Making the Most of the Federal Home Energy Rebates

Strategies to Lower Bills, Increase Comfort, and Transform Markets Through Smart Program Design

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Glossary of Acronyms:

- **A4E:** Adaptive for Equity
- **AMI:** Area Median Income
- **ASHRAE:** American Society of Heating, Refrigerating and Air-Conditioning Engineers
- **BPI:** Building Performance Institute
- **BTM:** Behind-the-meter
- **BTU:** British thermal units
- **CBP:** Community Benefits Plan
- **CCIA:** Clean Communities Investment Accelerator
- **DEI:** Diversity, equity, & inclusion
- **DG:** Distributed generation
- **DOE**: Department of Energy
- **DR/DER**: Distributed energy resource
- **EE:** Energy efficiency
- **EV:** Electric vehicle
- **FERC:** Federal Energy Regulatory Commission
- **GGRF:** Greenhouse Gas Reduction Fund
- **GW:** Gigawatt
- **HEAR:** Home Electrification and Appliance Rebates Program (also known as HEEHR or HEEHRA)
- **HOMES:** Homeowner Managing Energy Savings
- **HVAC:** Heating, ventilation, and air conditioning
- **IIJA:** Infrastructure Investment & Jobs Act
- **IRA:** Inflation Reduction Act

- **ISO:** Independent System Operator
- **kWh:** Kilowatt-hour
- **LIHEAP:** Low-Income Home Energy Assistance Program
- **LMI:** Low-and-moderate income
- **MW:** Megawatt
- **NCIF:** National Clean Investment Fund
- **PUC:** Public Utility Commission/Commissioner
- **RTO:** Regional Transmission Organization
- **SCEP:** Office of State & Community Energy Partnerships
- **SEFI:** State Energy Financing Institution
- **SEO:** State Energy Office
- **VPP:** Virtual power plant
- **WAP:** Weatherization Assistance Program

Executive Summary

The Inflation Reduction Act (IRA) provides approximately $8.6 billion in total for the Home Efficiency Rebates and the Home Electrification and Appliance Rebates Programs ($4.3 billion each). Over the next fifteen months, these funds will be distributed to every state across the country through a formula funding process. While Congress and DOE have attached some requirements to these funds, state energy offices (SEOs) are responsible for designing specific rebate programs. They will decide which households receive rebates, which technologies they finance, and how the rebate programs serve larger public policy goals.

This guide is designed to help states meet this responsibility and serves as a complement to the detailed guidance released by the U.S. Department of Energy (DOE) this summer. It is informed by the experience and expertise of companies, advocates, and industry experts working in the efficiency, electrification, and distributed energy resource (DER) space. Section One discusses two central goals for these rebate programs articulated by Congress and DOE - reducing household energy burden, and catalyzing market growth in the residential energy sector - and the obstacles to achieving these goals. Section Two provides a quick overview of the twin programs – requirements, options, and applications deadlines. Section Three places the Rebate programs within the context of a larger set of incentives and resources. $8.6B may seem like a lot of money but spread across the states and tribes it is quite finite. One of the challenges faced by SEOs will be finding ways to stretch these funds by stacking, braiding, and substituting them with other incentives and resources. This section dives into that challenge, detailing complementary federal tax provisions, energy assistance programs, and funding mechanisms. While the rules, and practical considerations, about how these resources may be used in conjunction with the Home Energy Rebates can be complex, the takeaway is clear: Federal resources and incentives, as well as those from the state and utility, should be utilized to optimize the Home Energy Rebates.

Section Four brings the information in the first three sections together with our expertise to produce a set of 25 recommendations intended to help SEOs design rebate programs that meet the DOE requirements, maximize bills savings, and stretch funds to serve as many homes as possible, while helping catalyze a larger market for DERs. Below we've summarized those 25 recommendations across nine clusters that track the subsections of Section Four:

- To **Get Started**, SEOs should review existing state rebate programs to see if they might be "Quick Start" eligible. They should also ensure they're fully aware of the efficiency and electrification programs offered by utilities, and work to proactively build trust in communities – especially disadvantaged communities – they intend to serve.

- As states consider which **Technologies and Upgrades to Prioritize** for rebates, they should start with an analysis of household energy burdens. Despite regional variation, space heating and cooling consistently lead household energy use, so we recommend focusing there first, followed by water heating. Rebate programs should also cover technologies that automate household energy use and enable remote management.

- Serving **Low-Income Households** is a significant priority of the rebates. States should devote more than 40% program funds towards these households. Sequencing WAP funds and Appliance rebates, states can fully finance household retrofits while using LIHEAP dollars to address arrearages, an acute issue for this constituency. Finally, enrolling these households in high bill alerts will help avoid future bill shock.

- With more financial resources, **Middle-Income Households** present policymakers with more options, but also limitations as the IRA shrinks the share of project and appliance costs the rebates can cover. We recommend sequencing the rebates to maximize their efficacy, stacking residential tax credits (e.g. 25C&D) to further reduce costs, and establishing or expanding state financial institutions to provide low-interest loans.

- **Multifamily buildings** present their own set of challenges and opportunities when it comes to program design. Given the opportunity to provide benefits at scale, we recommend SEOs devote a substantial share of Rebate funds to them (more than the 10% minimum established by DOE), focusing particularly on buildings with shared systems and ensuring the building owners stack relevant tax deductions (e.g. 179D).

- To maximize program efficacy, policymakers should also consider **Additional Supportive Policies**. Ensuring that program implementers and third-party service providers have the data they need to effectively serve households, while protecting consumer information, we recommend an “opt-out” process around data access. States should also apply for contractor training grants from the DOE to help train a well-equipped workforce to undertake efficiency projects and install electric appliances.

- State policymakers also have to choose where to focus rebate dollars: **New Construction vs. Retrofits** for existing households. Given the growing economic case for all-electric new construction, and the 45L tax credit to further improve project economics, we recommend rebate funds are focused on retrofits for existing homes.

- Program design should complement the ongoing **Residential Energy Transition**. In states where policymakers are already planning for the future of natural gas and / or where communities are committed to residential electrification, rebates should help low- and middle-income households make the transition away from gas. In other states, rebates should focus on enabling the transition off of delivered fuels.

- To unlock the full value of residential efficiency and electrification, policymakers should also ensure broader state policies enable **Virtual Power Plants (VPPs)**. SEOs should engage with state utility regulators around related policies and regulations. Regulators should, in turn, help to catalyze VPP growth through open retail markets, and work with regional RTOs / ISOs to ensure FERC Order 2222 is effectively implemented, enabling DER participation (and thus VPPs) in wholesale markets.

About the Authors

Advanced Energy United educates, engages, and advocates for policies that allow our member companies to compete to repower our economy with 100% clean energy. We work with decision makers at every level of government as well as regulators of energy markets to achieve this goal. The businesses we represent are lowering consumer costs, creating thousands of new jobs every year, and providing the full range of clean, efficient, and reliable energy and transportation solutions. The U.S. market for advanced energy products and services reached nearly $375 billion in 2022. Together, we are united in our mission to accelerate the transition to 100% clean energy in the United States.

Rewiring America is the leading electrification source, focused on electrifying our homes, businesses, and communities. Our world-class team develops accessible, actionable data and tools. We're the conduit for Americans to achieve energy efficiency, tackle nationwide emission goals, improve health, save money and build the next generation of the clean energy workforce. We believe in an abundant, flourishing, climate-safe future, and know that, together, we can realize one.

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While a wide range of industry leaders and sector experts contributed to its development, the information and recommendations in this guide are representative of United and Rewiring as a whole and should not be attributed to any specific member company or affiliated organization.

Introduction

Among its numerous provisions and incentives, the Inflation Reduction Act (IRA) created two particularly notable rebate programs: the Homeowner Managing Energy Savings or HOMES Program (referred to hereafter as the **Home Efficiency Rebates Program**) and the High-Efficiency Electric Home Rebate or HEEHRA Program (referred to hereafter as the **Home Electrification and Appliance Rebates Program**). The Act budgeted approximately $4.3 billion for each program to be allocated to each State Energy Office (SEO) via formula funding.

These twin programs are designed to improve residential energy efficiency and lower energy bills for low- and middle-income Americans by reducing (even eliminating) the upfront cost of residential energy efficiency and electrification projects. They are also intended to grow demand and catalyze markets for products such as heat pumps, induction stoves, heat pump water heaters, and efficiency services. If implemented successfully, these programs should spur long-term growth for these products and services well after federal funds have been exhausted.

The U.S. Department of Energy's (DOE) Office of State and Community Partnerships (SCEP) is charged with implementing these programs. On July 27, SCEP released finalized guidance regarding the programs and issued detailed instructions regarding the state application process. SCEP's finalized guidance was effectively the "starting gun" for the state application process. Once states apply and receive their funding, it is then the responsibility of SEOs and their implementation partners to provide rebates for whole-home energy retrofits and home electrification upgrades in single residences and multi-family dwellings.

This guide is intended to serve as a complement to SCEP's guidance. As state energy leaders go about developing state-specific rebate programs and crafting applications that comply with the parameters of the **Home Efficiency** and **Electrification and Appliance Rebates Programs** (collectively referred to hereafter as the **Home Energy Rebate Programs**), they will face several substantive decisions. Drawing on the expertise of the advanced energy industry and the electrification community, this guide is intended to provide context and recommendations that inform such decision-making.

The following four sections lay out a comprehensive overview of the Home Energy Rebate Programs and their goals, place them in context with broader home energy incentives, and provide United's recommendations for state-level implementation.

Section 1 describes the rebate programs' goals for reducing the energy burden for disadvantaged communities and for creating a market transformation in the home energy

sector. This section also addresses potential stumbling blocks that decision makers may encounter along the way.

Section 2 includes the information states will need to set up and sustain successful rebate programs. It also outlines the program components, requirements, and application deadlines. Here, we also include information on SCEP's associated Contractor Training Grant Program from which states can seek funding to bolster their implementation efforts.

Section 3 contextualizes the Home Energy Rebate Programs among the broader landscape of federal and state incentives for homeowners to electrify and weatherize their homes. While the Home Efficiency and Electrification Rebate Programs *cannot* be combined for the same measure, they *can* be stacked (or "braided") with a variety of existing tax credits, state-based rebate programs, and other financing mechanisms to maximize their impact. Here, we provide specific examples of federal tax credits, longstanding weatherization programs, and common state-based financing solutions that decision makers can direct homeowners to.

Finally, **Section 4** provides our specific recommendations for state decision makers to use throughout the implementation process, from applications to program funding renewals. These are holistic recommendations that we believe will strengthen program design, ensure long-term success, and meet the goals of each program by reducing energy burdens on disadvantaged communities and catalyzing market transformation.

Section 1: Home Energy Rebate Program Goals

In their guidance, SCEP articulates a short list of overarching goals for the rebate programs, including: (1) lowering the energy burden for low-income and disadvantaged households; and (2) sustaining the transformation of the market for residential energy efficiency and electrification, so that these projects and retrofits might continue beyond the end of federal financing. This guide is crafted to help state leaders fully understand these goals (and their obstacles) and design state-specific programs to achieve them. This section briefly unpacks what these goals entail.

1.1) Serving Low-Income & Disadvantaged Households

Low-income households are positioned to see the greatest benefit from efficiency upgrades and new electric appliances. With limited budgets, energy bills that may be bearable for other consumers are a significant burden for them. Moreover, these households are more likely to lose energy to poor insulation and inefficient appliances, which only exacerbates their energy burden. The end result: Low-income consumers spend the highest percentage of income on energy bills of any income bracket, due to lower levels of overall income and energy losses in the home.[1]

Despite the enormous opportunity these programs provide, effectively reaching low-income consumers and ensuring they can access efficiency upgrades and electric appliances is a challenging proposition. Successful implementation of the Home Energy Rebates will necessitate addressing the challenges detailed below to ensure that these households receive the support they need:

- **Limited Access to Cash or Credit:** Even if low-income households could internalize all the benefits of making efficiency upgrades and/or purchasing more efficient, electric appliances, they often lack sufficient access to cash or credit to do so. The upfront cost to replace appliances can be prohibitive and sometimes energy-efficient or electric appliances are more expensive than their inefficient counterparts.[2] More than one-third of Americans lack the cash on hand to pay for a $400 emergency, much less an optional energy efficiency upgrade.[3] Arrearages on energy bills, discussed in greater detail below, only exacerbate this challenge.

The traditional approach to meeting this capital need is by issuing loans that require consumer credit checks and the creation of new debt obligations, neither of which may be feasible for

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4819331/.
[2] https://www.energystar.gov/about/how_energy_star_protects_environment/energy_efficiency.
[3] https://www.energystar.gov/products/inclusive_utility_investment.

customers already underwater with existing payments.[4] Further, many energy efficiency upgrades cannot be easily financed because building codes can prohibit or limit a lender's ability to claim certain tangible goods like building insulation as collateral – in other words, certain upgrades cannot be removed from a building once installed and, without tangible collateral, traditional debt financing can be difficult to arrange.

- **Split Incentives:** Split incentives occur where the benefits of a transaction do not flow to the party that bears the costs. For example, rental households are typically responsible for paying their utility bills (and therefore would save money if they could lower their energy usage), but property owners are responsible for purchasing the appliances that drive energy usage. Although it would benefit renters to have more efficient appliances, there is no incentive for owners to bear higher costs to purchase them. Nor is there an incentive for renters to front costs for long-lived assets that may not pay off while they are living at the property. Low-income households are affected by this issue disproportionately because they are more likely to be renters.

- **Income Verification:** Verification of household income to determine eligible, if done poorly, could be a barrier to consumers participating in these rebate programs. It's important that these rebate programs use categorical eligibility to establish that a consumer meets income eligibility requirements. For categorical eligibility, customers should be able to confirm their eligibility based on the fact that they participate in an existing program such as SNAP. There are existing benefit programs whose eligibility requirements would ensure that a household is also eligible for the HOMES and HEEHRA rebate programs. For low- and moderate-income customers that are not already participating in an existing benefit program, income verification should be made simple to ensure that income verification requirements do not prevent qualified consumers from participating.

- **Energy Bill Arrearages:** Many low-income customers have also experienced arrearages or power shutoffs due to late payments, a problem that has been exacerbated in recent years by the pandemic, high heating costs, and overall inflation.[5] Ironically, it is precisely the sort of upgrades and efficient appliances funded by the Home Energy Rebate programs that these households need to address their ongoing

[4] https://www.energystar.gov/products/inclusive_utility_investment.

