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Smart Energy Snapshots:

What Have We Learned?



Alleviating Americans' Energy Burdens

Following a period of high inflation and rising energy costs, the Smart Energy Consumer Collaborative (SECC) conducted a survey to uncover how families are dealing with economic uncertainty. This Smart Energy Snapshot reveals insights for electricity providers and other industry stakeholders looking to better understand consumers who have had difficulties paying their electric bills.

25%

of Americans said they have struggled to pay their electric bill in the past 12 months, including:



Consumers making under \$50K per year have had to...

Make a late payment **39%**

Apply for an assistance program **27%**

Make a partial payment **25%**

Consumers often lack awareness of utility programs that could lower their bills. In the past 12 months, few struggling consumers have heard about these programs from their electricity providers.



12% Received an offer to perform an energy audit

22% Have been offered an alternative rate plan

24% Know about rebates on energy-efficient appliances

34% of those who make <\$50K/year

32% of those who rent their homes

Struggling consumers are trying to decrease their bills by...

53%

Reducing heating and/or air conditioning usage

20%

Installing more energy-efficient appliances

41%

Replacing inefficient bulbs with LED bulbs



Source: An online survey of 1,524 Americans conducted on April 19-20, 2023.

NEADA

NATIONAL ENERGY ASSISTANCE DIRECTORS ASSOCIATION

Energy Hardship Report

August 2024

Introduction

Low income families struggle to pay their home energy bills, often going without food, medicine and other essentials to stay connected to electric and natural gas service.

The purpose of the Energy Hardship Project is to track energy prices, utility bill arrearages and shut-offs, and overall toll unaffordable energy costs take on low income families.

Data in this report come from various sources, including the US Bureau of Labor Statistics, Health and Human Services, Energy Information Administration, and Census Bureau, and utilities, state agencies and other data sources.

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NEADA is the primary educational and policy organization for state directors of the Low Income Home Energy Assistance Program (LIHEAP) the primary federal program that helps low-income families pay their home energy bills.

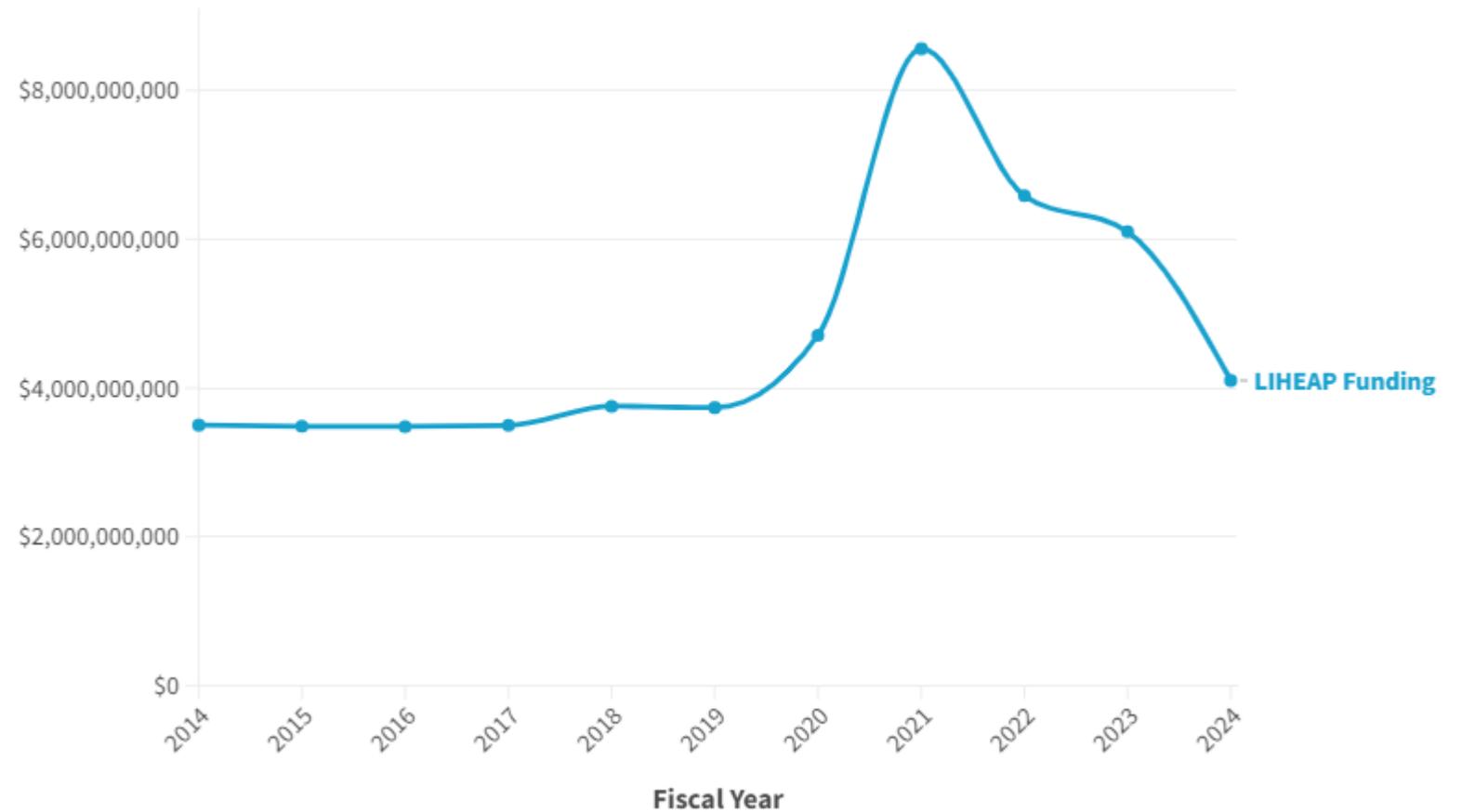
Key Findings

- Federal funding for the Low Income Home Energy Assistance Program (LIHEAP) was reduced from \$6.1 billion to \$4.1 billion between FY 24 and FY 23. The impact of the program's cuts are severe and increasing energy affordability across the US.
 - The number of households served during this period was reduced from 5.9 million to 4.9 million.
 - Roughly 80% of LIHEAP funds is used for heating, leaving only 20% of funds to cover the growing and urgent need for home cooling assistance.
- Due to reduced funding, utility arrearages which had been declining, rose by 8.4% since 12/31/23 to \$17.4 billion. The \$17.4 billion in debt is spread across 17.4 million households.
 - Utility shut-offs are also rising and are expected to increase by almost 300,000 to 3.8 Million by 12/31/24.
 - While families are protected from shut offs during cold months, 31 states do not have shut off protections for the summer months, leaving families vulnerable to extreme heat.
 - Shutting off power is a ruthless and effective debt collection strategy, forcing roughly than a third of families to prioritize utility payments over other basic necessities.

LIHEAP Funding and Households Served

Funding for LIHEAP was reduced by \$2 billion from about \$6.1 billion in FY 23 to \$4.1 billion in FY 24.

