



# No Off Switch: Energy Affordability in a System Without Consumer Agency

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# How Many People Have Ever Felt Like This After Getting an Energy Bill?

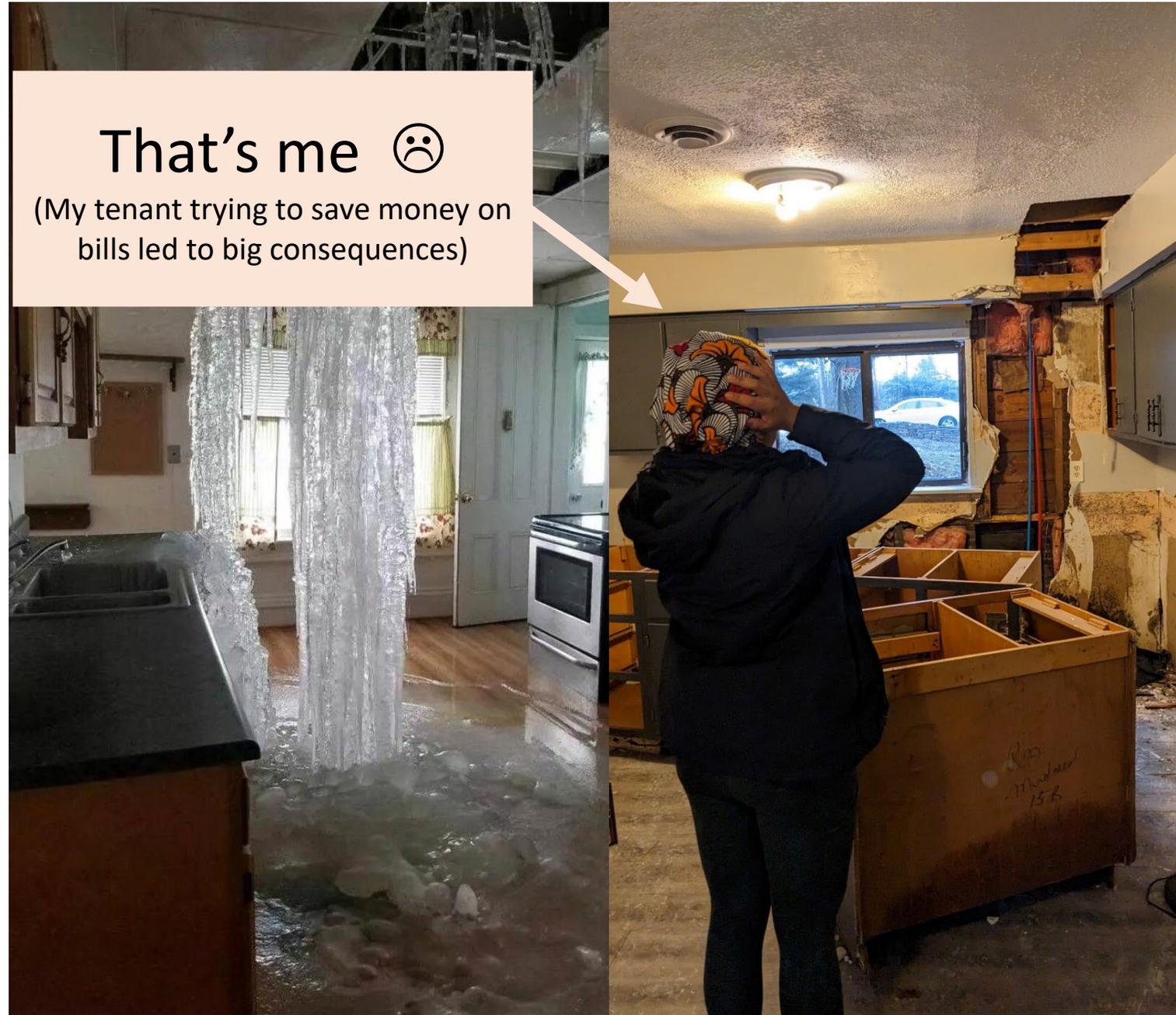


# Have You Ever Done This to Save Money on Energy Bills?

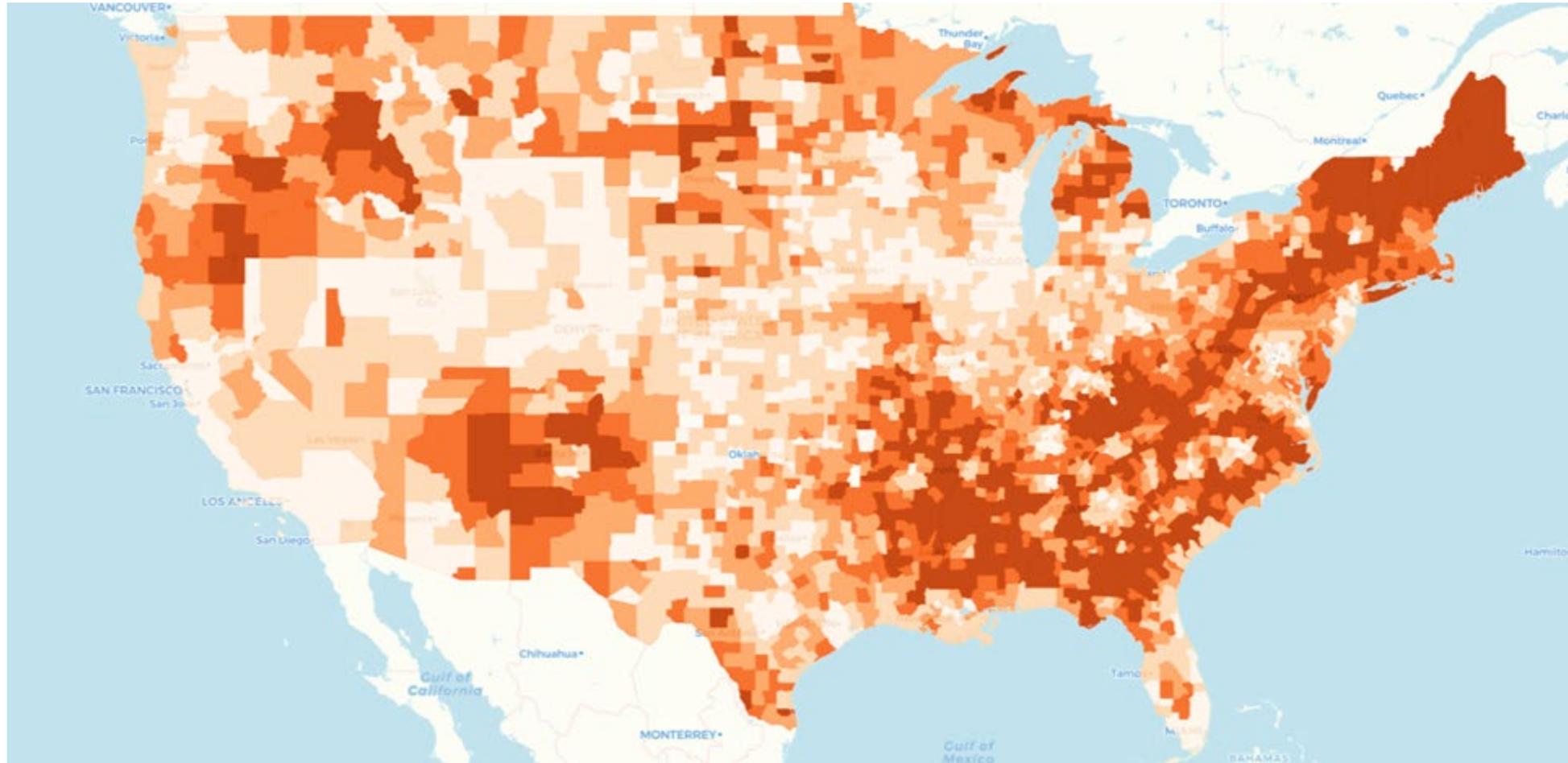


How Many People Have Experienced Pipes Freezing in your Home because you (or someone you know) was trying to save money on the heating bills?