[5] Over 20 million U.S. low-income households (one out of six) were behind in their electric bills in early 2023, and about 13 million were behind on their gas bills in the same period. These arrearage rates, having increased about 1% in the past year, are possibly the highest on record and potentially will continue on an upward trend. Further, according to a study by the Center for Biological Diversity, families in the U.S. (data for 33 states and D.C.) have had their electricity shut off more than 3.5 million times since the beginning of the COVID-19 pandemic due to energy debt.

energy poverty. But when immediate energy bills are already burdensome, it is difficult to encourage households to adopt new programs focused on long-term savings.

- **Existing Fuel Mix:** Energy burden and the key drivers of energy burden vary across climates. In some regions, like the Northeast, a disproportionate share of low-income residential dwelling units rely on fossil fuels for their primary heating source. This can make these homes even more susceptible to large price shocks. DOE's LEAD tool can be utilized to identify fuel mixes by income level.[6]

- **Information Constraints:** Information constraints further limit opportunities to reach low-income households. Participating in energy efficiency programs requires both knowledge about the program itself and about home energy usage, such as the type of water heater a building uses. In addition to not having information readily available if they are renters, low-income customers often lack the time to undertake research on available programs and household energy data.[7] Distribution channels also matter. At least 15 million Americans lack access to high-speed Internet.[8] When programs rely exclusively or primarily on the Internet for advertising and enrollment, they risk excluding key target customers. The same is true for programs only offered in English. The Census Bureau's American Consumer Survey reports that 8.3% of the total U.S. population "speak[s] English with limited proficiency."[9] Reaching these customers requires not only meaningful and consistent outreach and communications that provide program information in multiple languages, but also providing interpreters for related customer-facing interactions, such as program evaluations and home assessments.

- **Trust:** Earning customer trust is essential to reaching low-income households. A survey of 1,500 residential customers identified lack of trust as one of four primary barriers to reaching program nonparticipants.[10] Past experiences with utilities, contractors, and other project implementers can contribute to a lack of trust in some communities, particularly low-income and disadvantaged communities. Consumers in these communities report a lack of listening, understanding and responsiveness to multiple interrelated needs (e.g., health, safety, and housing), singular focus on cost effectiveness measures, low to non-existent transparency and reliability in delivery of service to vulnerable customers, and low customer control over their bills, among others. Misconceptions about new technologies (e.g., heat-pumps) and how they operate, as well as mistrust of contractors and the real bill savings from proposed projects, can all feed into a lack of trust. State leaders should work to get ahead of this

[6] https://www.energy.gov/scep/slsc/lead-tool.
[7] https://www.aceee.org/research-report/b2301.
[8] Ibid
[9] Ibid
[10] https://illumeadvising.com/files/Residential-Nonparticipant-Market-Characterization-and-Barriers-Study.pdf.

important, but tough-to-tackle, obstacle with proactive and equitable outreach strategies, as discussed further in this guide.

1.2) Market Transformation

The Home Energy Rebate funds may look substantial at first glance, but spread across 50 states, tribes, and millions of households, they are remarkably finite. Finding ways to stack, braid, or otherwise complement these rebates with other funds, incentives, and financing mechanisms, as discussed in Section 3 of this report, will be key to stretching rebate dollars. Within the decade (at the latest) federal funds for these two rebate programs will be exhausted.

In addition to the aim of serving low-income households, state leaders need to consider how design, implementation, and marketing of the Home Energy Rebates can help catalyze a market for residential efficiency services and electrified appliances that will continue and thrive after the end of these programs. Indeed, detailing how they plan to enable such a market transformation is a DOE requirement SEOs must meet, as described in Section 2.1 below. What does it take to build a durable market for residential efficiency and electrification? While there's no one "right" recipe, below we've identified a set of key ingredients based on our experience working in states across the country:

- **Financing:** A durable market fundamentally requires that consumers are able to purchase the goods and services offered. Although efficiency and electrification demonstrate a clear return on investment over the medium- to long-term through lower energy bills, the upfront costs of retrofits, upgrades, and appliances is challenging for middle-income consumers and virtually prohibitive for low-income consumers. As detailed in this guide, the Home Energy Rebate programs offer states the opportunity to strengthen financing for efficiency and electrification by raising consumer awareness of additional federal and state incentives and establishing or expanding state-level financing programs for clean energy.
- **Workforce:** A skilled and certified workforce is essential to growing and sustaining energy efficiency and electrification businesses. Workforce shortages have been a key limiting factor in the growth of the advanced energy industry writ-large, and that's certainly true within these subsectors. These experts are a key channel for customer outreach and education: installers and technicians with an understanding of the latest technologies, upgrades, and financing programs can help steer consumers towards the best and most cost-effective efficiency upgrades and electric appliances. As detailed below, the Home Energy Rebate programs, along with other IRA funds, can help support the training and certification of this workforce.

- **Full Value Realization:** Individually, energy efficiency upgrades and high-efficiency electric appliances can lower household energy burden, improve resilience, and benefit indoor air quality. Aggregated together and dispatched via demand response, these technologies can also provide a host of grid benefits that protect consumers, such as boosting resilience, supplying ancillary services, reducing energy production costs, and defraying transmission and distribution costs. For more detail on these grid benefits, see ***Grid Benefits of Aggregated Efficient & Electrified Technologies*** in the Appendix. These value streams strengthen the business case for efficiency and electrification services, drawing additional private capital and business into the space. Enabling these value streams begins with demand response (DR) technologies, many of which – such as smart thermostats and panels – can be funded under the Home Energy Rebate programs. Aggregating them into virtual power plants (VPPs), which are discussed in greater detail in Section 4, requires state leaders collaborate with utility regulators and market operators to unlock retail and – where available – wholesale markets for these services.

- **Complementary Technologies:** Residential energy efficiency and electrification live in a larger ecosystem of distributed energy resources (DERs), which include DR (discussed above), residential solar, residential storage, and EV charging. These technologies are complementary – households that improve efficiency and install electrified appliances to lower their energy burden can further reduce that burden and increase their resilience to grid disruptions through integrated solar and/or storage. The companies and workers that provide these goods and services are also complementary - many offer both supply- and demand-side solutions and/or can be effective outreach and educational channels for these technologies and services. The growth of DER businesses in general thus helps bolster residential efficiency and electrification. While the Home Energy Rebates may not be used to directly finance some of these complementary technologies, state leaders can effectively enable or even encourage their adoption through smart program design and consumer education.

- **Policy:** Well-crafted state policies and regulations, including up-to-date building codes, energy efficiency targets, clean energy standards, and enabling regulations for virtual power plants (as discussed above), can send a clear signal that a state is open for business and, in many cases, can also enable and catalyze the growth of efficiency, home electrification, and other complementary DER businesses in the state. While many of these policy and regulatory considerations fall beyond the immediate scope of program design, we would encourage state leaders to keep them in mind and collaborate with other policymakers and regulators to ensure the state is moving in the right direction.

Section 2: The Home Energy Rebate Programs: An Overview

2.1) Overarching Information

SCEP has prepared detailed guidance regarding the necessary components of state applications for the **Home Energy Rebate Programs**. While the programs are distinct, there is significant overlap when it comes to when and how states should apply, what must be included in their plans, and how they can utilize funds. We encourage states to thoroughly review SCEPs guidance for complete details regarding the application process. Below we highlight a few notable items that are applicable to both rebate programs.

Application Deadlines:

- **Quick Start:** December 31, 2023 – States that wish to launch their rebate programs in 2023 (i.e., states that likely have compliant, existing programs in place) may submit a "Quick Start" application by the end of December 2023 for 25% of their total formula funds. By January 31, 2025, "Quick Start" recipients must either request the other 75% of funds to continue those programs funded under "Quick Start" or submit complete applications for new programming to receive the remainder of those dollars.
- **Notice of Intent:** August 16, 2024 – States that haven't already applied for "Quick Start" should indicate whether they intend to accept or decline the funds for either/both of the rebate programs by this date.
- **Final Application Deadline:** January 31, 2025 – Full applications are due from all states by the end of January 2025 for both rebate programs. DOE will review applications on a rolling basis as they are received, with "Quick Start" applications prioritized. Thus, we encourage states to apply for the rebate programs as soon as their application is ready.

Application Documents:

In order to apply, states must submit a **State Application**. Those *not* applying on the "Quick Start" track may opt to defer some components of the application to their **State Implementation Blueprint**, an in-depth document to be submitted after receipt of their award but at least 60 days *before* planned program launch. SCEP has provided detailed requirements for both the Application and Blueprint in their guidance.

Central to the Blueprint are six distinct plans and strategies: (1) Community Benefits Plan (CBP); (2) Education & Outreach Strategy; (3) Consumer Protection Plan; (4) Utility Data

Access Plan*; (5) Privacy & Security Risk Assessment for State Systems; and (6) Market Transformation Plan. Here, we highlight three elements of the Blueprint:

- **Community Benefits Plan:** DOE identifies four core issues that a CBP must address: (1) engagement of community and labor partners; (2) growth and retention of a skilled workforce in the sector; (3) incorporation of diversity, equity, inclusion (DEI), and accessibility objectives; and (4) how the states plans will serve disadvantaged communities.

  We would encourage state leaders to utilize the insights in this guide, particularly with respect to serving low-income consumers, addressing issues of equity and access, and growing a skilled residential efficiency and electrification workforce as they craft their CBP. Experience suggests that development of a truly effective CBP requires strategic analysis of place-based issues and careful application of equity metrics, thus SEOs should be prepared to devote time and resources to their development. For more details on how to approach these issues see the **Trust Building** recommendation in Section 4.

- **Market Transformation Plan:** Catalyzing a growing and sustained market for residential energy efficiency and electrification is a fundamental goal of these programs, particularly since the funding available will only cover a fraction of the total households that need to be served across the U.S. As such, DOE has requested that states submit Market Transformation Plans that detail how their specific rebate programs will help spur durable market growth. Specifically, these plans must detail (1) how their programs will enable the market to recognize the value of homes that have been upgraded (e.g., providing for home certifications) and (2) how program design and activities around the state program will support (A) cost-sharing, braiding, and coordination of financing with other parties (e.g., utilities, private philanthropy, community lenders, etc.) and (B) new business models to monetize the grid benefits of efficiency and electrification through mechanisms such as demand management and virtual power plants (VPPs).

  We would strongly encourage state leaders to consult the insights and recommendations in this guide as they craft their Market Transformation Plans, particularly around cost-sharing, fund braiding, and enabling new business models. The insights of the advanced energy industry and electrification advocates, woven throughout this guide, are informed by on-the-ground experience working in states and markets throughout the U.S.

- **Utility Data Access Plan:** Ensuring contractors, installers, and state implementers can efficiently, effectively, and securely access data regarding residential energy

consumption is vital for the success of both of these programs, but particularly for the Home Efficiency Rebates. Without such data, project administrators and contractors will not be able to efficiently target education, outreach, and marketing to households and effectively model (or measure) the savings they achieve. By contrast, utility data, particularly when leveraged with effective data analytics, can help identify and target consumers, better identify specific drivers of energy burdens, and tailor solutions.

As a result, SCEP requires that states submit a Utility Data Access Plan as part of their Implementation Blueprints to detail how they will ensure efficient, effective, and secure access for third parties. These plans have four essential requirements for states, as detailed in the Data Access Guidelines of the Home Efficiency Rebates and summarized below:

- Ensure that any data are transferred and maintained safely and securely.
- Ensure that third parties (i.e., anyone other than the consumer and their utility) participating in the program have secure data protection and management protocols.
- Determine which consumer consent processes the State will implement. There are four basic options from which the state should choose:
    1. **Opt-in:** Consumers are notified and must proactively elected for consumption data to be shared with third parties;
    2. **Opt-out:** Consumers are notified and may proactively elect that their consumption data is not shared with third parties (otherwise it is by default).
    3. **Open Access:** Consumption data is shared with third parties without consumer notification or consent.
    4. **Data Aggregation:** Consumption data is anonymized and aggregated to prevent individual consumer identification, then shared with Third Parties.
- Define energy consumption as a primary or secondary purpose, as detailed below:
    - **Primary:** Customer data may only be utilized for performing essential functions related to the program, such as savings measurement.
    - **Secondary:** Customer data may be utilized by third parties for outreach, education, and marketing purposes beyond the immediate program scope.

Ensuring customer data is securely transferred and maintained is essential. To craft a data access plan, however, and ultimately ensure the success of the Home Efficiency Rebates Program, states must go further and ensure that there is efficient and effective access to data, making determinations such which customer consent process to use and how consumption data is defined. The advanced energy industry and electrification community have in-depth experience regarding issues of data access. For specific insights and recommendations, see ***Data Access Planning*** in Section 4 of this guide.

Home Energy Rebate Funds

As noted, the IRA appropriated approximately $8.6 billion in total to finance the two programs. These funds are to be awarded on a state formula funding basis. DOE has already specified how much each state should be allocated (assuming all states accept the funding) - those allocations are laid out in the **State Allocation Table** in the Appendix of this guide. Below we have highlighted a few notable parameters and flexibilities SCEP has provided in their guidance:

Low-Income Minimums:

At a minimum, states must allocate a percentage of the funds for each rebate program to serve specifically low-income households (i.e., those at or below 80% AMI). Nationally that percentage is roughly 40% but varies by state; DOE has specified and publicized this amount (in dollars) in their formula funding announcement. In addition, states must allocate at least 10% of the funds for each rebate program to serve low-income multi-family buildings. DOE has likewise specified and publicized this amount. In both cases, these minimums should be thought of as a floor, rather than a target or ceiling, for low-income program allocations.

