FACT SHEET

Addressing Energy Insecurity via Utility Ratemaking

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About one in four American households experience some form of energy insecurity. Within this group, Black, Indigenous, Latine, low- and moderate-income (LMI), and other disadvantaged communities face a disproportionately higher burden.[1] Past efforts to mitigate energy insecurity have focused on downstream strategies such as bill assistance and weatherization. But upstream innovations in the utility ratemaking process have the potential to address the structural drivers of energy affordability themselves.[2]

Over 70 percent of household energy services in the United States are delivered by investor-owned utilities (IOUs). IOUs are privately owned entities regulated by state public utility commissions (PUCs). In exchange for monopoly power within their service territory, IOUs are subject to government-set prices with guaranteed rates of return, which are determined through a formal ratemaking process. IOU retail rate increases are routinely reviewed by PUCs through "rate cases" in which a judge considers relevant evidence, negotiates with the parties involved, and issues decisions that determine the IOU's revenue requirement and how the associated costs will be allocated among customer classes. PUC regulators must balance the interests of utility shareholders and ratepayers, with social and environmental policy goals such as energy conservation and affordability an important consideration.

Approaches to Advancing Energy Affordability via Utility Ratemaking

There are three categories of common utility affordability ratemaking approaches, all of which are explained in greater detail (including their advantages and challenges) in Table 1:

1. **Segmented rate classes** help deliver targeted and differentiated rates based on customers' income, location, usage, or other criteria. Unlike uniform fixed charges, which lead to higher energy burdens for low-income households, *income-based fixed charges* charge customers according to their ability to pay, with higher income customers paying more fixed charges. Variable volumetric charges through *increased block pricing* structures or *time of use rates* can encourage energy-saving behavior and lower daily peaks. These measures—when accompanied by technologies that improve access to relevant information or automate action—can overcome negative impacts on LMI households.[3]
2. **Low-income discount programs** subsidize qualifying residential customers' electricity bills by applying credits or rebates through federal funding, state grants, and/or on-bill tariffs. *Lifeline rates and straight discount models* are the most straightforward administratively, though *percent-of-income payment plans*, which include across-the-board energy burden caps that allow for household-level aid determination, have become increasingly popular. *Tiered discount models* offer the most targeted discounts, but precise income verification requirements impose a higher administrative burden.
3. **Budgeting strategies** help reduce variance in monthly bill charges for fixed-income households. *Budget billing* shields customers from bill volatility during the summer and winter months when energy consumption tends to increase. *Prepayment programs* help low-income customers pace themselves and reduce utility debt accumulation, though they also undermine typical consumer protections such as disconnection notices and seasonal shut-off moratoriums.

Through greater adoption of common ratemaking approaches, utilities and regulators can potentially go a long way toward addressing energy insecurity. However, maximizing the impact of these approaches will ultimately require addressing their drawbacks (see Table 1). For instance, income-based fixed charges, percent-of-income payment plans, and budget billing offer targeted aid to low-income customers, but may require the passage of legislation or complex administrative procedures for implementation. Future research can explore whether and how coupling complimentary approaches would help overcome the specific challenges involved, with the effect of further reducing energy insecurity for disadvantaged households and communities.[4]

