



# Summary for Regulators

*Bringing Clean Energy Home: Unlocking Innovation and Policy to Align US Household Energy Use with Ambitious Climate Targets*



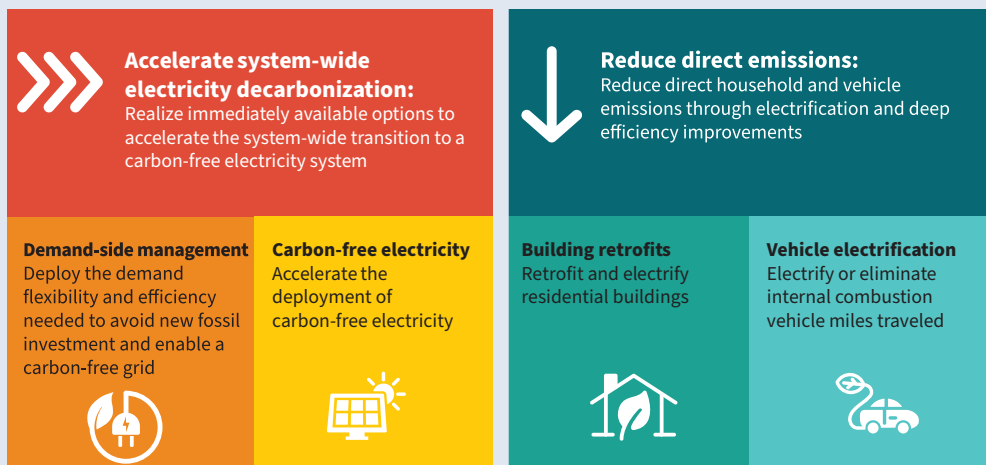
## Opportunity: The Benefits of Helping Households Reduce Emissions

Adoption of household clean energy technologies (e.g., efficiency, demand response, electric vehicle charging, and heat pumps) has the potential to reduce energy bills for all customers and decrease the energy burden for low-income customers. It can also support grid reliability, improve health and comfort, and accelerate progress toward clean energy goals.

- **Reducing energy bills:** Utility efficiency programs typically save energy much more cost-effectively than any supply-side resource can produce it,<sup>1</sup> even as renewable energy falls dramatically in price. For low-income households, efficiency upgrades can lower their energy burden.<sup>2</sup>
- **Supporting grid reliability:** Distributed energy resources can help prevent outages, support the grid to recover more quickly in outages, and support households to ride out outages safely by providing services such as quick ramping, flexibility, powering of critical loads, and islanding.<sup>3</sup>
- **Improving comfort and health:** Energy efficiency and electrification can reduce health risks such as asthma exacerbated by indoor air pollution and exposure to extreme heat and cold.<sup>4</sup> Distributed energy resources such as solar and storage can be deployed to help medically vulnerable households survive power outages.<sup>5</sup>
- **Accelerating clean energy progress:** Households are responsible for 40% of CO<sub>2</sub> emissions, which also means that residential customers can be a large part of the solution for meeting state- or utility-level clean energy goals. Adopting a full package of clean energy technologies can help an average household reduce CO<sub>2</sub> emissions by 80% or more.<sup>6</sup>

### Exhibit 1

#### What is needed to align residential energy-related CO<sub>2</sub> emissions with US climate targets



## Challenge: Barriers to Accelerating Adoption of Emissions-Reducing Technologies

Despite all these benefits, electric utility customers often face significant barriers to adopting these solutions. This is because solutions tend to be limited, costly, complex, and fragmented. These barriers are due both to gaps in available products and services from solutions providers, as well as structural features of regulation and utility business practices that hinder clean energy adoption.