Administrative Use of Funds:

In order to ensure successful state-level implementation, state administrators may utilize up to 20% of the total funds allocated to both programs for administrative purposes. Administrative purposes are broadly defined and include but are not limited to:

- State program staff, program planning & design
- Marketing, education, and outreach
- Tools and systems to manage applications and program administration
- Consumer protection activities & satisfaction surveys

- Program monitoring, evaluation, and audits
- Contractor training
- Activities to improve access to rebates, facilitating leverage of private funds and financing mechanisms (e.g., loan loss reserves, interest rate reductions) where beneficial to efficiency and/or electrification projects

Adequate staffing and planning for implementation, as well as effective monitoring and evaluation, are crucial to these programs' success. Thus, we would encourage SEOs to keep these resources in mind as they design state-level programs. Furthermore, we would draw particular attention to contractor training and financing mechanisms, as expanded upon below:

- **Contractor Training:** In addition to permitting the use of program funds for contractor training, the IRA also provides $200 million to states specifically for such training via the **State-Based Home Efficiency Contractor Training Grant Program.** This program, which is also administered by SCEP, provides states with resources to develop and implement a training program that prepares workers to deliver residential energy efficiency, electrification, and clean energy improvements, including those eligible for Home Efficiency and Electrification and Appliance Rebates. As with those programs, $150 million of these grants are allocated via formula funding (as well as $40 million in competitive funding), so states are guaranteed funding if they submit the requisite application. The deadline for states to apply is September 30, 2023. For additional insights regarding contractor training, see the ***Contractor Training*** recommendation within Section 4 of this guide.
- **Financing Mechanisms:** Of these rebate programs, only the **Home Electrification and Appliance Rebates** for low-income consumers (i.e., those at 80% or below AMI) cover 100% of the cost of upgrades. Otherwise, the rebates cover only a portion of total upgrade or project costs. As discussed elsewhere in this guide, there are likely be opportunities to braid other funds to cover remaining costs. In the absence of such additional resources, however, financing mechanisms that lower the cost of borrowing for low- and middle-income consumers are a critical means of expanding access to such projects and upgrades. State officials should be mindful of the opportunity to leverage a (small) portion of program funds to help stand-up or expand low-cost financing.

Combining Funds:

Home Efficiency Rebate funds and Home Electrification and Appliance Rebate funds *cannot* be used for the same efficiency or electrification upgrade. So, as a hypothetical example, a low-income household couldn't apply a $1,750 Home Electrification and Appliance Rebate towards a new, efficient $2,000 Heat Pump Water Heater, then get $250 from the Home Efficiency Rebate to cover the remainder. Nor can the efficiency gains from that new water heater (paid for by the Appliance rebate) be counted towards the cumulative energy savings for the Home Efficiency Rebate. That being said, there are ample ways to stack these rebates, as well as braid or otherwise jointly utilize other federal and non-federal funds to maximize program reach and impact. Indeed, SCEP strongly encourages states to think about such combinations. Below we've highlighted the general options, and constraints, around combining funds as spelled out by SCEP.

- **Home Efficiency Rebate and Electrification and Appliance Rebate funds:** While these two rebates cannot be used on the same upgrade, they can be used in the same household. Thus, households making multiple efficiency and electrification upgrades can use whichever rebate program that best suits them depending on the specific upgrade and their income. State leaders should keep this in mind as they craft rebate programs with an eye towards maximizing both the reach and complementarity of these programs.
- **Home Energy Rebates & Other Federal Rebates/Grants:** Similar to the parameters above, other federal grants and rebates cannot be used to finance the same upgrade. Rather, funding must be braided such that each grant only funds distinct, separate upgrades.
- **Home Energy Rebates & Federal Loans (or loans from prior Fed. Grants):** DOE does not consider such loans to be in the same category as federal grants or rebates. As such, they *can* be utilized to cover the remaining costs of upgrades financed by Home Energy Rebates and individual components of qualified electrification and efficiency projects.
- **Home Energy Rebates & non-Federal Funding:** Non-federal funds, such as those from state or local governments, utilities, and private philanthropy can also be utilized to cover the remaining costs of upgrades financed by Home Energy Rebates and individual components of qualified electrification and efficiency projects.
- **Home Energy Rebates & Tax Credits:** Households are allowed to "stack" the Home Energy Rebates and tax credits where efficiency and electrification upgrades are eligible for both. Under such a "stacking" process, the rebate

would first be applied to the product, followed by the tax credit for the remaining cost. So (in our hypothetical example) a middle-income household would get a $1,000 rebate for an eligible, efficient $2,000 Heat Pump Water Heater, leaving them with a remaining $1,000 in upfront cost. They would then apply the 25C Tax Credit to recoup 30% ($300) on that cost, leaving them with a total cost of $700. It is worth noting that a household must have sufficient tax equity to take advantage of this opportunity.

In Section 3 of this guide, we detail the specific federal funds and incentives that may be braided, stacked, or otherwise utilized in conjunction to stretch Home Energy Rebates. In Section 4, we make specific recommendations regarding what, in our estimation, are the best ways to maximize these complementarities.

2.2) Home Efficiency Rebates Basics

- **How It Works:** The IRA allocated $4.3 billion for the **Home Efficiency Rebates Program** to finance whole-home energy retrofit projects in single- and multi-family dwellings. The core aim of this program is to improve the over energy efficiency of households, and reduce energy bills, via multi-faceted efficiency projects. States can implement rebate structures based on modeled or measured energy savings pathways, as noted below.

- **Eligible Recipients:** Owners of single-family and multi-family residential buildings are eligible via their SEOs. There is no income cap on eligibility but, as detailed in the tables in the "Savings Pathways" section below, higher rebates will be awarded to LMI homeowners.

- **Eligible Technologies:** Rebates are based on the cumulative savings produced by a project, not those of an individual measure, so technologies or upgrades that contribute to the overall energy savings project are permitted. Common measures may include insulation, air sealing, upgraded windows and doors, smart thermostats, and high-efficiency appliances, as well as technologies that enable and manage such upgrades, like wiring and smart panels.

- **Savings Pathways – Modeled Approach:** Rebates can be awarded based on modeled energy savings of home energy upgrades. In other words, project installers can estimate in advance the energy savings level that the complete project can achieve (see below for precise methodology) and achieve the rebate upfront. Rebate amounts under the modeled approach, eligible income brackets, and variations by type of dwelling (single vs. multi-family) are detailed in the chart below.

Single-Family		
Modeled Energy Savings	**Income Level**	**Rebate Amount**
20%-34%	Less than 80% AMI*	Lesser of $4,000 or 80% of project cost
	80% AMI and greater	Lesser of $2,000 or 50% of project cost
35% and greater	Less than 80% AMI*	Lesser of $8,000 or 80% of project cost
	80% AMI and greater	Lesser of $4,000 or 50% of project cost
Multifamily		
Modeled Energy Savings	**Income Level**	**Rebate Amount**
20%-34%	A building with at least 50% of households with incomes less than 80% AMI*	Lesser of $4,000 per dwelling unit or 80% of project cost
	A building with at least 50% of households with incomes 80% AMI and greater	$2,000 per dwelling unit up to $200,000 per building
Greater than 35%	A building with at least 50% of households with incomes less than 80% AMI *	Lesser of $8,000 per dwelling unit or 80% of project cost
	A building with at least 50% of households with incomes 80% AMI and greater	$4,000 per dwelling unit up to $400,000 per building

*States may increase the maximum amount available for low-income households upon approval from DOE.19 See Section 3.1.3 for details.

- **Savings Pathways – Measured Approach:** States may elect to provide rebates based on measured energy savings post-installation or upgrade. A homeowner or installer participating in this program would receive a rebate based upon the energy savings they actually achieve as a result of the project. Details on this pathway are included in the chart below. As with the modeled approach, low-income households are eligible for greater rebates, and the details of the rebate vary depending on dwelling type.

For additional insights and details regarding both of these pathways, see ***Home Efficiency Rebate Pathways – Additional Information*** in the Appendix.

Single-Family		
Measured Energy Savings	**Income Level**	**Rebate Amount**
15% or greater	Less than 80% AMI	kWh, or kWh equivalent, payment rate equal to $4,000 for a 20% reduction of energy use for the average home in the State or 80% of project cost*
	80% AMI and greater	kWh, or kWh equivalent, payment rate equal to $2,000 for a 20% reduction of energy use for the average home in the State or 50% of project cost
Multifamily		
Measured Energy Savings	**Income Level**	**Rebate Amount**
15% or greater	A building with at least 50% of households with incomes less than 80% AMI	kWh, or kWh equivalent, payment rate equal to $4,000 for a 20% reduction of energy use per dwelling for the average multifamily building in the State or 80% of project cost**
	A building with at least 50% of households with incomes 80% AMI and greater	kWh, or kWh equivalent, payment rate equal to $2,000 for a 20% reduction of energy use per dwelling for the average multifamily building in the State or 50% of project cost

* Per statute, the measured energy saving of the home or portfolio of homes must achieve 15% savings, but the calculation of the rebate is based on a 20% reduction of average home energy use of an in the state.
**States may increase the maximum amount available for low-income households upon approval from DOE.20 See Section 3.1.3 for details.

Funding Expiration: September 30, 2031

2.3) Home Electrification and Appliance Rebates Basics

- **How It Works:** The IRA allocated $4.75 billion for states to administer the **Home Electrification and Appliance Rebates Program**, as well as $225 million for tribes. Tailored specifically to low- and middle-income households (those below 150% AMI), the fundamental goal of this program is to enable such households to install high-efficiency electric appliances that both lower energy bills and reduce building emissions.

Product Rebates		
Upgrade Type	**Qualified Product**	**Rebate Amount Not to Exceed**
Appliance	Heat Pump Water Heater	$1,750
	Heat Pump for Space Heating or Cooling	$8,000
	Electric Stove, Cooktop, Range, Oven, or Heat Pump Clothes Dryer	$840
Building Materials	Electric Load Service Center	$4,000
	Insulation, Air Sealing, and Ventilation	$1,600
	Electric Wiring	$2,500
Maximum Rebate $14,000		

- **Eligible Recipients:** As detailed in the chart above, only low-income households (at or below 80% AMI) and middle-income households (those between 80% and 150% AMI) are eligible to receive these rebates. The owners of rental and multi-family buildings are also eligible for rebates if the residents of those buildings meet the income qualification. As detailed in the table below, rebate amounts scale by project cost, dwelling type, and consumer income bracket.
    - **Multi-family Buildings Note:** Owners of multi-family buildings are permitted to pool rebates across eligible units to pay for building-level systems (e.g., a large-scale heat pump HVAC) provided they serve residential units. Such systems may also serve common residential spaces. Notably, unlike the Modeled Home Efficiency Rebates, there is no project cost cap in absolute dollars, enabling such a pooled approach.

Rebate Limitations		
Eligible Rebate Recipient	**Income Level**	**Rebate Amount Not to Exceed**
LMI Household or Eligible entity representative representing LMI household	Less than 80% AMI	100% of qualified project cost
	81%-150% AMI	50% of qualified project cost
Owner of multi-family building or eligible entity representative representing owner of multifamily building	At least 50% of residents with income less than 80%AMI	100% of qualified project cost
	At least 50% of residents with income of 81%-150% AMI	50% of qualified project cost

Eligible Technologies: As detailed in the table above, the technologies eligible for this rebate are specified. Eligible consumers can utilize multiple rebates (with some limitations, as noted below) but are constrained by a $14,000 maximum for an individual household. Below we've highlighted a handful of notable details, also embedded in the SCEP guidance, that aren't in the table but of which state leaders should be aware:

- **Additional Criteria:** Appliances installed are eligible for a rebate if (A) they are part of new construction (B) they are replacing non-electric appliances, or (C) they represent the first-time purchase of a heat-pump for space conditioning and will provide primary heating and cooling for the household. When designing their programs, states may opt to focus the rebates on one or more of the above categories. For specific recommendations regarding this decision, see the recommendations regarding ***New Construction v. Retrofits*** and ***America's Residential Energy Transition*** in Section 4 of this guide.
- **Building Materials Note:** Beyond rebates for specific appliances, electric load service centers (i.e., electric panels), wiring, insulation, air sealing, and ventilation can also receive rebates under this program. We would encourage states to include such upgrades – particularly electric panels and wiring – in their specific program designs both because they may be necessary to enable the installation of electric appliances and because they can facilitate the installation of complementary systems, such as distributed generation and behind-the-meter storage in the future. That said, states should also consider the complementarity of these two rebate programs, as the Home Efficiency Rebates can likewise finance a number of upgrades (such as insulation, air sealing, and ventilation) that maximize the efficiency of electric appliances. For

additional insights and recommendations on program complementarity, see ***Sequencing Rebates*** in Section 4 of this guide.

Funding Expiration: September 30, 2031

Section 3: Putting the Home Energy Rebate Programs in Context

The Home Efficiency Rebate and Home Electrification and Appliance Rebate programs may stand out for their financial magnitude and ambition. But they are part of a larger universe of programs and incentives, some of which have existed for years, that are available to help address residential energy needs, improve efficiency, and reduce consumer exposure to volatile fuel costs.

Understanding where the Home Energy Rebate programs sit in this broader universe can help state leaders better see which consumers are and aren't well served by different incentives, and thus where to focus finite rebate dollars. Likewise, an understanding of the other incentives and programs should help SEOs identify complementary resources that can be stacked or braided to complement the rebates and fill in gaps. The subsections below briefly describe the most relevant federal programs and incentives, as well as identifying types of state and utility programs and financing mechanisms that may also prove complementary.

3.1) Federal Efficiency & Electrification Programs & Incentives

Weatherization Assistance Program (WAP)

- **Administrator:** DOE
- **How It Works:** The Program provides federal dollars to state weatherization offices (usually the SEO, state housing agency, or state health and social services agency), which in turn distribute funds to a network of local weatherization providers that implement projects to increase residential energy efficiency. The program has been in operation for over 40 years and serves approximately 35,000 homes each year. The bipartisan infrastructure law (IIJA) provided $3.5 billion for the program, a significant increase over usual funding levels. Additional funding for the program will likely continue through the annual appropriations process (though likely not at those levels).
- **Eligible Recipients:** Low-income households (defined as at or below 200% of the federal poverty line or 60% of state median income) are eligible for weatherization projects under WAP.
- **Eligible Projects:** WAP funds can cover 100% of the cost of high efficiency electric appliances, heat pumps, and other upgrades. Typical weatherization measures seen under the program include repair and replacement of heating and cooling systems, air

sealing, repair and replacement of windows and doors, installation of efficient lighting, replacement of inefficient refrigerators, and consumer education.

    - **Electrification Addendum:** Under a 2022 revision to guidance from DOE,[11] WAP funds may also now be used for electrification projects, though grantees must obtain written DOE approval to perform these "fuel-switching" activities.

- **Home Energy Rebate Complementarity:** WAP funds can finance energy efficient upgrades and electrified appliances (provided grantees receive written approval from DOE) similar to those covered under the Home Energy Rebates. They can be used to finance complementary efficiency upgrades and projects but cannot be used for the same upgrade or appliance funded by the rebate programs. For recommendations on how WAP funds can effectively complement the Home Energy Rebates, see ***Sequencing WAP & Rebate Funds*** in Section 4.

