



THE UNIVERSITY OF CHICAGO  
THE LAW SCHOOL  
Abrams Environmental  
Law Clinic

March 13, 2026

*Via E-Filing*

Ms. Lisa Felice  
Executive Secretary  
Michigan Public Service Commission  
7109 West Saginaw Highway  
Lansing, MI 48917

RE: MPSC Case No. U-21973

Dear Ms. Felice:

Please find enclosed the Accompanying Exhibits FLO-22 to FLO-70 (Part 2 of 3) for the Direct Testimony of Sergio Cira-Reyes on Behalf of Frontline Organizations (Urban Core Collective, Soulardarity, and We Want Green, Too), along with proof of service, for electronic filing in the above-referenced matter.

Please do not hesitate to contact my office with any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark N. Templeton".

Mark N. Templeton, *pro hac vice*  
6020 S. University Avenue  
Chicago, IL 60637  
Phone: (773) 702-9611  
Email: templeton@uchicago.edu

xc: Parties to Case No. U-21973

Michigan Public Service Commission  
 DTE Gas Company  
 Customer Assistance Days, Customer Resource Fairs and Pop Ups

Case No: U-21973  
 Audit Request FLODG  
 Witness J.E. Sparks  
 Questions FLODG-5.4  
 Page: 1 of 1

CAD = Customer Assistance Days  
 CRF = Customer Resource Fairs

Year	Type	Date	Location	Time	Notes
2023	CRF	10/12/23	Booker T Dozier Recreation Center	10am - 4pm	
2023	CRF	11/02/23	Fellowship Chapel	10am - 4pm	
2023	Pop-Up	07/26/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	07/27/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	08/02/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	08/03/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	08/08/23	Samaritan Center	11am – 3pm	
2023	Pop-Up	08/09/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	08/09/23	Washtenaw Community Action Agency	11am – 3pm	
2023	Pop-Up	08/17/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	09/05/23	Samaritan Center	11am – 3pm	
2023	Pop-Up	09/19/23	Samaritan Center	11am – 3pm	
2023	Pop-Up	09/12/23	Considine Center	11am – 3pm	
2023	Pop-Up	09/20/23	Washtenaw Community Action Agency	11am – 3pm	
2023	Pop-Up	09/27/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	10/03/23	Samaritan Center	11am – 3pm	
2023	Pop-Up	10/11/23	Cares of Farmington Hills	11am – 3pm	
2023	Pop-Up	10/25/23	La Sed	11am – 3pm	
2023	Pop-Up	10/31/23	Northwest Activity Center	11am – 3pm	
2023	Pop-Up	11/16/23	Veterans Resource Fair Greater Grace	10am - 2 pm	
2023	Pop-Up	01/30/23	Samaritan Center	11am – 3pm	
2024	Pop-Up	02/01/24	Northwest Activity Center	11am -3pm	
2025	Pop-Up	02/28/24	Heilmann Recreation Center	11am -3pm	
2024	Pop-Up	03/07/24	Northwest Activity Center	11am -3pm	
2024	Pop-Up	03/18/24	Gethesemane Missionary Baptist Church	11am-2pm	
2024	Pop-Up	04/04/24	Northwest Activity Center	11am -3pm	
2024	CRF	04/12/24	Thompson Community Center	0 am – 1:30 pm	
2024	CRF	04/12/24	Ford Resource & Engagement Center East	10am – 3pm	
2024	Pop-Up	05/02/24	Northwest Activity Center	11am -3pm	
2024	Pop-Up	06/05/24	Northwest Activity Center	11am -3pm	date correction
2024	Pop-Up	07/03/24	Northwest Activity Center	11am -3pm	date correction
2024	Pop-Up	08/08/24	Northwest Activity Center	11am -3pm	Planned, did not complete
2024	Pop-Up	09/05/24	Northwest Activity Center	11am -3pm	Planned, did not complete
2024	Pop-Up	10/03/24	Northwest Activity Center	11am -3pm	Planned, did not complete
2024	Pop-Up	11/06/24	Northwest Activity Center	11am -3pm	date correction
		10/30/2025	Fellowship Chapel	10am - 3pm	
2025	Mobile Office	10/15/2025	Ford Center East Customer	10am - 3pm	
2025	Mobile Office	9/10/2025	Ford Resource Center East	10am - 3pm	
2025	Mobile Office	8/28/2025	Northwest Activities Center	9am-3pm	
2025	Mobile Office	8/15/2025	Christ the King Parish and Siena Literacy Center	11am-3pm	
2025	Mobile Office	7/23/2025	Northwest Activities Center	10am-3pm	date correction
2025	Mobile Office	7/23/2025	Ford Engagement Center East	10am - 3pm	
2025	Mobile Office	7/8/2025	Eastern Market Sheds 3 & 4	9am-3pm	
2025	Mobile Office	6/6/2025	Northwest Activities Center	9am-3pm	
2025	Mobile Office	6/12/2025	Dr. Gary Bernstein Community Health Clinic		
2025	Mobile Office	5/15/2025	Ypsilanti Library Customer	10am - 3pm	
2025	Mobile Office	5/7/2025	Northwest Activities Center	10am - 3pm	
2025	Mobile Office	4/17/2025	Oakland McCleren Pontiac	10am - 3pm	
2025	Mobile Office	4/8/2025	Northwest Activities Center	10am - 3pm	
2025	CRF	4/2/2025	New Grace Missionary Baptist Church Highland Pk, MI	10am - 3pm	
2025	CRF	3/27/2025	arkridge Community Center 591 Armstrong Dr Ypsilanti, M	10am - 3pm	
2025	Mobile Office	3/11/2025	Northwest Activities Center	10am - 3pm	
2026	Mobile Office	2/4/2026	Northwest Activities Center	10am - 3pm	
2024	Pop-up	9/10/2024	Neighborhood Pop - Clarenceville High School	10am-3pm	
2024	Pop-up	9/9/2024	Neighborhood Pop up - Senator Moss's Annual Senior Surr	10am -3pm	
2024	Pop-up	10/29/2024	Neighborhood Pop up Focus Hope	10am - 3pm	

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.4a

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** Witness Sparks states that DTE hosts Customer Assistance Days (CADs) and Customer Resource Fairs (CRFs).

- a. Please provide a spreadsheet listing the number of CADs and CRFs that occurred in 2023, 2024, 2025, and 2026 (so far), broken down by type (CAD vs. CFR), year, and format (virtual vs. in-person).

**Answer:** For 2026, certain Customer Assistance and Customer Resource Fair activities are pending confirmation as of the date of this response and therefore are not reflected in the spreadsheet provided. The attachment includes only events that have occurred or have been confirmed to date.

The Company has scheduled multiple in-person Customer Assistance events, including Customer Mobile Office deployments, and is also planning additional Customer Resource Fairs. Including 10 at Northwest Activity Center (NWAC) and 10 at the Ford Resource Center East, with additional events pending confirmation. The Company also is working on a proposed six Customer Resource Fairs across our service territory. See attachment for historical 2023-2025 and 2026 confirmed.

**Attachment:** U-21973 FLODG-5.4 2023-2026 CAD CRF Pop Ups

## BudgetWise Billing®

### ← Payment Programs

## Easily manage your budget with predictable monthly costs.

BudgetWise Billing® enables you to manage your budget and avoid seasonal spikes in energy costs. You'll have predictable monthly payments – minimizing the ups and downs of energy costs impacted by weather. Learn [how BudgetWise Billing works](#), including quarterly plan reviews and the annual Settlement Month, and [find out if you are eligible](#).

You can enroll in BudgetWise Billing for free at any point in the year and opt-out at any time.

Enroll Now

## BudgetWise Billing Benefits



### Comforting Predictability

A predictable monthly payment amount helps you easily manage your budget.



## Customized for You

Your monthly amount is the average energy costs at your current address over the past 12 months. If you've occupied the address for less than 12 months, the bill history of the previous occupant is used to calculate your 12 month average.



## Avoid Seasonal Spikes

Averaging your monthly payment amount helps you manage the impacts of weather on your energy bill.

## How It Works



## Make it easier to balance your budget.

See how BudgetWise Billing helps you easily manage your household budget with predictable monthly payments.

[Watch Video >](#)



## Your Initial Monthly Payment

Your BudgetWise Billing payment amount is the monthly average of your energy costs\* over the past year. This applies to the first three months of your plan.

### What determines your payment amount

- Average energy costs at your current address over the past year
- A weather factor that accounts for Michigan's unpredictable weather

\* Energy costs include energy usage, energy rates, taxes and fees. Energy rates may fluctuate throughout the year, and we take this into account when determining your initial monthly payment.

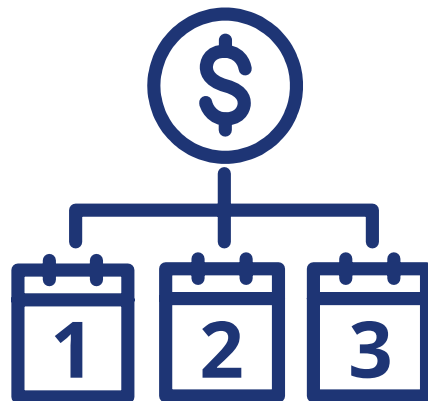


## Quarterly Reviews

Your monthly payment amount is reviewed every three months against your actual home energy costs over the past 12 months.

### How quarterly reviews impact your monthly payment

- If your energy costs changed by 5% or more over the 12-month period, your monthly payment amount may increase or decrease.
- Our goal is to keep your monthly bill as consistent as possible. Please remember your total energy costs are based on the energy you actually used.



## Nine Month Review

After nine months, in addition to Quarterly Reviews, your total monthly payments are compared to your actual energy costs.

### The nine month review might impact your monthly payment

- If your energy costs were more than what you paid, the difference will be distributed equally over the final three months of your plan.
- This distribution helps to minimize your annual settlement amount.



## Annual Settlement

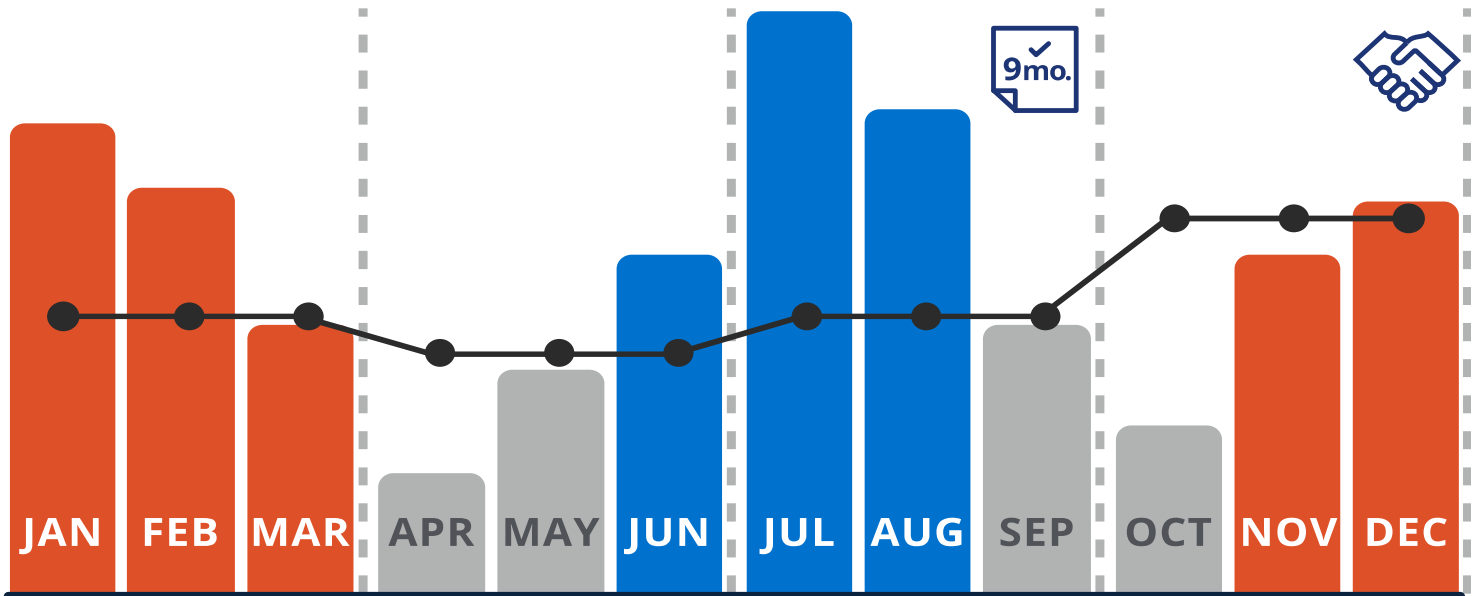
After 12 months, we review your account and settle any differences between energy used and the amount paid.

### Settlement Month details

- If your energy costs were less than your total payments, the amount you overpaid will be credited on your next bill, or you may request a check.
- If your energy costs were higher than your total payments, you're required to pay the full amount by your bill due date.

**BudgetWise Billing makes your payments more predictable.**

Example: how the plan minimizes the impacts of seasonal ups and downs on your bill. Your actual bill may differ.



High Cooling Energy Costs



High Heating Energy Costs



BudgetWise Billing® Payment Amount



Quarterly Review



Nine Month Review



Settlement Month

### Am I Eligible?

You are eligible for BudgetWise Billing if you have active DTE service, you're not enrolled in another DTE payment plan and your current account balance is in good standing and less than \$12.

BudgetWise Billing is not available if you are enrolled in Electric Choice, SolarCurrent, Dynamic Peak Pricing, Net Metering or Flexible Due Date.

Enroll Now

## How to Read a BudgetWise Billing Statement

### Summary of Charges

Account Number **1234 567 8910 1**

#### Your Payment Plan Summary

Last Month's Amount Due	162.00
Payment Received Sep 11, 2023	- 162.00
Prior Period Balance	0.00
Current Payment Plan Amount	162.00
<b>Payment Due By</b> October 06, 2023	<b>\$162.00</b>

#### Actual Balance Information

Account Balance as of Aug 15, 2023	234.70	1
Payment Received Sep 11, 2023 Thank You!	- 162.00	2
Balance Prior to Current Charges	72.70	3
Total Current Charges	163.29	4
Account Balance as of September 14, 2023	<b>\$235.99</b>	5

In this example, the customer's energy costs increased over previous months.

- 1 Energy costs for the previous month.
- 2 Current monthly payment amount applied.
- 3 Remaining balance after last payment.
- 4 Energy costs for the current month.
- 5 New account balance.

## Frequently Asked Questions

Review our BudgetWise Billing FAQ to learn more.

[View the BudgetWise Billing FAQ >](#)



## Billing and Payment Preferences



### eBill Paperless Billing

Go Green, Go Paperless with eBill Paperless Billing.

[Go Paperless >](#)



### AutoPay

No stamps, no checks and no hassles with AutoPay.

[Enroll Now >](#)

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.6d

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** Please refer to the Company's webpage on BudgetWise billing. (available at <https://www.dteenergy.com/us/en/business/billing-and-payments/payment-programs/budget-wise-billing.html>).

d. On the BudgetWise webpage, the Company states "We review your energy usage every three months to determine if your monthly amount needs to be adjusted." What formula or methodology does the Company use to determine adjustments to a bill during quarterly review?

**Answer:** Every three months, the Company uses the last rolling-12 months of the customer's energy usage to determine if they are using more or less energy as compared to the last quarterly adjustment amount. If their average usage has increased or decreased by 10%, the customer's BudgetWise Billing plan amount will be adjusted accordingly.

**Attachment:** None

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.25

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** Please provide the total dollar amount that DTE Gas projects to spend on conducting shutoffs, by year, for 2026–2030.

**Answer:** DTE Gas projects costs of \$2.67M in 2026 and \$2.75M in 2027 to conduct shut-offs. Cost projections for 2028-2030 are not available.

**Attachment:** None

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.11a

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** Please provide the relevant policy, procedures, terms, and conditions governing how and when DTE will issue a shutoff notice and disconnect a residential customer.

- a. Describe the extent to which past due amounts, number of days late, and payment history are factors in a disconnection decision. If all or some of these factors are considered, please describe how they are weighed in relation to one another.

**Answer:** DTE follows the Billing Practice Rules as issued by the Michigan Public Service Commission as stated in Rule 37. (R 460.137 and 138) and does not differentiate among customers regarding number of days late or payment history.

DTE will issue a shut off notice to all residential accounts with past due energy charges balance greater than \$100.

**Attachment:** None

Michigan Public Service Commission  
 DTE Gas Company  
 Disconnects Counts

Case: U-21973  
 Requestor: FLODG-5.12  
 Witness: J. E. Sparks  
 Page: 1 of 1

Note:

	2022	2023	2024	2025
Gas Disconnects	18,216	11,871	16,238	19,622
Residential Gas Disconnects	16,988	11,002	15,034	18,026

**12a. All residential customers**

The chart below shows the breakdown of all residential DTE Gas customers by the number of disconnects by year.

Number of Disconnects	2022	2023	2024	2025
1	14,637	10,058	13,274	15,253
2	1,018	382	716	1,153
3	82	34	63	120
4	11	10	11	23
5 or more	3	7	16	3
	15,751	10,491	14,080	16,552

**12b. Low-income customers**

The chart below shows the breakdown of all residential Low-income DTE Gas customers by the number of disconnects by year.

Note: Low-income flag appeared during the year in the chart.

Number of Disconnects	2022	2023	2024	2025
1	5,282	4,498	3,315	4,828
2	461	216	253	569
3	40	19	19	63
4	4	6	2	16
5 or more	-	1	1	1
	5,787	4,740	3,590	5,477

**12c. Customers participating in payment management plans (organized by type of plan, program, or pilot);**

The chart below shows the breakdown of residential DTE Gas customers by payment plans by the number of disconnects by year.