- **Limited:** Households have limited options for clean energy today in many geographies and housing types, and often have limited awareness or understanding of the options that are available and their impacts. In many states, regulatory priorities, and thus utility incentives, do not encourage a range of program options. For example, utilities that have an incentive for growing energy sales may not be motivated to offer energy efficiency programs to their residential customers.
- **Costly:** Even though demand-side clean energy technologies are often cost-effective on a life-cycle basis, high first costs present a barrier to customer adoption. Households in states or utility service territories that do not have incentives, programs, or financing in place for residential decarbonization may face stronger cost barriers to adoption. This limits not only near-term adoption, especially by low-income households, but also the potential for market transformation that can deliver self-sustaining technology adoption to a broader set of homes.
- **Complex:** Many household clean energy options, ranging from enrolling in utility green tariff programs to heat pump and EV charger installations, require interested individuals to locate available rebates, identify capable contractors, coordinate electrical and/or plumbing work, complete local inspections, and more. Regulators can inadvertently make it more complicated for households to adopt new solutions. For example, 27 states do not have a clear framework for residential utility customers to provide third parties with access to energy usage data to help them identify promising solutions.
- **Fragmented:** In most instances today, people retrofit their homes, switch out devices, and enroll in utility programs independently, failing to capture the benefits of a bundled approach that maximizes the value of clean energy investments. Utility regulations and practices today can limit the attractiveness of bundled solutions, for example by separating energy efficiency and demand response programs across different business units, or even different companies.

## Recommendations: How Regulators Can Help

Regulators have a key role to play in addressing these barriers and supporting all households to benefit from making decisions to reduce their emissions. Regulators can ensure that options are accessible and affordable for all households, helping them achieve the cost, reliability, and equity benefits available today.

### Regulators can:

**Adjust** utility incentives and processes to maximize integration of demand-side resources

**Align** residential incentives, programs, and rates with decarbonization objectives and household benefits

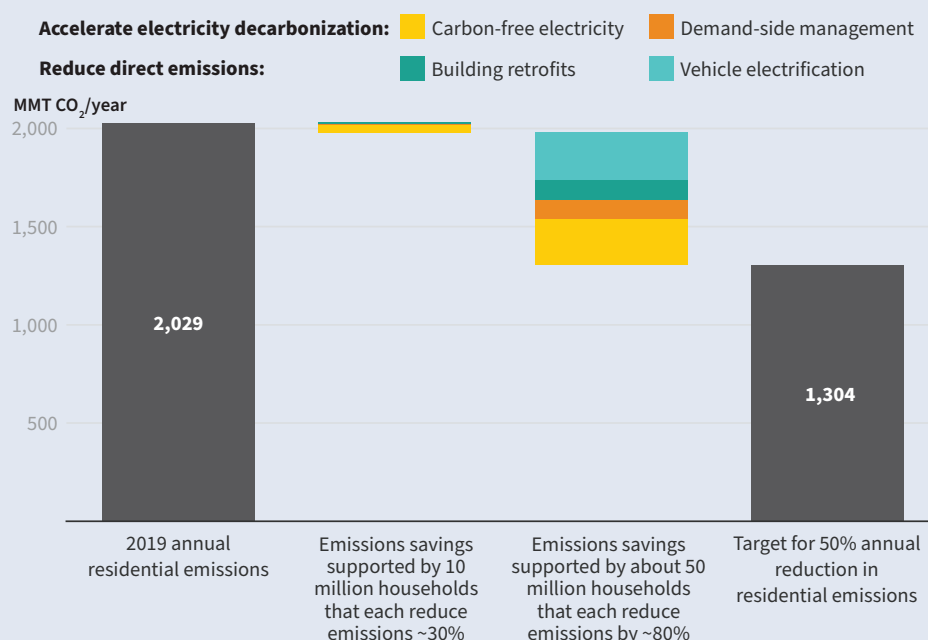
**Enable** data transparency and access

Regulatory action toward these outcomes, described in detail below, can also empower individual households to help lead the way toward meeting ambitious climate targets. If 10 million households opt in to a product or service that supports demand-side management and carbon-free electricity, they can address ~7% of the gap between today's household energy emissions and the 50% reduction by 2030 needed to reach US climate targets. This is roughly the number of customers participating in residential demand response programs today.

With regulatory shifts that unlock innovation, solutions providers could help households dramatically reduce their emissions. Reaching approximately 50 million households with an offer of this expanded scope can fully close the gap between household emissions today and 2030 clean energy policy targets.

## Exhibit 2

### How residential decarbonization products and services can help us reach US climate targets



### Adjust utility incentives and processes to maximize integration of demand-side resources

**Regulators can realign utility earnings so that the earnings are contingent on successfully meeting outcomes that benefit households**, such as customer engagement, resilience, or reduction of energy burden.