Low Income Home Energy Assistance Program ("LIHEAP"):

- **Administrator:** HHS

- **How It Works:** The program is designed to assist low-income families in managing costs associated with home energy bills, energy crises, and energy-related minor home repairs. LIHEAP is a federal block grant. Recipient agencies vary by state but can include SEOs.

- **Eligible Recipients:** Low-income households (defined as at or below 150% the poverty line or 60% state median income) are eligible for LIHEAP support.

- **Eligible Projects:** While the program is chiefly designed to provide direct bill assistance, states are also permitted to use fifteen percent of their allocation for low-cost residential weatherization or other energy-related home repair for low-income households. States may apply for a waiver that allows them to use up to twenty-five percent of their LIHEAP funds for this purpose.[12] Depending on a state's requirements and utilization of their waiver authority, LIHEAP weatherization funding can be used to meet up to 100% of project costs for a given efficiency project. For example, California has used its LIHEAP weatherization funds to provide free energy efficiency upgrades to low-income customers.[13]

- **Home Energy Rebate Complementarity:** LIHEAP can also be combined with other programs, similar to WAP – utilized to fund upgrades and projects complementary to

[11] https://www.energy.gov/sites/default/files/2022-10/WPN-22-10-Revised-NEI_0.pdf.
[12] https://www.law.cornell.edu/uscode/text/42/8624.
[13] https://www.csd.ca.gov/pages/liheapprogram.aspx.

those funded by the rebates. Moreover, LIHEAP funding available for weatherization can be directly folded into a state's weatherization program.[14] Under Section 2605 states may use up to 15% of LIHEAP funds for residential weatherization measures without a DOE waiver, and up to 25% if they seek and obtain a waiver.[15] That said, as the core function of the LIHEAP program is energy bill relief, states will need to determine whether and to what extent these funds are available for weatherization activities. For recommendations on the complementarity of LIHEAP funds and Home Energy Rebate programs, see ***Addressing Customer Arrears*** in Section 4.

The Greenhouse Gas Reduction Fund ("GGRF"):

- **Administrator:** EPA
- **How It Works:** Created under the IRA, the GGRF provides $27 billion "to mobilize financing and private capital to combat the climate crisis and ensure American economic competitiveness." The fund will be implemented through three grant competitions:
    - The National Clean Investment Fund ("NFIC") – $14 billion
    - The Clean Communities Investment Accelerator ("CCIA") – $6 billion
    - The Solar for All program – $7 billion.
- **Eligible Recipients:** The GGRF (specifically the NFIC & CCIA) is intended to help capitalize non-profits and state energy financing institutions ("SEFIs"), which are, in turn intended to "deliver the benefits of greenhouse gas- and air pollution-reducing projects to American communities, particularly low-income and disadvantaged communities." NCIF will provide grants for 2-3 national nonprofits with clean financing capacity and CCIA will provide grants for 2-7 regional "hub" nonprofits that can deliver funding and technical assistance to local lenders. The Solar for All program will provide up to 60 grants to states, territories, Tribal governments, municipalities, and nonprofits to expand access to residential solar for low-income and disadvantaged communities.
- **Eligible Projects:** The range of eligible projects that these funds are ultimately leveraged to support is not strictly defined, unlike the Home Energy Rebate Programs. Given that one of the overarching goals of the GGRF is to deliver the benefits of clean energy projects to low-income and disadvantaged communities, helping to finance

[14] https://liheappm.acf.hhs.gov/assessment/docs/LIHEAP_Weatherization_Report.pdf. See also, https://assets.ctfassets.net/v4qx5q5o44nj/7LiHS6hhVKaIdph8bdVV8b/fbac70d0d6e74ce7a467ad526d47af29/HEEHRA_factsheet.pdf; https://www.acf.hhs.gov/ocs/fact-sheet/liheap-fact-sheet.
[15] https://liheapch.acf.hhs.gov/pubs/LCIssueBriefs/solar/renewable.pdf.

residential efficiency and electrification upgrades would be germane. For the Solar for All program, funding must be used to enable low-income and disadvantaged communities to deploy or benefit from solar and storage.

- **Home Energy Rebate Complementarity:** SEFIs are currently engaged in offering loan products to low-income customers to finance energy efficiency and electrification upgrades by leveraging state and federal funds.[16] SEFIs accomplish this work by establishing loan loss reserves, interest rate buy-downs, revolving loan funds, and other credit supports in collaboration with private lenders. Loan products financed by federal funds are explicitly permitted to be braided with Home Energy Rebates to cover the difference between the rebate and the ultimate cost of an appliance, upgrade, or project. This creates a notable opportunity for states to help facilitate these projects for low- to (particularly) middle-income consumers through low-cost financing. ultimately supported by GGRF dollars. For the Solar for All program, states or other funding recipients can establish rebate programs to allow consumers to access solar and storage that pairs with efficiency and electrification to help increase utility bill savings. For recommendations on how to leverage GGRF dollars to support the Home Energy Rebate programs, see ***Establish/Expand State Energy Financing Institutions (SEFIs)*** in Section 4.

Energy Efficient Home Improvement Tax Credit (25C)

- **Administrator:** Treasury
- **How It Works:** The Energy Efficient Home Improvement Tax Credit allows homeowners to receive a credit of 30% against their tax bill that is equal to a portion of the cost of energy efficiency home improvements and/or installation of high-efficiency appliances. The IRA extended this provision through the early 2030s and raised the efficiency standards such improvements and appliances must meet to be eligible.
    - **Credit Limits:** The annual limit on this program is $1,200, with the exception of expenditures for heat pumps, water heaters, and certain stoves, for which taxpayers may deduct up to $2,000. Doors, windows, and home energy audits also have individual limits. Prior to the IRA, this credit had a lifetime limit on its use, so this change effectively expands the utility of the credit.

[16] See e.g., residential energy efficiency financing program from Michigan Saves: https://michigansaves.org/residential-homes/.

- **Eligible Recipients:** Households with sufficient federal tax liability can apply the credit to investments in eligible efficiency and electrification projects and appliances. The credit can only be used for investments at primary residences.
- **Eligible Technologies:** Upgrades to increase the energy efficiency of windows and doors, heat pumps, heat pump water heaters, biomass stoves, hot water boilers, central air conditioning, electric panel upgrades, and home energy audits.
- **Home Energy Rebate Complementarity:** As noted in Section 2, tax credits can be "stacked" on top of the Home Energy Rebates. Households may apply the credit to the remaining cost of a project or appliance after the rebate. As such, for households with sufficient federal tax liability, the credit can be a valuable means of further reducing the cost of efficiency and electrification investments. For recommendations on how best to integrate this credit, and those discussed below, see ***Stacking Tax Credits*** in Section 4.

Residential Clean Energy Tax Credit (25D)

- **Administrator:** Treasury
- **How It Works:** Similar to 25C above, the Residential Clean Energy Tax Credit allows homeowners to receive a 30% credit against their tax bill. Unlike 25C, the 25D credit is geared to the installation of eligible clean energy generation or storage systems. The IRA restored this credit to its full level, extended it through 2034 (with a phase down beginning in 2032), and added battery storage to the list of eligible technologies.
- **Eligible Technologies:** Solar electric, solar water heating, biomass, geothermal heat pumps, residential wind, fuel cells using renewable fuels, and stand-alone energy storage systems (as long as they are at least 3 kWh).
- **Eligible Recipients:** Households with sufficient federal tax liability can apply the credit to investments in eligible clean energy projects and technologies. It's worth noting, the credit can be rolled over from one year to the next, so even consumers with more limited tax liability may be able to take advantage.
- **Home Energy Rebate Complementarity:** Although this credit is likewise stackable, it is less likely (than 25C) to help directly finance a project, upgrade or appliance funded by the Home Energy Rebate programs given the minimal overlap in eligible technologies. That said, the expansion of distributed generation (DG) and residential energy storage are an important complement to residential efficiency and electrification efforts and are playing an important part in both lowering energy burdens and catalyzing transformation of the broader residential energy market.

New Energy Efficient Homes Credit (45L)

- **Administrator:** Treasury

- **How It Works:** This per-dwelling credit, first established in 2006, incentivizes residential homebuilders and developers of multi-family properties to reduce energy consumption by building new residences to meet the latest energy efficiency and/or zero-energy standards in their construction. Specifically, as amended and revitalized by the IRA, the credit provides:

    - $5,000 for single family and manufactured homes eligible to participate in the EPA's ENERGY STAR Residential New Construction Program or the ENERGY STAR Manufactured New Homes Program, respectively, and which are certified to applicable Zero Energy Ready Home ("ZERH") program requirements.

    - $1,000 for dwelling units that are part of a building eligible to participate in the ENERGY STAR Multifamily New Construction Program, and which are certified to applicable ZERH program requirements (unless the project meets prevailing wage requirements, in which case the 45L credit is $5,000 per dwelling unit)

- **Eligible Recipients:** This credit is geared towards home builders to reduce the cost of new (or substantially rebuilt) homes that meet specific DOE residential construction standards.

- **Eligible Technologies:** Similar to other whole home efficiency incentives, the credit isn't geared to finance a specific set of technologies, but rather to meet overall standards as established by DOE. Notably, from an electrification standpoint, installing all-electric appliances is neither necessary nor sufficient to meet the requirements for the 45L credit. For example, highly efficient gas furnaces can meet program requirements, and all homes (even those that install electric appliances) are required to meet additional insulation requirements.[17] However, selecting all-electric appliances, which are already likely to be highly efficient, is a meaningful step towards becoming eligible for this credit.

- **Home Energy Rebate Complementarity:** Similar to other tax credits, 45L may be stacked (or supplemented) to finance Home Energy Rebates. As the credit is geared towards home builders, recipients are more likely to have federal tax liability to which the credit can be applied. For additional insights and recommendations regarding how

[17] https://www.energystar.gov/partner_resources/residential_new/homes_prog_reqs/national_page. See also, https://www.energystar.gov/sites/default/files/asset/document/National%20Program%20Requirements%20Version%203.1_Rev%2012.pdf.

45L and the Home Energy Rebates should interact, see ***Broader Context: The Economics of New Construction v. Existing Home Retrofits*** in Section 4.

Efficient Commercial Buildings Deduction (179D)

- **Administrator:** Treasury
- **How It Works:** This credit, which was also first established in 2006, incentivizes commercial building owners to conserve energy by allowing them to immediately deduct the installation costs of energy-efficient building systems. The IRA increased the maximum deduction amount and expanded the scope of eligible participants to include state, tribal, local governments, and tax-exempt entities through the application of direct pay.[18]
    - **Technical Details:** To qualify for incentives, a building must be within the scope of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1 energy standards than the ASHRAE baseline.[19] The 179D tax deduction functions on a sliding scale, increasing with higher levels of building efficiency and a "bonus rate" for meeting labor standards. The scale increases on a per square foot basis and can also apply to retrofits of buildings that are at least five years old.[20]
- **Eligible Recipients:** Commercial building owners with sufficient tax liability may utilize the 179D deduction, as well as entities eligible for Direct Pay, as noted above.
- **Eligible Technologies:** Energy efficient building systems, such as lighting, HVAC, and building controls, are eligible for the deduction.
- **Home Energy Rebate Complementarity:** As this tax deduction is also stackable, it can serve as an effective complement to the Home Energy Rebates when applied to multi-family rental properties. Building owners can apply the deduction after the initial rebates to further reduce the cost of relevant efficiency and electrification installations. For more recommendations regarding how 179D and the rebate programs can be effectively integrated, see ***Stacking Tax Deductions*** in Section 4.

The tables below provide an review of the federal efficiency and electrification programs detailed above for single and multi-family residences, broken out by income brackets.

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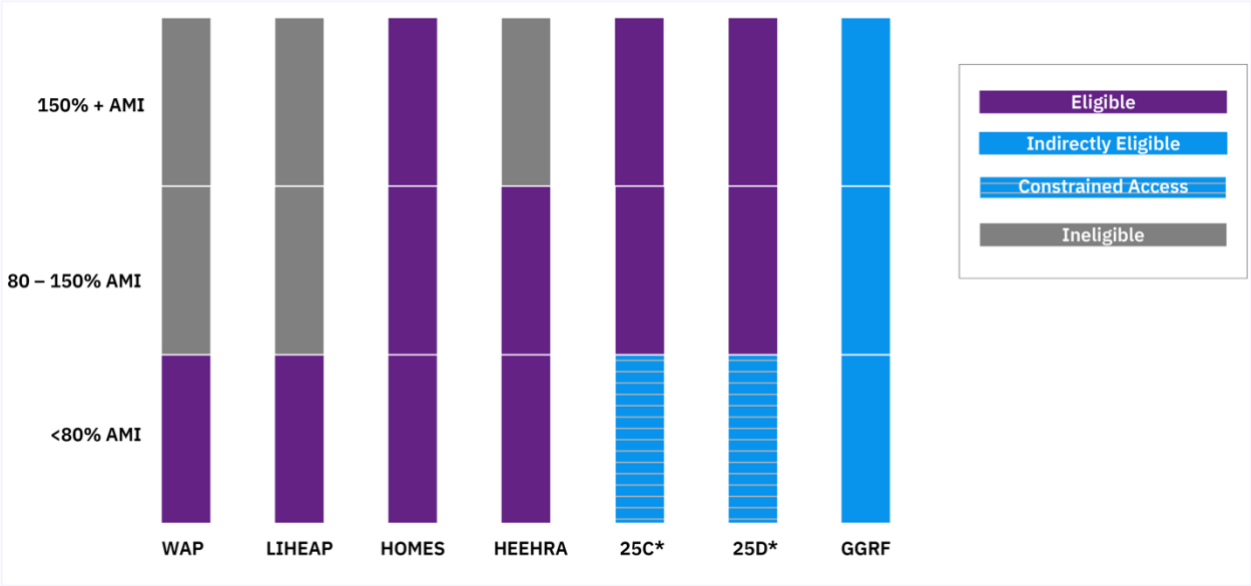
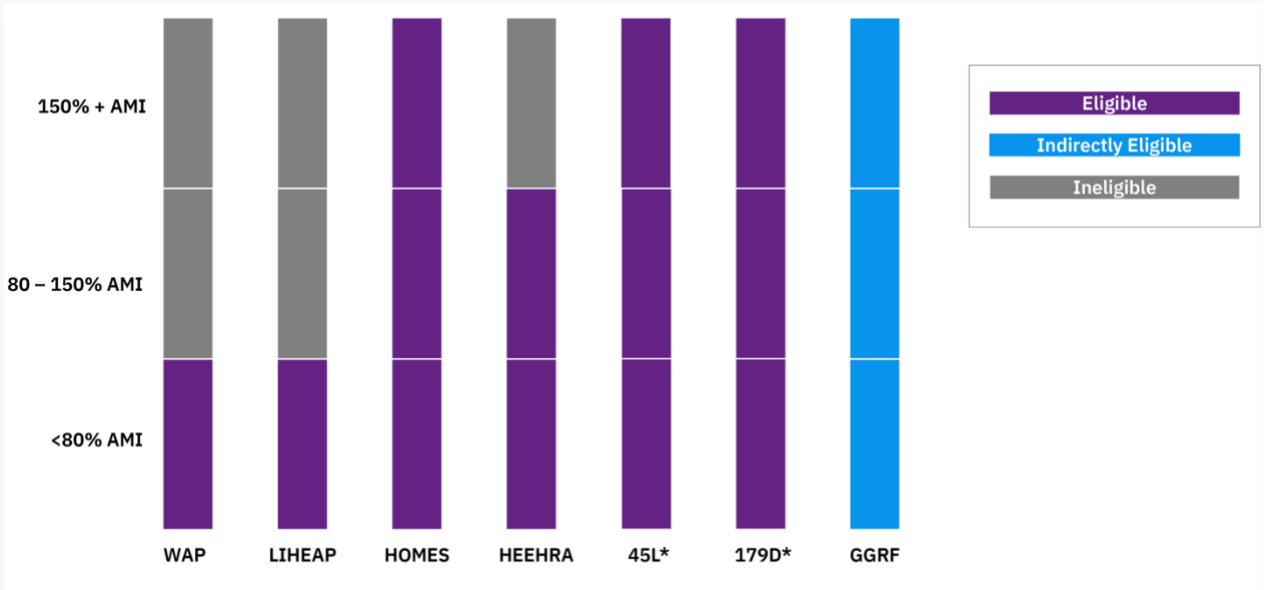
[18] "Direct Pay" allows eligible entities to be treated as having made a payment of tax equal to the value of the credit they would otherwise be eligible to receive. In effect, this means an eligible entity can receive a cash payment from treasury equal to the tax credit amount, even if they don't pay taxes or have limited tax liability.
[19] https://www.ashrae.org/technical-resources/bookstore/standard-90-1. See also, 26 U.S.C. § 179D, which defines "energy efficiency commercial building property" as property that is within the scope of ASHRAE 90.1, which excludes low-rise buildings (defined as three stories or less).
[20] https://www.rer.org/docs/default-source/fact-sheets/ira-energy-fact-sheet-9-9-2022.pdf?sfvrsn=37ccca3e_3.