Table 1: LIHEAP Funding FY 2014 to FY 2024



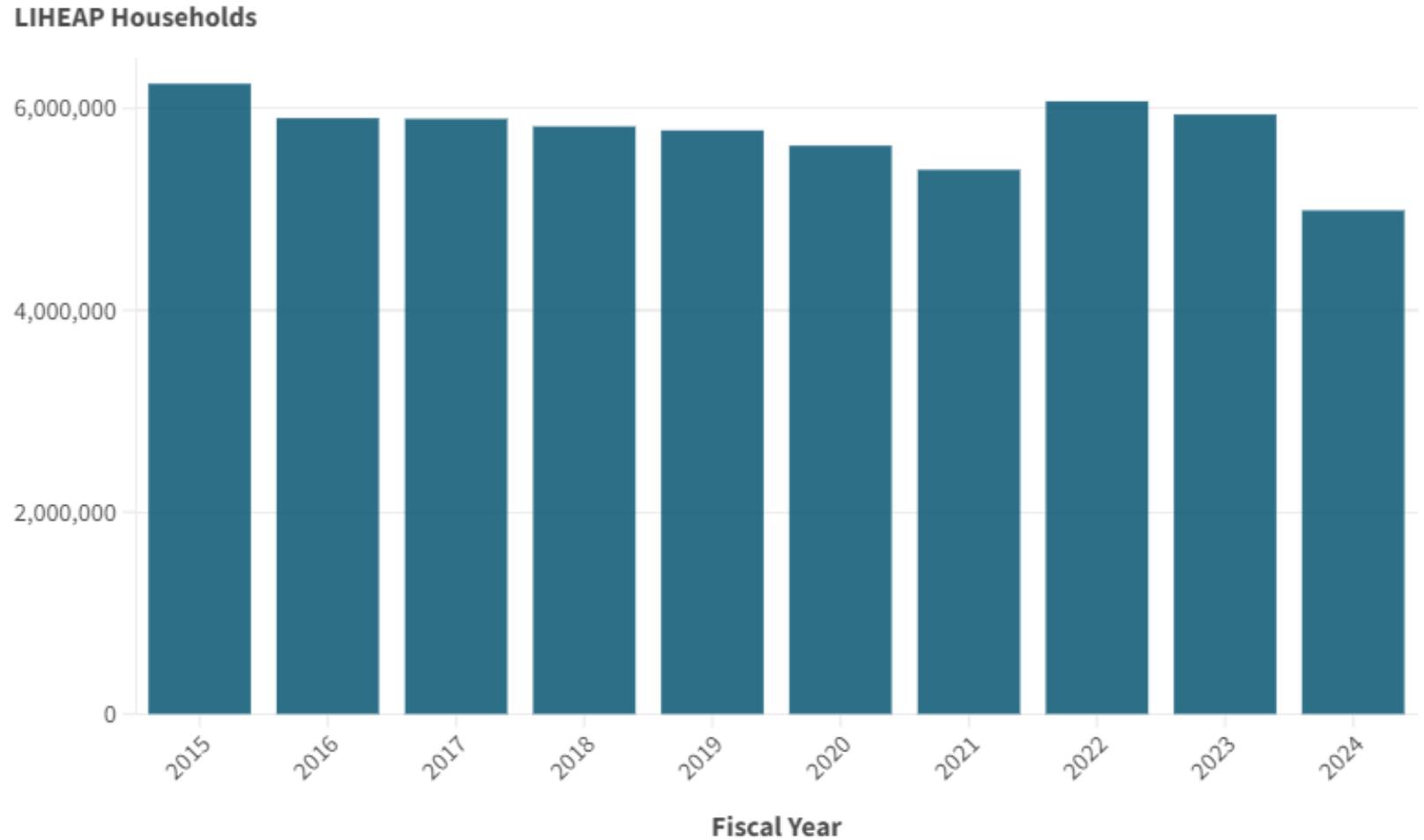
Source: HHS ACF

States have reduced the number of households receiving LIHEAP by close to one million households as a result of the cutback in program funding.

States have reported that they have reduced:

- a) reducing crisis assistance to families to help with outstanding winter heating and summer cooling bills;
- b) cutting back on weatherization assistance;
- c) reducing or ending cooling programs.

Table 2: Household Receiving LIHEAP Assistance FY 2014 - FY 2024



Source: HHS OCS • 2024 Households are Estimated

Arrearages Remain High With Shut Offs Rising

Almost than one out of seven households are behind on their electric and gas bills, at 13% (17.4 million) of all U.S. households.

Since the beginning of the calendar year, the national arrearage balance increased by 8.4% from \$16.1 billion on 12/31/23 to \$17.4 billion in 3/31/24.

Sources: Select publicly-available state and utility arrearage data

Table 3A: Electricity - Residential National Arrearage Estimates

	Percent Households in Arrears	Total Households in Arrears	Average Amount Owed	Total Utility Debt
March 31, 2024	13.2%	17.4M	\$681	\$11.8B
December 31, 2023	13.1%	17.2M	\$634	\$10.9B
March 31, 2023	12.9%	16.9M	\$657	\$11.2B

Table 3B: Natural Gas - Residential National Arrearage Estimates

	Percent Households in Arrears	Total Households in Arrears	Average Amount Owed	Total Utility Debt
March, 31, 2024	13.8%	11.0M	\$505	\$5.6B
December, 31, 2023	14.4%	11.5M	\$447	\$5.2B
March, 31, 2023	15.8%	12.6M	\$481	\$6.1B

Source: Utility Arrearage Reports • Created with Datawrapper

Residential utility shut-offs are also increasing due to the cutback in federal funding. Based on available data, the number of utility shut-offs in 2024 is projected to increase by almost 300,000 households from about 3.5 million in 2023 to 3.8 million in 2024.

Table 4: Est Residential Utility Disconnections

Estimates for total utility shut offs due to nonpayment for each year

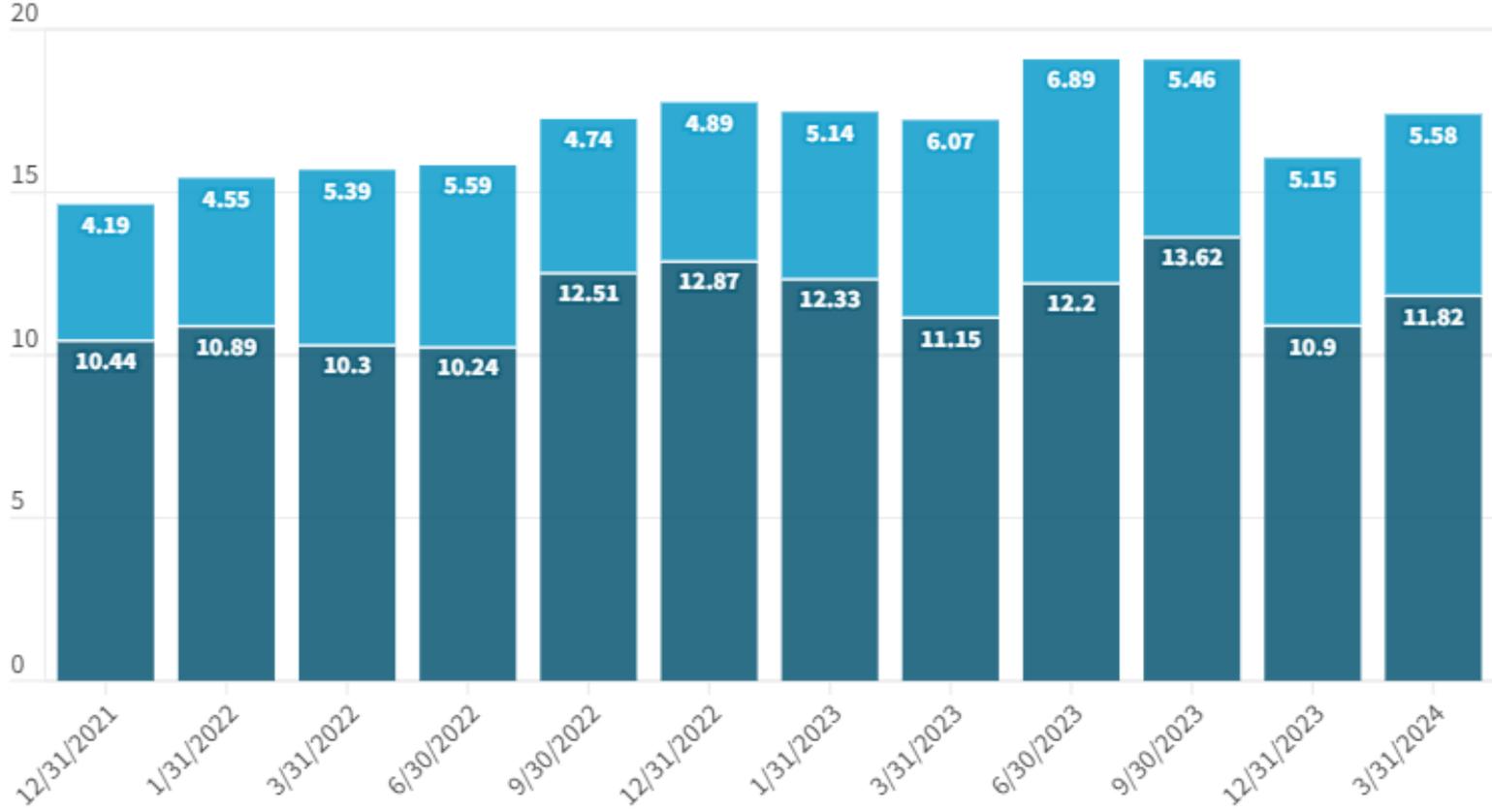
Shut offs	Electric	Gas	Total
2024	2.7M	1,091,225	3.8M
2023	2.6M	929.2K	3.5M

Source: Utility Disconnection Reports • Created with Datawrapper

Table 5: Residential Utility Arrears Estimates 12/2021 to 3/2024

■ Electric Arrears ■ Gas Arrears

Arrears in Billions of Dollars



Source: Utility Arrearage Reports

Electric and gas utility arrears decreased in 2023 due in part to increased federal funding for LIHEAP and then began to increase in 2024 as LIHEAP funding was cut from \$6.1 billion to \$4.1 billion.

