the same single upgrade is a violation of Federal law and must be reported to DOE" (p.45 & p.83).

1. **Low-Income Households –** Households at or below 80% of Area Median Income (AMI),[4] including those qualifying for WAP at under 200% of the Federal Poverty Line (FPL).[5]
2. **Moderate-Income Households –** Households between 80% - 150% AMI.
3. **Market Rate Households –** Households with over 150% AMI and/or no income qualification.

Funding options listed will vary state by state based on existing state and utility programs, the status of other federal funding in both the IRA (including the Greenhouse Gas Reduction Fund)[6] and the Infrastructure Investment and Jobs Act (including the Energy Efficiency Revolving Loan Fund Capitalization Grants)[7] - as well as state-level decisions on HOMES and HEAR program design and participation,[8] and each state's rebate program funding allocation.[9] Per October 2023 EPA guidance, forgivable GGRF loans **are considered loans, not grants** – and therefore can be used to cover the remaining balance of a single upgrade after a HOMES or HEAR rebate has been applied (EPA 2023; DOE 2024).[10]

[4] See the U.S. Department of Housing and Urban Development (HUD) 2023 AMI levels here.
[5] See DOE's 2023 WAP income eligibility here. Note, some states utilize their LIHEAP funds to expand on the eligibility and measures supported by their state WAP.
[6] See EPA's GGRF framework here. EPA has also released detailed Notices of Funding Opportunity (NOFOs) for all three subprograms: the $13.97B National Clean Investment Fund (NCIF); the $6B Clean Communities Investment Accelerator (CCIA); and the $7B Solar For All (SFA) competition.
[7] See DOE's EERLF Capitalization Grant Program page here.
[8] Per DOE guidance, "States may choose to implement the modeled path, measured path, or both." (p.34).
[9] See DOE HOMES and HEAR State and Tribal Allocation Amounts here.
[10] See EPA CCIA and NCIF FAQs. Per DOE, "loans from previously granted Federal funds [like GGRF] are not considered Federal grants [and] may be used to finance any remaining costs for upgrades and individual components of qualified electrification and energy efficiency projects additional to and separate from the value of the rebate." (p.45, p.83).

Low-Income Households Below 200% Federal Poverty Line for WAP Eligibility and Below 80% of AMI