2022 Christmas cold snap led to the entire duplex losing access to water



# Energy poverty discussions dominated by Energy Burden



Energy burdens (at the county level) for LMI (low and moderate-income) households. The lightest color in the choropleth scale is <6% of annual income spent on housing energy bills, and the darkest is >19%.

<https://blog.ucsusa.org/joseph-daniel/how-to-make-energy-burden-less-bad>

# Do you know the percent of income you spend on your energy bills?

- If most people don't know their energy burden...why does that metric dominate research and analyses?
- It's easy to calculate
- Many equate affordable with low bills, but this misses health and safety of indoor environments.

# Low Energy Bills $\neq$ Affordable



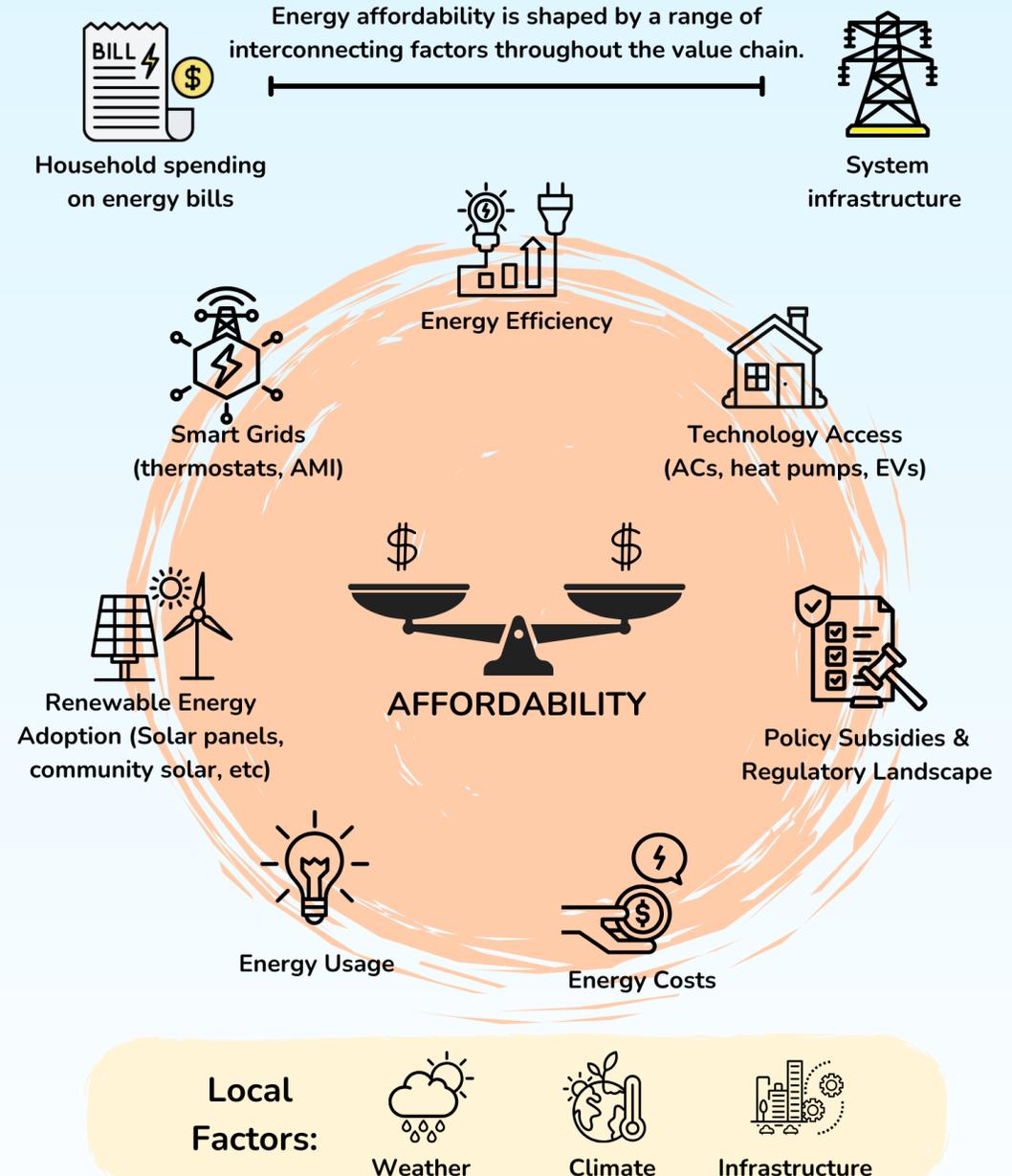
# Energy Affordability Definition

Energy affordability is the ability of households to access reliable and sufficient energy services without compromising their financial well-being.

It encompasses energy costs, energy usage, efficiency, access to modern energy technologies, and the influence of policies and rate structures.

*\*\*More comprehensive definition in the near-term recommendations (MA IRWG)\*\**

# ENERGY AFFORDABILITY



How Much Would You Be  
Willing To Pay for 345 kWh of  
electricity?

My husband said \$5

Students said \$2 - \$30



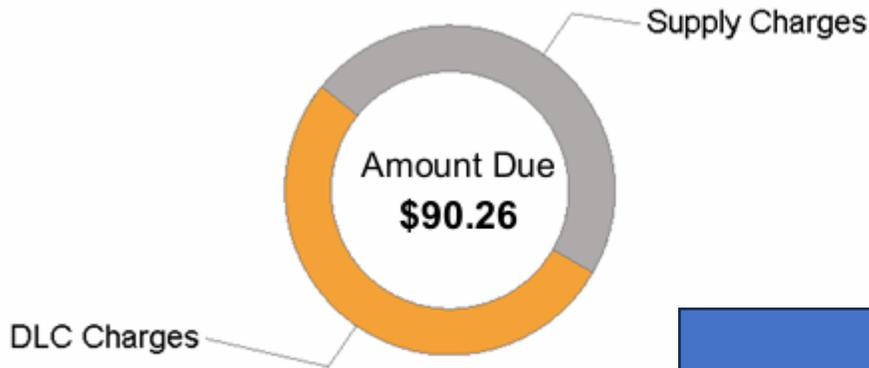
Account # [redacted]@gmail.com

Due Date	Amount Due
11/12/2025	\$90.26

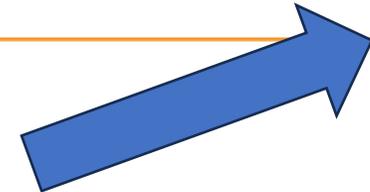
### Bill Summary

Bill ID: [redacted] Date Prepared: 10/22/2025

Previous Account Balance	\$127.37
Payment(s) Received as of 10/14/2025	-\$127.37
<b>Balance Forward</b>	<b>\$0.00</b>
DLC Charges	\$47.39
Supply Charges	\$42.87
<b>AMOUNT DUE BY 11/12/2025</b>	<b>\$90.26</b>



But what did that \$90 get me?