Families Struggle to Pay their Home Energy Bills

The Census Bureau's Pulse Survey reported 23.7% of households could not pay their energy bill for at least one month in the last year, an increase from 21.6% in 2023.

The largest increase in the amount of households unable to pay their energy bill at for at least one month was in households with children, which increased from 29.3% to 32.4%.

Table 6A: Percent of Households Unable to Pay Energy Bill, by Survey Period

Household was unable to pay an energy bill or unable to pay the full bill amount, at least one month in the last year

Time Period	National Average	Low- and Moderate-Income (<\$50k)	Households with Children	Households of Color
5/28/2024 - 6/24/2024	23.7%	37.4%	32.4%	32.4%
6/7/2023 - 6/19/2023	21.6%	36.3%	29.3%	31.1%
6/1/2022 - 6/13/2022	22.0%	37.8%	31.4%	32.3%

Table: NEADA • Source: Census Pulse Survey July 2024 • Created with Datawrapper

The Census Bureau' pulse survey also reported that the percentage of households that kept their home at unsafe temperatures also increased from 19.8% last June to 22% this year.

Table 6B: Percent of Households Keeping Home at Unsafe Temperature to Save Money on Energy Bill, by Survey Period

Household kept home at a temperature that felt unsafe or unhealthy, at least one month in the last year

Time Period	National Average	Low- and Moderate-Income (<\$50k)	Households with Children	Households of Color
5/28/2024 - 6/24/2024	22.0%	30.9%	22.4%	25.7%
6/7/2023 - 6/19/2023	20.3%	30.5%	19.8%	25.8%
6/1/2022 - 6/13/2022	19.8%	30.1%	20.9%	24.5%

Table: NEADA • Source: Census Pulse Survey July 2024 • Created with Datawrapper

The Census Pulse Survey also reported that more than one out of three households (34.2%) reduced or forewent basic household expenses at least once during the previous year months in order to pay their home energy bills.

Table 6C: Percent of Households Foregoing Basic Necessities to Pay Energy Bills, by Survey Period

Household reduced or forewent expenses for basic household necessities, such as medicine or food, in order to pay an energy bill, at least one month in the last year

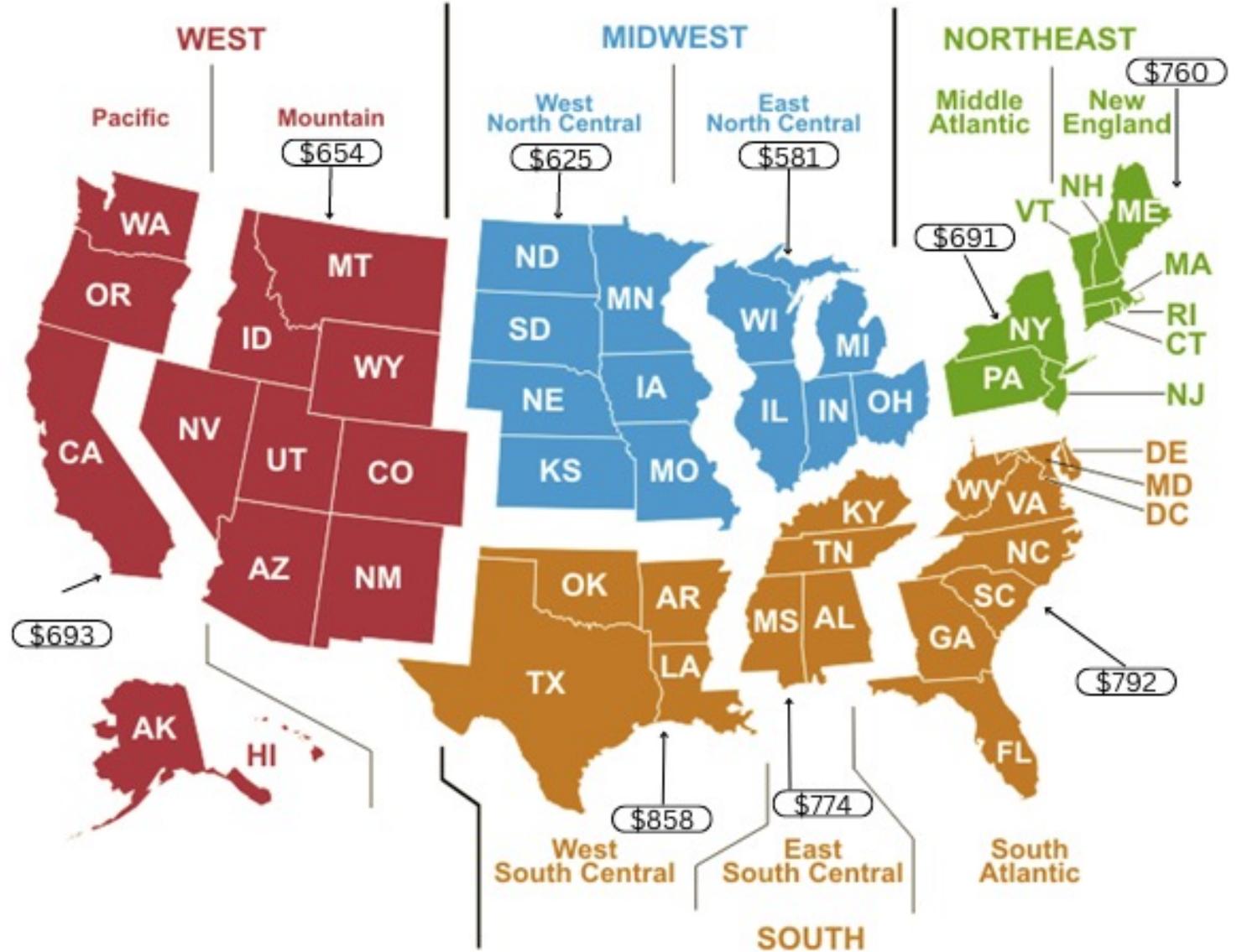
Time Period	National Average	Low- and Moderate-Income (<\$50k)	Households with Children	Households of Color
5/28/2024 - 6/24/2024	34.2%	50.8%	40.9%	43.4%
6/7/2023 - 6/19/2023	32.5%	49.2%	38.7%	41.9%
6/1/2022 - 6/13/2022	32.8%	51.0%	40.5%	43.2%

Table: NEADA • Source: Census Pulse Survey July 2024 • Created with Datawrapper

High Summer Cooling Costs

Cooling costs increased on average by about 8% compared to the previous summer. The West South Central region is expected to send the most on summer cooling.