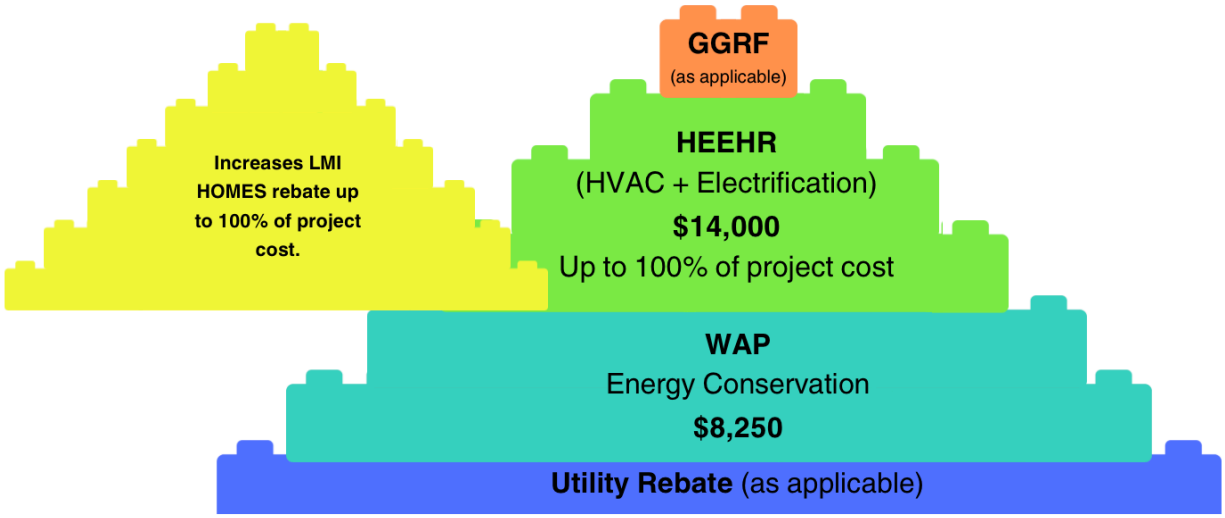

Figure 1. Low-income households below 200% Federal Poverty Line (FPL) for WAP eligibility, and below 80% of Area Median Income (AMI) for maximum HOMES/HEAR rebate eligibility. *Source:* Saul-Rinaldi and Wiltshire-Gordon, 2024.

Low-income families below the 200% FPL should first qualify for the Weatherization Assistance Program to receive up to $8,250 to fully cover cost-effective energy conservation measures.[11] This initial investment can be coupled in the same home with up to $14,000 in HEAR Rebates for up to 100% of the HVAC and electrification upgrades, provided they are not for the same measure(s) – plus any additional support from utility rebates or potential funding in the form of loans or grants provided by GGRF recipients under the National Clean Investment Fund (NCIF), Clean Communities Investment Accelerator (CCIA), or Solar for All (SFA).[12] Importantly, HEAR funds and services must be provided at the point-of-sale or project.

Additionally, a *Modeled* HOMES rebate of $4,000 for 20% improvement or $8,000 for a 35% improvement[13] could be included (up to 80% of the project cost[14]). However, because it would have to be achieved without the same measures included in WAP or HEAR, it would likely be more cost effective for a low-income homeowner to take advantage of the other funding options available if the state does not wish to take advantage of increasing the rebate for low-income HOMES participants. Where the resident qualifies for HEAR (<150% of AMI) and not WAP (200% poverty line), HOMES should be considered. Or, if the state chooses to use (c)(3) in the IRA to "increase rebate amounts for low or moderate-income households," thus allowing a

[11] See DOE's 2023 WAP Adjusted Average Cost Per Dwelling Unit calculation on p.8 here.
[12] All three GGRF categories list energy efficiency retrofits as an eligible expense: NCIF and CCIA projects may include "whole-home retrofits for 1- to 4-family homes and manufactured homes to improve energy efficiency" (NCIF p. 11; CCIA p.12); SFA projects may include enabling upgrades that include energy efficiency measures, up to 20% of the cost (SFA p. 9).
[13] This assumes the HOMES rebate follows the *Modeled* Approach to energy savings and is based on predictions. A *Measured* Approach may provide similar or greater rebate based on an aggregator model and actual savings of at least 15% across a portfolio – but, as noted, only HEAR non-energy saving measures can be combined with HOMES *Measured* rebates.
[14] DOE guidance allows states to request authority to provide even larger HOMES rebates – up to 100% of project costs (p.15).

HOMES rebate to cover up to the full costs of an LMI upgrade, after taking advantage of the other resources WAP or utility programs. However, to take advantage of an LMI increase for HOMES rebates, the homeowner must be <80% of AMI.

Tax incentives are a less effective option for many low-income homeowners, because many lack the tax liability needed to claim a credit.[15] Even without HOMES or the tax incentive, ***low-income households could receive at least $22,000 in potential federal support*** *(also not including utility rebates, GGRF dollars, or an increase in HOMES rebates for LMI).* We do not include financing in this section (beyond potential forgivable loans issued by GGRF NCIF or CCIA grant recipients), since the ability to qualify and provide debt repayment is particularly challenging for low-income residents.