### Message Center

Looking for ways to save on your bills? Visit our website or use the DLC Mobile app to review your home's energy usage and find tips to save. We also have easy to use tools, rebates, incentives and a store of energy-efficient products. Get started today by visiting [DuquesneLight.com/home-energy-center](http://DuquesneLight.com/home-energy-center).

Duquesne Light Company partners with Dollar Energy Fund to provide assistance to customers who struggle to pay their electric bill. If you would like to support the Dollar Energy Fund and your neighbors in need, make a tax deductible monthly pledge at [DuquesneLight.com/dollar](http://DuquesneLight.com/dollar).

### Usage Comparison Chart

Period	Total kWh Usage	Avg Daily kWh Usage	# of Days	Avg Daily Temp (F)
Current Month	345	12	29	61
Last Month	511	17	30	69
Same Month Last Year	329	11	29	62



## Message Center

Looking for ways to save on your bills? Visit our website or use the DLC Mobile app to review your home's energy usage and find tips to save. We also have easy to use tools, rebates, incentives and a store of energy-efficient products. Get started today by visiting [DuquesneLight.com/home-energy-center](http://DuquesneLight.com/home-energy-center).

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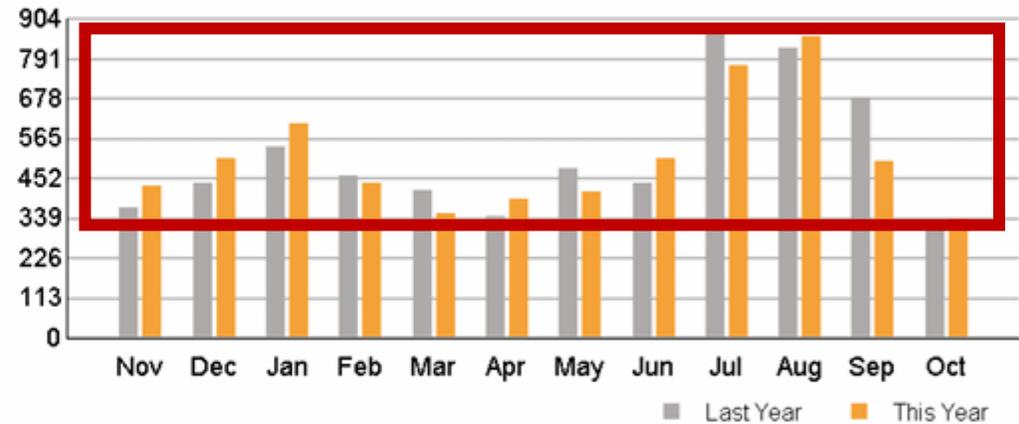
Since the summer and winter are not the same height I am probably not heating my entire home with electricity.

But since summer and spring not same height, you could guess I have AC.

## Usage Comparison Chart

Period	Total kWh Usage	Avg Daily kWh Usage	# of Days	Avg Daily Temp (F)
Current Month	345	12	29	61
Last Month	511	17	30	69
Same Month Last Year	329	11	29	62

kWh:



Average Monthly Usage for the last 12 months: 520 kWh  
 Total Annual Usage for the last 12 months: 6238 kWh

BI\_EBILL\_20251022PRD.xml

 **Online:** [www.DuquesneLight.com](http://www.DuquesneLight.com)

 **Phone:** 888-393-7100

*Billing and meter reading details on page 3* 

Please return this portion with your payment. Please enclose check facing forward.  
 Make payment payable to Duquesne Light Company in US Currency.



*A late charge of 1.25% may be assessed after 2025-11-12*

Due Date	Amount Due
11/12/2025	\$90.26

## General Information

Visit us online or call to learn about payment options, or for a copy of our rate schedules. For questions about your bill, please contact us before the bill due date.

 **Online:** [www.DuquesneLight.com](http://www.DuquesneLight.com)

 **Phone:** 888-393-7100 **TTY Users:** 711

 **Mail:** Dept 6-1  
411 7<sup>th</sup> Ave Ste 3  
Pittsburgh, PA 15219-1942

## Billing and Service Options

Sign up online for any of the following services:

- **Phone:** 888-393-7100 **TTY Users:** 711
- **Budget Billing** - Levels out payments across the year
- **Start/Stop Service** - If you're moving and need to have your service turned on or off, you must call Customer Service at 888-393-7100 or visit our website
- **Double Notice Protection** - Sends a payment reminder to you and a person you designate

## Dollar Energy Fund

Give to Dollar Energy Fund to help people in our community without heat or light. There are several easy ways to donate and your gift is tax deductible.

 **Text:** Make a one-time donation of \$5 by texting POWER to 50000

 **Online:** Visit [www.DuquesneLight.com](http://www.DuquesneLight.com) and select "Payment Options" from the Account & Billing menu

 **Phone:** 888-393-7100

## Understanding Your Bill

- **Customer Charge** – A monthly basic service charge that includes costs for meter reading, customer billing, service equipment, and other expenses. These expenses are incurred even in months when customers do not use electricity.
- **Distribution Charges** – Basic service charges for delivering electricity over a distribution system to the home or business from the transmission system.
- **Distribution System Improvement Charge (DSIC)** – A charge for company investment to improve service quality and increase safety by repairing, improving, or replacing eligible infrastructure used to deliver electricity.
- **DLC Charges** – Services necessary for the physical delivery of electricity service, such as supply, including default service, transmissions and distribution.
- **Kilowatt-Hour (kWh)** – The basic unit of electric energy for which most customers are charged. It equals the amount of electricity used by 10, 100-watt light bulbs left on for one hour.
- **Meter Reading** – An actual (Act) reading is a reading taken from the meter. An estimated (Est) reading is used when no actual reading is available and is based on past electric usage.
- **Non-Basic Service Charges** – Any category of service not related to basic service.
- **Smart Meter Charge** – Charges for advanced metering technology and related infrastructure that will provide the ability for features such as two-way communication and interval usage data.
- **Supply Charges** – Basic service charges for generation supply to retail customers.
- **Transmission Charges** – Basic service charges for the cost of transporting electricity over high voltage wires from the generator to the distribution system.