Single Family Federal Efficiency & Electrification Programs



Multi-Family Federal Efficiency & Electrification Programs



* This tax credit may not be accessible to homeowners below certain income thresholds if they do not have sufficient tax liability

3.2) State & Utility Efficiency & Electrification Incentives

Utilities have long been a significant provider of efficiency (and, increasingly, electrification) programming at the state level. While their relationship with customers can be complex, they will continue to be a significant channel for education, communication, outreach, and, in many

cases, specific rebates and incentives. State agencies, both the SEO and beyond, have also been a significant provider of efficiency and electrification programs and measures in regions of the country. Indeed, SCEP's "Quick Start" option is intended to provide near term Home Energy Rebate funding to already operational and effective state programs that align well with the rebate parameters and goals.

To maximize the reach of the Home Energy Rebate programs, states should keep in mind existing efficiency and electrification programs run by both the utilities and their own state government. These programs are expressly permitted to work in tandem with the federal rebate programs. Combining funds ultimately allows consumers to leverage the full benefits of IRA and IIJA programs while lowering their monthly energy costs, deploying clean energy and low- zero-carbon technologies, and opening up new market segments for contractors and installers. For specific examples of utility- and state-run efficiency and electrification programs from across the country that are congruent with the Home Energy Rebate programs, see ***Examples of Existing State & Utility Efficiency & Electrification Programs*** in the Appendix.

3.3) Energy Financing Innovations

A number of states across the country are working to expand access to residential energy efficiency and electrification, and catalyze a larger market for such services, through financial mechanisms. As the Home Energy Rebates, particularly the Home Efficiency Rebates, do not necessarily cover the full cost of projects and appliances (nor will tax credits where they can be used) additional financing is important. Particularly in a high-interest rate environment, low- to no-interest loans and other financial instruments are especially critical. For specific examples of existing State Energy Financing Institutions (SEFIs), see ***Energy Financing Innovations – Specific Examples*** in the Appendix.

SEFIs are also not the only financial innovation that can help finance residential energy efficiency and electrification projects. On-bill financing, either on utility bills or local or state property taxes, also provides an option to access upfront financing that stretches out the repayment period, effectively allowing energy savings to cover all or part of the incremental cost. That said, these products may not be best suited to serve low-income and disadvantaged households that either don't own their property or have poor credit. Specific examples of on-bill financing mechanisms can also be found in ***Energy Financing Innovations – Specific Examples*** in the Appendix. For additional insights and recommendations regarding the integration of Home Energy Rebates and financial innovations, see ***Establish/Expand State Energy Financing Institutions (SEFIs)*** in Section 4.

Section 4: Program Design & Implementation Recommendations

This final section of the guide serves as a summation of the above information, crafted into a series of specific recommendations (numbered in the order in which they appear) intended to help state leaders wade through the complexities of developing effective energy rebates, meeting the goals of the program, and best serving their constituents. State leaders may pick and choose those recommendations that best suit their priorities and constituencies. That said, many of these recommendations are intended to be complementary and aim to maximize the efficacy of rebate funds.

4.1) Getting Started

To help SEOs get their bearings, we have three preliminary program development recommendations:

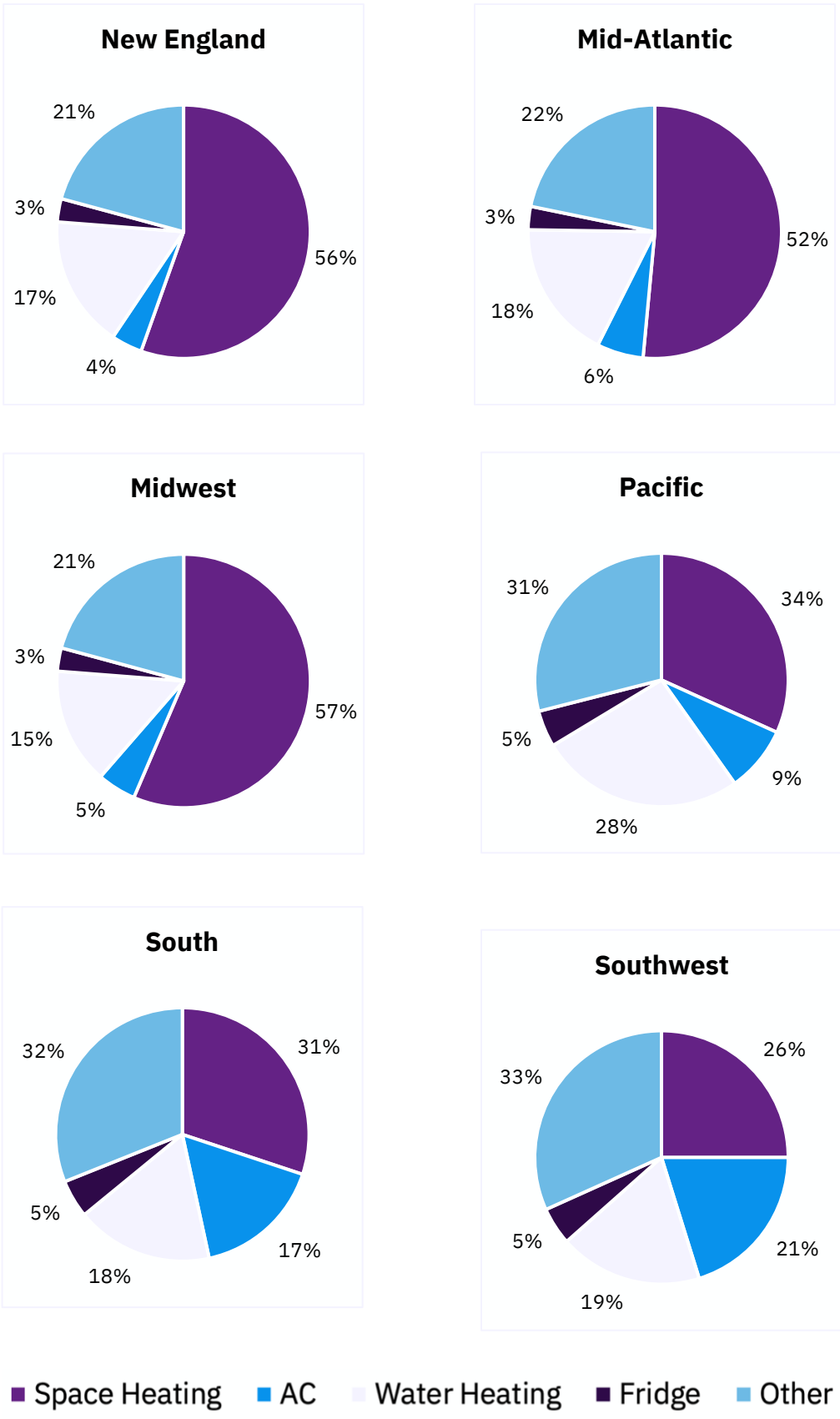
- (#1) Quick Start Assessment: We recommend SEOs review existing state-led residential energy rebate programs to determine if any may be eligible for "Quick Start" funding. Even if they are, states should carefully consider whether moving quickly is the best approach. On the upside, the "Quick Start" approach can ramp up programs and get rebates to consumers sooner. However, existing state programs may be more modest or piecemeal in scope than what can be achieved under the Home Energy Rebate programs.
- (#2) Utility Program Assessment: We recommend that SEOs also consult their state utility regulators and the demand-side management teams at utilities to ensure that they're fully aware of complementary residential efficiency and electrification programs being operated by the utilities. In so doing, they should seek to gather information from utilities about the efficacy of these programs and how many customers have participated. This preliminary analysis should help inform where to target state-led rebate programs and potential outreach, marketing, and education channels to improve customer uptake. Utility customer data can help better identify recipients for efficiency and electrification rebates and enhance outreach and education.
- (#3) Trust Building: Before state leaders can effectively implement the Home Energy Rebate programs, they also need to ensure that they and their partners (government officials, third party implementers, and/or utilities) are trusted by the communities they intend to serve. As discussed in Section 1, this trust deficit can be a key (but seemingly intangible) impediment to program uptake, particularly in low-income and disadvantaged communities. To proactively address issues of trust and credibility, we

recommend that SEOs employ a relevant and validated framework to address issues of energy equity and community trust, such as the ADAPTIVE For Equity (A4E) tool developed by DNV Energy Systems. A4E is just one example of such a tool, but worth considering in order to understand how something like this can help in the program design and implementation process. A4E is a comprehensive, interactive, and guided framework that helps SEOs, implementers, and other partners balance research-based and lived experience-informed processes, principles, and strategies to innovatively address unique energy equity challenges. A4E provides a toolkit to guide program planning, analysis and evaluation and advice on tactics to reach and engage with low income and hard-to-reach customer base. Using an energy equity toolkit at the outset of the program design and implementation and consistently applying it throughout the program lifecycle can help craft programs that better serve low-income and disadvantaged communities and sustainably increase program uptake. The outreach, education, and marketing strategies developed in the process, as well as the larger program designs, can help inform the Community Benefits Plan (see Section 2.1) that each state must submit to DOE.

4.2) Prioritizing Technologies & Upgrades to Maximize Efficacy

The list of upgrades and appliances that can be financed by the Home Energy Rebates is lengthy, and there is significant overlap between the two programs in terms of the upgrades and technologies that are eligible. Given the finite (if substantial) amount of funding for both rebates, state leaders should carefully consider how to maximize the efficacy and complementarity of the two.

Smart, complementary program design and implementation can produce a result greater than the sum of its parts: i.e., projects and appliances that, together, lower energy burdens more than they would separately. But if the programs are implemented haphazardly, new appliances or upgrades may not lower energy costs (or, in the worst-case scenario, could cause bills to rise), producing consumer disappointment and undermining market growth. Understanding how households in your state use energy is a fundamental first step. As the charts below show, residential energy use varies from one part of the U.S. to another.


New England
21%
3%
17%
4%
56%
Mid-Atlantic
22%
3%
18%
6%
52%
Midwest
21%
3%
15%
5%
57%
Pacific
31%
5%
28%
9%
34%
South
32%
5%
18%
17%
31%
Southwest
33%
5%
19%
21%
26%
Space Heating
AC
Water Heating
Fridge
Other

As the charts above show, residential energy use, measured in BTUs that allow for comparison across various fuel types, varies substantially from region to region in the U.S. Dwelling type, income level, fuel availability, energy prices, and more also shape household energy consumption patterns. So, unfortunately, there's no "one-size-fits-all" program design for energy rebates. Some analysis can help inform state program targeting, however:

- (#4) Analyzing Household Energy Burdens: Utilizing allowable administrative costs, we recommend that **SEOs analyze the key drivers of price shocks in the state to inform strategy for targeted populations and households** if they don't already have this information. Where possible, SEOs should work with utilities and / or leverage utility customer data, employing tools such as data science and analytics to gather deeper insights into the energy usage of constituents and better understand the energy burdens facing communities. Each state is unique, but generally speaking, if lowering energy burdens and reducing emissions are priorities, then reducing the use of fossil fuels in residences will be a consistent priority. Delivered fuels are frequently a source of price shocks as cost volatility is often passed directly to customers.

Step back from specific variations, however, and some common themes emerge. First, across the U.S., space heating and cooling (i.e., "AC") together constitute the largest single segment of residential energy use regardless of region. In many places, they are near or above half of all household energy use. Second, after space heating and cooling, water heating constitutes a substantial share of household energy use – more than any other single appliance. Third, "Other" - a category that includes household electronics such as computers, TVs, and cell chargers – is, on the whole, a notable and growing segment of household energy use. These common themes can help illuminate a set of three broadly applicable recommendations:

- (#5) Space Heating & Cooling: To lower energy burdens to the greatest extent possible, we recommend that SEOs prioritize rebates for projects, upgrades and appliances that maximize efficient space heating and cooling. This should start with the building envelope, improving insulation and air sealing and replacing old windows and doors, so that households effectively retain heating and cooling. From there, heat-pumps, which help households transition away from price-volatile and expensive fuels (see ***America's Residential Energy Transition*** later in this section), should be a top priority in appliance rebates. The question of which rebates or other funds and incentives SEOs should/can use to finance these upgrades is discussed in ***Sequencing WAP & Rebate Funds***, ***Stacking Tax Credits***, ***Establish/Expand State Energy Financing Institutions (SEFIs)***, and ***Stacking Tax Deductions*** later in this section.