Note: Customers may be on multiple plans. Customers were on a plan before the disconnect.

BWB		2022	2023	2024	2025
Number of Disconnects					
1		208	197	209	229
2		12	5	5	8
3		-	-	-	1
4		-	1	-	-
5 or more		-	-	-	-
		220	203	214	238

Payment Agreements		2022	2023	2024	2025
Number of Disconnects					
1		666	572	1,335	2,316
2		55	27	60	170
3		5	6	6	9
4		-	-	-	1
5 or more		-	-	-	-
		726	605	1,401	2,496

**12d. Customers participating in EWR programs (organized by type of plan, program, or pilot);**

The chart below shows the breakdown of residential DTE Gas customers participating in EWR programs by the number of disconnects by year.

Note: Customers may be on multiple plans. Customers were on a plan before the disconnect.

EWR		2022	2023	2024	2025
Number of Disconnects					
1		94	68	62	104
2		3	-	2	3
3		1	1	-	-
4			-	-	-
5 or more			-	-	-
		98	69	64	107

EWR Programs:	2022	2023	2024	2025
Appliance Recycling	15	16	30	41
Audit and Weatherization	3	-	1	-
Energy Efficiency Assistance	41	19	16	48
Home Energy Consultation	5	1	-	-
Home Energy Consultation Low Income	16	31	-	-
HVAC	13	-	12	5
HVAC Midstream	3	1	1	-
New Homes Construction	1	-	-	-
Residential Energy Star and Lighting	1	1	4	13
	98	69	64	107

**12e. Customers participating in arrearage management plans (organized by type of plan, program, or pilot);**

The chart below shows the breakdown of DTE Gas customers by residential arrearage plans by the number of disconnects by year.  
 Note: Customers may be on multiple plans. Customers were on a plan before the disconnect.

SPP		2022	2023	2024	2025
Number of Disconnects					
1		1,932	1,532	1,236	2,214
2		156	77	72	196
3		12	7	5	20
4		-	-	-	3
5 or more		-	-	-	1
		2,100	1,616	1,313	2,434

WPP		2022	2023	2024	2025
Number of Disconnects					
1		24	50	16	17
2		-	20	1	1
3		-	-	-	-
4		-	-	-	-
5 or more		-	-	-	-
		24	70	17	18

LSP		2022	2023	2024	2025
Number of Disconnects					
1		172	247	85	171
2		13	16	5	10
3		2	1	-	-
4		-	1	-	-
5 or more		-	1	-	-
		187	266	90	181

**12f. Customers with payment restrictions (organized by cause of the payment restriction).**

The chart below shows the breakdown of DTE Gas customers with the cash only flag by number of disconnects by year.

LSP		2024	2025
Number of Disconnects			

1	739	976
2	31	44
3	3	2
4	-	-
5 or more	-	-
	773	1,022

Michigan Public Service Commission  
 DTE Gas Company  
 Residential Shutoff Notices (First Red Bill Print)

Case: U-21973  
 Requestor: FLOGD  
 Witness: J. E. Sparks  
 Question FLOGD-5.17  
 Page: 1 of 3

#17. For 2024 and 2025, please provide the number of residential customers DTE issued shutoff notices to once, twice, three times, four times, and five or more times during each year? Provide a breakdown by:

- a. All residential customers;
- b. Low-income customers;
- c. Customers participating in payment management plans (organized by type of plan, program, or pilot);
- d. Customers participating in EWR programs (organized by type of plan, program, or pilot);
- e. Customers participating in arrearage management plans (organized by type of plan, program, or pilot);
- f. Customers with payment restrictions (organized by cause of the payment restriction).

FLOGD-1.17 a

		FRBP Counts													
		All Residential Gas Contract Accounts	0	1	2	3	4	5+	0	1	2	3	4	5+	
All Gas	2,022	1,441,189	1,106,191	125,796	69,455	46,090	31,050	62,607	77%	9%	5%	3%	2%	4%	
	2,023	1,455,061	1,103,495	130,934	70,226	47,342	33,007	70,057	76%	9%	5%	3%	2%	5%	
	2,024	1,461,920	1,123,327	124,847	67,250	45,012	30,808	70,676	77%	9%	5%	3%	2%	5%	
	2,025	1,476,435	1,117,558	126,601	70,709	48,686	34,540	78,341	76%	9%	5%	3%	2%	5%	
Gas Only	2,022	694,237	596,348	47,632	23,705	13,513	7,195	5,844	86%	7%	3%	2%	1%	1%	
	2,023	691,981	592,257	48,538	23,221	13,493	7,744	6,728	86%	7%	3%	2%	1%	1%	
	2,024	696,582	606,649	44,670	21,647	11,914	6,459	5,243	87%	6%	3%	2%	1%	1%	
	2,025	702,151	601,716	47,197	23,655	13,970	8,246	7,367	86%	7%	3%	2%	1%	1%	
Combo	2,022	746,952	509,843	78,164	45,750	32,577	23,855	56,763	68%	10%	6%	4%	3%	8%	
	2,023	763,080	511,238	82,396	47,005	33,849	25,263	63,329	67%	11%	6%	4%	3%	8%	
	2,024	765,338	516,678	80,177	45,603	33,098	24,349	65,433	68%	10%	6%	4%	3%	9%	
	2,025	774,284	515,842	79,404	47,054	34,716	26,294	70,974	67%	10%	6%	4%	3%	9%	

FLOGD-1.17 b

		FRBP Counts						
		Low Income Residential Gas Contract	0	1	2	3	4	5+
All Gas	2,022	167,324	68,425	28,633	22,640	17,215	12,138	18,273
	2,023	165,537	68,793	27,459	21,303	16,227	11,633	20,122
	2,024	162,036	68,447	27,393	19,893	15,078	11,149	20,076
	2,025	174,889	74,350	26,142	20,940	17,052	13,118	23,287
Gas Only	2,022	41,998	21,923	7,661	5,792	3,704	1,823	1,095
	2,023	41,343	21,774	7,451	5,436	3,605	1,862	1,215
	2,024	38,483	22,394	7,049	4,325	2,510	1,344	861
	2,025	40,718	23,324	6,099	4,780	3,314	1,961	1,240
Combo	2,022	125,326	46,502	20,972	16,848	13,511	10,315	17,178
	2,023	124,194	47,019	20,008	15,867	12,622	9,771	18,907
	2,024	123,553	46,053	20,344	15,568	12,568	9,805	19,215
	2,025	134,171	51,026	20,043	16,160	13,738	11,157	22,047

Notes:

- 1. Residential customers with Gas contract
- 2. FRBP Step with Print date between 2022 and 2023 excluding the reversed from FKKMAKO
- 3. Group the customers by the number of times they received the FRBL in 2022 and 2023
- 4. Subset for LI income profile at the time of dunning date based on table ZBUT0000DGL41

FLOGD-17 c+e

		FRBP Counts								
		Residential Gas Contract Accounts	0	1	2	3	4	5+		
All Gas	2022	SPP	60,825	25,873	9,156	9,273	5,328	5,138	6,057	
		PA	26,897	3,766	3,945	4,509	3,210	3,469	7,998	
		BWB	198,640	179,187	5,845	6,901	2,096	2,126	2,485	
		LSP	20,338	10,418	3,380	2,969	1,372	1,245	954	
	2023	SPP	46,616	11,581	7,141	7,901	4,416	5,606	9,971	
		PA	31,811	5,554	4,602	4,961	3,453	3,813	9,428	
		BWB	177,706	163,092	4,569	4,968	1,665	1,552	1,860	
		LSP	18,526	9,767	3,202	2,426	1,290	962	879	
	2024	SPP	44,318	7,120	6,135	7,479	4,770	6,098	12,716	
		PA	48,790	9,067	5,939	6,665	4,421	5,448	17,250	
		BWB	164,841	155,634	3,048	3,085	1,003	936	1,135	
		LSP	16,115	9,348	2,674	1,874	861	648	710	
	2025	SPP	53,412	6,996	7,204	9,045	5,621	7,451	17,095	
		PA	64,581	9,823	7,191	9,073	5,810	7,593	25,091	
		BWB	162,191	151,759	3,403	3,592	1,120	1,078	1,239	
		LSP	7,968	5,809	773	542	291	256	297	
	Gas Only	2022	SPP	8,111	3,921	1,410	1,283	614	497	386
			PA	4,816	675	884	1,091	718	677	771
			BWB	99,084	94,197	1,665	1,984	507	445	286
			LSP	1,248	629	246	177	98	58	40
2023		SPP	5,785	1,847	1,111	1,118	525	564	620	
		PA	5,408	754	1,017	1,150	817	724	946	
		BWB	91,161	86,810	1,572	1,687	481	363	248	
		LSP	1,239	660	235	170	90	51	33	
2024		SPP	4,691	992	815	957	502	617	808	
		PA	7,857	1,056	1,213	1,568	1,042	1,129	1,849	
		BWB	85,712	83,294	888	876	287	225	142	
		LSP	944	607	126	101	48	27	35	
2025		SPP	6,379	853	1,064	1,377	700	930	1,455	
		PA	13,938	2,175	2,081	2,717	1,587	1,985	3,393	

	<b>BWB</b>	84,827	81,616	1,143	1,259	339	270	200
	<b>LSP</b>	416	345	30	19	7	8	7
<b>Combo</b>	<b>2022 SPP</b>	52,714	21,952	7,746	7,990	4,714	4,641	5,671
	<b>PA</b>	22,081	3,091	3,061	3,418	2,492	2,792	7,227
	<b>BWB</b>	99,556	84,990	4,180	4,917	1,589	1,681	2,199
	<b>LSP</b>	19,090	9,789	3,134	2,792	1,274	1,187	914
<b>2023</b>	<b>SPP</b>	40,831	9,734	6,030	6,783	3,891	5,042	9,351
	<b>PA</b>	26,403	4,800	3,585	3,811	2,636	3,089	8,482
	<b>BWB</b>	86,545	76,282	2,997	3,281	1,184	1,189	1,612
	<b>LSP</b>	17,287	9,107	2,967	2,256	1,200	911	846
<b>2024</b>	<b>SPP</b>	39,627	6,128	5,320	6,522	4,268	5,481	11,908
	<b>PA</b>	40,933	8,011	4,726	5,097	3,379	4,319	15,401
	<b>BWB</b>	79,129	72,340	2,160	2,209	716	711	993
	<b>LSP</b>	15,171	8,741	2,548	1,773	813	621	675
<b>2025</b>	<b>SPP</b>	47,033	6,143	6,140	7,668	4,921	6,521	15,640
	<b>PA</b>	50,643	7,648	5,110	6,356	4,223	5,608	21,698
	<b>BWB</b>	77,364	70,143	2,260	2,333	781	808	1,039
	<b>LSP</b>	7,552	5,464	743	523	284	248	290

Count dunning dates per CA if account had plan for 30+ days

FLOGG-1.171

		FRBP Counts						
		All Residential Gas Contract Accounts	0	1	2	3	4	5+
<b>All Gas</b>	<b>2,022</b>	-	-	-	-	-	-	-
	<b>2,023</b>	25,433	8,607	4,255	3,206	2,610	2,049	4,706
	<b>2,024</b>	31,303	9,111	5,431	4,163	3,312	2,748	6,538
	<b>2,025</b>	33,829	8,971	5,059	4,407	2,767	2,906	9,719
<b>Gas Only</b>	<b>2,022</b>	-	-	-	-	-	-	-
	<b>2,023</b>	6,323	3,082	1,100	787	572	360	422
	<b>2,024</b>	7,177	3,009	1,438	1,020	708	516	486
	<b>2,025</b>	7,627	2,944	1,374	1,119	611	586	993
<b>Combo</b>	<b>2,022</b>	-	-	-	-	-	-	-
	<b>2,023</b>	19,110	5,525	3,155	2,419	2,038	1,689	4,284
	<b>2,024</b>	24,126	6,102	3,993	3,143	2,604	2,232	6,052
	<b>2,025</b>	26,202	6,027	3,685	3,288	2,156	2,320	8,726

Count dunning dates per CA if BP was cash-only for 1+ mo

17.d

All Gas	2022	Residential Gas Contract Accounts	FRBP Counts					
			0	1	2	3	4	5+
Appliance Recycling		9352	6775	878	501	379	228	591
Audit and Weatherization		5819	5167	263	120	91	52	126
Energy Efficiency Assistance		33016	14644	4500	3442	2768	2341	5321
HVAC		13601	12414	582	227	119	87	172
HVAC Midstream		995	840	66	22	24	14	29
Home Energy Consultation		6189	4974	477	222	150	108	258
Home Energy Consultation Low Income		6389	3090	954	715	534	395	701
Multi-Family Low Income		42	28	5	6	1	1	1
Multi-Family Residential		4	3	0	0	0	0	1
New Homes Construction		1232	1073	113	28	10	3	5
Residential Energy Star and Lighting		3360	3102	122	41	30	15	50
Residential Energy Star and Lighting Online Marketplace		5017	4388	274	107	64	56	128

Gas Only	CA	0	1	2	3	4	5+
Audit and Weatherization	1615	1540	47	19	4	2	3
Energy Efficiency Assistance	1271	899	161	90	76	21	24
HVAC	7797	7319	280	105	43	31	19
HVAC Midstream	550	507	27	8	6	2	0
Home Energy Consultation	2013	1816	103	42	29	12	11
Home Energy Consultation Low Income	617	436	66	46	36	22	11
Multi-Family Low Income	13	9	2	2	0	0	0
Multi-Family Residential	1	1	0	0	0	0	0
New Homes Construction	514	485	24	4	0	0	1
Residential Energy Star and Lighting	1212	1164	26	10	8	1	3
Residential Energy Star and Lighting Online Marketplace	259	245	9	1	0	4	0

Combo	CA	0	1	2	3	4	5+
Appliance Recycling	9352	6775	878	501	379	228	591
Audit and Weatherization	4204	3627	216	101	87	50	123
Energy Efficiency Assistance	31745	13745	4339	3352	2692	2320	5297
HVAC	5804	5095	302	122	76	56	153
HVAC Midstream	445	333	39	14	18	12	29
Home Energy Consultation	4176	3158	374	180	121	96	247
Home Energy Consultation Low Income	5772	2654	888	669	498	373	690
Multi-Family Low Income	29	19	3	4	1	1	1
Multi-Family Residential	3	2	0	0	0	0	1
New Homes Construction	718	588	89	24	10	3	4
Residential Energy Star and Lighting	2148	1938	96	31	22	14	47
Residential Energy Star and Lighting Online Marketplace	4758	4143	265	106	64	52	128

All Gas	2023	Residential Gas Contract Accounts	FRBP Counts					
			0	1	2	3	4	5+
Appliance Recycling		8908	6390	808	474	363	250	623
Audit and Weatherization		6862	6046	384	148	95	57	132
Energy Efficiency Assistance		3697	2078	521	382	254	166	296
HVAC		11295	10181	554	188	117	73	182
HVAC Midstream		2670	2264	162	84	47	35	78
Home Energy Consultation		5413	4403	368	202	115	95	230
Home Energy Consultation Low Income		5752	2592	857	650	514	431	708
Multi-Family Low Income		34	28	4	2	0	0	0
Multi-Family Residential		3	3	0	0	0	0	0
New Homes Construction		1094	1004	68	6	6	3	7
Residential Energy Star and Lighting		3143	2874	114	57	32	18	48
Residential Energy Star and Lighting Online Marketplace		5820	4774	388	192	124	99	243

Gas Only	CA	0	1	2	3	4	5+
Audit and Weatherization	1980	1880	60	18	8	7	7
Energy Efficiency Assistance	1066	796	134	60	40	18	18
HVAC	6525	6125	225	78	44	27	26
HVAC Midstream	1110	1029	43	16	11	5	6
Home Energy Consultation	1517	1397	59	35	9	10	7
Home Energy Consultation Low Income	371	252	45	23	24	17	10
Multi-Family Low Income	17	16	1	0	0	0	0
Multi-Family Residential	2	2	0	0	0	0	0
New Homes Construction	561	542	18	0	1	0	0
Residential Energy Star and Lighting	1131	1083	29	7	5	4	3
Residential Energy Star and Lighting Online Marketplace	696	641	29	12	7	4	3

Combo	CA	0	1	2	3	4	5+
Appliance Recycling	8908	6390	808	474	363	250	623
Audit and Weatherization	4882	4166	324	130	87	50	125
Energy Efficiency Assistance	2631	1282	387	322	214	148	278
HVAC	4770	4056	329	110	73	46	156
HVAC Midstream	1560	1235	119	68	36	30	72
Home Energy Consultation	3896	3006	309	167	106	85	223
Home Energy Consultation Low Income	5381	2340	812	627	490	414	698
Multi-Family Low Income	17	12	3	2	0	0	0
Multi-Family Residential	1	1	0	0	0	0	0
New Homes Construction	533	462	50	6	5	3	7
Residential Energy Star and Lighting	2012	1791	85	50	27	14	45
Residential Energy Star and Lighting Online Marketplace	5124	4133	359	180	117	95	240

All Gas	2024	Residential Gas Contract Accounts	0	1	2	3	4	5+
Appliance Recycling		9019	6326	842	512	343	267	729
Audit and Weatherization		1252	1155	42	20	16	4	15
Energy Efficiency Assistance		4315	2467	584	430	294	192	348
HVAC		17020	14657	841	414	300	255	553
HVAC Midstream		2634	2258	135	76	47	27	91
Residential Energy Star and Lighting		2826	2583	100	41	29	18	55
Residential Energy Star and Lighting Online Marketplace		4215	3434	270	140	113	59	199