[Redacted]

Account # [Redacted]

### Account Detail



[Redacted]

Supplier Agreement ID: [Redacted]

#### Meter Reading Usage Information

Meter Number	[Redacted]	
Present	10/22/2025 Act	42,945.6520
Prior		60
Difference		60
Your Meter		1
Total kWh		60



#### Current Bill Details

DLC Rate	RS-Residential Service	
Price to Compare	\$0.1243 / kWh	
<b>DLC Charges</b>		<b>\$47.39</b>
Customer Charge		\$13.00
Distribution	344.8860 kWh@ \$0.099869	\$34.44
DSIC Surcharge	0.02%	\$0.01
Pennsylvania Tax Adjustment		-\$0.06

#### Supply Charges

<b>Supply Charges</b>		<b>\$42.87</b>
Supply	344.8860 kWh@ \$0.097093	\$33.49
Transmission	344.8860 kWh@ \$0.027187	\$9.38

**Total kWh Used 344.8860**

**Service Charges \$90.26**

### Shopping and Supplier Information

When shopping for electricity with an Electric Generation Supplier, please provide the following information:

**Supplier Agreement ID: 8628173655**  
**Rate Schedule: RS-Residential Service**

And All of That Was For  
Electricity....  
in My Gas Heated Home...  
Meaning I didn't even Pay for  
Heat Yet.



**PEOPLES**

An Essential Utilities Company

For 24/7 account access: [peopleseaccount.com](http://peopleseaccount.com)

PITTSBURGH PA

Account Number [REDACTED] Date Prepared Nov 17, 2025 Next Meter Reading 12/18 - 12/19/2025 B 16

For General Information call 1-800-764-0111. For an Emergency call 1-800-400-4271.

**Summary of Basic Charges**

**Credits And Charges Since Your Last Bill**

Balance from last bill \$40.59  
 Payment on OCT 31, 2025 - Thank You 40.59 CR  
**Balance \$0.00**

**Current Charges**

Residential (RS)(P)  
 Customer Charge - 1 Month \$16.80  
 Commodity Charge \$3.5913 per MCF 37.35  
 Delivery Charge  
 10.4 MCF @ \$6.3952 66.51  
 Capacity Charge \$1.8933 per MCF 19.69  
 Tax Repairs Surcredit .44 CR  
 DSIC Surcharge .70  
 State Tax Surcharge @ 0.06% .04  
 Weather Normalization Adjustment 1.50 CR  
**Total Current Charges \$139.15**  
**Total Account Balance \$139.15**

Peoples current charges include \$0.90 in state taxes.

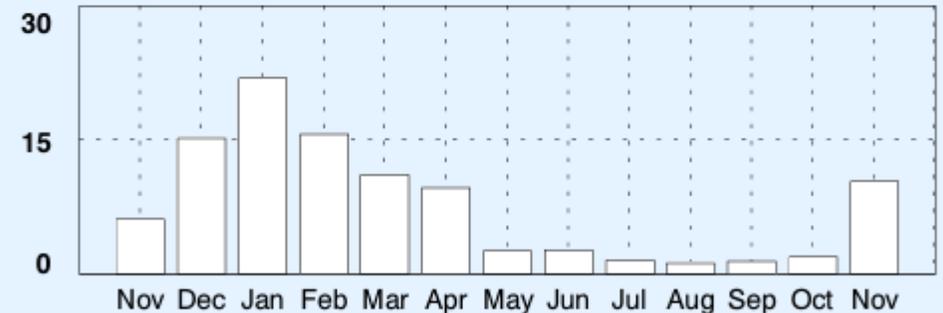
Your PRICE TO COMPARE is \$3.59 per MCF.

**Shopping Information Box**

**Monthly Usage Comparison**

Average Daily Temperature 2024 2025  
 For This Billing Period 54°F 46°F

Gas Use In MCF



2024 2025  
 Legend: Actual (white), Estimate (grey), Customer Read (black), Adjusted Usage (light blue)

Average monthly use: 7.8 MCF  
 Total annual use: 95.1 MCF

**Billing Period And Meter Readings**

Date	Read Type	Reading	Difference
Meter Number [REDACTED]			
NOV 17, 2025	Actual	912.2	
OCT 17, 2025	Actual	901.8	10.4

## Summary of Basic Charges

### Credits And Charges Since Your Last Bill

Balance from last bill	\$40.59
Payment on OCT 31, 2025 - Thank You	40.59 CR
<b>Balance</b>	<b>\$0.00</b>

### Current Charges

Residential (RS)(P)	
Customer Charge - 1 Month	\$16.80
Commodity Charge \$3.5913 per MCF	37.35
Delivery Charge 10.4 MCF @ \$6.3952	66.51
Capacity Charge \$1.8933 per MCF	19.69
Tax Repairs Surcredit	.44 CR
DSIC Surcharge	.70
State Tax Surcharge @ 0.06%	.04
Weather Normalization Adjustment	1.50 CR

**Total Current Charges** **\$139.15**

**Total Account Balance** **\$139.15**

Peoples current charges include \$0.90 in state taxes.

Your PRICE TO COMPARE is \$3.59 per MCF.

### Shopping Information Box

When shopping for gas with a Natural Gas Supplier please provide the following:

Account Number: XXXXXXXXXX

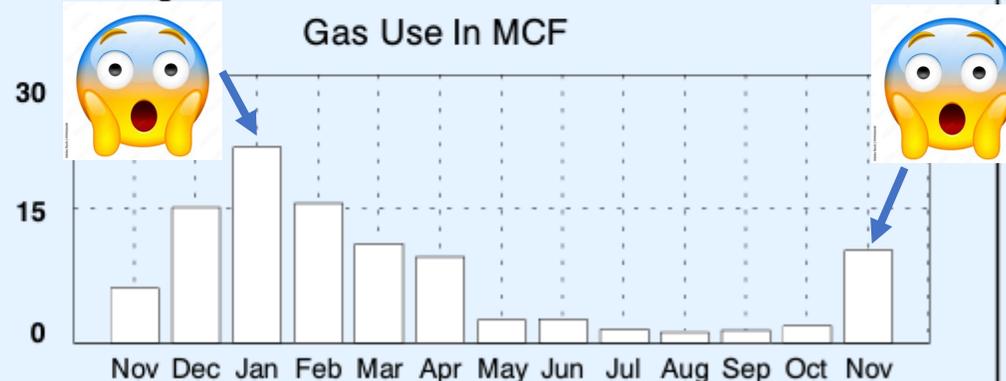
Rate Schedule: Residential (RS)(P)

If you are already shopping, know your contract expiration date.

**Account Balance of \$139.15 will be sent to bank for automatic payment on DEC 01, 2025**

### Monthly Usage Comparison

Average Daily Temperature	2024	2025
For This Billing Period	54°F	46°F



Based on Last Year's bill from Nov to Jan my gas could Double or Triple in the coming months