[15] According to the National Bureau of Economic Research (NBER), from 2005-2012, just 11 percent of the benefits from previous iterations of the 25C and 25D (Residential Energy Efficient Property Credit) tax credits went to taxpayers making under $40,000 per year. Taxpayers making under $20,000 per year received just one percent of the benefits. In contrast, 62 percent of the benefits went to taxpayers making over $75,000 per year. National Bureau of Economic Research, "The Distributional Effects of U.S. Clean Energy Tax Credits." https://www.journals.uchicago.edu/doi/epdf/10.1086/685597. 211.

Moderate-Income Households Between 80% - 150% AMI

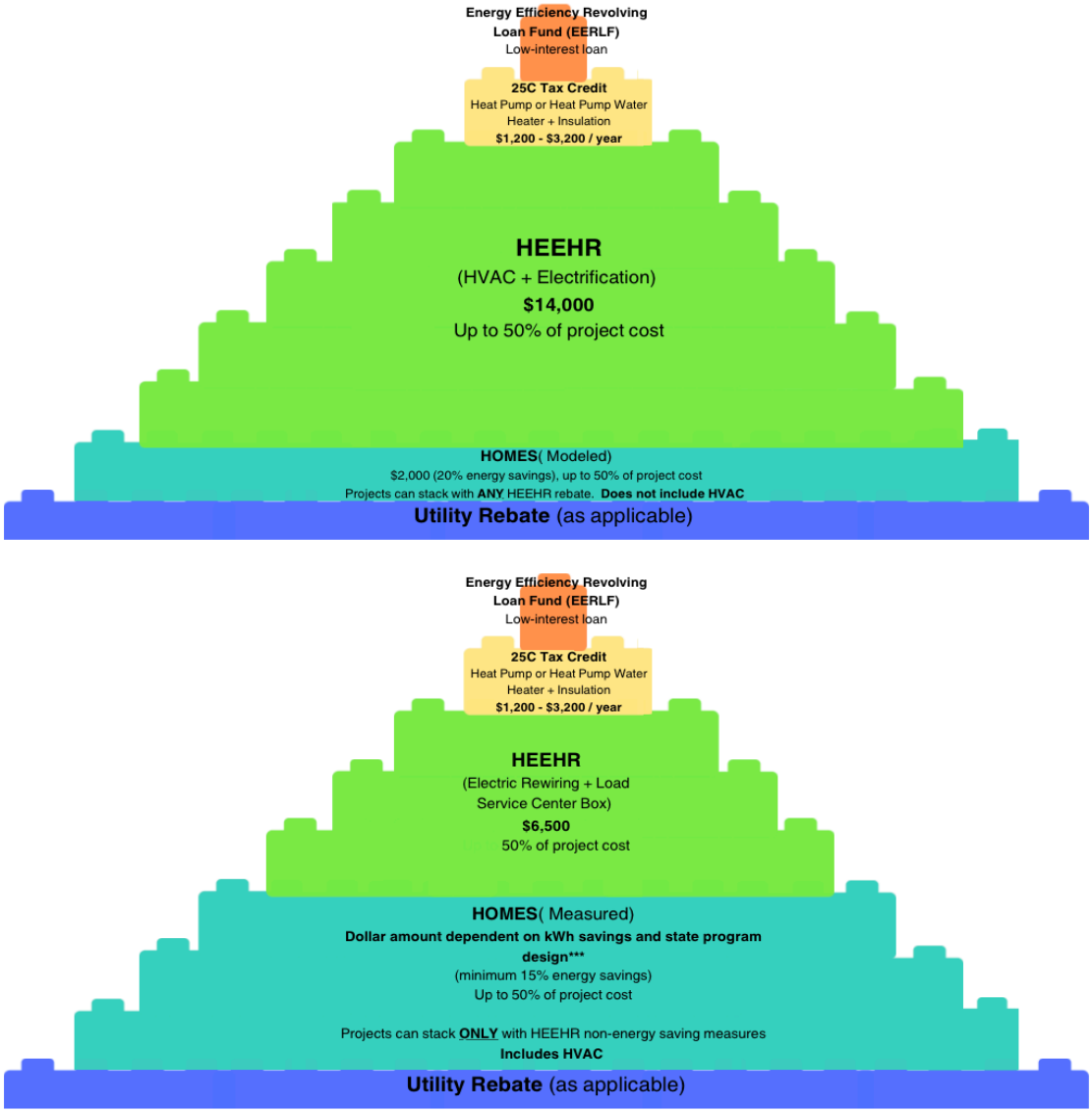

Figure 2. Moderate-Income Households Between 80% - 150% AMI. *Source*: Saul-Rinaldi and Wiltshire-Gordon, 2024.