Gas Only	CA	0	1	2	3	4	5+
Appliance Recycling	1	1	0	0	0	0	0
Audit and Weatherization	442	431	10	0	1	0	0
Energy Efficiency Assistance	973	736	109	60	33	22	13
HVAC	8204	7748	247	101	49	28	31
HVAC Midstream	766	731	23	6	4	1	1
Residential Energy Star and Lighting	950	898	29	13	5	3	2
Residential Energy Star and Lighting Online Marketplace	685	641	24	7	5	5	3

Combo	CA	0	1	2	3	4	5+
Appliance Recycling	9018	6325	842	512	343	267	729
Audit and Weatherization	810	724	32	20	15	4	15
Energy Efficiency Assistance	3342	1731	475	370	261	170	335
HVAC	8816	6909	594	313	251	227	522
HVAC Midstream	1868	1527	112	70	43	26	90
Residential Energy Star and Lighting	1876	1685	71	28	24	15	53
Residential Energy Star and Lighting Online Marketplace	3530	2793	246	133	108	54	196

All Gas	2025	Residential Gas Contract Accounts	0	1	2	3	4	5+
Appliance f	8816	6159	793	519	349	277	719	
Audit and \	1456	1345	53	18	13	6	21	
Energy Effi	4384	2427	593	411	301	227	425	
HVAC	12070	10953	500	247	114	72	184	
HVAC Mids	2883	2447	160	79	50	42	105	
Residential	2779	2537	84	47	36	24	51	
Residential	8489	6351	615	369	296	246	612	

Gas Only	CA	0	1	2	3	4	5+
Appliance f	0	0	0	0	0	0	0
Audit and \	522	504	8	3	2	1	4
Energy Effi	1171	840	132	84	50	30	35
HVAC	7153	6694	256	111	44	21	27
HVAC Mids	837	779	29	18	5	3	3
Residential	980	931	25	13	5	4	2
Residential	1980	1847	60	32	20	13	8

Combo	CA	0	1	2	3	4	5+
Appliance f	8816	6159	793	519	349	277	719
Audit and \	934	841	45	15	11	5	17
Energy Effi	3213	1587	461	327	251	197	390
HVAC	4917	4259	244	136	70	51	157
HVAC Mids	2046	1668	131	61	45	39	102
Residential	1799	1606	59	34	31	20	49
Residential	6509	4504	555	337	276	233	604

		FRBP Counts				
All Gas	2022	Residential	0	1	2	3
		Gas Contract Accounts				
	Appliance Recycling	9352	7653	812	378	208
	Audit and Weatherization	5819	5331	236	98	68
	Energy Efficiency Assistance	33016	27798	4713	268	120
	HVAC	13601	12797	458	150	58
	HVAC Midstream	995	878	45	20	21
	Home Energy Consultation	6189	5364	396	192	100
	Home Energy Consultation Low Income	6389	4438	1022	444	212
	Multi-Family Low Income	42	38	2	1	1
	Multi-Family Residential	4	3	0	0	0
	New Homes Construction	1232	1137	63	17	7
	Residential Energy Star and Lighting	3360	3195	90	29	16
	Residential Energy Star and Lighting Online Marketplace	5017	4573	224	73	45
Gas Only						
	Audit and Weatherization	1615	1582	21	8	3
	Energy Efficiency Assistance	1271	1072	120	49	19
	HVAC	7797	7527	179	53	17
	HVAC Midstream	550	529	13	4	2
	Home Energy Consultation	2013	1867	88	39	12
	Home Energy Consultation Low Income	617	518	54	21	15
	Multi-Family Low Income	13	12	0	1	0
	Multi-Family Residential	1	1	0	0	0
	New Homes Construction	514	500	12	1	1
	Residential Energy Star and Lighting	1212	1192	11	5	3
	Residential Energy Star and Lighting Online Marketplace	259	250	5	1	2
Combo						
	Appliance Recycling	9352	7653	812	378	208
	Audit and Weatherization	4204	3749	215	90	65
	Energy Efficiency Assistance	31745	26726	4593	219	101
	HVAC	5804	5270	279	97	41
	HVAC Midstream	445	349	32	16	19
	Home Energy Consultation	4176	3497	308	153	88
	Home Energy Consultation Low Income	5772	3920	968	423	197
	Multi-Family Low Income	29	26	2	0	1
	Multi-Family Residential	3	2	0	0	0
	New Homes Construction	718	637	51	16	6
	Residential Energy Star and Lighting	2148	2003	79	24	13
	Residential Energy Star and Lighting Online Marketplace	4758	4323	219	72	43

4	5+		2023	Gas Contrac	0
123	178	All Gas	Appliance Recycling	8908	7284
31	55		Audit and Weatherization	6862	6331
58	59		Energy Efficiency Assistance	3697	2672
55	83		HVAC	11295	10715
10	21		HVAC Midstream	2670	2424
60	77		Home Energy Consultation	5413	4633
130	143		Home Energy Consultation Low Income	5752	3319
0	0		Multi-Family Low Income	34	31
1	0		Multi-Family Residential	3	3
3	5		New Homes Construction	1094	1045
9	21		Residential Energy Star and Lighting	3143	2976
34	68		Residential Energy Star and Lighting Online Marketplace	5820	5264
		Gas Only			
0	1		Audit and Weatherization	1980	1930
5	6		Energy Efficiency Assistance	1066	910
9	12		HVAC	6525	6351
2	0		HVAC Midstream	1110	1076
5	2		Home Energy Consultation	1517	1439
7	2		Home Energy Consultation Low Income	371	288
0	0		Multi-Family Low Income	17	17
0	0		Multi-Family Residential	2	2
0	0		New Homes Construction	561	558
1	0		Residential Energy Star and Lighting	1131	1108
1	0		Residential Energy Star and Lighting Online Marketplace	696	677
		Combo			
123	178		Appliance Recycling	8908	7284
31	54		Audit and Weatherization	4882	4401
53	53		Energy Efficiency Assistance	2631	1762
46	71		HVAC	4770	4364
8	21		HVAC Midstream	1560	1348
55	75		Home Energy Consultation	3896	3194
123	141		Home Energy Consultation Low Income	5381	3031
0	0		Multi-Family Low Income	17	14
1	0		Multi-Family Residential	1	1
3	5		New Homes Construction	533	487
8	21		Residential Energy Star and Lighting	2012	1868
33	68		Residential Energy Star and Lighting Online Marketplace	5124	4587

FRBP Counts

1	2	3	4	5+
772	370	195	117	170
292	109	56	31	43
472	257	126	89	81
343	127	40	19	51
127	51	30	19	19
367	162	87	70	94
948	628	404	230	223
2	1	0	0	0
0	0	0	0	0
28	9	4	1	7
84	47	14	12	10
304	100	54	41	57

All Gas

38	7	3	2	0
99	36	14	3	4
116	34	16	4	4
24	8	1	0	1
49	16	6	2	5
39	23	12	8	1
0	0	0	0	0
0	0	0	0	0
2	1	0	0	0
14	5	3	0	1
16	2	1	0	0

Gas Only

772	370	195	117	170
254	102	53	29	43
373	221	112	86	77
227	93	24	15	47
103	43	29	19	18
318	146	81	68	89
909	605	392	222	222
2	1	0	0	
0	0	0	0	0
26	8	4	1	7
70	42	11	12	9
288	98	53	41	57

Combo

2024	Residential Gas Contract Accounts	FRBP Counts				
		0	1	2	3	4
Appliance Recycling	9019	7127	832	391	260	158
Audit and Weatherization	1252	1197	30	14	5	6
Energy Efficiency Assistance	4315	3167	555	285	130	84
HVAC	17020	15473	703	310	199	130
HVAC Midstream	2634	2378	118	60	31	11
Residential Energy Star and Lighting	2826	2662	72	41	13	16
Residential Energy Star and Lighting Online Marketplace	4215	3771	220	75	57	38

	CA	0	1	2	3	4
Appliance Recycling	1	1	0	0	0	0
Audit and Weatherization	442	439	3	0	0	0
Energy Efficiency Assistance	973	870	67	23	7	6
HVAC	8204	7991	133	39	18	15
HVAC Midstream	766	746	15	5	0	0
Residential Energy Star and Lighting	950	923	18	7	1	1
Residential Energy Star and Lighting Online Marketplace	685	669	8	4	2	2

	CA	0	1	2	3	4
Appliance Recycling	9018	7126	832	391	260	158
Audit and Weatherization	810	751	27	14	5	6
Energy Efficiency Assistance	3342	2297	488	262	123	78
HVAC	8816	7482	570	271	181	115
HVAC Midstream	1868	1632	103	55	31	11
Residential Energy Star and Lighting	1876	1739	54	34	12	15
Residential Energy Star and Lighting Online Marketplace	3530	3102	212	71	55	36



## A Decent Home: The Status of Home Repair in Detroit

October 2020

By Ryan Ruggiero<sup>a</sup>, Josh Rivera<sup>b</sup>, and Patrick Cooney<sup>c</sup>

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## Table of Contents

INTRODUCTION .....	4
METHODS .....	5
FINDINGS.....	6
Housing quality and economic mobility .....	6
The cost of inaction on housing quality .....	6
Housing quality and racial disparities in the United States.....	7
Measuring Inadequate Housing in Detroit MSA .....	9
Racial disparities in housing quality persist in Metro Detroit.....	11
Estimating Housing Inadequacy and Repair Needs in Detroit.....	13
The State of Detroit's Home Repair Market.....	16
What home repair programs are available to Detroit residents? .....	16
Understanding loan programs .....	17
Understanding grant programs.....	18
Understanding weatherization and energy programs .....	19
Understanding volunteer programs .....	19
How are home repair programs being used?.....	20
How do other cities prioritize home repair?.....	21
Practitioner perspectives: Home Repair in Detroit .....	23
Gaps in the Home Repair Ecosystem.....	24
Moving Forward: Policy Options .....	31
Enhancing Existing Programs .....	32
Provide a toolkit of home repair services to organizations and residents .....	32
Offer multiple funding options for different income groups .....	32
Integrate lead abatement grants into health and safety repairs .....	32
Universal healthy home assessments for all programs and shared database.....	32
Address home health & accessibility goals to assist aging-in-place residents.....	33
Provide technical assistance for home repair projects .....	33
Funding for small landlords to improve rental housing conditions .....	33
Learning from Peer Practices .....	33
Align resources and promote cross-sector collaboration .....	33
Use real estate transfer taxes to fund state housing trust fund .....	34
Establish a housing resource center to leverage city funds.....	34
Prioritize low-income, longtime Detroiters in the redevelopment of homes .....	34
Linking healthy housing initiatives and workforce development .....	34
Encourage savings and financial literacy to improve credit scores .....	35

CONCLUSION.....	35
LIMITATIONS.....	36
Appendix Table 1: Population and Economic Characteristics of the Nation, Detroit, and the Detroit Metropolitan Statistical Area .....	37
Appendix 2: Detroit Home Repair Ecosystem Map 2018 .....	38
REFERENCES .....	38

## INTRODUCTION

*“Home repairs not only help that family; it helps the whole block. If people see work happening, it may encourage additional investment into your property. It’s an easy way to stabilize the community.”*

*- Construction manager, community-based organization*

In 1945, President Truman told Congress, “A decent standard of housing for all is one of the irreducible obligations of modern civilization.”<sup>1</sup> Seventy years later, this ideal of a decent home for every American has still not been achieved, with nearly 6 million homes in the U.S. deemed inadequate.<sup>2</sup> Though Truman’s words were lofty, federal policies at the time only sought to extend this “irreducible obligation” to white Americans, and racial disparities in housing quality today are large and persistent.<sup>3</sup>

Home repair programs can serve as a critical tool to support housing stability and promote racial equity, particularly in Rust Belt cities with an aging housing stock and large populations of Black residents who have consistently faced structural racism in the U.S. housing system.<sup>4</sup> In Detroit, a mostly Black city, old housing stock coupled with high poverty rates and an aging population intensifies demand for home repair and home accessibility modifications. As we explore in this report, however, current home repair efforts cannot meet this demand. Fixing this gap has taken on new urgency as the COVID-19 pandemic has underscored the importance of housing stability and the connection between housing and health outcomes.

This report examines the current state of the home repair ecosystem in Detroit, identifies potential gaps in the system, and provides a scan of promising practices in cities across the Midwest. A central finding of our analysis, however, is that reforms to existing programs will not be enough to meet the needs of Detroit residents. To truly meet the needs of a city faced with old homes and low incomes, more resources are needed.

## METHODS

In summer 2019, Poverty Solutions at the University of Michigan interviewed 22 individuals from community-based organizations who administer or interact with the home repair programs in Detroit to better understand the city's home repair ecosystem. Sixteen of these organizations also responded to a survey assessing satisfaction with existing home repair programs.

Seven of the organizations interviewed help administer the largest loan-based home repair program in Detroit, the City of Detroit's 0% Interest Home Repair Loan Program, an effort by the city and local banks to extend credit to low-income Detroit households. Organizations that administer the 0% Interest Home Repair Loan Program are known as "Intake Centers" throughout the city and include:

- U-SNAP-BAC
- Bridging Communities
- SER Metro Detroit
- Jefferson East Inc.
- Central Detroit Christian
- Wayne Metro Community Action
- Cody Rogue Community Action Alliance

Poverty Solutions also used information from online searches, word of mouth, and snowball sampling methods — where research participants recruit other participants — to identify additional organizations involved in the home repair ecosystem. These organizations — in addition to the seven intake centers listed above — include Detroit Future City, Detroit Action Commonwealth, CLEARCorps, LISC, United Community Housing Coalition, Grandmont Rosedale Development Corporation, Brick + Beam, Rippling Hope, Rebuilding Together Southeast Michigan, Ehm Senior Solutions, Detroit Disability Power, Detroit Block Works, Habitat for Humanity, the Detroit Land Bank Authority, and Metro In-Home Solutions. As a result of this data gathering effort, Poverty Solutions developed a home repair ecosystem map, including the total funds expended and households reached in 2018. Additional organizations identified, but not interviewed, are included in the ecosystem map (Appendix 2).

In addition to the interviews, Poverty Solutions conducted two supplemental forms of analysis. First, we analyzed data on housing quality in the Detroit metropolitan statistical area from the American Housing Survey (AHS), which is sponsored by the Department of Housing and Urban Development (HUD) and conducted by the U.S. Census Bureau in select metropolitan areas every two years. The survey is the most comprehensive national housing survey in the United States and offers estimates of housing conditions throughout the country.

Finally, we conducted a scan of home repair programs in peer cities in the Midwest to gain a better understanding of the types of innovative programs and financial products that are extending capital to low-income households and to see what lessons can be learned from these programs.

## FINDINGS

### Housing quality and economic mobility

#### The cost of inaction on housing quality

Healthy and safe homes promote healthy and safe families and communities. As such, the work of home repair and remediation ensures families can thrive. Removing lead paint allows children to live in a healthy environment. Accessibility modifications can help seniors age in place with dignity and autonomy. The inverse is also true. Numerous studies have found that poor dwelling spaces can severely impact health in ways that diminish quality of life, increase the risk of diseases, and promote distress.<sup>5</sup> For example, research has shown:

- **Housing and physical health are strongly correlated.** The cumulative health effects of substandard housing quality can lead to lifelong declines in health. Studies find dwelling spaces that are damp, cold, and toxic (i.e. lead and mold exposure) increase the risk of tuberculosis, recurrent headaches, sore throat, cardiovascular and respiratory disease, and lung cancer.<sup>6</sup>
- **Housing conditions also affect mental health.** Poor housing quality such as leaky roofs, broken windows, and pest infestation is a stronger predictor of emotional and behavioral problems in low-income children than residential instability (defined as moving often), high housing costs, home ownership, and receipt of a housing subsidy.<sup>7</sup> For adults, poor housing conditions may be associated with anxiety, depression, and social isolation.<sup>8</sup>
- **Inadequate housing exacerbates chronic disease, particularly among children.** Home environmental factors such as water leaks, poor ventilation, and pest infestation are also associated with poor health outcomes including asthma, the most common chronic disease among children. Children with asthma are more likely to miss school than their peers, missing 2.48 more school days each year.<sup>9</sup>
- **Seniors living in houses with inadequate heat are vulnerable.** Seniors living in cold environments face increased respiratory problems, which have been associated with increased mortality.<sup>10</sup>

Taken together, there is strong evidence that substandard housing leads to adverse effects on multiple dimensions of physical and mental health and well-being. In the United States, 1.2 million children have lead poisoning, asthma is linked to 10% of all emergency room visits, and 3,645 people died in house fires in 2017.<sup>11</sup> These effects also spill over in ways that produce tremendous costs on society.

In turn, the public expense of dealing with inadequate housing is substantial. Faced with blighted and inadequate housing, governments:

- must enforce penalties against homeowners who maintain inadequate dwelling conditions;
- use tax dollars to tear down dilapidated homes;
- provide public benefits to address the negative health outcomes that result from housing insecurity;
- lose tax revenue due to declining property values;
- lose future earnings from individuals injured or sick due to home condition;
- and pay long-term medical costs associated with disease.<sup>12</sup>

The significant public cost of inadequate housing underscores the idea that home repair is not solely an issue for homeowners, but an issue that commands public action.

### **Housing quality and racial disparities in the United States**

While progress has been made to secure safe and healthy homes in the U.S., significant challenges remain. As shown in Figure 1, the share of renter units facing moderate or severe physical issues declined from 9.9% to 7.5% from 2011 to 2017.<sup>13</sup> Meanwhile, the share of owner-occupied units facing physical issues has remained flat at roughly 3.5% over that time period. Despite these improvements, as of 2017, nearly 6 million homes in the U.S. were deemed inadequate by the AHS, meaning the home faced physical problems related to maintenance, electrical wiring, heating, or plumbing.