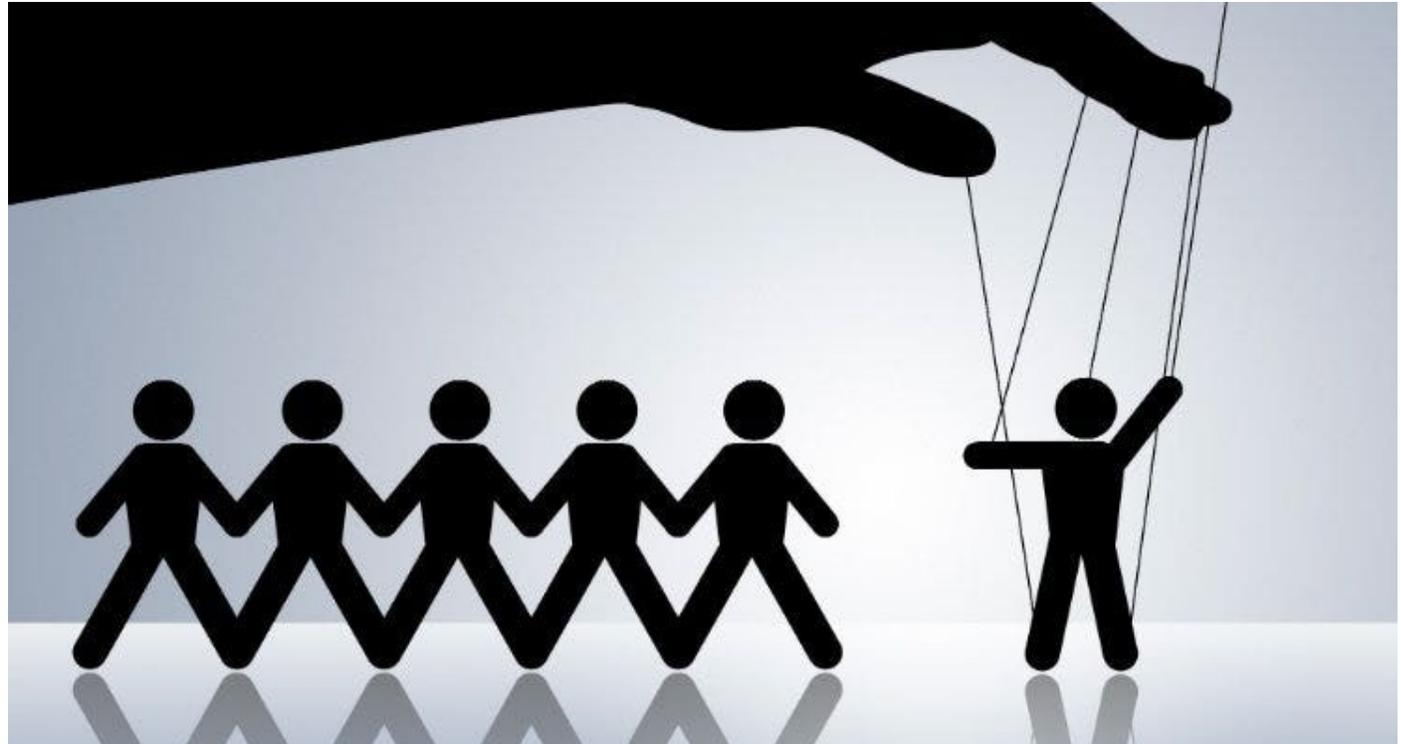
	Reading	Difference
	912.2	
MCF Used in 31 Days	901.8	10.4

oz 950994/4413321 0024053 0048419 I=0000

Effective October 1, 2025, the Distribution System Improvement Charge (DSIC) increased from 0.42 % to 0.83 %. This charge funds the repair, improvement and replacement of natural gas pipelines and related infrastructure.

# Affordability challenges are rooted in the lack of agency.

- With food and medicine people can choose different brands or quality levels, but with electricity and gas you need services to live in modern society.



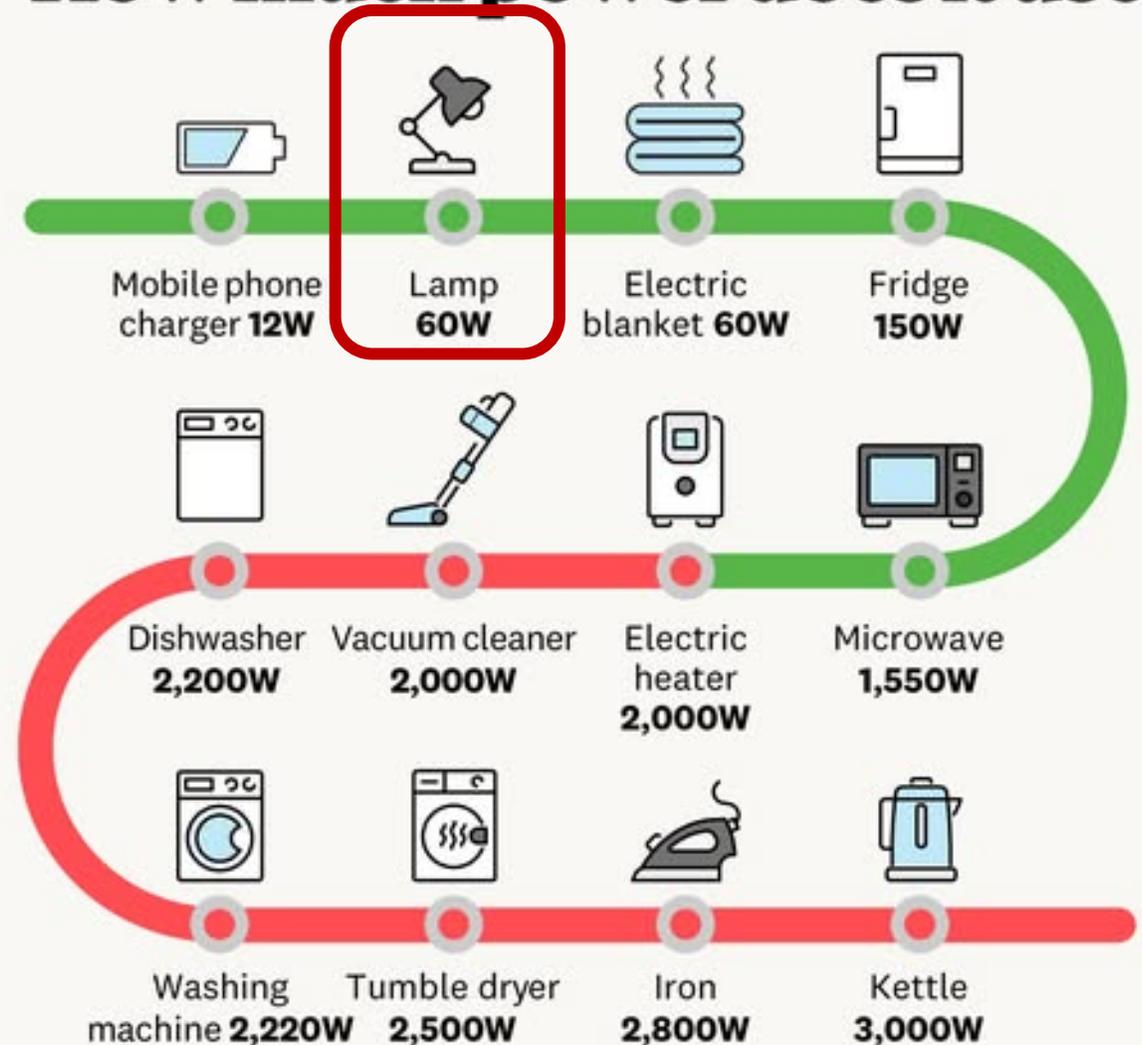
Have you ever argued with your kids, spouses, or whoever else is in your house to cut off the lights to save money on the electric bill?

Lighting is only  
~10% of your  
household  
electricity costs.

If your bill is ~\$200 That means even  
if you turned off all the lights in your  
house you'd save \$20....