Moderate-income households will be able to recover up to 50% of the costs of their electrification projects with HEAR Rebates and receive 30% of the remaining balance of the cost of key equipment with the 25C tax credit when they file their taxes (up to a $3,200 maximum annual credit). To combine *Modeled* HOMES[16] and HEAR rebates in the same home, the

[16] An ENERGY STAR natural gas furnace/propane/oil furnace also could potentially qualify for both HOMES (*Modeled* and *Measured* approaches) and a 30% tax credit (up to $600) via the 25C tax credit. If not using energy saving HEAR measures, the HOMES *Measured* approach should be considered and has more flexibility on the size of the rebate.

contractor will need to use a model that has been calibrated with the home's utility data to affirm that measures from the HOMES rebate alone are predicted to save at least 20% of the energy usage.[17] States including high-efficiency gas HVAC as an allowable HOMES measure may also consider the HOMES *Measured* or *Modeled* Energy Savings approaches.[18] The 25C tax incentive can still be applied to the balance of the upgrade costs.

HOMES and HEAR rebates cannot cover more than 50% of the project cost for this income bracket, nor can their measures overlap. Critically, this analysis assumes states will offer HOMES and HEAR rebates to moderate income households - although moderate income households are included in IRA statute under both programs, DOE guidance allows states to limit both HOMES and HEAR programs to only households with under 80% AMI.

The chart on the previous page shows two different pathways moderate-income households can take, stacking either the HOMES *Modeled* or *Measured* approaches with HEAR and other incentives. The path to the left assumes a project is electrification-focused, reaches the maximum HEAR project cap, meets at least the 20% *Modeled* energy savings HOMES program requirement, and costs over $32,000 – which would enable a ***moderate-income household to potentially receive some $19,000*** in federal incentives when stacked. The path to the right charts an electrification-focused project that uses non-energy saving HEAR measures and assumes deep energy savings using the *Measured* HOMES rebate with a total project cost over $21,000 – which could enable a moderate-income household to receive more than $13,700 in federal incentives.[19] Alternately, a project focused on high-efficiency gas HVAC could achieve $5,200 - $11,700 in federal support. Per DOE, projects may also use low interest loans and utility rebates. In fact, DOE guidelines affirm that any loans from DOE EERLF, GGRF, and HUD "are not considered Federal grants in that the recipient household receives these programs as financial products rather than as grants or rebates". Therefore, these programs may be used to support projects that leverage the value of the rebate to finance any remaining costs for upgrades and individual components of qualified electrification and energy efficiency.

[***] Depending on state plan design, households can pursue *Measured* Energy Savings, a pathway relies on granular energy savings and features a **$2,000** payment rate per kilowatt hour saved equal to a **20 percent** reduction for the average home in the state, up to **50 percent** of project cost (minimum 15% energy savings). With no dollar cap, this has the potential to result in larger rebates. Rebate amounts will vary per state and aggregator business model.

[17] In the moderate-income chart, the scenario to the left assumes that since HEAR offers much more generous HVAC rebates, households would pursue HEAR for HVAC upgrades and use the HOMES *Modeled* approach for other home energy savings. As a result, this scenario also anticipates that moderate-income households would likely pursue the 20% *Modeled* energy savings tier, since achieving the 35% *Modeled* energy savings tier on a HOMES project without any HVAC upgrades would be challenging.