Although not captured by the AHS, according to a report by the Center for American Progress, 24 million housing units in the U.S. face lead-based paint hazards, 17 million homes face heightened exposure to indoor allergens, and 6.8 million homes have elevated levels of radon, a radioactive gas that is the second leading cause of lung cancer in the U.S.<sup>14</sup> Low-income renters, and particularly low-income renters living in central cities, are far more likely than others to live in poor dwelling conditions.<sup>15</sup>

The rate at which Americans occupy inadequate households also varies by race. In 2017, Black households occupied inadequate housing units at a rate of 7%, compared to a rate of 4% for white households. In Metro Detroit, 11% of Black households live in inadequate housing, compared to just 3% of white households.<sup>16</sup>

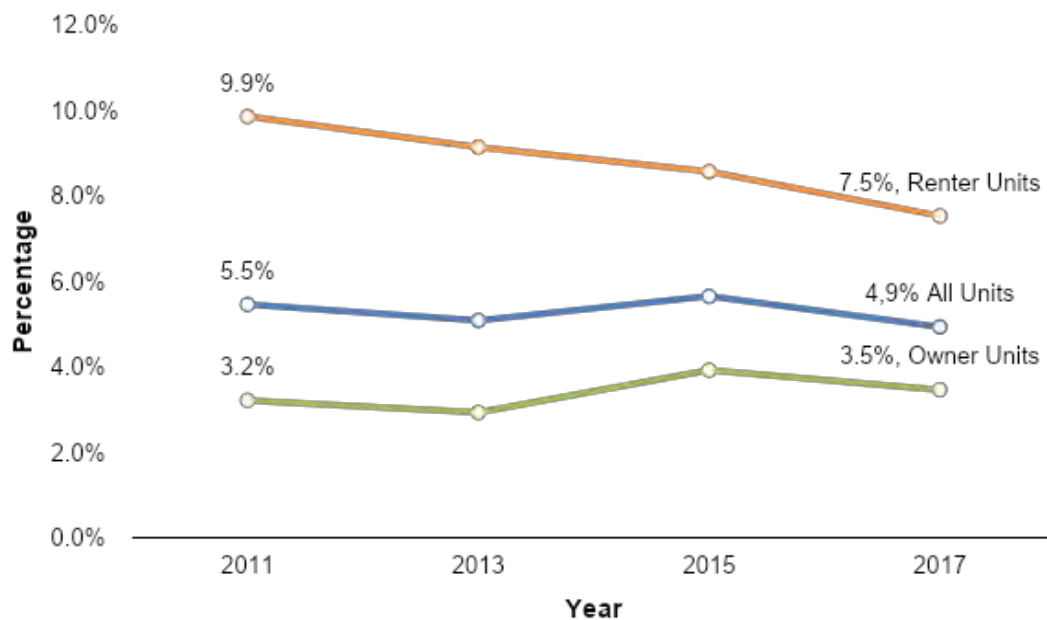
Racial disparities in housing have persisted for decades, the result of government policies, programs, and inaction that have prevented many Black Americans from securing safe, stable, and affordable housing, and building wealth.<sup>17</sup> In *The Color of Law*, Richard Rothstein outlines the chain of events that has led to the racial disparities in housing we see today.<sup>18</sup> From the 1930s through the 1960s, the Federal Housing Administration (FHA) sparked a homeownership boom in the United States by insuring and issuing mortgages at favorable terms to white working-class families, enabling them to purchase a home for the first time.<sup>19</sup> Through means both implicit and explicit, the FHA denied Black Americans this same treatment. Of the \$120 billion in new housing construction loans underwritten by the FHA between 1934 and 1962, only 2% went to non-white families.<sup>20</sup> Lacking access to these low-risk mortgages, Black families were left to purchase homes using predatory land contracts, which carried with them high interest rates, a high risk of eviction, and no legal protections, often resulting in a loss of household wealth.<sup>21</sup> Through the mid-20<sup>th</sup> century, discrimination in labor markets and unions reduced earnings for Black Americans.<sup>22</sup> At the same time, home values rose substantially, making homeownership – particularly in the suburbs – unattainable for many working class Black families by the time the Fair Housing Act passed in the late 1960s.<sup>23</sup>

From the passage of the Fair Housing Act through 2000, we see some signs of improved housing stability for Black households, such as a six percentage point increase in rates of Black homeownership.<sup>24</sup> However, these gains were soon lost, due to the disproportionate harm Black homeowners suffered from the subprime mortgage crisis in the late 2000s, which erased those gains in homeownership, and decimated the wealth of Black households.<sup>25</sup> Detroit's property tax foreclosure crisis in the years immediately following the mortgage foreclosure crisis magnified those losses.<sup>26</sup>

In sum, Black Americans have not had the same opportunities to secure housing, have had to pay more for housing, have had fewer choices for housing, and – due to discrimination in both housing and employment – have had less income with which to procure housing and make repairs. We pay particularly close attention to gaps in housing adequacy by race in this report because the initial and substantial support government offered to white Americans in their pursuit of safe and stable housing, but denied Black Americans, has never been redressed. And though home repair programs are an inadequate tool to rectify the harms done, it is one area in which we can act quickly to support homeownership and housing stability for low- and moderate-income Black households.

**Figure 1 - National Housing Quality, 2011-2017**

*The fraction of homes deemed moderate and severely inadequate*



*(Source: American Housing Survey)*

### **Defining inadequate housing**

The American Housing Survey (AHS) is sponsored by the Department of Housing and Urban Development (HUD) and conducted by the U.S. Census Bureau in select metropolitan areas every two years.

HUD developed the AHS in 1973 to assess the quality of housing stock and its characteristics in response to Title V of the 1970 Housing Act.<sup>27</sup> In addition to providing detailed information about the quality of housing units in select metropolitan areas, the AHS also categorizes housing units as severely inadequate, moderately inadequate or adequate. Though the AHS provides one measure of housing inadequacy, it fails to capture many housing issues that are important for policymakers to consider, such as home accessibility.

There are two methods for defining a unit as severely inadequate or moderately inadequate.

Severely Inadequate Method 1: The unit meets one of the following four conditions: (1) no electricity used, (2) exposed wiring without working electrical plugs in every room and the fuses were blown more than twice in the last three months, (3) unit was cold for 24 hours or more and the heating equipment broke down more than twice, lasting longer than six hours, or (4) unit has one of the following bathroom problems: no hot and cold running water, no full bathroom, shared plumbing facilities with occupants of another housing unit.

Severely Inadequate Method 2: The unit meets five of the following six conditions: (1) outside water leaks in the last 12 months, (2) inside water leaks in the last 12 months, (3) holes in the floor, (4) open cracks wider than a dime, (5) area of peeling paint larger than 8x11, or (6) rats seen in the unit in the last 12 months.

Moderately Inadequate Method 1: The unit has three or four of the conditions listed in “Severely Inadequate Method 2” but has not been designated as Severely Inadequate using Method 1.

Moderately Inadequate Method 2: The unit meets one of the following three conditions: (1) more than two toilet breakdowns in the last three months lasting longer than six hours; (2) the main heating equipment is unvented room heaters burning kerosene, gas, or oil; or (3) unit meets one of the four kitchen conditions: no kitchen sink, no working refrigerator, no working cooking equipment, or unit does not have exclusive use of kitchen.

For the purposes of this report, a unit is referred to as inadequate if it is categorized as severely inadequate or moderately inadequate.<sup>28</sup>

## Measuring Inadequate Housing in Detroit MSA

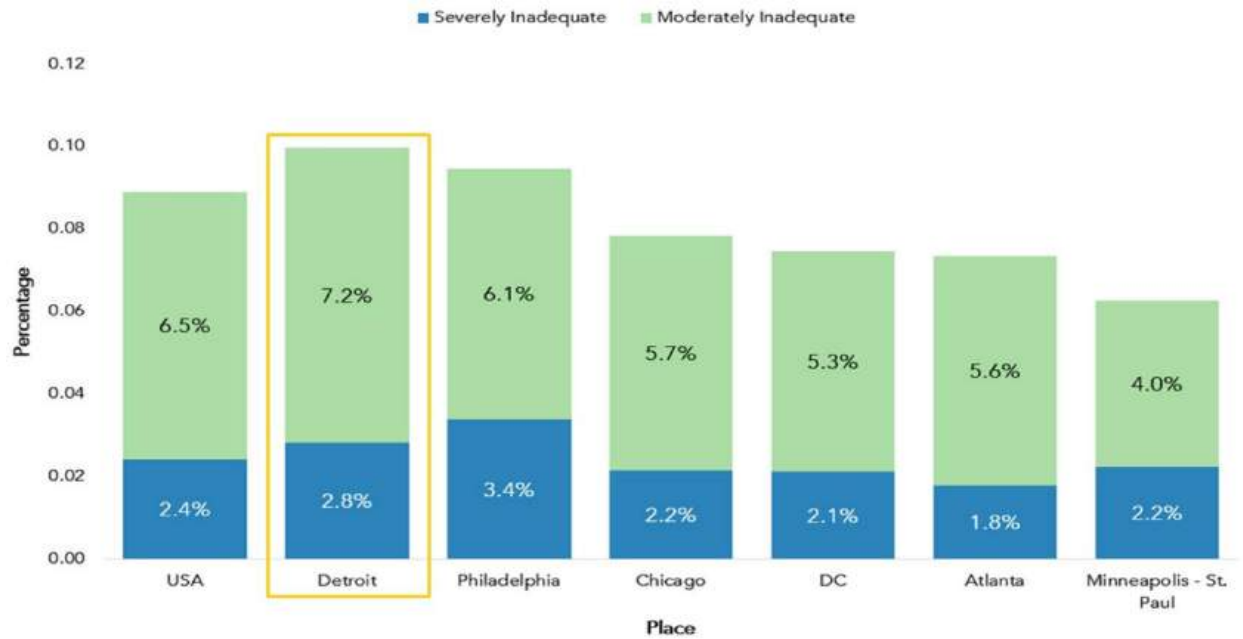
Although the focus of this report is the city of Detroit, the AHS only provides data at the metro-level for select cities. The trends in housing quality in Detroit’s six-county Metropolitan Statistical Area (MSA) mirror what is occurring nationally: marked improvements alongside persistent disparities. From 2015 to 2017, the share of severely and moderately inadequate homes in the Detroit MSA fell from 101,200 units to 84,600 units. In total, around 5% of occupied housing units in the Detroit metro area are considered inadequate, which mirrors the national rate.

However, housing inadequacy is more widespread among very low-income metro Detroit residents (annual household income less than \$20,000) than in peer cities, with 10% of very low-income households – roughly 32,000 households – living in inadequate housing (Figure 2).

When compared to other metro areas surveyed in the AHS, Detroit stands out for facing higher rates of moderate and severely inadequate housing for very low-income households. In Washington, D.C., Atlanta, Minneapolis-St. Paul, and Chicago, inadequate housing affects fewer than 8% of low-income households. The highest rates of inadequate housing are in Philadelphia (9.5%) and Detroit (10%).

**Figure 2 – Inadequate Housing for Very Low-Income Households Varies by Metro, 2017**

The fraction of homes deemed moderate and severely inadequate by metro area for households with less than \$20,000 annual household income  
 (Source: American Housing Survey)



**What is the Detroit Metropolitan Statistical (Detroit MSA) area?**



The Detroit-Warren-Dearborn Metropolitan Statistical Area

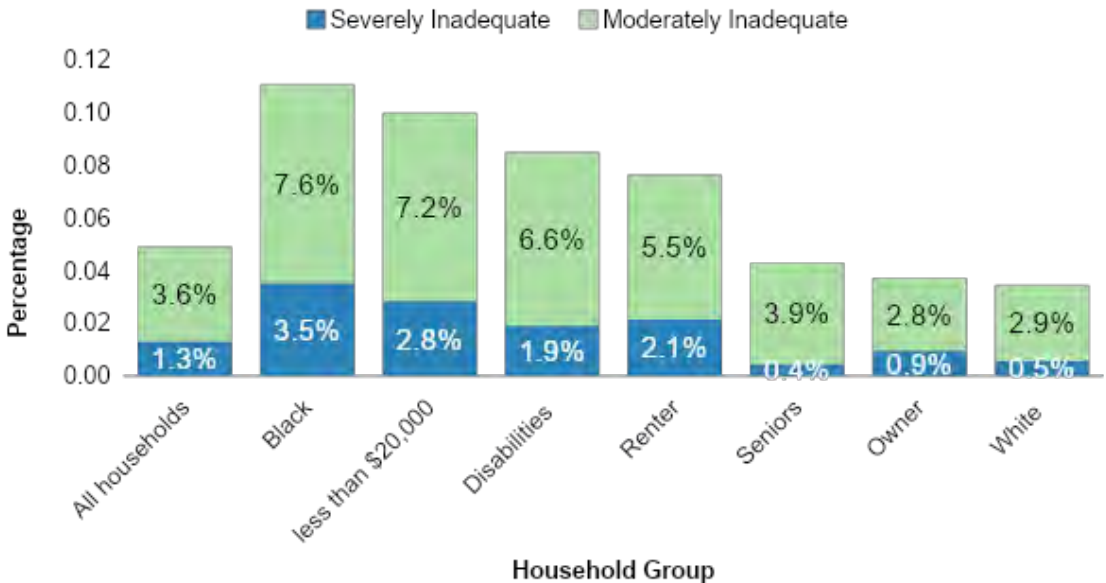
A Metropolitan Statistical Area (MSA) is a geographic boundary delineated by the federal government for the purposes of publishing statistical data. MSAs represent a “core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration within that core.”<sup>29</sup> The data presented in this report from the American Housing Survey represents the Detroit-Dearborn-Warren MSA. Estimates for the Detroit MSA likely differ from housing conditions in Detroit. For example, Detroit has a lower median income, a higher percentage of households living in poverty, and an older housing stock than the wider Detroit MSA (Appendix Table 1). Despite these differences, understanding inadequate housing at the MSA level provides useful information on the scale of housing inadequacy in the region, quantifies the most common types of housing issues, and provides insight into housing quality disparities by race and income.

**Racial disparities in housing quality persist in Metro Detroit**

Among all households in the Detroit metro area, Black households face the highest rates of inadequate housing. In Metro Detroit, 10.9% of Black households live in inadequate housing compared to less than 2.8% of white households (Figure 3). If we look only at very low-income households (defined as households earning less than \$30,000 annually), the share of Black households living in inadequate housing increases to 14.8%, while the share of white households increases to 5.4%, still roughly half the rate for all Black households regardless of income. Again, this is a reflection of the extent to which Black households have, for decades, experienced racial discrimination in housing and employment markets that have pushed them into older housing stock, hampered wealth creation, and reduced incomes.<sup>30</sup>

In addition, renters are approximately twice as likely to live in inadequate housing as owners, regardless of race. This is important for Detroit, as the city has shifted from a majority-owner city to a majority-renter city over the past 15 years, owing in large part to the city’s twin foreclosure crises.<sup>31</sup>

**Figure 3 – Detroit Metro Housing Quality, Select Population Groups, 2017**  
*The fraction of homes deemed moderate and severely inadequate for occupied units*  
 (Source: American Housing Survey)



The most common housing quality issues facing Metro Detroit residents include inadequate heating, exterior water leaks, signs of mice or rats, and weak foundations (Table 1).

- **Heating issues:** Nearly 15% of all occupied units, or 253,400 units, reported being uncomfortably cold for 24 hours or more. Some of the reasons why occupied units reported cold temperatures included utility interruptions, equipment breakdowns, and inadequate insulation.
- **Water leakage issues:** Twelve percent of all occupied units or 206,600 units reported a water leakage from the outside, with slightly more basement leaks than roof leaks.

**Table 1 – Selected Types of Housing Quality Issues in the Detroit Metro, 2017**

Estimates are in thousands of housing units (Source: American Housing Survey)

Characteristics	N	%
<b>Total Occupied Housing Units</b>	1,723	100%
<b>Severely Inadequate</b>	22.4	1.3%
<b>Moderately Inadequate</b>	62.2	3.6%
<b>Severely and Moderately Inadequate</b>	84.6	4.9%
<b>Selected Deficiencies</b>		
Uncomfortably cold for 24 hours or more	253.4	14.7%
Water leakage from outside structure	206.6	12.0%
Water leakage from inside structure	154.5	9.0%
Electrical fuses or circuit breakers blown in last 3 months	154.3	9.0%
Signs of mice or rats inside the home in the last 12 months	153.8	8.9%
Foundation crumbling	105	6.1%
Open cracks or holes (interior)	96.1	5.6%
Missing roofing material	74.4	4.3%
Broken windows	67	3.9%
Missing bricks, siding, or other outside wall material	55.9	3.2%
Broken plaster or peeling paint (interior)	52.5	3.0%
Sewage disposal breakdown(s) in last 3 months	42.2	3.0%
Water stoppage in last 3 months	42.3	2.5%
Exposed wiring	34.4	2.0%
Signs of cockroaches in last 12 months	30.4	1.8%
No toilet working sometime in the last 3 months	25.6	1.5%
Rooms without electric outlets	19.6	1.1%

## Estimating Housing Inadequacy and Repair Needs in Detroit

Understanding the magnitude and distribution of home repair needs in Detroit is important to developing appropriate policy solutions. Yet, the primary source of information on housing adequacy in the U.S., the American Housing Survey, only provides statistics at the national level and for select metropolitan areas. This means statistics on housing quality for cities, like Detroit, need to be collected locally or otherwise estimated.