Is it really worth the argument??

## How much power does it use?



The appliance power ratings used are indicative only. We've used the highest ratings found across popular brands of appliances.

# Heating, Cooling, and Water Heating



## Energy Use by Systems

Heating and cooling systems consume the largest portion of residential energy use.

Around **40-70%** of your bill



## Water Heating Energy Use

Water heaters are the next highest energy users after heating and cooling systems.

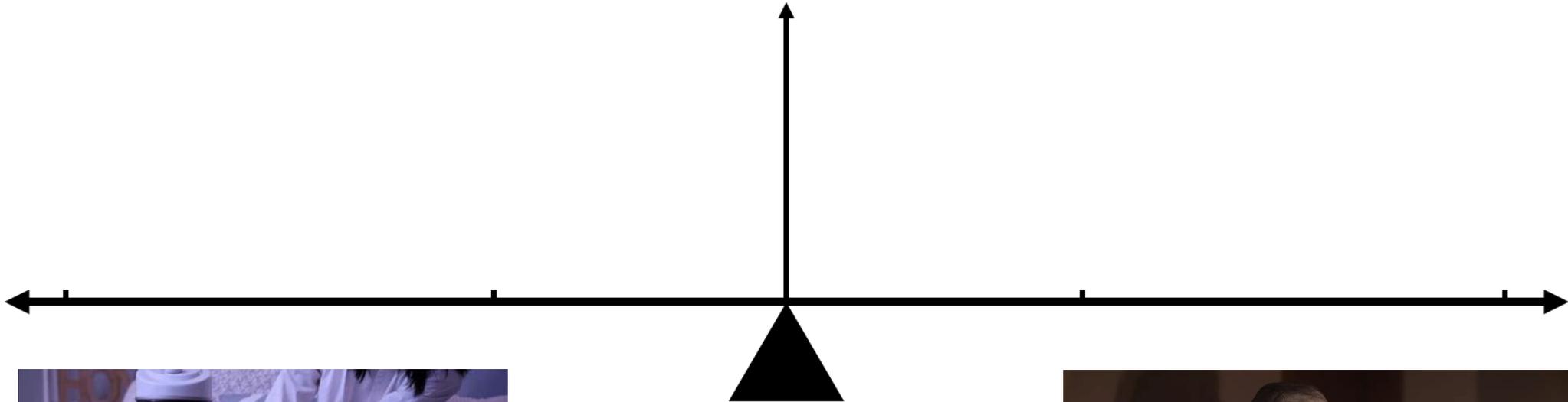
**44% of Americans have found themselves in an argument over the thermostat**