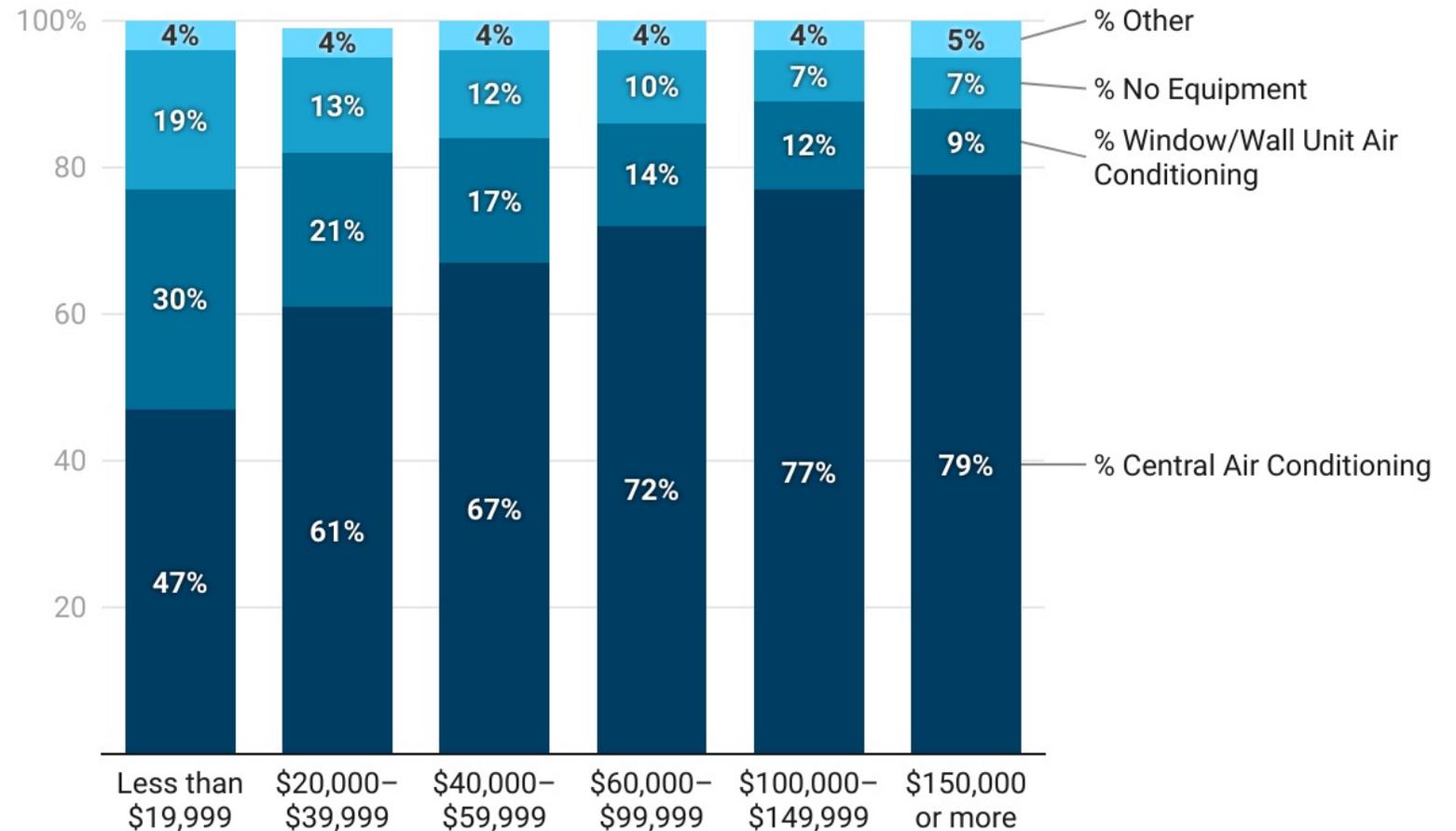
Table 7: Summer Cooling Costs



Housing Characteristics and Energy Cost by Income

Access to effective home cooling is limited by income with nearly **20%** of low-income households lacking air conditioning.

Table 8: Cooling Equipment Type by Income



Source: EIA RECS • Created with Datawrapper

The Energy Information Administration's Residential Energy Conservation Survey found that home energy expenditures rise at a slower rate than comparable increases in family income. This is because every household needs to use a baseline of energy for heating and cooling and that baseline increases at a slower rate than overall energy use.

Table 9A: Yearly Energy Costs by Fuel and Income

Annual energy costs by fuel and income from RECS 2020 survey data

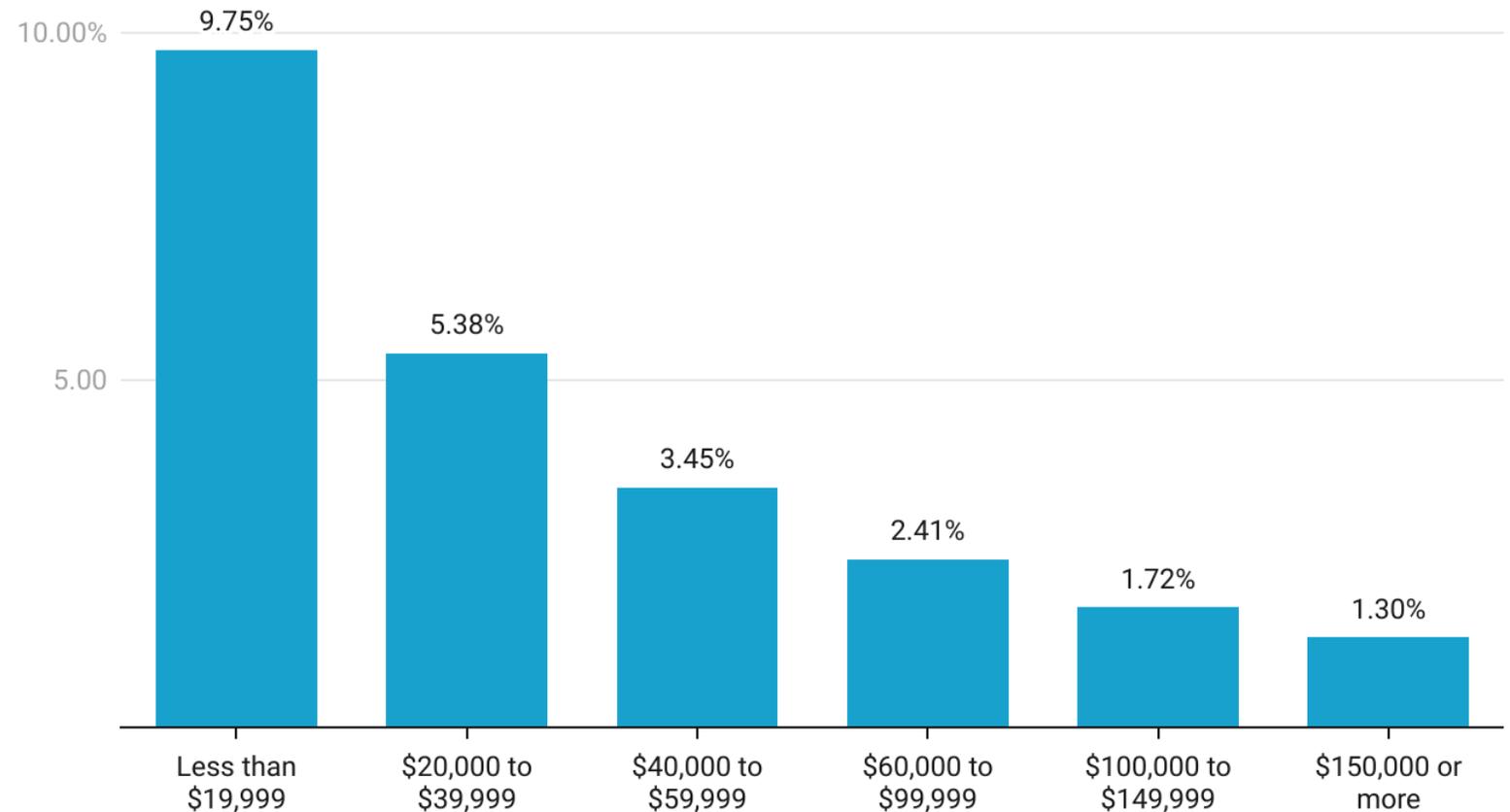
2020 annual household income	Total	Electricity	Natural gas	Fuel oil or kerosene
Less than \$5,000	\$1,512	\$1,188	\$479	\$966
\$5,000 to \$9,999	\$1,379	\$1,056	\$471	\$1,012
\$10,000 to \$19,999	\$1,462	\$1,089	\$513	\$867
\$20,000 to \$39,999	\$1,614	\$1,209	\$545	\$1,048
\$40,000 to \$59,999	\$1,724	\$1,285	\$583	\$1,028
\$60,000 to \$99,999	\$1,925	\$1,404	\$641	\$1,330
\$100,000 to \$149,999	\$2,147	\$1,552	\$679	\$1,242
\$150,000 or more	\$2,608	\$1,830	\$817	\$1,656

Source: EIA RECS • Created with Datawrapper

Households that made less than \$20,000 spent 7.5 times more of their income on energy than households that made \$150,000 or more.