Here, we briefly review what we know about housing quality in Detroit and then use estimates on the incidence of housing inadequacy in the Detroit metropolitan area to derive an estimate of inadequate units in Detroit under two scenarios. First, we assume Detroit faces the same housing inadequacy rate as the Detroit metro area to produce a conservative lower-bound for the number of inadequate homes. Then, because we see such stark disparities in housing inadequacy by race, and acknowledging our country's long history of racial discrimination in housing, we apply the inadequacy rates at the metro level by race to Detroit's racial composition to generate an alternative estimate.

Over the past decade, several ambitious efforts to collect local data have shed light on property conditions in the city. For example, in 2009 the Detroit Data Collaborative, a joint effort of the Detroit Office of Foreclosure Prevention and Response (FPR), Community Legal Resources (CLR) (now Michigan Community Resources), and Data Driven Detroit (D3), surveyed the exterior of every residential property in Detroit. The collaborative found 92% of Detroit's occupied housing structures were in good condition, meaning the building needed no more than two minor repairs.<sup>32</sup> Another 7% were in fair condition meaning the buildings were structurally sound, but with some damage that could be rehabilitated. Only 1% were in poor condition, defined as not structurally sound with major repairs needed. According to the collaborative, these results pointed to the strength of many Detroit neighborhoods, despite accelerating vacancy and widespread housing distress. However, this effort only surveyed structures' exterior conditions, and therefore would not reveal repair needs inside the home, which make up the bulk of housing quality issues.

In 2013, another parcel survey effort called Motor City Mapping collected data on property conditions that informed the blight removal policy recommendations of the Detroit Blight Removal Task Force.<sup>33</sup> Results from Motor City Mapping found that 30% of all residential structures in the city demonstrated some form of blight, but the effort told us very little about repair needs in occupied structures.<sup>34</sup>

While other efforts to understand the status of Detroit's homes have occurred since Motor City Mapping, in our search of data sources, we did not find estimates of housing adequacy for every occupied residential property in the city. In addition, while previous efforts assessed the conditions of Detroit housing structures based on exterior appearance, many of the major home repairs residents face (e.g. furnace problems, leaking roofs, poor insulation, interior lead paint, plumbing disrepair, electrical needs), cannot be assessed through a "windshield survey," but would require either a home assessment or resident interviews.

Lacking those sources, we apply inadequacy estimates for metro Detroit to the city of Detroit in two ways in order to generate city-level estimates. As shown in Table 2, there are 264,360 occupied housing units in Detroit.<sup>35</sup> A majority, or 140,264, of those units are renter-occupied units and the remainder are owner-occupied units.

To generate our first estimate of inadequate units, we apply the rate of inadequate housing for Detroit metro to the city of Detroit. This estimate can be thought of as a conservative lower-bound of how many Detroit homes might be inadequate, as the socioeconomic characteristics and housing stock of Detroit differ greatly from that of the metro region. Under this conservative method, we estimate there are 15,252 occupied housing units that are moderately or severely inadequate in Detroit, with rental units making up 10,660 of the total.

As noted, however, the city of Detroit is dissimilar from the Metropolitan Statistical Area (MSA) on important dimensions. Detroit's housing stock is older and median household incomes are lower, suggesting that Detroit homes might need more and costlier repairs and residents have lower incomes to address them (Appendix Table 1). In addition, data from the American Housing Survey make clear that Black households (both homeowner and renter) are far more likely than white households to live in inadequate housing, likely a result of decades of discrimination in housing and employment markets that have pushed Black households into substandard housing and left Black households with fewer resources.<sup>36</sup> As the share of Black households in Detroit is far greater than the share of Black households throughout the MSA (Detroit is 79% Black while the MSA is 22% Black), we would expect this to be reflected in the share of inadequate homes in Detroit.

Therefore, in Table 3, we attempt to account for differences between Detroit and the Detroit metro area by looking at inadequacy by race.<sup>37</sup> We find that once accounting for race, the estimated number of inadequate and severely inadequate homes jumps up to 24,119 with a majority of those homes being renter occupied (15,682). Taking into account the margin of error on the estimate, the total number of severe and moderately inadequate units ranges from 14,825 to 33,413.<sup>a</sup>

There is reason to believe that this may also be an underestimate of the overall home repair need in Detroit. From 2005 to 2015, Detroit experienced twin foreclosure crises, during which 120,000 properties in the city went through either mortgage or tax foreclosure.<sup>38</sup> These foreclosed homes were largely purchased by investors, many of whom failed to invest in their properties while charging high rents, seeking to "milk" the property for profit, quickly evicting tenants for nonpayment, and often letting the property fall back into tax foreclosure.<sup>39</sup> This mass transfer of properties to speculative ownership has likely contributed to further disrepair in the city's housing stock. Indeed, investigative reports have identified a pattern of eviction and disrepair in Detroit's rental housing stock, prompting the City of Detroit to broaden its enforcement of the city's rental ordinance.<sup>40</sup> In other words, while we would expect the city's housing repair needs to be far greater than the metro area overall due to the age of the housing stock and low average incomes, the fallout from the city's twin foreclosure crises likely exacerbated these needs to a great degree.

Table 2 –Estimating home adequacy and repair needs in Detroit, 2017

	Total	Owner	Renter
<b>Housing Stock</b>			
Number of occupied housing units in Detroit *	264,360	124,096	140,264
<b>Housing Inadequacy</b>			
Share of occupied housing units that are severely & moderately inadequate in the Detroit Metro**	4.90%	3.70%	7.60%

<sup>a</sup> Confidence level of 95%

Percent severely inadequate occupied housing units alone	1.30%	0.90%	2.10%
Percent moderately inadequate occupied housing units alone	3.60%	2.80%	5.50%
Number of severely and moderately inadequate housing units in Detroit assuming Detroit Metro rate	15,252	4,592	10,660
Number of severely inadequate occupied housing units in Detroit assuming Detroit Metro rate	4,062	1,117	2,946
Number of moderately inadequate occupied housing units in Detroit assuming Detroit Metro rate	11,189	3,475	7,715

Table 3: Estimating home adequacy and repair needs in Detroit by Race, 2017

	Owner	Renter	Total Occupied Units
<b>Housing Stock</b>			
Black occupied	95,976	114,599	210,575
White occupied	21,764	18,470	40,234
Other race occupied	6,356	7,195	13,551
Total Occupied Units in Detroit city	124,096	140,264	264,360
<b>Housing Inadequacy Rates</b>			
Black occupied Adequate	91.84%	86.28%	
<i>Range based on margin of error</i>	<i>(88.01%-95.66%)</i>	<i>(82.46%-91.19%)</i>	
Black occupied Inadequate	8.16%	13.18%	
<i>Range based on margin of error</i>	<i>(4.34%-11.99%)</i>	<i>(8.81%-17.54%)</i>	
White occupied Adequate	97.24%	96.85%	
<i>Range based on margin of error</i>	<i>(96.19%-98.28%)</i>	<i>(94.71%-99.00%)</i>	
White occupied Inadequate	2.76%	3.15%	
<i>Range based on margin of error</i>	<i>(1.72%-3.81%)</i>	<i>(1.00%-5.29%)</i>	
<b>Number of adequate and inadequate (severely &amp; moderately inadequate) housing units</b>			
Black occupied Inadequate	7,836	15,101	22,997
<i>Range based on margin of error</i>	<i>(4,168-11,504)</i>	<i>(10,099-20,103)</i>	<i>(14,267-31,607)</i>
White occupied Inadequate	601	581	1,182
<i>Range based on margin of error</i>	<i>(374-829)</i>	<i>(185-977)</i>	<i>(559-1,806)</i>
Estimated Total Black & White Occupied Inadequate Households	8,437	15,682	24,119
<i>Range based on margin of error</i>	<i>(4,542-12,333)</i>	<i>(10,284-21,080)</i>	<i>(14,825-33,413)</i>

(Source:\*=American Community Survey, \*\*=American Housing Survey, Note: Margins of errors in parenthesis).

## The State of Detroit's Home Repair Market

Homeownership has the potential to be a viable pathway to stable, affordable housing for low-income households, particularly in a city like Detroit with plentiful inexpensive housing stock. However, many low-income families struggle with the cost of owning and maintaining a home. One study found 1 in 4 low-income homeowners were at risk of losing their home due to being late on debt repayment after just two years.<sup>41</sup> The study also found the cost of home repair was the greatest challenge faced by low-income families after purchasing the home, with nearly 1 in 6 confronting a repair they could not afford.<sup>42</sup> These challenges are more pronounced for Black and Hispanic homebuyers, who are more likely to buy homes considered moderately or severely inadequate by the AHS.<sup>43</sup>

Although national homeownership rates for Black and Hispanic Americans have increased over the past several decades, they still lag behind homeownership rates of white Americans. In 1940, the homeownership rate of Black Americans was approximately 23%, compared to 46% for white households.<sup>44</sup> Nearly 80 years later, in 2017, Black Americans owned their homes at a rate of 46%, the same homeownership rate as white households in 1940, while the white homeownership rate had risen to 72%.<sup>45</sup> Studies show that even after controlling for demographic characteristics such as education, income, and marital status, white Americans continue to have higher homeownership rates than Black Americans<sup>46</sup>

If we hope to realize the potential benefits of homeownership for low-income households, and low-income Black households in particular, access to home repair resources is a critical part of the equation.

To place home repair in a local context and to understand the resources available to low-income families, we first established a list of home repair programs available to Detroit residents and then conducted extensive research on these programs and how they function. This included web searches, interviews with home repair administrators, and conversations with government officials, nonprofits, and Detroit residents. We contacted over 60 organizations to determine if they administered a home repair program, and published information found from 25 home repair programs in our [2019 Detroit Home Repair Resource Guide](#). To calculate the total home repair funding issued to Detroit residents and the number of households reached in 2018, we requested data from all identified organizations offering home repair programs including city, state, and federal agencies. We also included weatherization and energy program funding, which can improve household heating conditions and reduce utility costs. Please see our Home Repair Ecosystem Map (Appendix 2), which provides funding streams and breakdowns of estimated households reached and dollars spent by each program in 2018.

### What home repair programs are available to Detroit residents?

We find Detroit city residents received an estimated **\$15,842,205** in funding in 2018 for residential home repair, reaching an estimated **2,943** housing units.<sup>47</sup> All estimates listed in this section are for the city of Detroit, unless otherwise noted, and all programs except one are available exclusively to owners who occupy their residence, leaving renters with few to no options for accessing funds for home repairs.<sup>a</sup>

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<sup>a</sup> To our knowledge, the only home repair program available to renters is the City of Detroit's Lead Abatement program.

We separated the funding into four categories:<sup>48</sup> (1) loans, (2) grants (3) weatherization/energy, and (4) volunteer community-based organizations.

The totals shown in Table 3 represent our best estimate of the home repair funding issued to Detroit residents and households reached in 2018.

- **Loans:** Three programs provided an estimated \$2,760,770 in the form of home repair loans, reaching 175 households.<sup>a</sup>
- **Grants:** Nine programs provided an estimated \$6,649,221 in grant funding, reaching 771 households.
- **Weatherization & Energy:** Four programs provided an additional \$6,432,214 specifically for weatherization and energy projects that mainly included furnace replacement or repair, reaching an estimated 1,623 households.<sup>49</sup>
  - Three of the four weatherization and energy programs are provided as grants to households, and one provides inspections and equipment. These programs are restricted to weatherization and energy improvements and do not fund other critical repairs such as roof repair.
- **Volunteer community-based organizations:** A confirmed 10 community-based organizations utilized volunteers and donations to reach approximately 374 households, mostly focusing on minor home repairs such as painting, yard work, and beautification. The estimated donations received for these programs was not reported.

Table 4 – Home repair funding by category for 2018

Funding Type	Dollars Spent	% of Total Dollars	Units Reached	% of Total Units
Loan	\$2,760,770	17%	175	6%
Grant	\$6,649,221	42%	771	26%
Weatherization	\$6,432,214	41%	1,623	55%
Community-based organizations	Not reported	-	374	13%
2018 Totals	\$15,842,205	100%	2,943	100%

Note: The MI Saves Home Energy Loan Program is included in the “Loan” funding type, even though the funding is primarily for energy related improvements, because it is administered as a loan.

## Understanding loan programs

Poverty Solutions confirmed a total of three loan programs provided 175 home repair loans to Detroit residents in 2018, totaling \$2,760,771.<sup>50</sup>

- Michigan State Housing Development Authority’s (MSHDA) Property Improvement Program (PIP) issued two loans totaling \$18,329.

<sup>a</sup> Note that this analysis is only taking into account home repair loans designed to serve low- and middle-income homeowners who may struggle to access other forms of capital due to high debt-to-income ratios or sub-prime credit scores. It therefore does not include traditional home repair loans or home equity lines of credit offered by commercial banks.

- Michigan Saves' Home Energy Loan Program issued 78 loans totaling \$679,531.
- The City of Detroit's 0% Interest Home Repair Loan Program issued 95 loans totaling \$2,062,911. More information regarding the distribution of loans by household income is provided in a subsequent section.

### Credit scores and loan programs

Loan programs offered by MSHDA, Michigan Saves, and Liberty Bank — which advertises a home repair loan on its website but would not confirm lending data in 2018 — all require credit scores in the 600s, with interest rates starting at 4%, which are potentially limiting factors for low-income families. In addition, these programs are restricted to certain geographies and eligible repairs, and, in the case of MSHDA's PIP program, extremely limited in scope. The PIP program, which issues home repair loans of up to \$25,000 with interest rates of 4%-8% depending on income, issued only two loans in Detroit in 2018, totaling \$18,329. Better utilization of this program, which has a loan repayment period of 20 years and is available to households with annual incomes up to \$105,700, could provide needed home repair funds to higher-income households in Detroit who may lack access to other home repair capital.

The City of Detroit's 0% Interest Home Repair Loan program seeks to correct for the deficiencies of these other programs. The program is available to those with a credit score above 560, more than 120 points below "prime" — a critical factor in a city where the median credit score is 552<sup>51</sup> — and can be used on a range of potential repairs.

However, while the program aims to target a credit-constrained population, the average credit score of approved applicants is 727, suggesting that other program requirements are preventing those with lower credit scores from accessing the program.<sup>52</sup> Still, the 0% Interest Home Repair Loan approved \$2,062,911 in loans in 2018, representing an estimated 75% of the total home repair loans in Detroit analyzed in this paper.

### **Understanding grant programs**

A confirmed total of nine grant programs provided an estimated \$6,649,221 in funding to 771 homes for home repair and accessibility projects in Detroit in 2018. A description of the largest home repair grant programs available to Detroit residents who meet eligibility requirements is below.

- The City of Detroit's Lead Hazard Control Program is by far the largest home repair grant program in Detroit, expending \$3,327,691 in funds in 2018 and accounting for half of all home repair grant dollars that year. The program reached 76 homes, for an average expenditure of \$43,785 per home.
  - The program is only available to income-eligible households with children under 6 and pregnant women.
  - Two of the 76 homes receiving services were through ChildHelp, which assists rental units with lead abatement repairs.
  - Although the program's focus is on lead abatement, the program provided additional health and safety repairs including roof repairs, window replacement, and porch repair.
  - The majority of the Lead Hazard Control Program funding (74%) comes from Community Development Block Grant Dollars (CDBG) from the U.S. Department of Housing and Urban Development (HUD), and the remainder comes from the state of Michigan.

- The Federal Home Loan Bank of Indianapolis's (FHBLI) Neighborhood Improvement Program (NIP) provided a total of \$530,560 in grants to 76 homes in 2018 for home repairs up to \$7,500 related to repair or replacement of windows, siding, roof, exterior doors, and water heaters.
- MSHDA's State Emergency Relief (SER) program provided \$70,307 in non-energy grants for hot water heater replacement, and roof, door, and window repairs to 67 homes throughout Wayne County in 2018. This program has a lifetime maximum grant amount of \$1,500 per household. This program was unable to provide Detroit city estimates.

#### Grants for improving home accessibility

In addition to the programs above, four grant programs focused specifically on home accessibility. These programs expended \$2,654,919 in 2018, representing approximately 40% of all grant dollars, although a portion of the Accessibility Modification Program from the Federal Home Loan Bank of Indianapolis (FHLBI) and the City of Detroit's Senior Emergency Program can also be used for approved non-accessibility repairs, including roof repair.

- Detroit Area on Aging's MI Choice Waiver program, a Medicaid program for MI Choice Waiver enrollees in Detroit, Highland Park, Hamtramck, Harper Woods, and the five Grosse Pointes, reached an estimated 468 households expending \$1,492,608, the most funding one program spent on home accessibility modifications.
- The city's Senior Emergency Program provided \$545,182 in repairs to 22 homes and is available for seniors and people living with a disability over age 55.
- FHLBI's Accessibility Modification Program (AMP) funded \$447,129 in repairs to 31 homes.
- The Veteran Affairs Specially Adapted Housing Grant funded two homes with \$170,000.

#### **Understanding weatherization and energy programs**

A confirmed total of four weatherization and energy programs provided an estimated total of \$6,432,213 in grant funding for energy or weatherization repairs or equipment to an estimated total of 1,623 homes in 2018.

The largest weatherization and energy programs available to Detroit residents are listed below:

- DTE Energy provided \$4,184,715 in grants and equipment, representing 61% of all private funding in the home repair ecosystem;
- Wayne Metro Community Action's Weatherization Assistance Program (WAP), provided \$1,487,392 from the Department of Energy and Low Income Home Energy Assistance Program (LIHEAP) funds to 168 homes for weatherization repairs such as wall installation and furnace replacement.
- MSHDA's State Emergency Relief (SER) program provided \$460,107 in energy grants reaching 155 households in Wayne County.