AROUND THE CLOCK SERVICE  
**MOONLIGHT  
MECHANICAL**  
THE LEGEND IN HEATING AND AIR  
**580-512-2014**

# Tradeoff between energy and other necessities

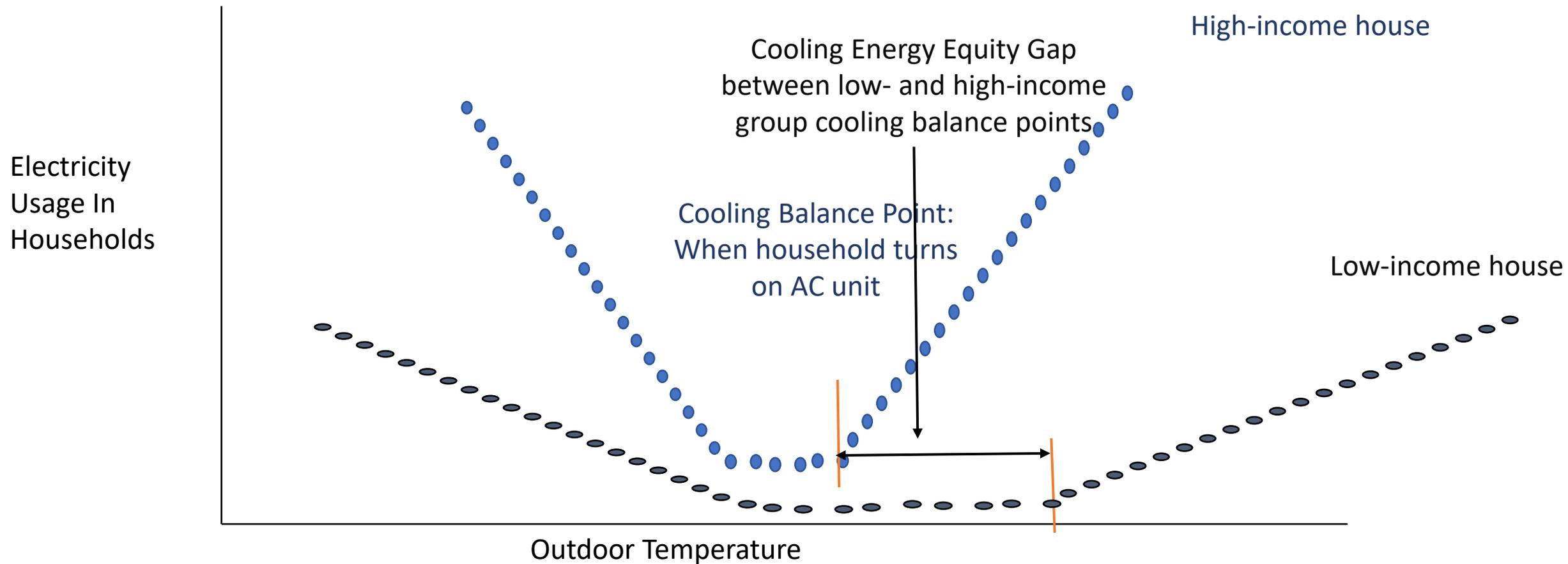
Ideal point: energy needs satisfied



shutterstock.com · 2529925235

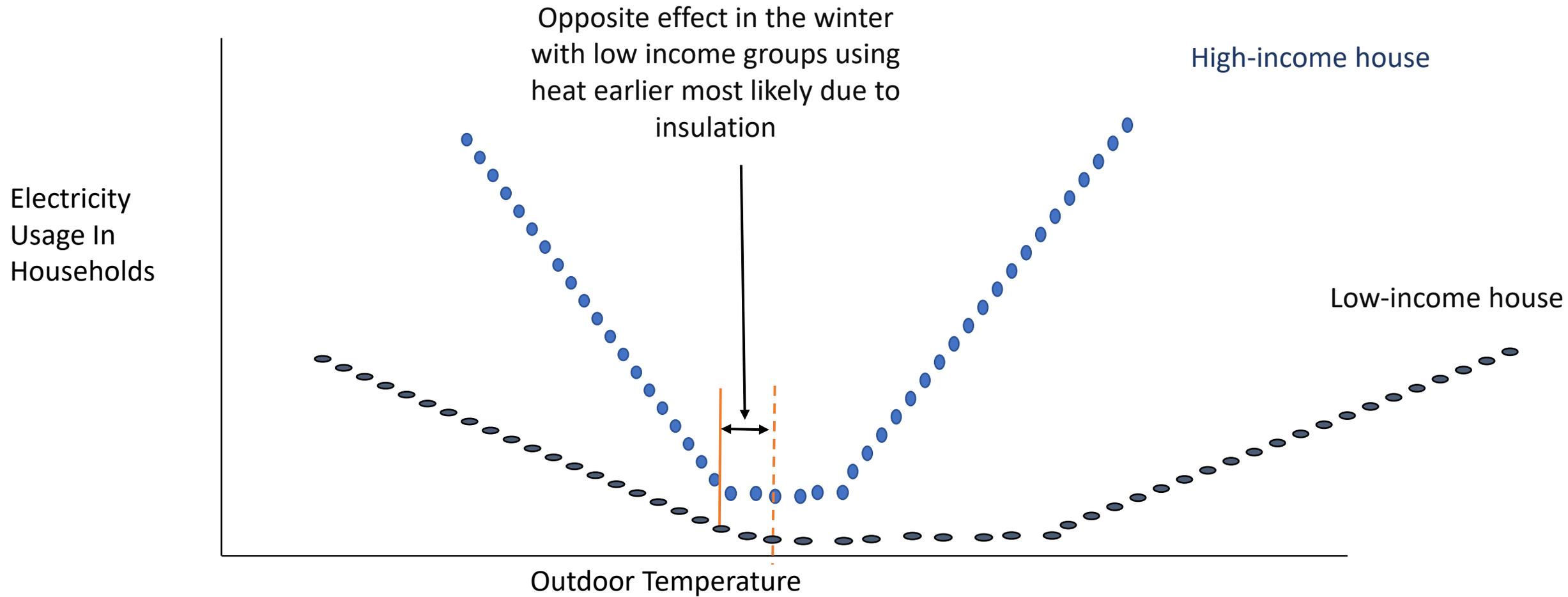


# Energy Equity Gap



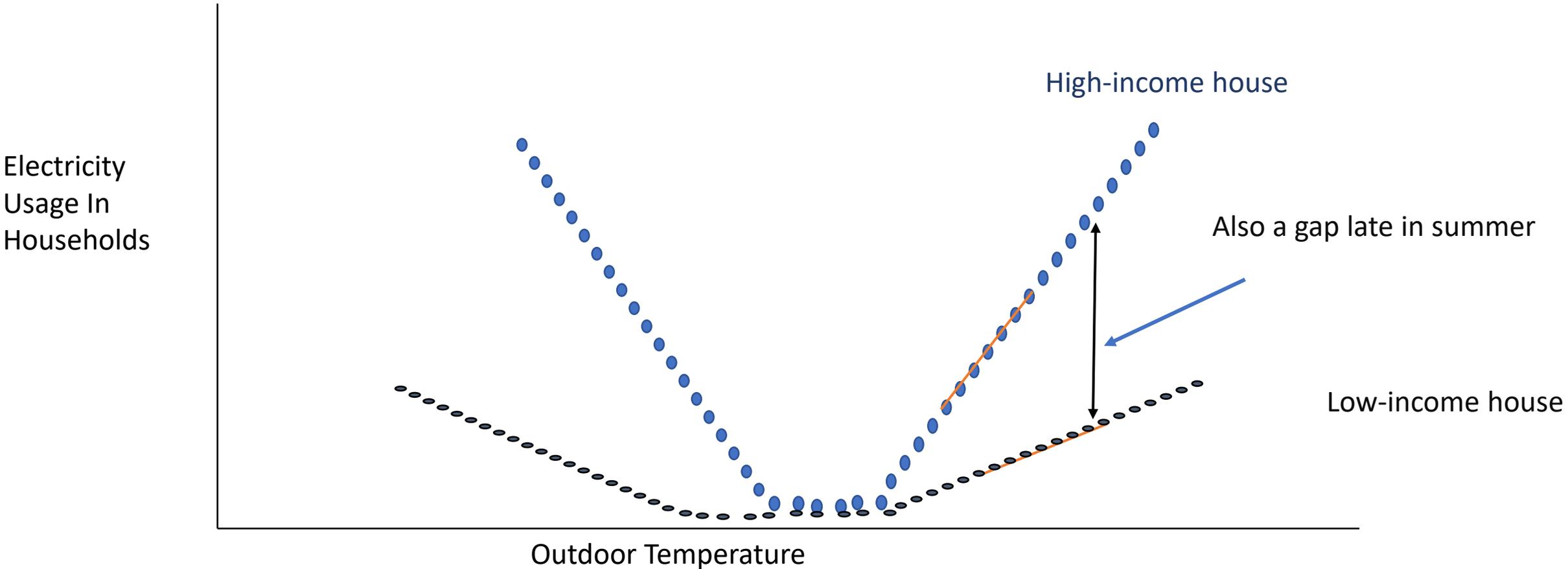
(Cong et al 2022 in Nature Communications and Huang et al (2023))

# Energy Equity Gap



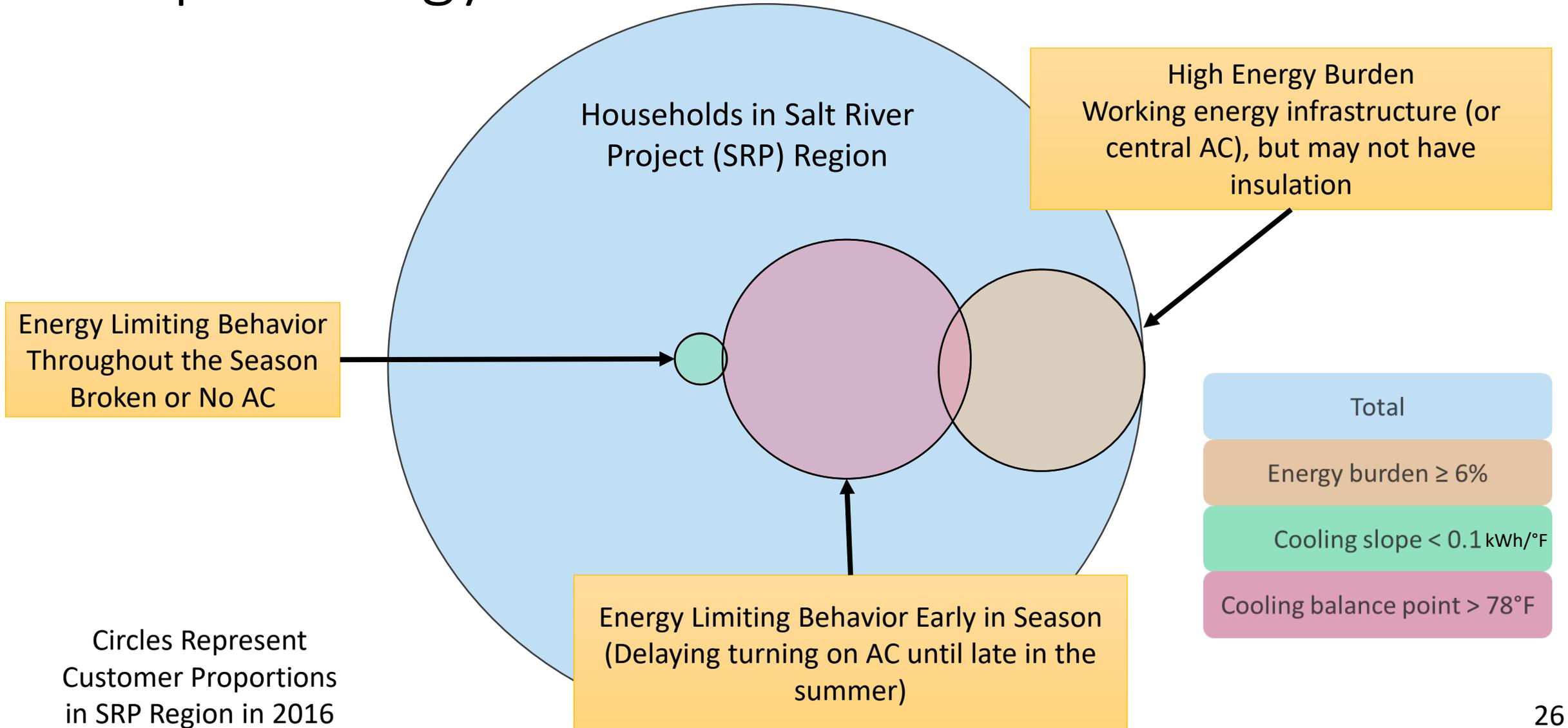
(Cong et al 2022 in Nature Communications and Huang et al (2023))