#### Recommendations

Implement performance incentive mechanisms (PIMs) that incent utilities to pursue outcomes that homes can support (e.g., strategic demand reduction, distributed energy resource deployment, resilience, and customer engagement).

Reduce capital bias through decoupling or equalization of earnings on operational expenditures to level the playing field for customer-sited solutions and third-party participation.



**Where these opportunities are actionable:**

- Only 13 states currently (CA, TX, HI, MS, WI, MI, OH, IN, NY, VT, MA, CT, RI) have PIMs for strategic demand reduction.<sup>7</sup>
- Only 17 states are decoupled for electric utilities.<sup>8</sup>
- Only CO and WA require all-source competitive procurement.<sup>9</sup> WA's rules specifically include demand-side resources and efficiency as resources that can participate in an all-source RFP.<sup>10</sup>
- At least 18 utility programs have implemented tariffs for distributed energy resources (DERs) that open up a role for third-party aggregation.<sup>11</sup>
- At least nine states (CA, CT, HI, MA, NY, MD, MI, MN, OR) have established requirements and processes for distribution system planning or integrated system planning.

## **Align residential incentives, programs, and rates with decarbonization objectives and household benefits**

**Regulators can create and consolidate residential incentives and programs and make solutions more affordable for low-income households.** Currently, residential programs may be constrained by out-of-date cost-effectiveness tests that constrain the ability to fund electrification programs or programs that produce benefits beyond cost, or to develop integrated value streams across resources.

### **Recommendations**

Update cost-effectiveness tests and fuel-switching rules to ensure that DER and electrification benefits are adequately captured in the design of utility residential customer programs, and that multiple or aggregated DERs can be considered.

Expand access to low-income incentives for decarbonization, including home and vehicle electrification.

**Where these opportunities are actionable:**

- Eleven states (TX, AZ, WA, OK, KS, AR, LA, SC, PA, WV, MN) have rules prohibiting or discouraging funding for fuel-switching programs that can be addressed.<sup>12</sup>
- Sixteen states do not have state requirements or utility programs for low-income energy efficiency.<sup>13</sup>
- Fifteen states plus D.C. do not have state requirements or utility programs for on-bill financing.<sup>14</sup>
- A survey of 2017 filings identified only 22 programs that integrated energy efficiency and demand response across the 50 largest utilities, indicating that many do not have such programs today.<sup>15</sup>

## Enable data transparency and access

**Regulators can define frameworks for data access to activate the market.** In order for solutions providers to innovate, they often need access to utility energy and billing data, system data, and aggregated community-level data. Regulators can play a leading role in standardizing the process, protections, and security requirements to ensure that this data can be accessed by third parties and households themselves.

### Recommendations

Develop frameworks for sharing utility energy and billing data, system data, and aggregated data.

Make real-time pricing and emissions data accessible to solutions providers and customers with adequate protections.

#### Where these opportunities are actionable:

- Only 56% of the country has advanced metering infrastructure (AMI) enabled for residential customers.<sup>16</sup>
- Only six states require utilities to provide energy usage data to customers, sixteen states have guidelines for third parties to access data if customers share access, and only ten of those states require utilities to provide the data upon request after customer authorization.<sup>17</sup>
- In 41 states, less than 5% of residential customers are enrolled in time-varying rates. Overall, 47.2% of customers in the United States have access to time-based pricing and 12.6% are enrolled.<sup>18</sup>
- As of 2020, there were no utilities with PIMs associated with leveraging AMI data. There were a few examples where leveraging AMI has been associated with shareholder compensation (e.g., BGE) or performance standards for AMI rollouts (e.g., SoCalGas).<sup>19</sup>
- Utilities in at least seven states (NY, CA, MA, MD, CT, NV, NJ, HI); Xcel Energy (MN, CO); and Exelon for Pepco Holdings, PECO, and ComEd have made hosting capacity maps for grid conditions available.<sup>20</sup>
- California is the only known state that has adopted an emissions signal as part of a requirement for a statewide incentive program and made it accessible through an API for devices to use.<sup>21</sup>

# Endnotes

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