#### **Understanding volunteer programs**

A confirmed total of 10 nonprofit organizations performed minor home repair work on an estimated 374 homes in 2018 through the use of volunteers and donations. Most of these organizations cannot perform more technical repairs like roof repairs or major accessibility modifications due to a lack of program funds or lack of technically skilled volunteers. Funding for these programs varies year to year, is not guaranteed, and almost every program only operates in specific geographic areas in the city.

- Life Remodeled was the only confirmed community-based organization with a volunteer home repair program performing roof repairs in 2018, through the use of licensed contractors who donate time and materials.
- Brick+Beam does not provide home repair funds to residents, but they do provide workshops for building rehabbers and offer resources online aimed at teaching homeowners skills to repair their homes themselves. We did not include the number of households they reached with workshops in our estimates.

### **How are home repair programs being used?**

To understand how existing home repair programs' resources are being used, we further defined and categorized programs by the type of repairs funded by each program in 2018. Table 5 denotes how funding was utilized by four program types: critical home repairs, energy and weatherization, accessibility, and volunteer programs. Some programs allow funds to be used for more than one type of repair (e.g., accessibility and critical home repair), but categorization was conducted based on the main type of repair funded by the program.

**Critical home repairs** are defined as home repairs that improve the condition of a property such as roof repairs, lead abatement, electrical work, etc. Although Life Remodeled is a volunteer-based program, we included it in this category because the program repairs roofs, which are critical repairs. In 2018, 38% of home repair resources went to critical home repairs, yet these types of repairs represent only 13% of total participants served (Table 5).

**Energy and weatherization programs** typically provide low-income households with funds to perform home modifications to reduce energy costs and protect against the elements. Funds typically cannot be used for critical home repairs and are primarily used for furnace replacement. MI Saves Home Energy Loan is the only exception, allowing households to use the funds for non-energy related improvements if the improvement is necessary to complete an energy project. In 2018, 45% of home repair resources went to energy/weatherization projects reaching 1,701 units — the largest share of total households reached (Table 5).

**Accessibility programs** provide home modifications that improve the ability of individuals living with disabilities and seniors to live in their homes. Although Ehm Senior Solutions and Bridging Communities have volunteer-based home repair programs, we included them in this category because their programs are targeted to seniors. In 2018, 17% of home repair resources went to accessibility programs reaching 556 units (Table 5).

**Volunteer home repairs** are defined as repairs performed by volunteer-based programs that typically provide minor improvements to homes, such as gutter cleaning, fence repair, or painting. Donations collected were not reported by volunteer programs. In 2018, nearly 300 homes received volunteer home repair assistance.

Table 5 – Home repair spending by type for 2018

Program Type	Dollars Spent	% of Total	Units Reached	% of Total
Critical Home Repairs	\$6,075,541	38%	387	13%
Energy/Weatherization	\$7,111,745	45%	1,701	58%
Accessibility	\$2,654,919	17%	556	19%
Volunteer Home Repairs	Not reported	-	299	10%
2018 Totals	\$15,842,205	100%	2,943	100%

*Note: Critical Home Repair Programs include MSHDA's Property Improvement Program, City of Detroit's 0% Interest Home Repair Program, MSHDA's State Emergency Relief Non-Energy Program, City of Detroit's Lead Hazard Control Program, FHLBI's Neighborhood Improvement Program, MSHDA's Neighborhood Enhancement Program, UCHC's Make It Home Program, Cody Rouge's Porch Repair Program and Life Remodeled's Home Repair Program.*

*Energy/Weatherization Programs include Michigan Saves Loan Program, Wayne Metro's Weatherization Assistance Program, Wayne Metros' Water Residential Assistance Program, DTE's Energy Efficiency Assistance Program and MSHDA's State Emergency Relief Energy Program.*

*Accessibility Programs include FHLBI's Accessibility Modification Program, MI Choice Waiver program, the VA's Specially Adapted Housing Grant, the City of Detroit's Senior Emergency Program, Bridging Communities and Ehm Senior Solutions.*

*Volunteer Home Repair Programs include the following organizations: Rebuilding Together Southeast Michigan, Rippling Hope, and Central Detroit Christian. Units reached were not confirmed for Joy Southfield Development Corporation and Hope Community Church. Units reached by Brick + Beam were not included because they do not provide funding or equipment to households.*

## How do other cities prioritize home repair?

To better inform the Detroit home repair ecosystem, we conducted a scan of city-administered home repair programs in peer cities to evaluate program requirements and design compared to the city of Detroit (Table 6). We focused on peer cities in the industrial Midwest and also examined cities with numerous home repair programs, such as Minneapolis. While this list is not exhaustive, it provides insight into existing efforts to address home repair needs.

In total, all of the cities offered some form of home repair program, with Minneapolis and Cleveland providing the greatest number of home repair program offerings. Collectively, these cities offer a number of promising practices from which Detroit may be able to learn.

**Table 6 – Home Repair Programs in Select Peer Cities, 2019**

City	Number of programs	Deferred loan for health/safety repairs	Interest rate varies by income	Loan Term	Program available to all low-income residents without credit score	Lead grant included in loan program	Renter/landlord program
Cleveland, OH	5	Yes	Yes	Up to 30 years	Yes	No	Lead only
Madison, WI	3	Yes	Yes	Up to 20 years	Yes	No	Code violations
Milwaukee, WI	4	Yes	Yes	15 years	Yes	No	Code violations
Pittsburgh, PA	3	No	No	20 years	No	Yes	Accessibility
Minneapolis, MN	5	Yes	Yes	30 years	Yes	Yes	None
Louisville, KY	4	Yes	No	5-year forgivable	Yes	Yes	Code violations
Detroit, MI	3	No	No	10 years	No	No	Lead only

**Deferred loans:** Nearly all cities assessed provide deferred loans available to residents for code violations or health and safety home repairs with different income thresholds, ranging from 30%-80% of a city's area median income (AMI).<sup>53</sup> Deferred loan programs often will delay repayment on a loan until the eventual sale of a home (and even then may only require a partial payment) or forgive the loan if the home's value declines.<sup>54</sup> Thus, deferred loans add no immediate financial burden to households. No credit score requirement exists in any of the deferred loan programs we reviewed. Because of the high risk of loss on the part of the lender, deferred loan programs are often run by government entities or mission-driven organizations. No deferred loan program currently exists in Detroit.

Madison's deferred loan program requires a one-time income review at five years and if the borrower's income exceeds program limits, the loan is converted into a low-interest, fixed-rate installment loan.<sup>55</sup> Pittsburgh does not have a deferred loan option, but their 0% interest home repair loan term is 20 years, resulting in lower monthly payments, and is integrated with other grant programs.<sup>56</sup>

**Varying interest rates and income eligibility caps on city-run low-interest loan programs:** Most cities we studied also have low-interest home repair loan programs, which have an income cap and varying interest rates by income. Varying interest rates (i.e., charging those with higher incomes a slightly higher interest rate) is a notable feature of low-interest loan programs, as higher rates for those

who can afford it could help build a healthier, more sustainable revolving loan fund. In addition, imposing an income cap can ensure higher-income households, who would more likely qualify for financing on the private market, are not crowding out low- and middle-income households from limited low-interest loan funding. Four cities we studied offer varying interest rates (ranging from 0-6.75%) depending on household income, and all cities have income limits on their programs, though in some cities, like Milwaukee, Minneapolis, and Madison, these limits are quite high. Conversely, Detroit's 0% Interest Home Loan Program charges a 0% interest rate at all income levels, and in certain neighborhoods, there is no income eligibility cap.

**Fusing grant programs with loan programs:** In our interviews, we found a primary barrier to accessing Detroit's 0% Interest Home Loan Program was that households were required to remediate lead in their home in order to qualify for loans of over \$10,000. Other cities have faced this issue as well, and, to remedy the problem, have combined a lead remediation grant program with their home loan program. Pittsburgh and Minneapolis have both implemented this model.

**Offering landlords a flexible lending program:** Several of the cities we studied have loan programs that enable landlords to address a host of code violations, tied to affordable rent provisions. Detroit also has a loan program targeted to landlords, but funds from the program can only be used for lead remediation. While lead remediation is a major concern in rental properties, landlords often need to address a range of repairs to bring their properties up to code.<sup>57</sup>

## Practitioner perspectives: Home Repair in Detroit

*"The whole system is one big gap."*

*- Executive director, community-based organization*

Most organizations interviewed for this project completed a short questionnaire to capture practitioner perspectives on the state of the home repair market in Detroit. Table 7 summarizes their responses to the survey questions. Overwhelmingly, interviewees commented that the existing home repair programs, funding, and resources offered throughout Detroit by government, private funders, and volunteers are not coming close to meeting the needs of residents. Demand far exceeds supply at the price lower income residents can pay.

**Table 7– Satisfaction with home repair resources**

n=16<sup>1</sup> unless otherwise noted

<i>The existing home repair programs in Detroit meet the home repair needs of Detroiters</i>	75% Disagree or Strongly Disagree
<i>Detroiters would benefit from additional home repair programs being offered</i>	94% Agree or Strongly Agree
<i>Detroiters who have home repair needs face challenges in meeting eligibility requirements for loan-based home repair programs</i>	88% Agree or Strongly Agree

<i>The existing home repair programs in Detroit meet the home accessibility needs of Detroiters</i>	88% Disagree or Strongly Disagree
<i>Detroiters would benefit from more home repair programs focusing on home accessibility being offered</i>	88% Agree or Strongly Agree
<i>There is sufficient affordable accessible (ramp, railings, grab bars) housing in Detroit</i>	81% Disagree or Strongly Disagree
<i>I am confident I can refer those in need to home repair services that can meet their needs</i>	81% Disagree or Strongly Disagree
<i>There is coordination between the available homeownership resources/programs in the city</i>	83% Disagree or Strongly Disagree (n=12)

*Survey Responses: Detroit Future City, Detroit Action Commonwealth, ClearCorps, Wayne Metropolitan, UCHC, Grandmont Rosedale, Brick+Beam, Rippling Hope, U-SNAP-BAC, Bridging Communities, SER Metro Detroit, Jefferson East Inc., Central Detroit Christian, Cody Rouge Community Alliance, Rebuilding Together Southeast Michigan, EHM Senior Solutions.*

A large majority of organizations commented that there's not enough funding or programs to meet the current need in Detroit (75%), that they don't know where to refer people to for services (81%), and waitlists are long. Moreover, many organizations discussed their hesitation to advertise programs because the available funding can help only a limited number of people. Although the City of Detroit contributed more than one-third of all funding in the 2018 home repair ecosystem, city government faces similar constraints as other organizations, with limited funding, resources, and capacity.

### **Gaps in the Home Repair Ecosystem**

Poverty Solutions also conducted open-ended interviews with providers to understand how home repair programs operate in Detroit and to identify gaps in existing programming. The following list represents the main gaps identified during the interviews:

- Low-income Detroiters struggle to access loan programs
- There are not enough grant dollars to address immediate health and safety repair needs
- Seniors and persons living with disabilities struggle to access resources
- There is a lack of coordination between programs
- Low-income homeowners need help navigating applications, bids, and inspections
- Nearly all home repair loans and grants require ownership and occupancy
- There is a shortage of licensed general contractors, and the cost of repairs is high

#### Low-income Detroiters struggle to access loan programs

The most common remark we heard from community-based organizations is that low-income residents struggle to access loan programs. The 0% Interest Home Repair Loan is the largest home repair program available to low-income residents for health and safety repairs in Detroit.

**What is the 0% Interest Home Repair Loan Program?**

The loan provides 10-year no-interest loans up to \$25,000 for qualified homeowners, with funding from private banks and the U.S. Department of Housing and Urban Development (HUD). Qualified homeowners across the city cannot make more than 80% Area Median Income (\$42,750 for a 1-person household in 2019), but there is no income limit inside targeted areas. The minimum credit score is 560 and the debt-to-income ratio cannot exceed 45%, among other requirements such as homeowner's insurance and being current on property taxes (including payment plans).

With no interest and a subprime credit threshold, the 0% Interest Home Repair Loan Program is clearly designed to offer loans to low-income and credit-constrained households. However, due to exceptionally low credit scores amongst Detroit residents and other requirements around debt-to-income ratio, homeowner's insurance, and property tax delinquency, families with very low incomes struggle to access the program. Several community-based organizations remarked that the program was largely inaccessible to the residents they serve.

**Barriers to accessing the 0% Interest Home Loan Program for low-income households**

*Unaffordability:* In a city where half of all households have incomes less than \$31,283, adding an additional monthly bill of \$150-\$200 for 10 years, even without interest, is unaffordable.<sup>58</sup> In addition, a loan of any kind is often a challenge for seniors on fixed-income. For low-income populations, expanding grant programs or deferring loan payments until the point of sale — with loans potentially forgiven if the sale price does not cover loan payments — may be the only solutions to ensure access to home repair resources.

*“Most of these folks are already living on the edge, so the thought of taking on another expense in their life is not something they’re overjoyed about.”*

*- Executive director, community-based organization*

*High Debt-to-Income Ratios and Low Credit Scores:* To meet the program's required debt-to-income threshold of 45%, a homeowner making \$24,050 a year would have to owe less than \$900/month in debt payments, which includes property taxes (including payment plans), mortgage payments, homeowner's insurance, past-due debt, credit card payments, plus the additional cost of the 0% interest loan. This presents a challenge in a city like Detroit, where 66% of residents have debt in collections, credit card usage ratios are high compared with the rest of the country, and roughly 60,000 households in 2018 were delinquent on their property taxes.<sup>59</sup> Other cities have instituted deferred loan programs for low-income residents, which do not increase debt or financial burden.

In addition, while the credit score threshold for the 0% Interest Home Repair Loan program is far below traditional underwriting requirements, it still falls above the median credit score in Detroit of 552,<sup>60</sup> making it inaccessible to many Detroit residents.<sup>a</sup> As we referenced above, several cities have dropped credit score requirements from certain loan programs to better ensure broad access to capital.

<sup>a</sup> The median credit score figure comes from a 2016 study from the Urban Institute and includes both owners and renters. To the extent that homeowners have better credit than renters, the median credit score for the population that might be applying for the 0% Interest Home Repair Loan program may be higher than the median credit score for all Detroit residents.

*“I think the 0% loan program is fantastic, but the issue is that it skips over or avoids the target clients, those most in need of services.”*

*- Program manager, community-based organization*

*Homeowner’s Insurance and Property Tax Payment Plans:* Unaffordable or inaccessible homeowner’s insurance can also serve as a barrier to applicants. The program permits applicants whose insurance was canceled due to a needed repair, but it does not specifically address applicants who cannot get approval for homeowner’s insurance due to low property values. More research is needed on the obstacles Detroit households face in obtaining homeowner’s insurance.

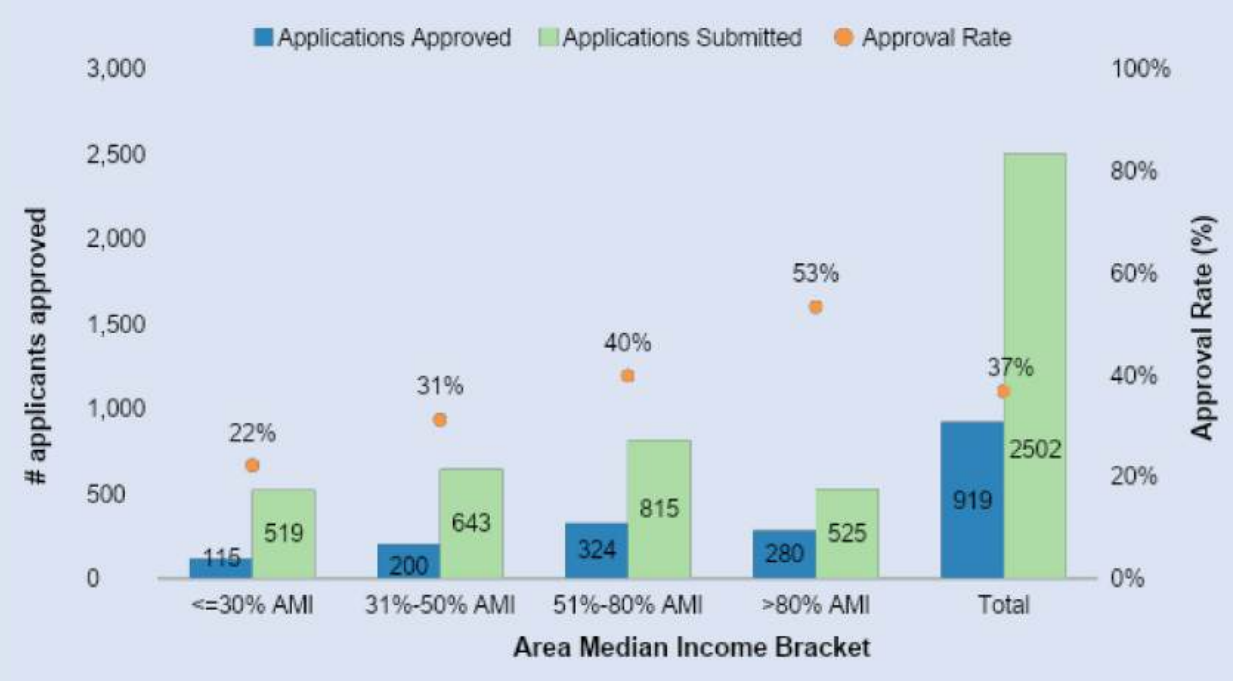
In addition, as noted above, tens of thousands of Detroit homeowners are not current on their property taxes, due to a combination of low incomes, artificially high property assessments, and historically low participation in the City’s property tax exemption program for low-income homeowners.<sup>61</sup> Efforts to keep households current on property taxes can also help reduce barriers to accessing home repair funds, and the City of Detroit and Wayne County have made significant progress in helping tax delinquent households avoid foreclosure and manage property tax debt.<sup>62</sup>

#### Reviewing 0% Interest Home Repair Loan Approval Data

As of June 2019, a total of 919 applicants had been approved for the 0% Interest Home Repair Loan Program over its four year history, with an approval rate of 37% (Figure 4). As one might expect, as household income increases, the approval rate also increases. Just 22% of extremely low-income borrowers, below 30% AMI, have been approved for the program, compared to 53% of borrowers above 80% AMI.