# Slope Gap



(Kwon et al 2023)

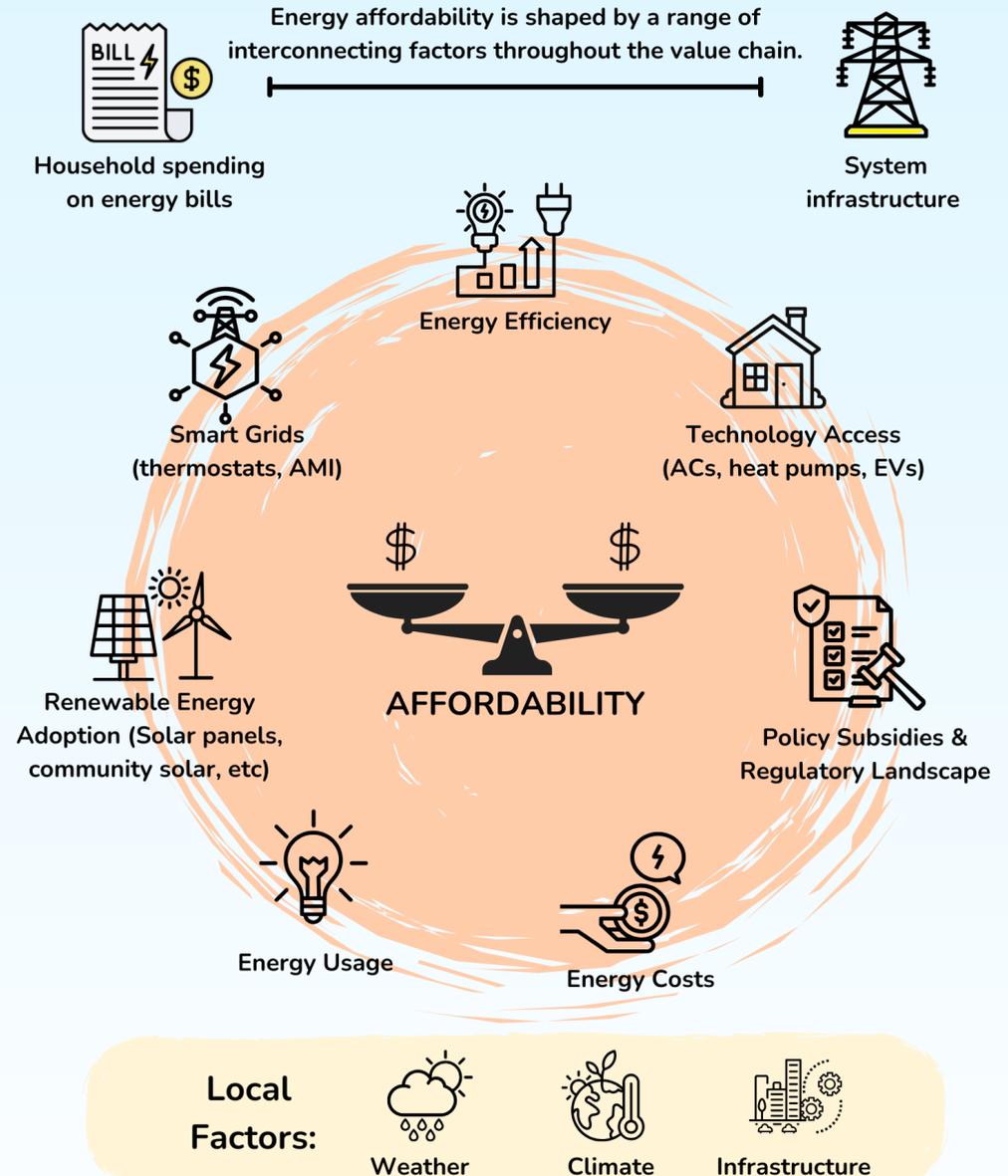
# Multiple Energy Insecurities



# A big part of the solution

- Integrate energy justice as a measure of energy transition success
- We need to move beyond income-based measures to holistically understand the multiple facets of energy affordability
- States and energy advocates need to push for the adoption of comprehensive definitions of energy affordability

## ENERGY AFFORDABILITY



# The SPICE Team



# Contact and Acknowledgements

- Destenie Nock
  - E-mail: [dnock@andrew.cmu.edu](mailto:dnock@andrew.cmu.edu)
  - BlueSky: @Destenie



- This work is funded in part by the Sloan Foundation and NSF.
- Huang, L., Nock, D., Cong, S., & Qiu, Y. L. (2023). Inequalities across cooling and heating in households: Energy equity gaps. *Energy Policy*, 182, 113748.
- Kwon, M., Cong, S., Nock, D., Huang, L., Qiu, Y. L., & Xing, B. (2023). Forgone summertime comfort as a function of avoided electricity use. *Energy Policy*, 183, 113813.
- Cong, S., Nock, D., Qiu, Y. L., & Xing, B. (2022). Unveiling hidden energy poverty using the energy equity gap. *Nature communications*, 13(1), 2456.
- Cong, S., Ku, A. L., Nock, D., Ng, C., & Qiu, Y. L. (2024). Comfort or cash? Lessons from the COVID-19 pandemic's impact on energy insecurity and energy limiting behavior in households. *Energy Research & Social Science*, 113, 103528.

# Dr. Destenie Nock

Dr. Destenie Nock is an Associate Professor of Engineering and Public Policy and Civil and Environmental Engineering at Carnegie Mellon University. Dr. Nock is a leader in energy justice, environmental justice, sustainable energy transitions, and the energy-poverty-climate change nexus. She has pioneered new measures of energy poverty to help utility companies identify vulnerable populations and energy deficits (i.e., energy limiting behavior and forgone thermal comfort).

Dr. Nock is the Chief Executive Officer of Peoples Energy Analytics, a data driven company which uses energy analytics to identify energy poverty in vulnerable households. Dr. Nock received her PhD in Industrial Engineering and Operations Research from the University of Massachusetts Amherst, and two BS degrees in Electrical Engineering and Applied Mathematics from North Carolina A&T State University.