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[1] Diana Hernández, Qëndresa Krasniqi, and Alexandra Peek, "Energy Insecurity in the United States," Center on Global Energy Policy (factsheet), October 2023, https://www.energypolicy.columbia.edu/publications/energy-insecurity-in-the-united-states/.
[2] Andrea Nishi, Diana Hernández, and Michael Gerrard, "Energy Insecurity Mitigation: The Low Income Home Energy Assistance Program and Other Low-Income Relief Programs in the US," Center on Global Energy Policy (infoguide), November 2023, https://www.energypolicy.columbia.edu/publications/energy-insecurity-mitigation-the-low-income-home-energy-assistance-program-and-other-low-income-relief-programs-in-the-us/; Bruce Tonn, Michaela Marincic, and Erin Rose, "A Dollar Well Spent: Monetizing the Societal Benefits of Low-Income Weatherization Programs in the United States," *Energy Research & Social Science*, vol 107 (2024), https://doi.org/10.1016/j.erss.2023.103341 (https://www.sciencedirect.com/science/article/pii/S2214629623004012); Qëndresa Krasniqi, Vivek Shastry, Alexandra Peek, and Diana Hernández, "Utility Policies and Practices to Alleviate US Energy Insecurity," Center on Global Energy Policy, June 2024, https://www.energypolicy.columbia.edu/wp-content/uploads/2024/06/UtilitiesSecurityPolicies-Commentary_CGEP_062524-2.pdf.
[3] Lee V. White and Nicole D. Sintov, "Varied Health and Financial Impacts of Time-of-Use Energy Rates across Sociodemographic Groups Raise Equity Concerns," *Nature Energy* 5, 16–17 (2020), https://doi.org/10.1038/s41560-019-0515-y.
[4] Kirsten Verclas and Eric Hsieh, "From Utility Disconnection to Universal Access," *The Electricity Journal* vol. 31, 6 (2018): 1–8, https://doi.org/10.1016/j.tej.2018.06.006.

Table 1: Common Utility Ratemaking Approaches to Addressing Energy Insecurity

Model	Description	Pros	Cons
Segmented rate classes			
Income-based fixed charges	Customers' fixed charge is differentiated based on income bracket (ability to pay).	• Addresses the regressive nature of uniform fixed charges. • Can encourage adequate consumption of energy to support comfort, health, and safety, which is especially relevant for LMI customers who conserve vigilantly to save on bills.[5]	• Authorization likely requires state-level legislation. • Can discourage energy conservation for higher income customers since variable charges would make up a lower portion of electric bills.
Increasing block pricing (IBP)	Raises customers' variable rates once usage passes certain thresholds or "blocks," rewarding households that keep their energy consumption low.	• Encourages energy conservation. • Indirectly rewards low-income households, which tend to have lower consumption rates.	• Renters may not have control over their household's energy efficiency. • Granting higher-income, energy-efficient households lower overall rates decreases the cross-subsidy potential of low-income programs.[6]
Time-of-use rates	Prices vary based on the time of day, peaking in the late afternoon and early evening, as a demand response to lower daily energy peaks.	• Allows customers to be responsive to price signals and adjust consumption accordingly. • Benefits all customers by preventing service disruptions during extreme heat or cold.	• Low-income customers may not have access to necessary metering infrastructure to opt-in. • Medically vulnerable and LMI households may not be able to lower consumption at peak times. • May further encourage unhealthy coping strategies among low-income households.
Low-income discount programs			
Lifeline rate	Regulators determine a baseline volume of electricity that qualifying households will be allotted to cover their basic necessities, and that portion of the bill is discounted.	• Customers receive the discounted rate up to the set volume (e.g., 500 kWh), encouraging conservation practices. • Ensures a basic level of energy access in line with recognizing energy as a basic human right.[7]	• Determining essential levels of electricity can be difficult given the many factors involved, such as household characteristics, home and appliance efficiency, geography, climate change-induced temperature extremes.[8] Essential volumes of electricity or gas will depend on home heating/cooling configuration (e.g., gas or electric). • Families may exceed lifelines consistently even though their per-person energy consumption is less than that of single-occupant households.
Straight discount model	Eligible customers' utility bills are reduced by a set percentage or dollar amount.	• The discount rate will likely be determined in a way that contributes to the goal of reducing overall energy burden. • Less administratively burdensome for utilities compared with other discount models.	• Customers in the lowest income bracket may not receive the relief they need.
Percent of income payment plan (PIPP)	Regulators decide on an acceptable energy burden (e.g., 6% of household income), on the basis of which they determine a household's monthly bill.	• Most targeted program and guarantees that bills do not exceed the determined level. • Participating households are more likely to pay their bills in full and on time compared with other households, reducing arrearage-management costs.	• Imposes higher burden on other ratepayers who cross-subsidize once LIHEAP funding is used. • High administrative costs. • No incentives for conservation or energy efficiency. • Targets are arbitrary and may not fully relieve EI.
Tiered discount model	Varying percentage discounts depending on customer income level, with larger discounts given to the lowest-income customers.	• Allows for more specific, targeted discounts compared with a straight discount model. • Can potentially reduce overall energy burden below the 6% threshold.	• Not as precise as a PIPP for each household's needs (i.e., requires some generalization). • Income verification adds administrative complexity for customers and utilities; if tied to other means-tested programs, the tiered model can miss eligible groups.
Budgeting strategies			
Budget, or "smoothed," billing	Program administrators offer levelized billing by analyzing past usage and determining an average that then serves as the basis for a flat monthly rate.	• Reduces utility bill volatility during hotter and colder months. • Enables customers to better plan for their energy expenditures.	• Requires administrators to "true up" at the end of the year, which can be managed through refunds, surcharges, or billing rate revisions the next year. • Customers lose sensitivity to variability in their energy use, sometimes leading to higher total energy consumption.[9]
Prepayment, "pay-as-you-go" or pre-paid meters	Customers pay in advance for service, which is automatically (or "voluntarily") shut off when account balances are fully depleted.[10]	• Reduces the administrative cost for utilities to run arrearage management programs. • Real-time usage technology allows customers to engage conservation practices. • Ability to make more frequent, smaller payments and avoid utility debt	• Programs lead to elevated rates of service interruption and cut offs, putting users at risk. • Consumers forfeit standard protections such as disconnection notices, payment agreements, and temperature-based or seasonal bans. • May encourage unhealthy coping strategies for low-income households.