Table 9B: Percent of Income Spent on Energy

Percentage is calculated using the midpoint of the income range

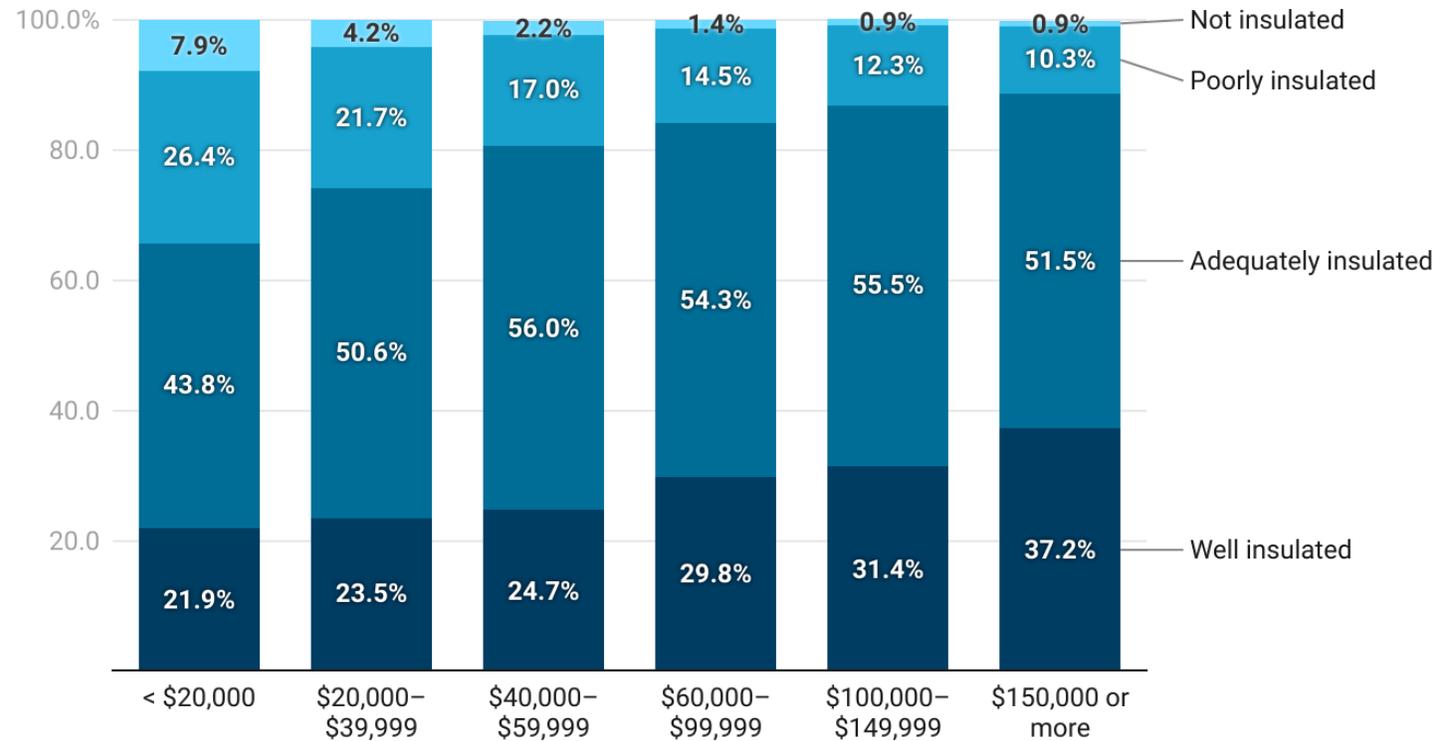


For the final income category \$200,000 is used as the midpoint

Source: EIA RECS • Created with Datawrapper

Low-income families are more likely to live in homes with poorer quality insulation or no insulation. This is one of the primary factors, in addition to limited incomes, that they have unaffordable home energy bills.

Table 10: Home Insulation Adequacy by Income



Source: EIA RECS • Created with Datawrapper

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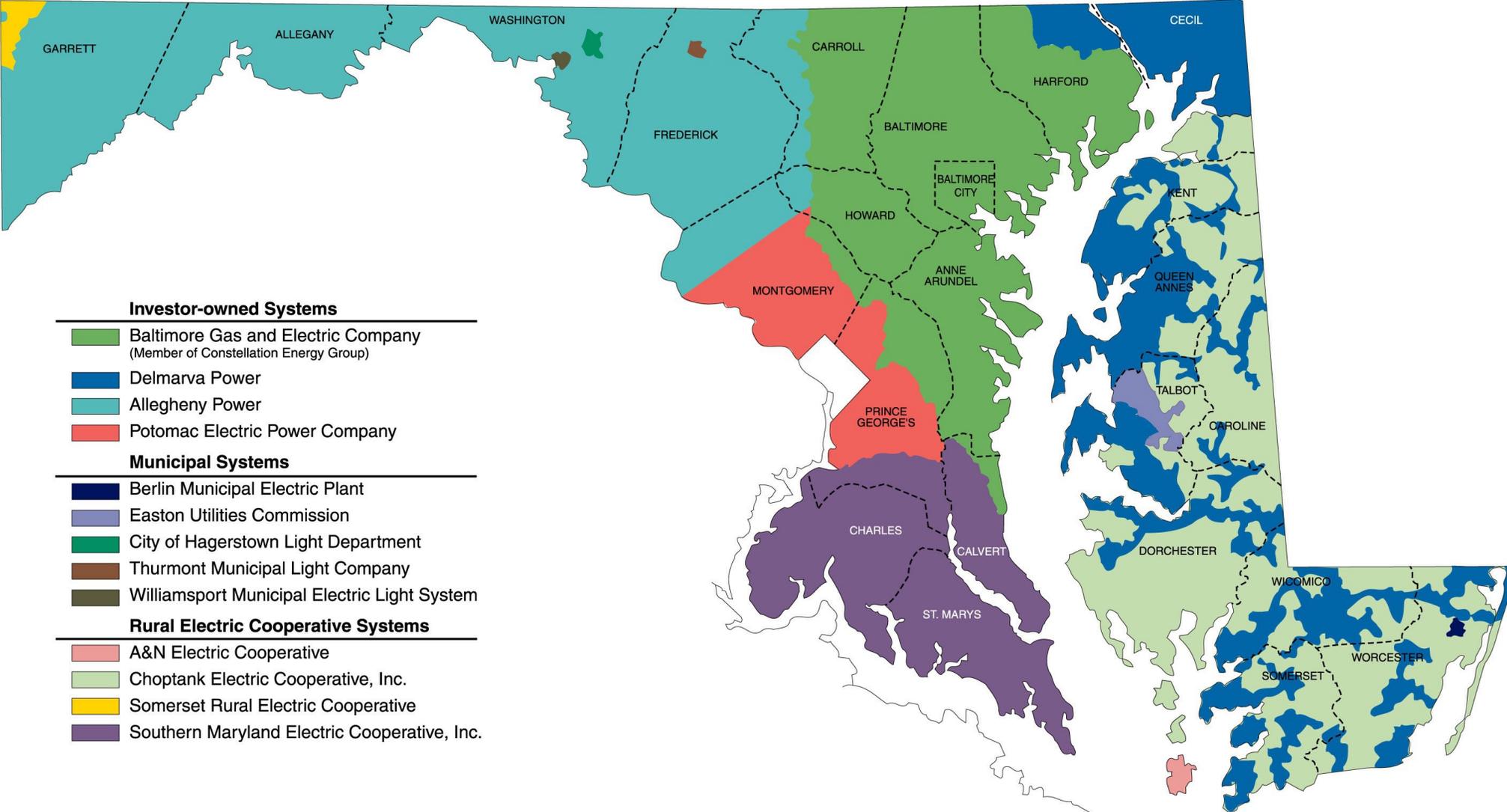
AN EXELON COMPANY

October 16, 2024

Cooling High Summer Electric Bills

Kevin Knight, Manager of Load Management Programs

Baltimore Gas and Electric (BGE)



Investor-owned Systems

- Baltimore Gas and Electric Company
(Member of Constellation Energy Group)
- Delmarva Power
- Allegheny Power
- Potomac Electric Power Company