- **(#6) Water Heating:** In places where heat-pump HVAC units have already been installed or are otherwise inapplicable, we recommend that SEOs focus appliance rebates on heat-pump water heaters. Not only should heat-pump water heaters help lower household energy usage when they replace those powered by natural gas or fuel oil, but they are also a great dispatchable resource, able to be managed remotely and aggregated to provide grid services with minimal customer impact.
- **(#7) Dispatchable Resources:** As discussed in Section 1, energy efficiency and electrification can provide a host of benefits not only to consumers, in the form of lower energy burdens and cleaner buildings, but also the larger electric system. Some of these benefits accrue without any additional action – e.g., a more efficient home uses less energy and reduces demand on the grid. Other benefits require active engagement, or "dispatch", on the part of consumers, utilities, and/or third parties to realize. Strategies to realize these benefits, which can both enrich consumers and catalyze a broader market transformation, are discussed in more detail below under ***Virtual Power Plants and Market Transformation***.

Enabling technologies, in the form of smart panels (electric load service centers), smart thermostats, and remote switches, are often a prerequisite to "dispatching" appliances or upgrades and realizing their benefits. **We recommend that SEOs encourage the deployment of such technologies in efficiency projects and appliance upgrades**, using rebate funds to help incentivize their deployment. This should help strengthen the foundation for a broader DR market and maximize the likelihood that such projects reduce energy burdens. We would also encourage SEOs to ensure that, when rebates are utilized to finance electric load service centers, such upgrades include sufficient capacity to allow the installation of complementary distributed energy resources (DERs), such as residential solar, residential energy storage, and EV charging, in the future.

4.3) Serving Low-Income Households

As discussed in Section 1 of this guide, low-income consumers face acute obstacles to accessing efficiency and appliance upgrades, the most acute of which is the lack of disposable income to cover any upfront costs. At the same time, these are the households most in need of such investments, given the disproportionate energy burdens they often face and the health and safety risks to which they're often exposed from out-of-date building stock and appliances.

The recommendations below are intended to help inform the thinking of state leaders as they go about program design with the aim of serving low-income and disadvantaged communities in particular:

- (#8) Funding Allocations by Income Bracket: The Home Energy Rebates are tailored to serve low-income consumers in a way that some other federal efficiency and electrification incentives are not, as illustrated in the graphs in Section 3.2. By covering up to 100% of the cost for efficient, electrified appliances and specific materials, the Electrification and Appliance Rebates are particularly well suited to meeting the financial constraints of these households. DOE requires that, at a minimum, states endeavor to use approximately 40% of program funds for low-income and disadvantaged households. We recommend that state program managers **set aside substantially more than 40% of these funds (particularly funds for the Electrification and Appliance Rebates) for low-income consumers.**

- (#9) Sequencing WAP & Rebate Funds: Unlike the Home Efficiency Rebates, WAP dollars can be used to cover 100% of the cost of residential efficiency projects (up to $8.25K). As *Recommendation #5* states, projects and upgrades that maximize space heating and cooling should be the upmost priority. To that end, **we recommend that states use WAP funds first and foremost to finance these projects for eligible, low-income consumers, then use Home Electrification and Appliance Rebates to cover the full cost of heat-pump HVAC systems**. Where WAP funds are limited, states can fall back on the Electrification and Appliance rebate program to cover some building envelope investments but should endeavor to keep those funds in reserve to fully fund high-efficiency, electric appliances.

- (#10) Addressing Customer Arrearages: If lack of disposable income presents a substantial obstacle for low-income households, bill arrears can make this challenge seemingly unsurmountable. Thus, **we would recommend, to the extent possible, SEOs focus LIHEAP funds to address such arrears**, then prioritize these customers for the efficiency and electrification upgrades most likely to reduce their energy burden going forward. In many states, LIHEAP already requires recipients to provide a copy of a shutoff or past-due notice to receive support, so the program is well structured for the first step of this recommendation. This two-step approach for the neediest of households should serve both to address immediate crises and over time, reduce the likelihood such households will continue to need bill assistance from LIHEAP or other programs.

- (#11) High Bill Alerts: Although the installation of efficiency upgrades and electrified appliances should serve to lower the energy burden for households, especially if done

in conjunction with weatherization or insulation improvements, improper use of new appliances or improperly installed upgrades could produce higher bills. Such bill shocks are a distinct problem for low-income households but may also discourage other consumers. To address this, **we recommend SEOs coordinate with state utilities and enroll rebate recipients in a "high bill" alert program**. Such alerts can serve as an added safety net to ensure the fundamental goal of these rebates (lowering energy burden) is met and that issues that arise in the transition are promptly addressed.

4.4) Serving Middle-Income Households

Middle-income households (i.e., those between 80% and 150% of AMI) may not face the same acute financial challenges as low-income households. But they are still constrained when it comes to the upfront cost of a new electric appliance or a small efficiency upgrade, let alone a comprehensive project that can run into the thousands of dollars. Fortunately, not only do the Home Energy Rebates provide (partial) upfront financing, but there are additional incentives and financial mechanisms that can help close the remaining gap.

The recommendations below are intended to help inform the thinking of state leaders as they go about program design with the aim of serving this population in an effective manner. Enabling middle-income consumers to access these goods and services is also more likely to catalyze larger market growth, as this consumer segment may be more likely to make additional efficiency, electrification, and clean energy investments (e.g., distributed generation, residential storage, EV charging) with future disposable income:

- (#12) Sequencing Rebates: As discussed above, rebate programs should focus first on upgrades and appliances that maximize the efficiency of residential space heating and cooling. To that end, we recommend **states prioritize using Home Efficiency Rebates to help finance upgrades to the building envelope, then Electrification and Appliance Rebates to finance the cost of heat-pump HVAC systems.**
- (#13) Stacking Tax Credits: To ensure middle-income consumers with federal tax liability are minimizing the cost of efficiency and electrification investments, we recommend **states include clear and compelling information regarding the Residential Energy Efficiency Tax Credit (25C) and its ability to be combined with rebates or other programs in all relevant education, outreach, and marketing**. SEOs should particularly ensure that contractors are aware of the ability to "stack" the tax credit and share that information with rebate recipients. Even when consumers are not eligible for Electrification or Appliance Rebates (i.e., they exceed the income cap) raising awareness of the revamped and expanded 25C credit is likely to help grow the

larger market for these services. States should likewise consider including information about incentives for complementary clean energy investments, such as the Residential Clean Energy Tax Credit (25D), in these communications given the complementary benefits of pairing efficiency and electrification investments (funded by the Home Energy Rebates) with distributed generation and residential storage, which are ineligible for the rebates.

- (#14) Establish/Expand State Energy Financing Institutions (SEFIs): The low- or no-interest loans that SEFIs can provide are a great means of addressing the upfront cost gap after Home Energy Rebates are applied. Middle-income consumers are more likely to have the capital over the long-term to repay such loans, particularly with the anticipated energy savings from the upgrades. In a high-interest rate environment, low- to no-interest loans are of particular value. So, if states do not already have an SEFI in place, we recommend that **SEOs use administrative funds from the rebate program to establish such an institution**. Once that's established, or if a state already has an SEFI in place, we further recommend that **states apply for GGRF funds via the National Clean Investment Fund (NCIF) or Clean Communities Investment Accelerator (CCIA) to help capitalize their SEFI** and use these funds to establish or expand lending for efficiency and electrification projects for eligible single and multi-family homes. State leaders should likewise consider the establishment of on-bill financing mechanisms, such as PACE, if they don't already exist in the state.

4.5) Serving Multi-family Residential Properties

Multi-family properties present both a challenge and an opportunity to program designers. Many, particularly rental properties, may have both low- and middle-income renters, who have few (if any) means of covering the upfront costs of efficient upgrades and electrified appliances. Building owners, by contrast, are more likely to have the capital to shoulder the initial costs of efficiency and electrification projects. But these properties face a "split incentive", as discussed in Section 1, that can lead owners to underinvest in efficiency upgrades and new appliances that would benefit residents.

While crafting programs for such properties may be challenging, we would encourage SEOs to make significant investments in multi-family efficiency and electrification projects. The recommendations below are intended to serve as a "jumping off" point for the development of such rebate programs:

- (#15) Funding Allocations by Dwelling Type: DOE requires that states endeavor to use at least 10% of Home Energy Rebate funds in multi-family buildings. We recommend

that state program managers **set aside more than 10%** for multi-family buildings. Effectively designed and deployed, multi-family efficiency and electrification upgrades have greater potential to scale, making them both more economic and more likely to catalyze additional market growth. Serving multi-family buildings can likewise have the advantage of assisting low-income consumers while not requiring the same upfront outlays that may be required for individual homeowners, as multi-family property owners may be better equipped to cover post-rebate gaps.

- (#16) Target Buildings with Shared Systems: As noted in Section 2.3 above, owners of multi-family buildings are permitted to pool Home Electrification and Appliance Rebates across eligible units to pay for building-level systems (e.g., a large-scale heat pump HVAC). We recommend **SEOs identify and prioritize these buildings in their program outreach and education**, ensuring that building owners are aware of the option to pool rebates. As building owners are likely footing at least a share of the energy costs for common spaces, they may be more inclined to embrace building-wide efficiency and electrification projects.

- (#17) Stacking Tax Deductions: To ensure rental property owners with tax liability minimize their upfront costs for efficiency projects (which may also encompass high-efficiency electrification investments) we recommend that **SEOs provide clear, consistent information regarding the Efficient Commercial Buildings Deduction (179D) and its ability to be combined with the rebates in all relevant outreach and education to the owners of multi-family rental properties**. SEOs should particularly ensure that contractors are aware of the ability to "stack" the tax credit and share that information with rebate recipients. Even if some building owners are ultimately unable to take advantage of the rebates, widespread awareness of the deduction should help to catalyze greater market demand for efficiency and electrification services and a better experience for more renters.

4.6) Other Supportive Policies

Beyond tailoring programs to serve specific constituencies or advance particular technologies, states should be working to implement policies that broadly help ensure the success of the Home Energy Rebates. So, we have developed recommendations to inform policies and plans for data access and contractor training:

(#18) Data Access Planning: Beyond ensuring that energy consumption data is safely and securely transferred and maintained by all parties, we would strongly encourage states to maximize third party access. Maximizing access will significantly enhance program outreach, education, and marketing, helping to ensure rebates flow to consumers most and need and

where they can achieve the greatest impact (i.e., best lower energy bills). In the same vein, states should consider a two-way data sharing protocol wherein information flows both ways between the utilities and SEOs / third party providers, providing all parties with visibility regarding which households are participating in programs.

Some states may be uncomfortable with an "open access" process. Thus, to maximize data access while also ensuring consumer awareness, we would **recommend states to adopt an "opt-out" process**. By contrast, we would strongly discourage states from establishing an "opt-in" process for data access; experience suggests such an approach results in a distinctly low response rate and effectively serves as a barrier to essential data. In some cases, data aggregation may be sufficient to enable effective marketing, such as in multi-family buildings, but a lack of granularity is likely to weaken more targeted outreach.

Effective and efficient data access will not only ensure the success of these rebate programs but also help catalyze a broader market for residential efficiency, electrification, and clean energy. A household that utilizes these rebates to improve overall energy efficiency and electrify home heating and cooling could also benefit from residential solar or demand management insights, which could further lower their electric bill while enhancing resilience. Fostering a broader ecosystem of residential energy service providers helps ensure a durable market. To that end we would **recommend that states classify energy consumption data for "secondary purposes"** – i.e., permit the state and third parties to use relevant energy data to engage and educate consumers regarding complementary programs and technologies outside the immediate scope of these programs.

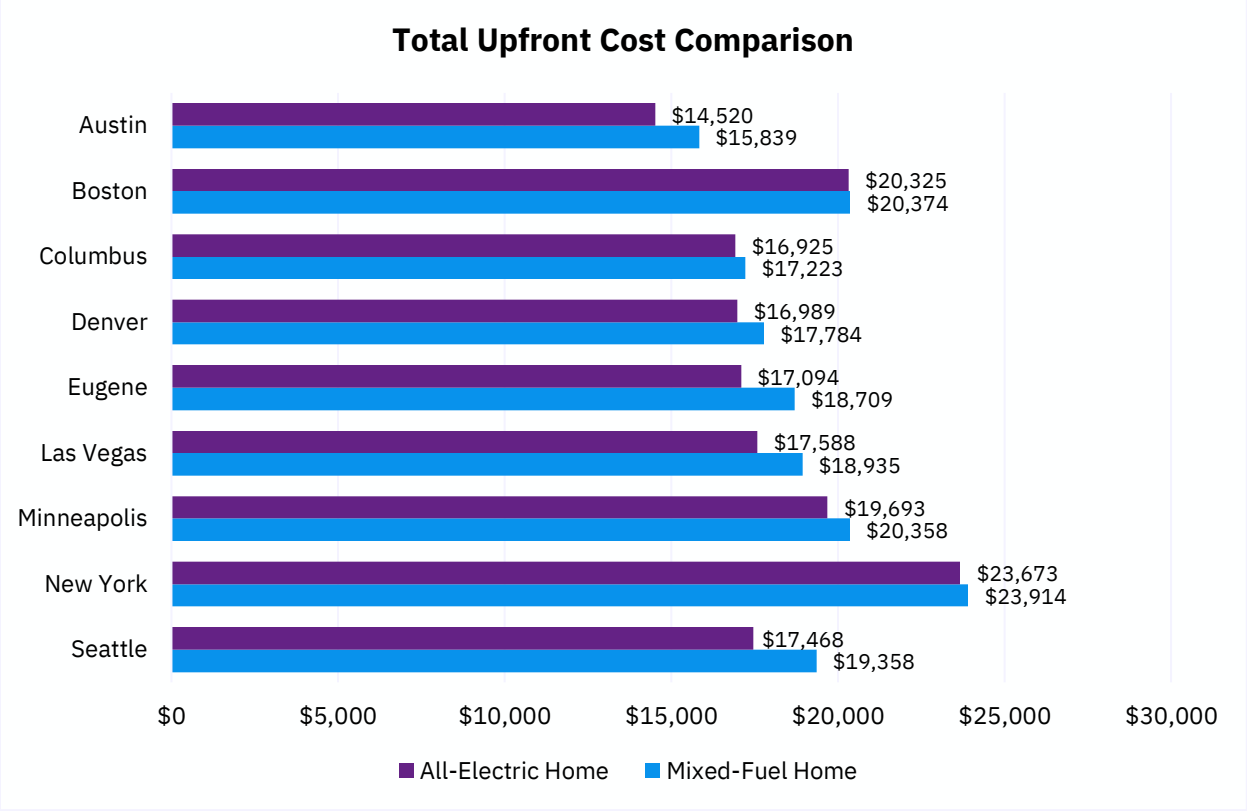
(#19) Contractor Training: **We recommend that states apply for the State-Based Home Efficiency Contractor Training Grants** provided by the IRA and administered by SCEP. The deadline to apply is September 30, 2023. As three-quarters of the $200 million will be allocated via formula, states are guaranteed to receive resources if they apply. There is no matching requirement for the program, so accepting such resources puts no obligation on the state, and receipt of these funds helps reduce the need to use program dollars for this administrative purpose (so more can go towards rebates).