[18] DOE allows states to restrict HOMES rebate eligibility to solely electric HVAC upgrades (see DOE Home Energy FAQ #25 – "States may choose to provide rebates for all, or some, of the allowable products"), though per IRA statute HOMES is performance-based and fuel neutral.

[19] This figure is approximate. As noted, HOMES *Measured* rebate amounts will vary per state.

Market-Rate Households Over 150% AMI

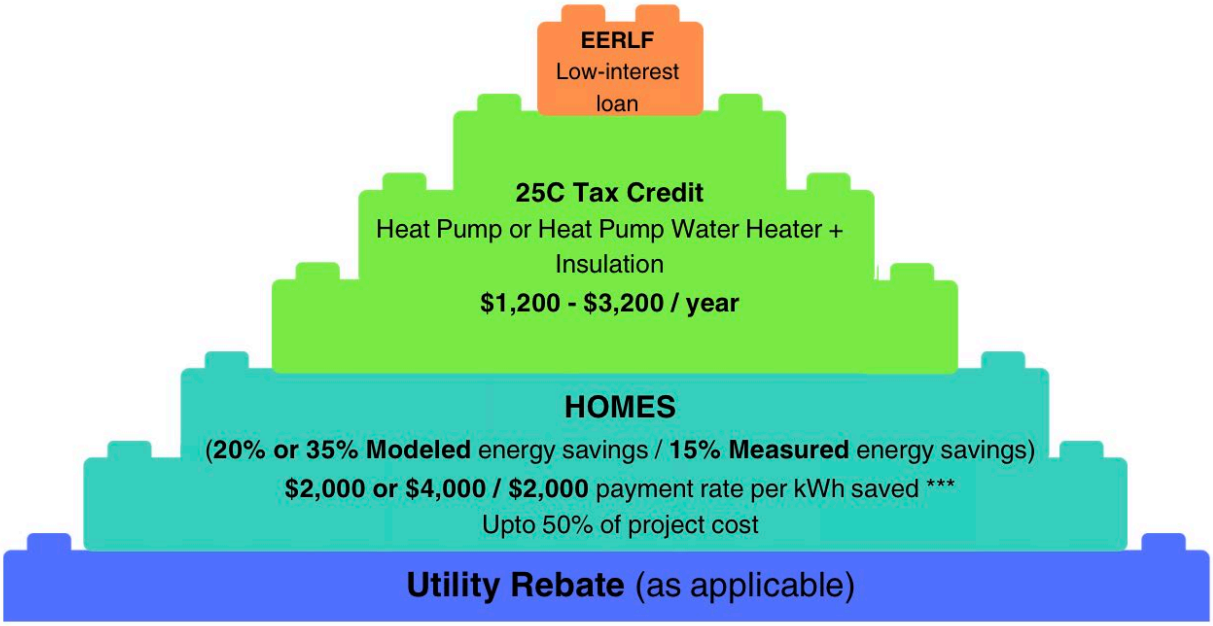

Figure 3. Market-rate households over 150% AMI / no income qualification. *Source*: Saul-Rinaldi and Wiltshire-Gordon, 2024.

Market-rate homeowners, while not income-qualifying for support from HEAR, are still a critical part of the public policy solution to address climate change, enhance grid reliability and meet essential decarbonization goals. In addition to any utility rebates, programs should incentivize these households to invest heavily in high-efficiency HVAC, electrification, and insulation. By undertaking a home performance retrofit that saves at least 20% of household energy use under the *Modeled* approach, market-rate households can receive up to $2,000 from a HOMES[20] rebate, and up to $4,000 for measures that achieve over 35% energy savings. Under the *Measured* approach, aggregators can provide rebates for actual energy savings and not be subject to the $2,000 or $4,000 caps, provided their portfolios achieve at least 15% energy savings on average from the baseline year.[21] Additionally, a homeowner may receive up to $3,200 annually off their tax bill for the qualifying products included in an annual retrofit. (Critically, the IRA makes 25C an annual credit, meaning eligible taxpayers can claim it every year for new improvements (but cannot carry the credit forward to future years). If high-efficiency gas HVAC is included in the state's HOMES program, some households might not take advantage of the 25C $2,000 heat pump tax incentive – though these households could still pursue the 25C credit of 30% up to $1,200 for building envelope and efficiency upgrades.