[5] Miranda Simes, Tasfia Rahman, and Diana Hernández, "Vigilant Conservation: How Energy Insecure Households Navigate Cumulative and Administrative Burdens, *Energy Research & Social Science*, vol. 101 (2023), https://doi.org/10.1016/j.erss.2023.103092.
[6] Adrienne Thompson, "Protecting Low-Income Ratepayers as the Electricity System Evolves," *The Energy Bar Association* (2016), https://www.eba-net.org/wp-content/uploads/2023/02/6-18-265-305-Thompson-FINAL_0.pdf.
[7] Diana Hernández, "Sacrifice along the Energy Continuum: A Call for Energy Justice," *Environmental Justice* Vol 8, 4 (2015): 151–56, https://doi.org/10.1089/env.2015.0015.
[8] Kevin A. Kelly, James Devanney, Seymour Goldstone, Robert Kurth, Stephen Storch, Bruce Hampton, Charles Franklin, and Russell Konst, "Lifeline Rates for Electricity and Natural Gas," report by the Policy Development Project, Department of Mechanical and Nuclear Engineering, Ohio State University, for the Public Utilities Commission of Ohio (1976), https://ipu.msu.edu/wp-content/uploads/2016/12/Kelly-Lifeline-Rates-Electricity-Nat-Gas-1976.pdf.
[9] Marilyn A. Brown, Anmal Soni, Melissa V. Lapsa, Katie Southworth, and Matt Cox, "High Energy Burden and Low-Income Energy Affordability: Conclusions from a Literature Review," prepared by the Oak Ridge National Laboratory for the US Department of Energy (2020), https://info.ornl.gov/sites/publications/Files/Pub124723.pdf.
[10] John Howat, Olivia Wein, and Karen Lusson, "Prepaid Electric Utility Service: Assessment of Risks and Benefits to Low-Income Consumers in the District of Columbia," National Consumer Law Center (2022), https://www.nclc.org/resources/prepaid-electric-utility-service-assessment-of-risks-and-benefits-to-low-income-consumers-in-district-of-columbia/.