While approval rates are skewed toward households with incomes above 80% AMI, the program is serving a need for this population, as little to no mortgage market exists in roughly half the city.<sup>63</sup> In these parts of the city, even well-qualified borrowers are likely unable to secure a loan for home repairs, and the 0% Interest Home Repair Loan program fills this gap. However, it is vital that policymakers consider who is unable to access this program and how home repair needs of low-income Detroiters can be better met.

**Figure 4 – 0% Interest Home Repair Loan Approval Rates by Area Median Income of Household**



(Note: Approval data from program start date in 2015 - June 2019 provided by LISC)

Among all approved borrowers:

- 35% have extremely or very low incomes, below 50% AMI,
- 35% have low-to-moderate incomes, between 51% and 80% AMI, and
- 30% have incomes above 80% AMI.

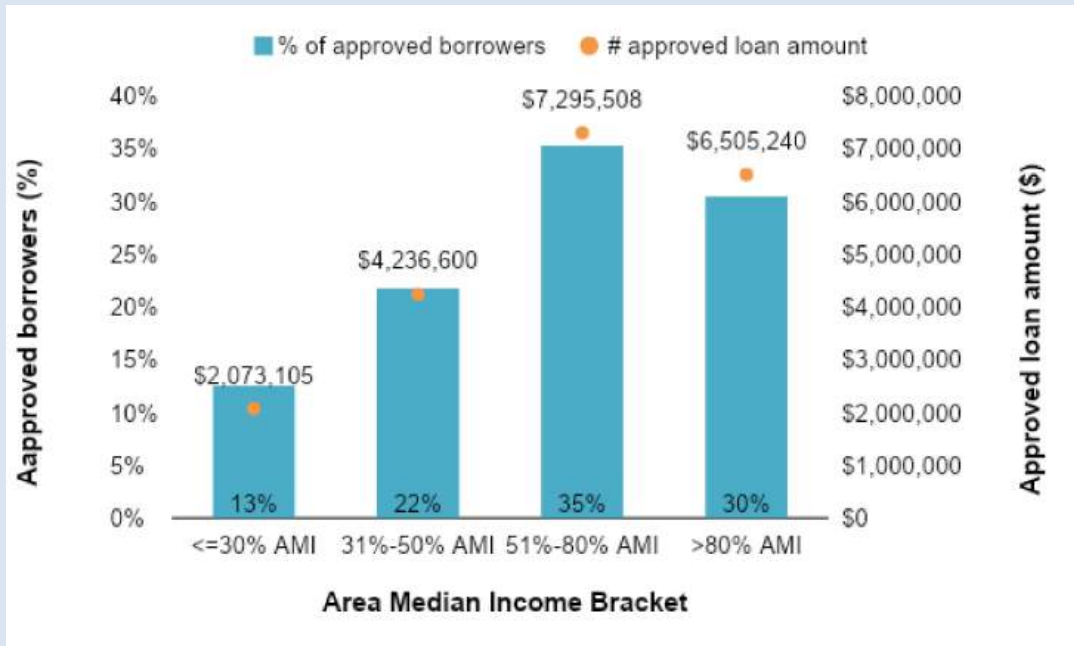
**Table 8 - 2017 Adjusted Household Income Limits for Households Living in the Detroit Metro Area**

AMI Limit	1 person	2 person	3 person	4 person
Extremely Low-Income 30% AMI	\$14,450	\$16,500	\$18,550	\$20,600
Very Low-Income 50% AMI	\$24,050	\$27,450	\$30,900	\$34,300
Low-Income 60% AMI	\$28,860	\$32,940	\$37,080	\$41,160
Moderate-Income 80% AMI	\$38,450	\$43,950	\$49,450	\$54,900

\*Note: Household size determines AMI. Average household size of a borrower in 0% Interest Home Repair Loan program is two.

Perhaps reflecting approval rates, 31% of the total approved loan funding was allocated to low-income households below 50% AMI and 69% was allocated to households above 50% AMI, representing an estimated \$6,309,705 and \$13,800,748, respectively (Figure 5).<sup>64</sup>

**Figure 5 – 0% Home loan Approved Borrowers and Loan Amounts by AMI**



### Barriers to accessing grant programs for low-income households

Although there are a few grant programs available to residents for home repairs, they are too limited in scope and scale to meet the varied and substantial needs of low-income Detroit homeowners.

*Limited funds for emergency repairs:* The only grant program that provides immediate, emergency assistance for health and safety home repairs is MSHDA’s State Emergency Relief (SER) program, which provided a total of just \$70,307 for non-energy related home repairs in 67 Wayne County homes in 2018. Several organizations interviewed commented that they regularly get calls for emergency home repair needs such as hazardous roof leaks or broken exterior steps, but they have nowhere to send residents. Volunteer-based home repair programs offered by community organizations are typically small in scale and do not focus on large-ticket items such as roof repair. The city of Detroit does not have a grant program focused on home health and safety repairs other than lead remediation, unless the resident is a senior or is over 55 with a disability.

*“I had someone come in and her credit was bad and she’s on disability with 3-4 kids and her basement is flooded, has mold, and the roof is leaking. She can’t get approved for the [0% Interest Home Repair Loan] program - I have no idea where to send her.”*

*Executive director, community-based organization*

The SER program is capped at a one-time grant of \$1,500.<sup>a</sup> However, this grant amount is likely too small to address most home repair needs. Estimates indicate the average repair cost for an occupied unit in the Detroit MSA is \$3,228, and national estimates for the average repair cost for moderately and severely inadequate units are \$4,361 and \$6,487, respectively, both eclipsing the maximum grant from the SER program.<sup>65</sup> It is also worth noting that the cost of repairs in the city of Detroit are likely higher than national or metro-level estimates due to the age of the housing stock and deferred maintenance due to low incomes, low property values, and constrained credit.

*Funds are expended quickly:* The only other grant option in Detroit for general home repairs is the Federal Home Loan Bank of Indianapolis' (FHLBI) Neighborhood Impact Program (NIP), which provides grants of up to \$7,500 for qualifying home repairs in households below 80% AMI. Emerging evidence suggests a \$7,500 grant, while perhaps not addressing all home repair needs in severely inadequate homes, is enough to address emergency repairs and improves a homeowner's perception of housing stability.<sup>66</sup> However, the NIP program is dramatically oversubscribed and available funds are expended quickly. Applications for the NIP program are typically released in April, with funds allocated by September, and applicants who do not submit a completed application correctly within a few weeks are unlikely to receive funds. U-SNAP-BAC, who helps administer NIP on behalf of local banks, commented that people were lined up at 1 a.m. the night before applications were released. Over 300 people applied at U-SNAP-BAC, but only 76 applicants in Detroit received funds in 2018.

*City of Detroit's non-senior grants focus on lead remediation:* The city's largest grant program is the City of Detroit's Lead Hazard Control Program, a necessary program in a city in which, in 2016, nearly 9% of children under 6 screened for lead poisoning exhibited elevated blood lead levels.<sup>67</sup> Because of the focus on lead remediation, however, these grant funds are not available for general repairs and are not available to all low-income Detroit residents. The program is only available for pregnant mothers and households with children under the age of 6.

#### Seniors and people living with disabilities struggle to access resources

Nearly every organization interviewed expressed concern over the lack of streamlined resources available to assist the immediate repair needs of seniors, who may be aging in place in old housing stock, struggle to maintain their homes, and need accessibility modifications.

*“Detroit has a rapidly aging population and you have people who have maintained their homes for a long time, they don't want to go anywhere else. Their decline in health is also a decline in maintenance. People don't know where to go and don't know what to do.”*

*- Construction manager of senior repair services*

Seniors who do not qualify for or who cannot afford a 0% Interest Home Repair Loan cannot immediately access grant funds for deferred maintenance items or accessibility needs. Three grant programs are available to seniors or people living with a disability, but they have waitlists or funds are expended quickly: the City of Detroit's Senior Emergency Program, the Detroit Area on Aging's MI Choice Waiver Program, and FHLBI's Accessibility Modification Program (AMP). Disabled Veterans

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<sup>a</sup> The program also offers one-time energy repairs up to \$4,000 that can only be used for furnace repair or replacement.

have access to grants from the U.S. Department of Veterans Affairs for accessibility modifications, but the VA disbursed only two grants in Detroit last year. While nonprofits are trying to fill in this gap with donations and volunteers, most are unable to address critical, technical repairs, such as roof replacement or ramp installation.

*Long waitlists:* Most organizations interviewed did not identify the City of Detroit’s Senior Emergency Program — which served 22 households in 2018 and currently has a waitlist — as a viable option. The MI Choice Waiver Program, which currently has a waitlist, can provide accessibility repairs to Medicaid-eligible adults who have been denied other funding sources.

*Funds are expended quickly:* The only other grant program available to seniors or people living with a disability is FHLBI’s Accessibility Modifications Program. However, similar to NIP, the program is oversubscribed and spots fill quickly.

#### There is a lack of coordination between programs

While some organizations partner to leverage funds and expertise, most of the funding in the home repair space is uncoordinated and restricted. In contrast, flexible and coordinated funding from multiple public and private partners can allow dollars to be combined to meet the most urgent needs and remove barriers to accessing certain programs. Several organizations noted that one potential area for reform may be removing requirements around lead remediation when there are no children in the home, which can limit access to and funding for other repairs. Rather, programs for seniors could first ensure that the home is secure (e.g., steps, porch, roof) and that seniors can get in and out of the home before addressing lead. Moreover, most seniors in Detroit do not have children living in the home, with 53.1% of Detroiters ages 65 and older living alone.<sup>68</sup>

*“The health hazards come out of your money. We had an older client who needed a furnace, she was approved for the full amount, but they found lead and it would cost \$30,000 to remove the lead. Where’s the consideration if there’s no children in the home?”*

*- Housing counselor, community-based organization*

Another area for coordination could be in the administration of DTE’s Energy Efficiency Program, which provides furnace repairs and replacement to qualified homes. The program requires homes have major repairs (e.g., structural damage to porches and roofs) completed before they can receive a new furnace. By partnering with existing or new home repair programs, DTE could better ensure Detroit households don’t lose access to their critical services.

#### Homeowners need help navigating applications, bids, and inspections

Low-income residents require assistance not just in applying for home repair programs, but throughout the process of completing home repairs. More technical assistance is needed to help residents fill out applications correctly, gather necessary documents and construction bids, and find licensed contractors. For example, FHLBI’s two grant programs — NIP and AMP — require residents to obtain two bids from certified general contractors. And while organizations like U-SNAP-BAC do their best to help residents complete applications, they do not have the capacity to help residents get two comparable, itemized estimates from certified contractors. Other programs like the city’s 0% Interest Home Repair Loan Program and the Senior Emergency Repair Program provide their own contractors,

but program guidelines dictate that homeowners are required to inspect and approve the work themselves. Although the city does have its own inspectors to assist homeowners throughout this process, it is unclear how it is implemented.

#### Nearly all home repair loans and grants require ownership and occupancy

Programs ranging from the 0% Interest Home Repair Loan to FHLBI's NIP and AMP programs all require residents to own and occupy their home for a minimum of six months before they can apply for home repair funds. This means owners of uninhabitable homes cannot receive funding unless they currently occupy the home, which particularly impacts Detroiters who hope to become homeowners by buying property from the land bank with plans to rehab the home.

The only option for renters, who live in inadequate housing at higher rates than homeowners, is to apply to the city's Lead Hazard Control Program. However, as the name suggests, the focus of the program is on lead abatement, not deferred maintenance or major home repairs, and the program is unavailable to renters without children. Renters who have other housing problems such as a leaky roof or pest infestation, are unable to access funds, and are instead wholly dependent on their landlords to make the repairs, which they often fail to do.<sup>69</sup> The best solution for renters is to ensure adequate enforcement of the city's rental ordinance, which is designed to compel landlords to make needed health and safety repairs.<sup>70</sup>

#### Shortage of licensed general contractors and high cost of repairs

According to interviewees, licensed contractors willing to provide bids or perform residential home repair work are hard to find. This is a huge challenge in accessing programs like FHLBI's NIP and AMP grant programs, which require residents to obtain bids from two licensed contractors.

Organizations also cited high construction costs (including licenses, insurance fees, and supply costs) for driving up the price of the work and for deterring unlicensed contractors from obtaining a license. Small business contractors and skilled tradesmen also require start-up working capital to participate in grant programs because payment comes after the work is completed. Challenges in accessing capital, especially for small, minority-owned businesses, can make it difficult to conduct home repairs on a large scale where licenses, fees, and materials are required upfront.

Recent reports in Detroit have noted the shortage of licensed skilled trades workers in the area.<sup>71</sup>

Organizations interviewed for this report echoed this sentiment and continually noted that efforts were needed to address liquidity constraints facing homeowners, while also bolstering the supply of licensed contractors to conduct home repair work.

## Moving Forward: Policy Options

The following recommendations are informed by community organizations, discussions with subject matter experts in healthy housing and accessibility, and reviewing leading practices in other cities. These are meant as options for what stakeholders could do to address existing needs, not necessarily recommendations for what should occur.

## Enhancing Existing Programs

### **Provide a toolkit of home repair services to organizations and residents**

Many organizations interviewed remarked they did not know of any home repair programs other than the 0% Interest Home Repair Loan program offered by the City of Detroit. For community-based organizations that interface with residents on a regular basis, it is essential that they have easy access to resources available to assist residents with home repair needs. Creating a continually updated home repair resource guide online to better inform organizations of the resources available, including funds, trainings, and services, can help connect residents to the assistance they need. The city of Milwaukee has a housing resource guide for both homeowners and homebuyers.<sup>72</sup> A new Detroit Home Repair Resource Guide published by Poverty Solutions aims to address this need by providing information on existing programs serving Detroit residents.<sup>73</sup> And the City of Detroit is working to create housing resource centers, located in neighborhoods throughout the city, which can serve as a one-stop shop for home repair resources.

### **Offer multiple funding options for different income groups**

Providing different funding options such as grants, 0% interest deferred loans, and low-interest installment loans to homeowners of various income levels could stretch dollars and offer low-income Detroiters greater opportunity to access home repair funds. The 0% Interest Home Repair Loan Program could be restructured to provide various funding options and interest rates including 0% interest deferred loans to low-income households and various low-interest installment loans to middle-income households. The city of Milwaukee uses city funds for its citywide Compliance Loan Program specifically to address health and safety code violations.<sup>74</sup> The program is available only to households with incomes less than 60% AMI, does not have debt-to-income or credit score requirements, and is a 0% deferred loan, resulting in no monthly payments to the borrower. While this program targets low-income residents with health and safety home hazards, the city also has three other programs: STRONG Homes has a 0-3% interest rate for households with up to 120% AMI; Home Rehab has a partial, forgivable, no-interest deferred loan for low-income seniors or people with a disability; and the Rental Rehab Program is for renters.

### **Integrate lead abatement grants into health and safety repairs**

Half of the grant funding spent in 2018 in Detroit came from the City of Detroit's Lead Hazard Control Program, which is specifically for households with children under 6 years old and pregnant women. A more integrated program that advertises home health and safety repairs including roof and window repair, is available to low-income residents, and allows homeowners to tap into grant funding for lead abatement could help households address lead in the home as well as other needed health and safety repairs. Pittsburgh's Home Rehabilitation Program (PHRP) provides up to \$10,000 in lead hazard reduction work for 0% interest loan participants.<sup>75</sup> The city of Minneapolis also incorporates lead hazard grants into their Home Improvement Program (HIP).<sup>76</sup>

### **Universal healthy home assessments for all programs and shared database**

Every home repair project should start with a complete home health assessment to better prioritize health and safety issues, regardless of the focus of the home repair program. Organizations such as

Rebuilding Together Southeast Michigan and Wayne Metro Community Action discussed the importance of implementing a healthy home assessment to determine the home repair needs and prioritize health and safety issues. The Green and Healthy Homes Initiative, a leader in promoting healthy homes, utilizes its own comprehensive assessment process to review home health and energy use.<sup>77</sup> Instituting a universal healthy home assessment that is implemented by the city and partner organizations, as well as creating a shared database including properties that have received a healthy home assessment, can promote efficiency and coordination of services.

### **Address home health & accessibility goals to assist aging-in-place residents**

For seniors and people living with disabilities who may have both home accessibility and home health and safety needs, it is important to assess the home and consider the goals of the individual. Housing Upgrades to Benefit Seniors (HUBS) in Baltimore provides individual and holistic home assessments for both home safety and security concerns, such as roof leaks and accessibility modifications, all through a single intake system that starts with an online pre-application. Home inspectors working with seniors could partner with occupational therapists or receive training to become Certified Aging-in-Place Specialists (CAPS) to better address both accessibility needs and health and safety needs of seniors' homes.

### **Provide technical assistance for home repair projects**

Low-income homeowners, especially seniors, require technical assistance to complete applications, conduct home inspections, and obtain bids. Organizations are too understaffed and under-resourced to assist homeowners throughout every phase of the home repair process. Investing in human capital to provide technical assistance could ensure homeowners enter fair contracts, obtain accurate and competitive bids, and receive requested repairs.