Establishing and/or expanding workforce training and certification for residential energy efficiency and electrification work will help to strengthen implementation of Home Energy Rebate Programs, ensuring program funds are well utilized, projects effectively implemented, and ultimately energy bills are reduced. In some states, certain upgrades can be performed by general licensed contractors, whereas in other states, only specialized licensed contractors (e.g., electricians) can perform that work. Therefore, SEOs should also identify all applicable licensed contractors for training programs that are developed under either formula program. It

is also worth noting, as detailed in Section 2.1, that DOE requires states to include a Community Benefits Plan (CBP) as part of their Implementation Blueprint. As part of their CBP, states must demonstrate that they have plans to engage and support a skilled and qualified workforce to implement these programs. Applying for the State-Based Training Grants allows states to demonstrate this to SCEP.

4.7) Broader Context: The Economics of New Construction vs. Existing Home Retrofits

The cost of building all-electric new construction is already proving to be less expensive upfront than the cost of building mixed-fuel homes in cities in all climate zones, as the graph below details.[21] This is in large part because the all-electric home foregoes the installation of two separate energy systems in favor of just one: electricity. To furnish natural gas service (or delivered fuels) for air or water heating, clothes drying, or cooking requires double the utility equipment in and around the home, specifically a gas main, a gas meter, and external and internal piping.



Moreover, as a growing number of states end or cut subsidization of new gas hookups, this differential will only grow in more places. Furthermore, if new construction can meet the latest

[21] Lacey Tan, Mohammad Hassan Fathollahzadeh, and Edie Taylor, The Economics of Electrifying Buildings: Residential New Construction, RMI, 2022, https://rmi.org/insight/the-economics-of-electrifying-buildings-residential-new-construction/.

ENERGY STAR requirements or the Department of Energy's Zero Energy Ready Homes (ZERH) qualifications, the homebuilder can further reduce costs via the reinvigorated 45L tax credit for new construction.

Residents of all-electric new construction also benefit from lower total annual energy costs, paid for via only one monthly energy bill. This is because air-and ground-source heat pumps and heat pump water heaters offer major energy efficiency gains over traditional gas furnaces and water heaters, and because high and volatile natural gas costs are passed directly onto consumers of natural gas service.[22]

Importantly, many cities, counties, and states are already moving towards all-electric homes with policies that phase out gas hookups in new construction. Additional local and state policies are advantageous to accelerate this market transformation and incentivize home builders to transition to all-electric new construction.

In contrast, retrofitting the existing housing stock requires significant upfront investment to purchase new appliances, customize installation to the specific building, and upgrade electrical service to accommodate new load. Many existing buildings were likely constructed using earlier, less efficient energy code standards, making efficiency upgrades particularly impactful. Many homes, especially older ones, will also require new insulation, sealing, windows, and roofs in order to maximize the benefits of high-efficiency heat pumps. Though the all-electric home can provide consumers with immediate savings on their monthly bills, and overall savings over the long run, the payback times for upfront investments may span years. Given these more challenging economics, low-income homeowners and renters are much less likely to initiate a retrofit project, and therefore benefit from a clean, all-electric home, without additional incentive dollars.

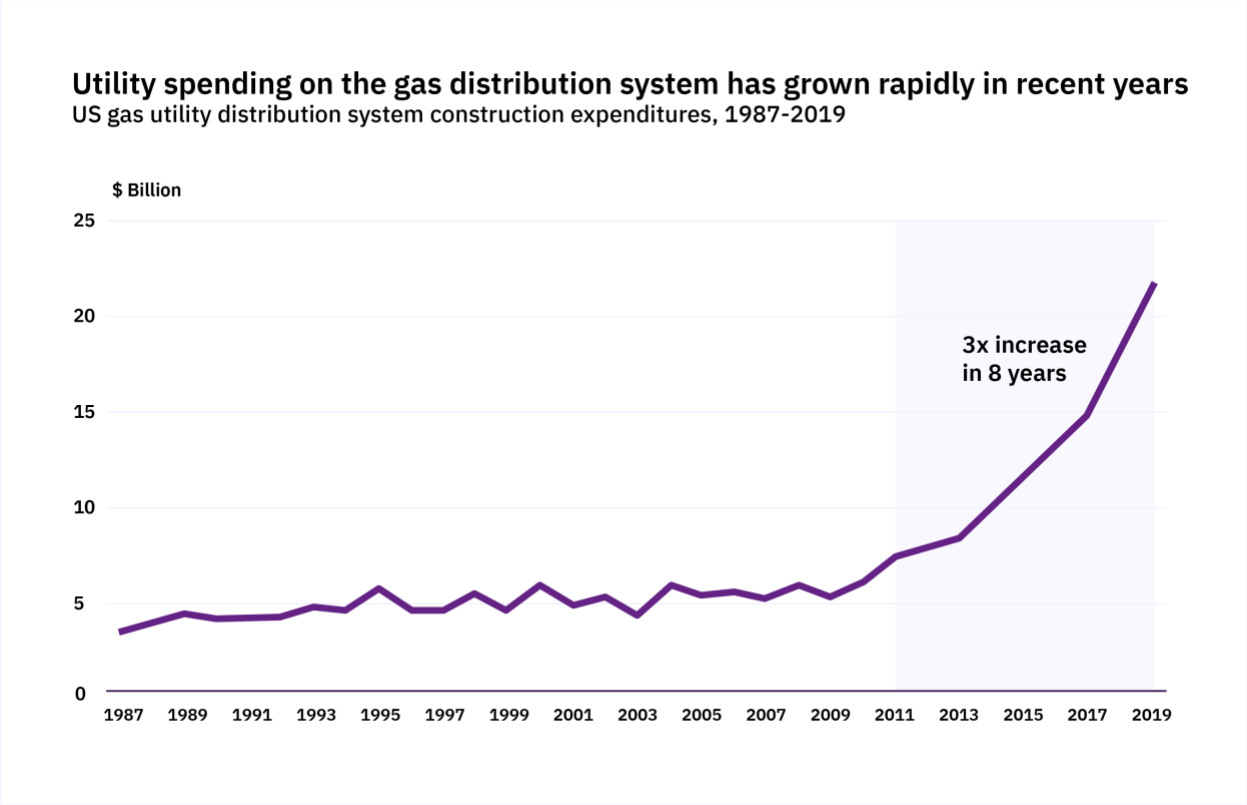
- (#20) New Construction v. Retrofits: While DOE guidance permits Home Electrification and Appliance Rebates to be utilized for both new construction and home retrofits, for the reasons detailed above we **recommend states focus these rebates on retrofits for existing residences.** To balance this, states should also consider **proactive outreach to homebuilders, ensuring they're aware of the New Energy Efficient Homes Tax Credit (45L)**, and discussing other solutions to support the construction of new, all-electric, energy efficient homes.

[22] Lacey Tan, Mohammad Hassan Fathollahzadeh, and Edie Taylor, The Economics of Electrifying Buildings: Residential New Construction, RMI, 2022, https://rmi.org/insight/the-economics-of-electrifying-buildings-residential-new-construction/.

4.8) Broader Context: America's Residential Energy Transition

Even before the IRA, high and volatile prices for fossil fuels, innovation and growth in the electric appliance sector, state policies supporting building decarbonization, and consumer preferences for clean, affordable energy were reshaping residential energy consumption.

Now, with an influx of new funding available from the IRA, consumers have even more incentives and resources to make the switch to efficient, zero-emission building technologies. This new demand, as well as domestic manufacturing incentives in the IRA, should further encourage private industry to scale production of energy efficient technologies and grow the energy efficiency and electrification workforce with qualified technicians who can install, maintain, and service these products.



At the same time, gas utilities continue to spend billions of dollars per year growing their gas distribution networks and replacing aging pipelines.[23] Indeed, as the chart above shows, spending has only accelerated over the past ten years. These two trends are at odds. As people electrify their homes, reducing or ending their gas consumption, fewer customers will remain on the hook for growing system costs. This will cause bills to increase as gas utilities

[23] https://rmi.org/insight/its-time-to-rethink-subsidized-gas-line-extensions/.

increase rates to compensate, which will make the economics of electrification even more cost-effective.

Several recent studies forecast significant rate shocks for remaining natural gas customers in the decades ahead.[24] To protect residents—especially those who are least able to purchase new electric appliances (e.g., renters and low-income households)—state policymakers can and should take preventive measures to manage the transition to electrified buildings in an orderly and cost-effective way. This first requires states to create new, transparent, long-term gas planning processes to review gas investments—and their alternatives—in light of new market trends and added stranded asset risks.

Next, as states begin to contemplate right sizing their pipeline networks to meet the needs of a shrinking number of customers, they should look to prioritize disadvantaged and vulnerable communities by geographically targeting available local, state, federal, and utility energy efficiency and electrification dollars, including those from the IRA.

As the above discussion shows, there's an acute need for states to actively plan for and manage the ongoing transition from natural gas, and other fuels, towards electrification to protect ratepayers. That said, the policies and regulations to manage such a transition do not arise overnight, and the timelines for the implementation of long-term plans may not align with the implementation of Home Energy Rebate Programs. We have crafted a pair of recommendations that reflect the different stages at which states may be in this process:

- **(#21) Natural Gas Focus:** If a state has, or is actively developing, a long-term gas distribution system plan that identifies where disadvantaged communities overlap with aging or unsafe gas infrastructure, AND/OR if a state has a disadvantaged community already interested in pursuing electrification projects, we recommend earmarking a portion of available Home Energy Rebate funds (particularly Home Electrification and Appliance Rebates) for one (or several) neighborhood decarbonization pilot project(s), where the costs to fully electrify low-income and vulnerable households, including panel upgrades and weatherization, are covered.
- **(#22) Delivered Fuels Focus:** We recommend prioritizing a share of Home Energy Rebate funds (particularly Home Electrification and Appliance Rebates) for households currently utilizing delivered fuels (fuel oil or heating oil). These households are likely to

[24] One specific example of a forecast rate shock comes out of Minnesota, where the Citizens Utility Board of Minnesota recently found that gas distribution utilities in the state are planning to spend a combined $1 billion per year by 2030 replacing pipelines rates as some of the safest in the country. This spending means a CenterPoint gas customer would pay over six-times more in gas delivery charges in 2040 than in 2010. For more information, see: https://cubminnesota.org/wp-content/uploads/2023/07/Bill-impacts-of-MN-gas-utility-capital-expenditures-2023.pdf.

have experienced some of the most significant rate shocks over the past couple of years and will experience some of the highest monthly bill savings from switching to efficient electric heat, so the transition to electric appliances should provide significant relief.

4.9) Broader Context: Virtual Power Plants & Market Transformation

Virtual power plants (VPPs) are aggregations of multiple distributed energy resources (DERs) that together provide valuable electricity and grid services at the distribution and/or transmission system level. Many different DERs can be included in a VPP, including rebate-eligible upgrades and appliances like smart thermostats, smart electrical panels, dispatchable water heaters, heat-pump HVACs, and other electrified appliances, as discussed in *Recommendation #7* above. Residential solar, electric vehicles (EVs), behavioral demand respond, and residential energy storage can likewise be incorporated into VPPs.

Individually, these DERs can provide valuable services to customers, such as lowering energy bills and increasing household resilience. Combined in a single household, different DERs can likewise complement one another, as discussed earlier in this guide. But grouping multiple DERs across households or communities into an aggregated whole that can act as a single resource—much like a conventional power plant—allows these smaller resources to achieve economies of scale to provide retail and wholesale services that they cannot provide individually.

Aggregated DERs may provide a host of grid benefits, such as electricity generation, demand reduction, resource adequacy/capacity, and ancillary services such as regulation or reserves. These are detailed in the Appendix under ***Grid Benefits of Aggregated Efficient & Electrified Technologies***. VPPs can also generate societal benefits, such as increased renewables deployment, faster grid connections, improved behind-the-meter grid intelligence, and enhanced customer satisfaction, that indicate a more complete accounting of their total value to society. So. whether market participants and or public policy makers value improving reliability, addressing grid congestion, or facilitating the transition to a 100% clean grid, VPPs are an effective—and cost-effective—resource to achieve these aims.

Realizing the full potential of VPPs involves unlocking and expanding retail programs and wholesale market participation options that allow aggregations of DERs to provide all the benefits they are technically capable of providing. VPPs received key support at the federal level when the Federal Energy Regulatory Commission (FERC) issued Order No. 2222, which requires all Regional Transmission Organizations and Independent System Operators

(RTOs/ISOs) to enable participation by DER aggregators to provide all wholesale services they are technically capable of providing. For example, aggregators will seek to bid customer-based DR aggregations, composed of resources such as "smart" thermostats and electric appliances into wholesale markets. However, whether and how fast VPPs are able to participate in the various wholesale markets depends on the RTOs/ISOs setting aggressive timelines to integrate DERs. While some RTOs/ISOs have made significant progress to integrate aggregations of DERs, others are only in the beginning stages.

State leaders also have an important role to play in enabling VPPs. Wholesale and retail energy markets may be complex and unfamiliar territory for many, so the recommendations below are intended to help leaders orient themselves and point state policies and engagement in the right direction. Ultimately, we hope that these recommendations can serve as part of the foundation for the state's Market Transformation Plan, as discussed in Section 2.1.