Market-rate households could potentially receive over $7,200 in incentives – while this may be a fraction of the cost of the upgrade, the total provides a key incentive for households to

[20] An ENERGY STAR natural gas furnace/propane/oil furnace also could potentially qualify for both HOMES (*Modeled* and *Measured* approaches) and a 30% tax credit (up to $600) via the 25C tax credit.
[21] Unlike the *Modeled* energy savings pathway, the *Measured* energy savings pathway does **not** have a statutory dollar cap, and features additional flexibility, since the rebate is offered by an aggregator that could potentially rebate more than the *Modeled* rebate dollar amounts. Importantly, both the *Measured* and *Modeled* pathways have a cost cap equal to 50 percent of the total project cost.

perform more efficient, electric, and climate-friendly upgrades. If installing gas HVAC, the total incentive could amount to **$5,200** (since the heat pump / heat pump water heater tax credit would not be used). Furthermore, market-rate households may be able to access low interest loans and additional utility incentives because they are pursuing clean home energy upgrades that support grid stability. Similar to the moderate-income section above, this analysis assumes states will offer HOMES rebates to market rate households - although households of all income levels are included in IRA statute under HOMES, DOE guidance allows states to limit HOMES programs to low and/or moderate-income households.

Conclusion

The IRA and IIJA are providing unprecedented opportunities for states to leverage the funding and programs they currently maintain while offering new and deeper energy savings opportunities in the residential sector. What these opportunities look like will vary widely depending on the state, their existing policies, programs, contractors, and politics. While some states have access to deep funding streams from rate-payer funded programs, government agencies with staff that have a deep understanding and history in clean energy, and clear access to secure energy data – other states have no existing clean energy programs, few energy staff, and are building new programs from scratch. These states with less history are also less burdened by past decisions and precedents in building their future policies and innovations. Importantly, the new federal resources aim to meet states where they are and move all states forward. This paper aims to help assess where they are and build on their unique paradigm.

At the outset of absorbing the new resources, states are already choosing to:

- Reach out to contractors, community organizations, and program administrators to find the gaps that existing programs are not adequately serving;
- Review state energy policy goals to ensure that the new initiatives are consistent with policies designed for the state's current challenges;
- Identify the expectations of existing programs in their state portfolios to use new funding streams to stretch goals and provide deeper, broader reach while supplementing and not supplanting the current programs; and
- Coordinate with other agencies to break silos and find staff and funding that can be leveraged, comparing funds and their limitations to target funds according to their most efficient and best use.

And working to build successful programs by:

- Providing training and workforce development opportunities;
- Delivering affordable financing;
- Offering rebates and incentives;
- Prioritizing energy equity and environmental justice;
- Addressing health and safety prior to home upgrades;
- Ensuring secure access to utility data;
- Incorporating grid flexibility in building efficiency; and

- Planning for long-term market transformation.

The new federal resources are an important opportunity for states to not only upgrade a large portion of America's homes but also to educate Americans about home energy efficiency and decarbonization. Changing how people think about the homes they live in and their energy consumption, increasing data flows to assist measuring energy savings, and providing attention to overlooked energy consuming appliances will support all states in supercharging their existing programs and building a new future for homeowners. Contractors that have invested in training because incentives can only be offered by a skilled workforce will use that knowledge long after the IRA and IIJA funds have expended. The ultimate legacy of these new federal resources is the creation of self-sustaining and growing markets for energy efficiency products that will emerge from these successful, well-designed, innovative programs.

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