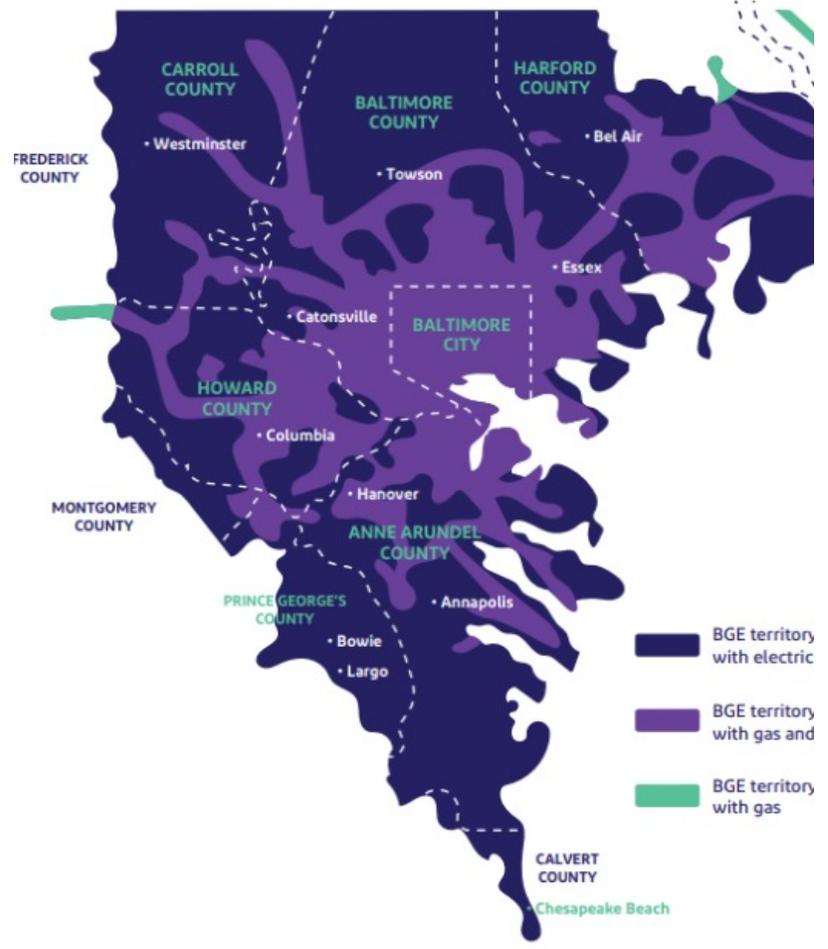
Municipal Systems

- Berlin Municipal Electric Plant
- Easton Utilities Commission
- City of Hagerstown Light Department
- Thurmont Municipal Light Company
- Williamsport Municipal Electric Light System

Rural Electric Cooperative Systems

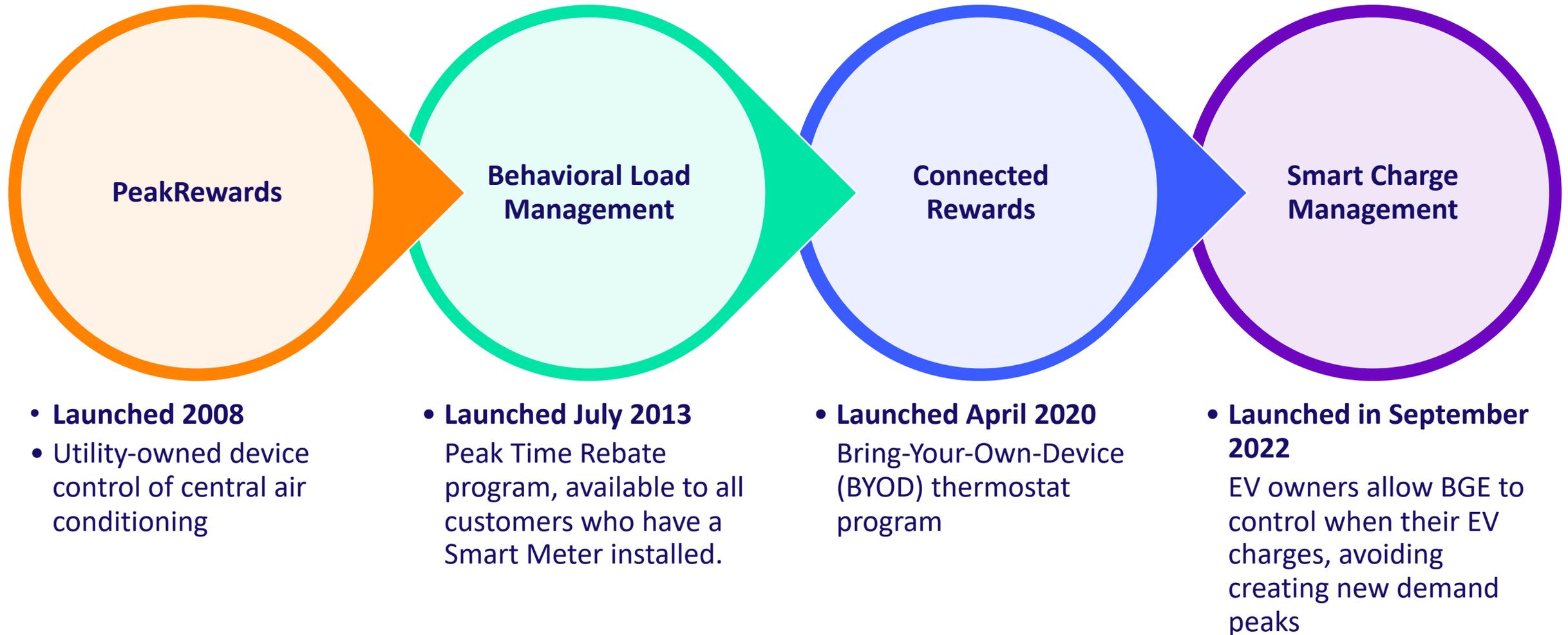
- A&N Electric Cooperative
- Choptank Electric Cooperative, Inc.
- Somerset Rural Electric Cooperative
- Southern Maryland Electric Cooperative, Inc.

Baltimore Gas and Electric (BGE)



Load Management Program Evolution

*Smart Meter Deployment dependent





Cooling High Summer Electric Bills

Following a period of record-setting heat across the United States, the Smart Energy Consumer Collaborative (SECC) conducted a survey to uncover how American families are dealing with the rising cost of cooling their homes. This Smart Energy Snapshot reveals insights for electricity providers and other stakeholders looking to better understand consumer openness to demand response programs.

78%

of households actively monitor their home cooling systems.

51%

of consumers have very or somewhat positive sentiments toward demand response programs.



62%

of Americans say that they are using central A/C to cool their homes. Only **50%** are using fans, and only **6%** say that they have a ducted heat pump, a highly efficient way to cool homes.

Among consumers who monitor their home cooling systems:

65% would be willing to voluntarily adjust their cooling system in the summer.

33% would participate in a utility-led demand response program.

Only **18%** of those who actively monitor their home cooling systems are unwilling to take part in a demand response program — compared to **24%** of all consumers.



58%

of all consumers have a programmable thermostat,

and



25%

have a smart thermostat.

Source: This online survey was fielded in August 2023. There were 1,516 respondents, who are all Americans aged 18 or older. The data was weighted on age, gender and region to U.S. Census data.

Company Overview

4th Largest Combination Utility

<i>Founded in 1886</i>	<i>~8,500 employees</i>	<i>Serving 6.7M Michigan Residents</i>
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Electric Business

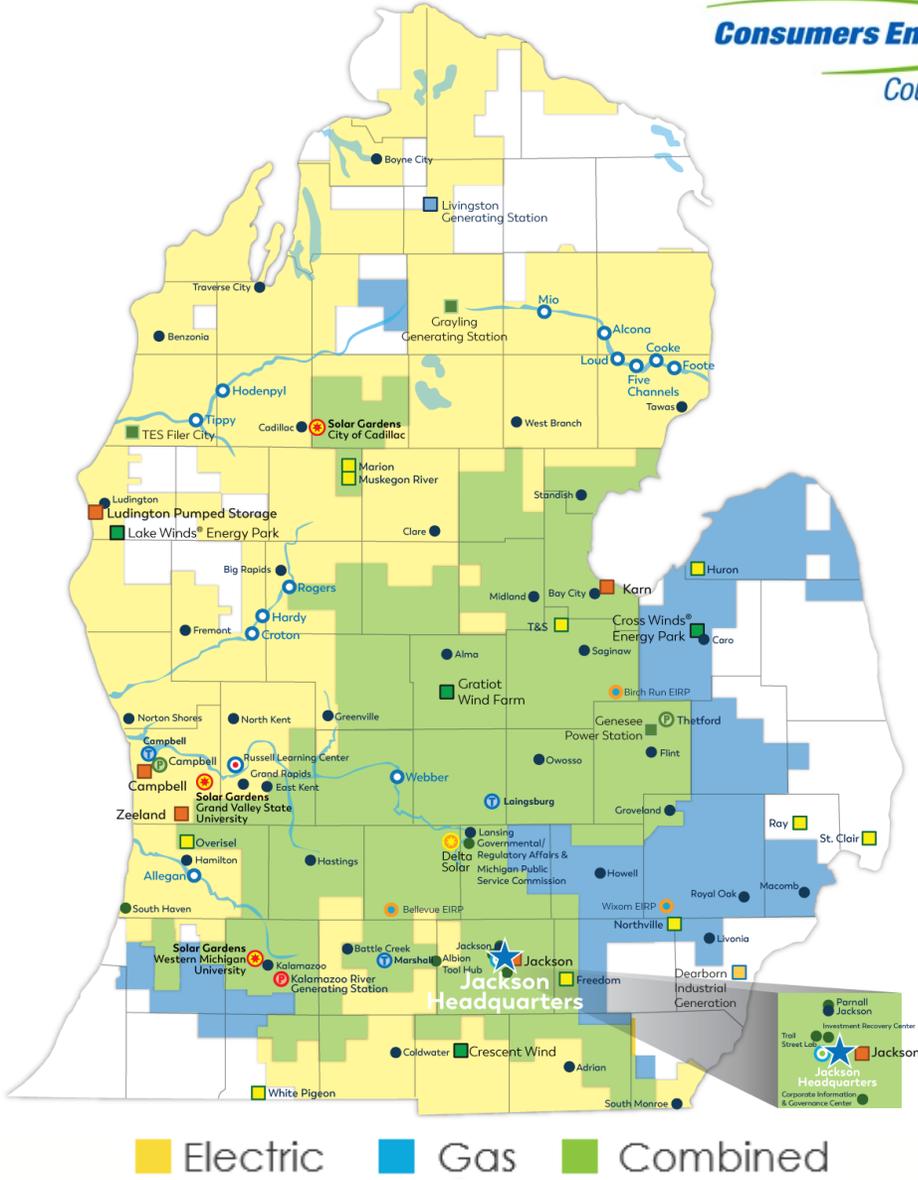
- Serving 1.9M electric customers
- Operating ~100,000 miles of electric distribution
- 7,526 MW of generating capacity