- (#23) PUC Engagement: In many states, public utility commissioners (PUCs) are the primary policymakers that engage with, oversee, and regulate energy markets, particularly at the state level. As such, **we recommend that SEOs engage early and often with their PUCs** to ensure close alignment around policies and regulations that can enable the growth of VPPs in their states.
- (#24) Retail Markets: While unlocking all of the value streams from VPPs will require action at the wholesale level—an issue discussed in greater detail below—state level retail markets represent a critical step in enabling VPPs. **We recommend state decision makers and regulators lead on the creation and growth of retail markets that enable and incorporate VPPs.** FERC Order 2222 gives states a key role in overseeing DER interconnection and reviewing aggregations to ensure successful implementation. In addition, states have oversight of important distribution-level systems, tools, and infrastructure that will be required to fully enable VPP participation in retail and wholesale markets.
- (#25) RTO/ISO Engagement: Wholesale energy markets are regulated by RTOs and ISOs. States play an important (but not exclusive) role in the governance and oversight of these organizations. As noted above, while Order No. 2222 requires RTOs/ISOs to allow for the participation of VPPs, the speed at which they move and the degree to which they let aggregated resources participate in these markets is an open question. **We recommend that state leaders and regulators remain coordinated and engaged with their local RTOs/ISOs (and with FERC) on implementation of Order No. 2222** to ensure swift and effective implementation. As VPPs can participate both in retail and wholesale markets, states will likewise need to coordinate closely with RTOs to ensure optimal use of VPPs across both retail and wholesale value streams.

Appendix

Home Energy Rebates - State Allocations

This table details the top-line state-by-state allocations for the Home Energy Rebate Programs. Amounts have been rounded to the nearest million. Please consult the official DOE announcement for precise amounts and detailed breakdowns

State/ Territory	Home Energy Performance-Based, Whole-House Rebate Allocations	High Efficiency Electric Home Rebate Allocations	Total Allocations Amount
Alaska	$37 Million	$37 Million	$75 Million
Alabama	$73 Million	$73 Million	$146 Million
Arkansas	$53 Million	$52 Million	$105 Million
American Samoa	$25 Million	$25 Million	$50 Million
Arizona	$77 Million	$76 Million	$153 Million
California	$292 Million	$90 Million	$582 Million
Colorado	$70 Million	$70 Million	$140 Million
Connecticut	$50 Million	$50 Million	$99 Million
District of Columbia	$30 Million	$30 Million	$59 Million
Delaware	$33 Million	$33 Million	$66 Million
Florida	$174 Million	$173 Million	$346 Million
Georgia	$110 Million	$109 Million	$219 Million
Guam	$26 Million	$26 Million	$51 Million
Hawaii	$34 Million	$34 Million	$68 Million
Iowa	$61 Million	$60 Million	$121 Million
Idaho	$41 Million	$40 Million	$81 Million
Illinois	$132 Million	$131 Million	$264 Million
Indiana	$91 Million	$91 Million	$182 Million
Kansas	$53 Million	$53 Million	$106 Million
Kentucky	$67 Million	$67 Million	$134 Million

Louisiana	$107 Million	$106 Million	$213 Million
Massachusetts	$73 Million	$73 Million	$146 Million
Maryland	$69 Million	$68 Million	$137 Million
Maine	$36 Million	$36 Million	$72 Million
Michigan	$106 Million	$105 Million	$211 Million
Minnesota	$74 Million	$74 Million	$148 Million
Missouri	$76 Million	$75 Million	$151 Million
Northern Marianas	$25 Million	$25 Million	$50 Million
Mississippi	$53 Million	$52 Million	$105 Million
Montana	$36 Million	$35 Million	$71 Million
North Carolina	$105 Million	$104 Million	$209 Million
North Dakota	$37 Million	$37 Million	$74 Million
Nebraska	$46 Million	$46 Million	$91 Million
New Hampshire	$35 Million	$35 Million	$70 Million
New Jersey	$92 Million	$91 Million	$183 Million
New Mexico	$44 Million	$44 Million	$88 Million
Nevada	$48 Million	$48 Million	$96 Million
New York	$159 Million	$158 Million	$318 Million
Ohio	$125 Million	$124 Million	$249 Million
Oklahoma	$65 Million	$64 Million	$129 Million
Oregon	$57 Million	$57 Million	$114 Million
Pennsylvania	$130 Million	$129 Million	$259 Million
Puerto Rico	$43 Million	$42 Million	$85 Million
Rhode Island	$32 Million	$32 Million	$64 Million
South Carolina	$69 Million	$68 Million	$137 Million
South Dakota	$34 Million	$34 Million	$69 Million
Tennessee	$84 Million	$83 Million	$167 Million
Texas	$346 Million	$344 Million	$690 Million

Utah	$51 Million	$50 Million	$101 Million
Virginia	$95 Million	$94 Million	$189 Million
U.S. Virgin Islands	$26 Million	$26 Million	$51 Million
Vermont	$29 Million	$29 Million	$59 Million
Washington	$83 Million	$83 Million	$166 Million
Wisconsin	$75 Million	$74 Million	$149 Million
West Virginia	$44 Million	$44 Million	$88 Million
Wyoming	$35 Million	$34 Million	$69 Million

https://www.energy.gov/articles/biden-harris-administration-announces-state-and-tribe-allocations-home-energy-rebate

Grid Benefits of Aggregated Efficient & Electrified Technologies:

As discussed in Sections 1 and 4, aggregated energy efficient and electrification technologies, enabled by demand response (DR), can generate a host of benefits for the electric grid, if permitted to participate in retail and wholesale electricity markets. These specific benefits are detailed below:

- **Protecting Consumers**: Energy efficiency and DR can reduce people's vulnerability to harm from natural disasters and electricity loss by improving the quality and comfort of shelter and reducing the harm resulting from loss of power. Energy efficiency is an effective way to ensure that homes and appliances provide better services and comfort when the power system fails. In times of severe weather, households with DR devices can receive signals instructing them to reduce power, and those households can receive a financial benefit for doing so.
- **Boosting Grid Resilience:** Energy efficiency and DR can support transmission and distribution system resilience by providing electricity, demand flexibility, and other grid services during extreme weather and times of stress. During periods of grid congestion or price spikes, communities with DR devices can reduce their load and help stabilize the grid, ensuring that electricity can flow to those without it and preventing brownouts and blackouts. Ensuring that DERs are aggregated, coordinated, and compensated is the best way for them to deliver large-scale grid benefits.
- **Providing Ancillary Services:** Energy efficiency and DR can provide valuable ancillary services, such as reserves and regulation, that support continuous reliability of the power system, especially during periods of heavy demand and grid stress. Like

electricity, ancillary services from DERs are bought and sold through wholesale markets. For example, in ISO-NE, demand response resources are able to participate in the ISO's ancillary services markets, providing 3% of the entire system's thirty-minute operating reserves.[25]

- **Reducing Production Costs:** Investing in energy efficiency and DR can reduce production costs because those resources can provide electricity at a cheaper price than other power sources, especially peaker plants, which are often expensive. With enough adoption of DERs such as energy efficiency and DR, investment in more expensive sources of electricity can be reduced or even eliminated, and that cost savings can be passed on to ratepayers.

- **Defraying T&D Costs:** DERs such as energy efficiency and DR can reduce power system costs by deferring or decreasing the need for transmission and distribution (T&D) infrastructure to address peak load. These cost savings could be substantial. For example, Texas utilities spent $40.6 billion on T&D infrastructure capital investment in the past 10 years. Deferring those investments by incorporating DERs could reduce total T&D infrastructure costs by 8.5% annually and save $5.5 billion over ten years.[26]

- **Resource Adequacy:** Resource adequacy is the measure of whether a power provider has enough resources to serve energy demand. This is a critical service, and one that's highly valued in the energy marketplace. After analyzing the costs of providing energy from a natural gas peaker plant, a transmission-connected utility-scale battery, and a VPP, the Brattle Group found that the VPP "provides the same resource adequacy at a significant cost discount relative to the alternatives."[27] The annualized net cost of providing 400 MW of resource adequacy is only $2 million for a VPP, compared to $43 million for a natural gas peaker plant and $29 million for a transmission-connected utility-scale battery. Brattle also found that a 60 GW VPP deployment could yield cost savings of $15 billion to $35 billion compared to the alternative options over a ten-year period.

Home Efficiency Rebate Pathways – Additional Information:

As discussed in Section 2, states may opt to use one of two pathways in regard to calculating the savings for the Home Efficiency Rebates: a modeled pathway or a measured pathway. Additional details and insights regarding each pathway are included below.

[25] https://www.iso-ne.com/static-assets/documents/2022/11/iso_dr_11_03_2022_hy.pdf.
[26] The Value of Integrating Distributed Energy Resources in Texas. TAEBA. (2019). page 11 https://www.texasadvancedenergy.org/hubfs/TAEBA%20(2019)/Valuing%20DERs%20in%20ERCOT%20final.11.13.19.pdf.
[27] https://www.brattle.com/real-reliability/.

- **Modeled Pathway:** The modeled approach may allow for the more rapid disbursement of rebates, but this approach establishes a higher threshold for projects to achieve and applies an absolute dollar cap to the maximum rebate amount.

The IRA requires the use of ANSI/BPI-2400 to calibrate modeled energy savings. However, some homes may not provide conditions necessary to use BPI-2400. This scenario may arise in multi-family homes, homes that use delivered fuels, and in homes where existing occupants have resided there for less than one year. For more information on the ANSI/BPI-2400 system, implementers can refer to the Building Performance Institute's State Energy Officials Guide to BPI-2400.

- **Measured Pathway:** This approach ensures that projects are valued more precisely for the savings they actually achieve. Moreover, DOE has provided more flexibility under the measured savings approach: projects that achieve energy savings of at least 15% can access rebates (as opposed to a 20% minimum threshold under the modeled approach) and this approach does not apply an absolute dollar cap on the amount of a rebate (theoretically allowing for the financing of larger projects).

Using the measured approach requires a minimum of nine months of calculation before a homeowner receives their rebate. This will delay the disbursement of rebates, which may be a significant impediment for low- and middle-income consumers unable to shoulder the upfront cost over that time period. In addition, if calculations take place in fewer than 12 months, then they must include at least one peak season.

Examples of Existing State & Utility Efficiency & Electrification Programs:

Below is a sample of utility- and state-run efficiency and electrification programs from across the country that are congruent with the Home Energy Rebate programs. This list is by no means comprehensive, rather it is intended to spur state leaders to consider where existing utility programs may be a good complement to the rebate programs and/or whether existing state programs may be an option for a "Quick Start" infusion using rebate funds.

Utility-Run Efficiency & Electrification Programs:

- **National Grid (New England):** Working with behavioral energy efficiency company Opower/Oracle, the utility was able to increase home weatherization upgrades among customers by 2.9x in 2021 after identifying homes in need of upgrades and then

sending them personalized program offers. This behavioral energy efficiency program has proven successful in not only lowering energy costs and increasing efficiency, but also in reducing carbon emissions.

- **MidAmerican Energy Company (Iowa):** The utility's rebate program provides residents with rebates on air-source heat pumps, ductless mini-splits, and smart thermostats for qualifying customers.

State-Run Efficiency & Electrification Programs:

- **NY Clean Heat (New York):** New York's clean heating program allows homeowners to receive rebates for purchasing heat pumps. Homeowners can use low-interest loans to purchase heat pumps and receive the rebates once purchased. Contractors can apply for the rebate on behalf of the homeowner and help them navigate financing options. One such financing option is on-bill recovery, which allows customers to repay their loans through their monthly energy savings.
- **Alaska's Weatherization Program (Alaska):** Administered by the Alaska Housing Finance Corporation, this program provides grants to local service providers. Alaska residents that meet income criteria are eligible to receive weatherization services from their local provider at no cost. Financed with WAP funds, this is a prime example of a set of programs effective at supporting LMI households because they are direct funds with no repayment that cover the full needs of weatherization.
- **Efficiency Maine (Maine):** This state-led efficiency provider has installed 100,000 heat pumps (an impressive feat for a state with 600,000 households). It has achieved this success in part by partnering across the supply chain with contractors, distributors, suppliers, and retailers to shift the market to being "heat pump first". By listening to feedback from all these partners, Efficiency Maine has created simple yet effective checklists that make participation in the program easy, streamlined the lead acquisition process to save both contractors and customers time and money, and brought costs down by increasing volume of sales.

Energy Financing Innovations – Specific Examples:

Below we've provided brief descriptions of a few SEFIs that are designed to support clean energy projects, including residential efficiency and electrification upgrades. This list is certainly not comprehensive, but rather is intended to provide food for thought to state leaders looking to stand-up or expand their own SEFIs:

- **Michigan Saves:** This is the country's oldest nonprofit green bank. Michigan Saves provides financing options for renewable energy installations, weatherization and insulation, and electric vehicle charging infrastructure to families and commercial property owners. This lending program is available to all residents throughout the state working with contractors to install clean energy and weatherization upgrades on their properties.
- **Colorado Clean Energy Fund:** Recently established, CCEF provides eligible Coloradans with loans up to $75,000 at low, fixed interest rates for solar installations, battery storage, insulation, heating and cooling, windows, air sealing, and EV charging. State leaders have indicated they hope to leverage the federal funding from the Greenhouse Gas Reduction Fund to expand its low-to zero-interest loan offerings to low income and disadvantaged communities.

Below are just two examples of different on-bill financing mechanisms, currently operating in states across the country, for state leaders to consider:

- **California Municipal Energy Districts PACE Programs:** Property-Assessed Clean Energy ("PACE") financing allows property owners to borrow money to pay for energy improvements, such as solar panels or insulation. The borrowed amount is usually paid back over a period of years through a special assessment added to the property tax bill. In California, PACE financing programs are offered by cities and counties, and property owners can use the financing for improvements to their developed property. To be eligible, the property owner must have a clean title and be current on property taxes and mortgages. Once approved, the financing is added to the property tax bill for up to 20 years. PACE is an effective program for those that can manage the increased property tax but may not be best to serve LMI households.[28]
- **Illinois Energy Efficiency Loan Program:** This on-bill financing program is administered through Slipstream Energy Finance Solutions and funded by participating utilities. Borrowers can finance $500-$20,000 at a fixed rate loan terms of 4.99% interest rate up to 10 years. These loans are designed to be repaid through regular utility bill payments and typically target residential customers with good credit scores.[29]

[28] https://dfpi.ca.gov/pace-program-administrators/pace/.
[29] https://programs.dsireusa.org/system/program/detail/5152/residential-on-bill-financing-programs-nicor-gas-north-shore-gas-peoples-gas-ameren-and-comed.