Gas Business

- Serving 1.8M gas customers
- Operating ~28,000 miles of distribution pipeline
- 309 Bcf gas storage

Planet Goals

<i>Exit coal in 2025</i>	<i>Net zero methane emissions for our gas system by 2030</i>	<i>Net zero carbon emissions for our electric business by 2040</i>	<i>Net zero GHG emissions for our entire business by 2050</i>
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Michigan Made. Here to Stay.

Reliability Roadmap

- **\$9 billion investment through 2028**
- **We envision a future when:**
 - ❑ **No single outage affects more than 100,000 customers.**
 - ❑ **All customers have power restored within 24 hours after an outage event.**

Progress

- ~90% of customers were restored in less than 24 hours in 2023
- Clearing over 7,000 miles of trees near power lines in 2024
- Buried 10 miles of distribution lines as a pilot, expanding to 1,000 through 2028



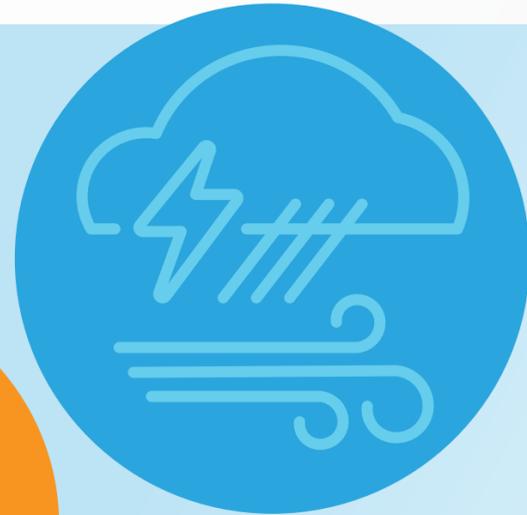


Extreme Weather and Power Outages: Communicating with Customers

As hurricane season comes to an end and winter storms begin to approach, the Smart Energy Consumer Collaborative (SECC) wants to know how consumers are feeling about extreme weather events and other possible causes for power outages. This Smart Energy Snapshot reveals insights for electricity providers on how best to communicate with consumers and help them better prepare for potential outages.

41% of consumers are more concerned with power outages now than 10 years ago.

Only **10%** are less concerned about outages — despite significant investments in grid modernization.



91% of consumers think their electricity providers should provide tips about preparing for extreme weather.

51% would like tips sent via email.

39% would like tips on their provider's website.

38% would like a text message.

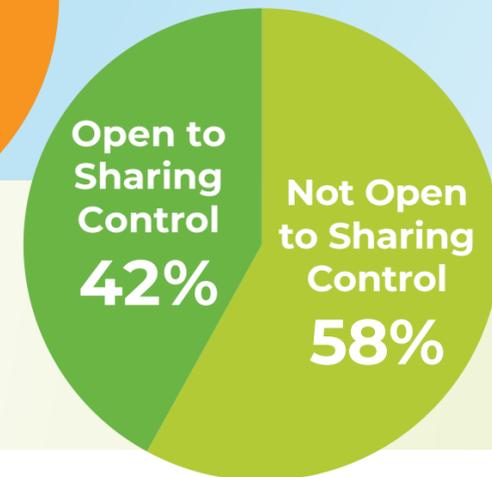
34% would like on-bill information.

18% would like tips on TV.

55% prefer receiving outage notifications by text message.

15% prefer phone

11% prefer emergency alert push notifications



42% of consumers are open to sharing control of their electricity usage to help their utilities better prepare for and manage outages.

Source: This online survey was fielded on October 18, 2023. There were 1,525 respondents, who are all Americans aged 18 or older. The data was weighted on age, gender and region to U.S. Census data.

Vividly 
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BY  **RAPPAHANNOCK**
ELECTRIC COOPERATIVE

Electric Vehicles: Exploring Consumer's Cost Concerns

Smart Energy Consumer Collaborative
2024 Members Meeting & Fall Workshop





RAPPAHANNOCK
ELECTRIC COOPERATIVE

RELIABLE • AFFORDABLE • FOCUSED ON YOU

RECommunications

- City/Town
- ★ State Capital
- ⚓ Port
- ✈ Airport
- Highway
- Interstate
- - - Railroad
- REC Territory
- State



- ~180k Members Across 22 Counties in VA
- ~141k Residential Members
- ~18k Miles Distribution & Transmission Infrastructure
- ~500 Employees (REC & Affiliate)

Vividly Brighter[®]



Programs & Offerings



EV CHARGING CREDIT

Pilot program started in 2022. Currently at full capacity with 400 participants. Slated to end of April 2025.



RATES – TIME OF USE

Rider for residential rate members to align all activities, including EV charging.



WEBSITE TOOLS

EV tools and interactive calculators for residential, fleet, and customized consultations.



EVSE INSTALLATION & SERVICE

Residential & commercial sales and installation through VB-Electrician Services

Public & Workplace Charging



Next Steps & Continued Expansion

COMMUNITY RELATIONSHIPS

RESIDENTIAL & C&I

- Member Tools
- Education/Partnerships
- Resources/Dashboards
- Community Events/Outreach

UTILITY

GRID

- Utilize DERMS & BTM Assets
- Improve Analytics & AI
- Defer System Upgrades
- Grants

SERVICES

IMPROVE & INTRODUCE

- EV Rates
- Managed Charging (DERMS)
- Public Charging
- EVSE Services



Electric Vehicles: Exploring Consumers' Cost Concerns

As stories about declining consumer interest in electric vehicles (EVs) make headlines, the Smart Energy Consumer Collaborative (SECC) wanted to

better understand how affordability impacts consumers' willingness to switch away from gas-powered vehicles. This Snapshot Survey explores some of the challenges consumers face on the road to electric transportation and reveals insights for electricity providers on educating consumers about the cost benefits of EVs.

54% of consumers who don't currently own an EV are open to owning one in the future.

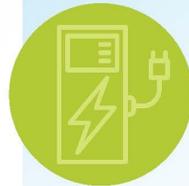


Among current non-owners of EVs:

55% have concerns about the cost of installing a home charger.

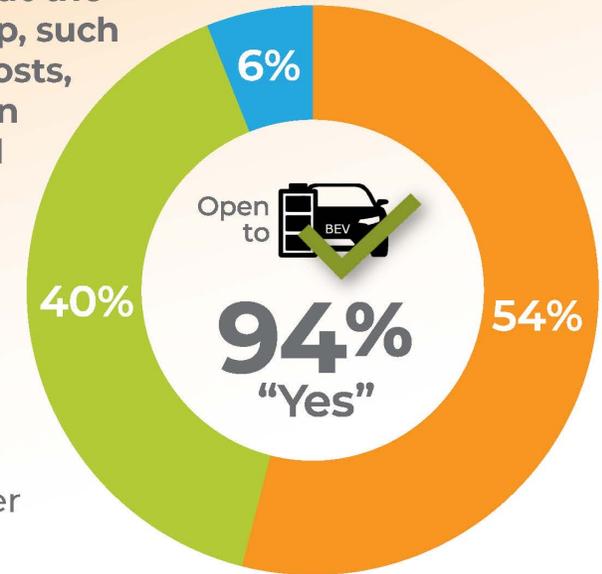
48% have concerns about unexpected battery costs.

38% have concerns about regular maintenance costs for EVs.



Even after learning about the benefits of EV ownership, such as lower maintenance costs, most consumers — even those open to EVs — still cite costs as a concern.

- Yes, same amount of concern as before
- Yes, but less concern than before
- No, costs are no longer a concern



40% of non-owners list purchase price as having the **single biggest impact** on owning an EV.

77% of consumers open to EVs are aware of rebates or incentives for purchasing.

43% of consumers not open to EVs are aware of any rebates or incentives.

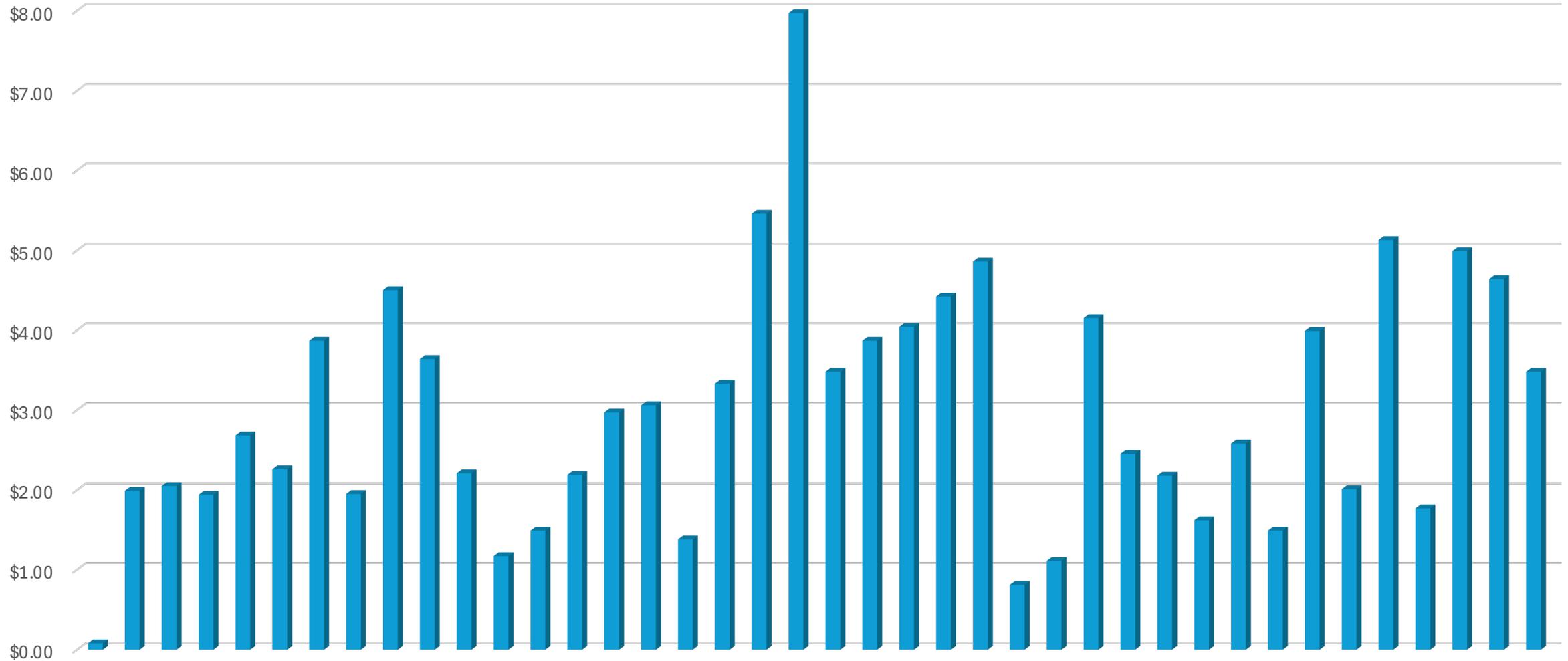
Source: This online survey was fielded on March 26-28, 2024. There were 1,539 respondents, who are all Americans aged 18 or older. The data was weighted on age, gender and region to U.S. Census data.

EV vs. ICE Vehicles Fueling

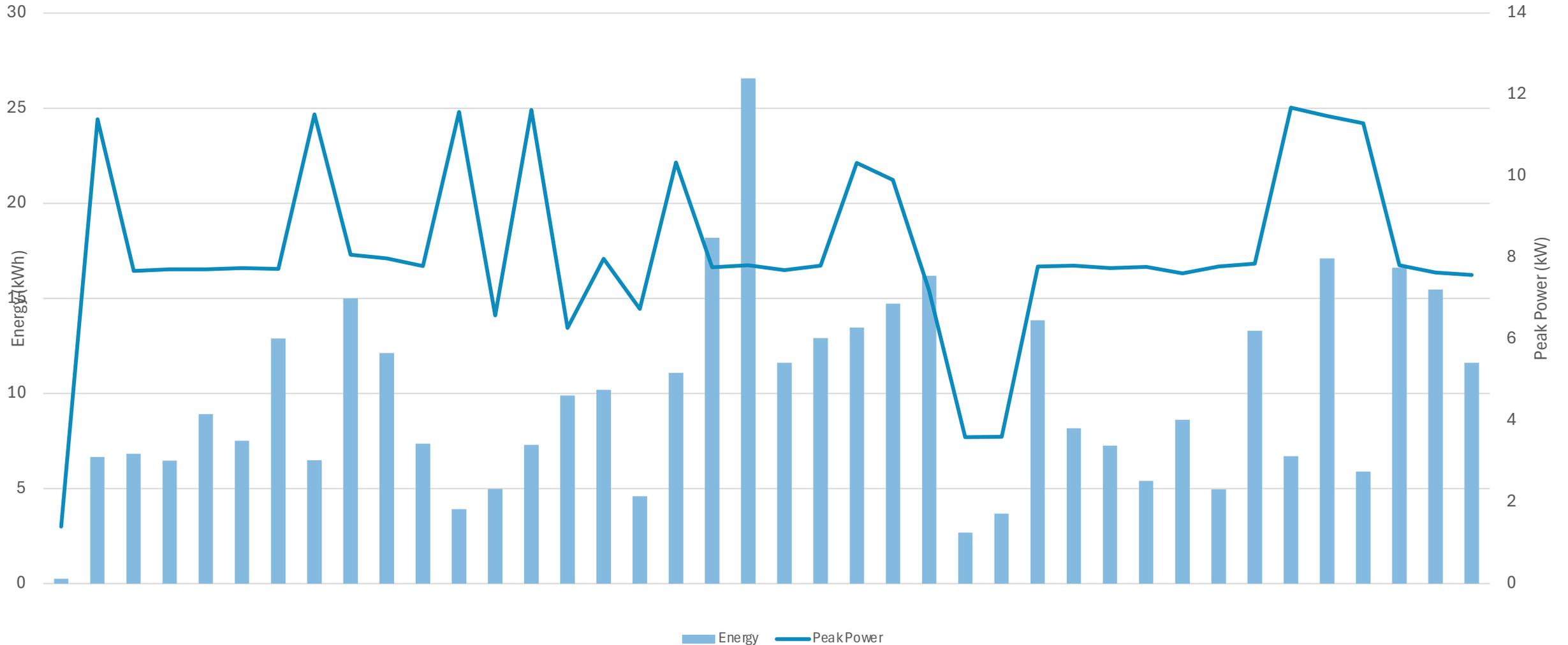
- Average public charging costs \$0.30 - \$0.50 per kWh
 - Average mile per kWh rating of 3 miles per kWh
 - \$0.07/mile
 - \$1,050 for 15,000 miles
- Average VA gas price of \$3.40 per gallon
 - Average mpg of 25.4
 - \$0.13/mile
 - \$1,950 for 15,000 miles



Typical L2 Charing Sessions-Public



Energy and Power L2- Public



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BY

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Thank You

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