### **Funding for small landlords to improve rental housing conditions**

Programs could also be expanded to provide funding to small, undercapitalized landlords to make needed health and safety repairs. Many cities, including Madison, Milwaukee, Louisville, and Greensboro, offer home repair funds for landlords. The city of Madison offers low-interest loans for non-owner-occupied units, with a requirement stipulating that rents after the first year of rehabilitation remain below a certain threshold.<sup>78</sup> By including an affordable rent provision in the contract, small landlords can access low-interest loans to correct code violations and make accessibility repairs, while maintaining affordable rental housing.

## **Learning from Peer Practices**

### **Align resources and promote cross-sector collaboration**

The home repair problem in Detroit cannot be solved by the city government alone or by organizations working in silos. While additional home repair funds are needed, organizations should leverage resources and existing expertise. More strategic collaboration is needed among community-based organizations, hospitals, the City of Detroit, and private organizations including banks and real estate firms to tackle inadequate housing. Using funds in flexible, innovative ways could reach more residents and expand the capacity of partnerships with community organizations already doing home repair

work in Detroit neighborhoods. For example, the Green and Healthy Homes Initiative, a national nonprofit, successfully brought together community stakeholders to assess how dollars could better align for maximum impact and how healthcare savings could be realized through home repair.

### **Use real estate transfer taxes to fund state housing trust fund**

Most states, including Michigan, have established housing trust funds to support affordable housing initiatives, including the provision of funds for home repair. In 2008, the state of Michigan established the Housing and Community Development Fund administered by MSHDA, but funding has not been allocated to the fund since 2013.<sup>79</sup> States — including Washington, D.C., Illinois, Iowa, Maine, Nevada, New Jersey, Pennsylvania, South Carolina, Vermont and West Virginia — commonly use the real estate transfer tax as revenue for their housing trust funds.<sup>80</sup> Michigan could consider joining these states in using the real estate transfer tax to support its housing trust fund and use more of those resources for home repair initiatives.

### **Establish a housing resource center to leverage city funds**

After years of providing Community Development Block Grants (CDBG) for home repairs, the city of Syracuse, New York, established a nonprofit, Home Headquarters, Inc., described as a one-stop-shop for all homeownership needs. The organization provides affordable home services including home repair funds, education, and counseling to promote affordable homeownership. Home Headquarters has won multiple awards and attracted additional funding, leveraging over \$83 million in home repair financing through several low-interest loan programs.<sup>81</sup> A home repair program that was once entirely city-funded has attracted \$4 for every \$1 invested, according to city estimates.

We must acknowledge, however, there is an opportunity cost to using CDBG or housing trust fund dollars to fund home repair programs, as these dollars would otherwise go to other important priorities.

### **Prioritize low-income, longtime Detroiters in the redevelopment of homes**

Louisville, Kentucky, identified the potential displacement of longtime residents as a concern in areas where the city is investing funds, such as the city's Russell neighborhood, home to the Beecher Terrace public housing development. In 2016, the local housing authority received a \$29.5 million implementation grant through HUD's Choice Neighborhoods Initiative to rebuild Beecher Terrace and the surrounding neighborhood.<sup>82</sup> The city focused on preventing the displacement of longtime residents in the neighborhood by investing in targeted home repair programs through five-year forgivable, deferred loans and rebuilding affordable low-income housing units. The two-year planning process for the grant application included a committee of Russell residents, city officials, and local leaders. A similar initiative in Detroit prioritizing residents who have lived in the city for at least 15 years, for example, could reduce unintended displacement associated with neighborhood investments.

### **Linking healthy housing initiatives and workforce development**

The large need for home repair offers a workforce development opportunity in the skilled trades and healthy home assessments. The newly developed Healthy Home Evaluator (HHE) certification offers an opportunity for unemployed workers to receive training and payment to expedite healthy home assessments in Detroit.<sup>83</sup> The National Center for Healthy Housing provided mini-grants in 2018 for its Healthy Homes Workforce Development competition, funding organizations like Green | Space in

Tennessee that will use funds to provide healthy homes workforce training.<sup>84</sup> Medicaid reimbursement funds can also be leveraged to fund Community Health Workers to provide healthy home assessments.<sup>85</sup>

Investing in opportunities for youth to be successful in the construction field and capitalizing on the existing contracting talent of unlicensed builders in Detroit can increase competition and lower construction costs. Philadelphia recently launched a pilot program to connect recent trade school graduates with local contractors to increase employment opportunities for young people.<sup>86</sup> Small-scale contractors without access to capital often cannot afford the added cost of insurance, licensing, and other expenses. Providing funds to Detroit-based, minority contractors to offset the expense of becoming a certified contractor, as well as providing project and business management support, could help build the pipeline of qualified contractors while reducing racial employment disparities in the metro Detroit region.

Many organizations in Detroit have been working for years to increase the number of licensed contractors and skilled tradespeople in the city. The Southwest Detroit Business Association and Michigan Hispanic Contractors Association are working to increase the number of Hispanic businesses in the construction industry; the Detroit Training Centers offers a range of potential licenses and certifications; and the City of Detroit, area community colleges, and Detroit Public Schools Community District fund and operate a number of programs designed to boost the number of Detroiters trained in construction and skilled trades. These are just a few of the many examples of organizations working to meet a critical gap in the home repair ecosystem, while also seeking to provide Detroiters with good jobs.

### **Encourage savings and financial literacy to improve credit scores**

Linking savings programs directly to home repair needs can encourage homeowners to save for critical home repairs. Financial literacy programs focused on tools and techniques to improve credit scores can help homeowners access loans for home repair and other capital needs. Working in Neighborhoods Cincinnati, a Cincinnati-based nonprofit, integrates financial literacy training into its community-centered approach to revitalizing neighborhoods.<sup>87</sup> The organization focuses on establishing savings goals with homeowners to save for home repairs, using a 2:1 matching savings incentive approach. Here in Detroit, the city recently launched the Financial Empowerment Center (FEC), which offers a range of financial counseling services around budgeting, debt reduction, and credit improvement, and integrates those services with other social services, such as foreclosure prevention.<sup>88</sup>

As far as we know, all of the promising practices listed above have not been evaluated, so we don't know for sure the extent to which these programs improve the condition of low-income housing in the cities in which they are based. Rather, these programs are offered solely as alternative approaches that respond to certain gaps identified within Detroit's home repair ecosystem. More evaluation is needed of existing and new home repair programs.

## **CONCLUSION**

Addressing the home repair needs of both homeowners and renters in Detroit requires a coordinated, cross-sector, collaborative effort that maximizes the impact of current programs. But it also requires

resources. Aging housing stock and low incomes are two risk factors that increase the likelihood and severity of repair needs.<sup>89</sup> In Detroit, nearly 80% of the occupied residential structures were built prior to 1960, and roughly one-third of residents live under the poverty line.<sup>90</sup> Families living in inadequate housing who are unable to afford repairs may eventually have no choice but to abandon their homes to escape housing problems such as leaky roofs, rodent infestation, inadequate heating, or mold. High rates of inadequacy in rental housing magnifies the need to invest in home repair for low-income homeowners as a way to maintain adequate, affordable housing units and build wealth.

The repair needs in Detroit are significant, and our analysis of data from the American Housing Survey and Detroit's home repair ecosystem suggests current resources devoted to home repair don't come close to meeting the need. The City of Detroit and a network of community partners can surely make necessary reforms to help stretch the impact of available dollars and provide a more seamless experience for those with home repair needs. But in order to make a real and lasting impact on the quality of Detroit homes, more philanthropic and federal resources are required.

Indeed, a compelling case can be made for federal action. In the 1940s, '50s, and '60s, the federal government subsidized the development of suburban homes across the country, solely for white people.<sup>91</sup> At the same time, Black Americans had to fend for themselves in cities like Detroit, often purchasing homes through predatory land contracts which robbed them of the wealth-building possibilities of homeownership.<sup>92</sup> Robust federal support for home repair in aging industrial cities like Detroit could give thousands of Black households the opportunity to secure safe and affordable housing, and perhaps even set the stage for the wealth creation. Such a measure would be far from sufficient to rectify the damage done by our history of racially discriminatory housing policies, but it would be a step in the right direction.

A decent home for all was our obligation in 1945, and it remains our obligation today. With innovative new programs, cross-sector collaboration, and an influx of resources dedicated to home repair, we can make great progress towards fulfilling this obligation.

## LIMITATIONS

While we made great efforts to be as comprehensive as possible in this report, the study is subject to certain limitations. First, although we attempted to interview all 110% Interest Home Repair Loan intake centers, some centers did not respond to requests for interviews. We also made an effort to engage in discussions with all organizations active in the home repair ecosystem, but we were unable to conduct interviews with every organization affiliated with home repair in Detroit.

Second, the universe of occupied housing units in the American Housing Survey Detroit MSA includes single-family homes, apartments, groups of rooms, and single occupied rooms, but it does not include institutional group quarters, nursing homes, or college dormitories. Although analyzing AHS data gives researchers an estimate of the level of home repair need in the Detroit area, it does not provide precise numbers.

Third, our staff contacted over 60 organizations to confirm they administered a home repair program, but given the number of community-based organizations in Detroit, it is possible that we missed a home repair program. Additionally, a few community-driven home repair programs did not want to be

included in our home repair resource guide and did not want to provide information about households reached. The funding spent on home repair in 2018 and households reached is intended to estimate the annual home repair funding. Funding is not constant year-to-year, but focusing on 2018 gives stakeholders an estimate for how much funding presently exists.

We did not include funding provided for training, even though training people how to maintain their home is important, because these programs do not directly provide funding or equipment to correct a repair problem. Likewise, the attached ecosystem map represents our best attempt to map out the funding streams within the 2018 ecosystem based on information received from program representatives and information online.

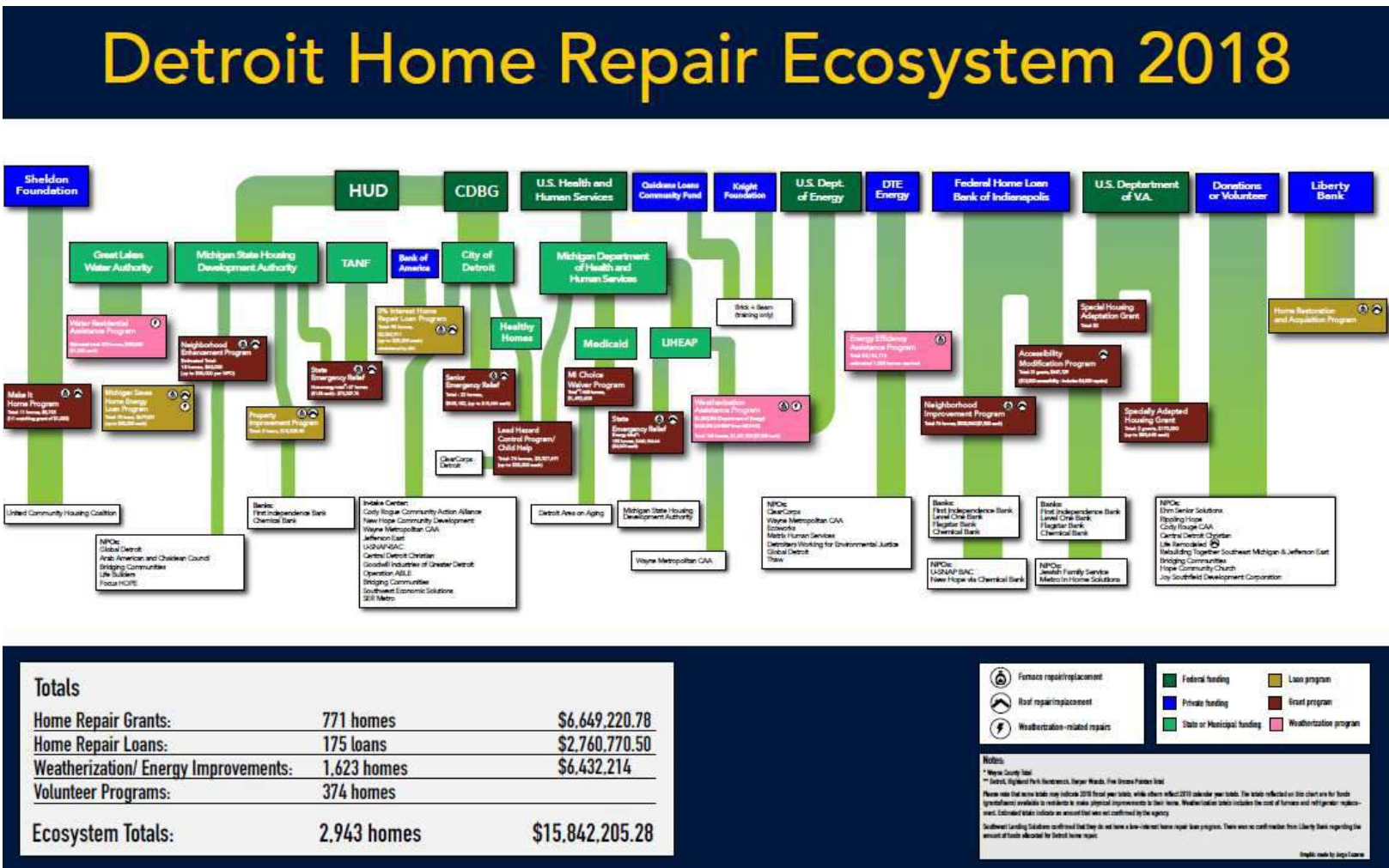
Finally, while this report offers a number of promising practices found in other cities, we do not have good evaluations of these programs. Therefore, we cannot say for certain whether the innovative programs we point to are truly effective in reducing the problem of inadequate housing in good repair.

**Appendix Table 1: Population and Economic Characteristics of the Nation, Detroit, and the Detroit Metropolitan Statistical Area**

Characteristic	USA	Detroit-Warren-Dearborn MSA	Detroit City
Median household income	\$60,336	\$58,411	\$30,344
Federal poverty rate	13.4%	14.6%	34.5%
Units built before 1950	17.6%	23.1%	57%
Median value of owner-occupied housing unit	\$217,600	\$171,600	\$50,200
Number of occupied housing units	120,062,818	1,723,000	264,360
Owner-occupied units	64%	69%	47%
Population by race			
<i>Black</i>	12.7%	22%	79%
<i>White</i>	72.3%	66%	14.5%
<i>Two or more</i>	3.3%	2%	1.7%
Bachelor's degree or higher	32%	31.1%	14.6%

(Source: American Community Survey, 1-year Estimates)

Appendix 2: Detroit Home Repair Ecosystem Map 2018



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<sup>48</sup>Within these categories, organizations are either restricted or allowed flexibility for how funds can be used in ways that many not be clearly communicated publicly. For example, the Michigan Saves Home Energy Loan is specifically for home energy improvements, but funds can be used for non-energy related improvements when necessary to complete an energy project. Additionally, for the purpose of categorizing program funds, weatherization/energy programs, although a separate category, are primarily administered as grants or as services/equipment provided to homeowners, and typically do not support critical home repairs.

<sup>49</sup>Please refer to our home repair ecosystem graphic for more information.

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<sup>53</sup>Area Median Income (AMI) is defined as the midpoint of a region's income distribution - half of households in a region earn more than the median and half earn less. AMI for each region is updated annually by HUD, and HUD programs often require that funding is allocated to households 80% AMI or less. However, it is important to note that many regions have higher median incomes than average incomes in the central city. Therefore, cities seeking to target lower-income households with certain policies may focus on households less than 60% or even 30% AMI. In the cities we studied, the income eligibility thresholds for deferred programs were:

- Cleveland up to 30% AMI,
- Milwaukee up to 60% AMI,
- Minneapolis up to 80% AMI,
- Louisville up to 80% AMI (in historically disadvantaged areas),
- And Madison up to 80% AMI.

<sup>54</sup>For an example of a deferred loan program, see the Genesee County Community Development Program: [https://www.gc4me.com/departments/planning\\_commission/community\\_development/home\\_improvement\\_program.php](https://www.gc4me.com/departments/planning_commission/community_development/home_improvement_program.php)

<sup>55</sup>"Home Rehabilitation Loans," City of Madison. Available from: <https://www.cityofmadison.com/dpced/economicdevelopment/home-rehabilitation-loans/314/>

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<sup>58</sup>American Community Survey (ACS) 2018.

<sup>59</sup>Elliott, "The Financial Health of Detroit Residents"; "The Quicken Loans Community Fund's 'Neighbor to Neighbor' Initiative Prevents Record 4,316 Detroit Families from Entering Property Tax Foreclosure in 2018," Quicken Loans, May 2, 2019. Available from: <https://www.quickenloans.com/press-room/2019/05/02/quicken-loans-community-fund-study-shows-2018-property-tax-foreclosures-in-detroit-hit-lowest-level-in-over-a-decade-company-commits-to-continuing-citywide-effort-to-help-homeowners/>

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<sup>65</sup> Eliza Wallace, Eileen Divringi, Keith Wardrip, and Elizabeth Nash, "Technical Appendix: A Repair Cost-Based Index of Housing Quality," *Federal Reserve Bank of Philadelphia*. Available from: <https://www.philadelphiafed.org/-/media/community-development/publications/special-reports/home-repair-costs-technical-appendix.pdf>

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<sup>67</sup> Joshua Akers, Alexa Eisenberg, and Eric Seymour, "Toxic structures: Speculation and lead exposure in Detroit's single-family rental market," *Poverty Solutions at the University of Michigan* (2020)

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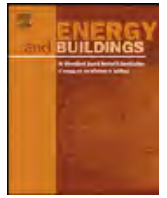
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# Energy and Buildings

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## The intersection of energy and justice: Modeling the spatial, racial/ethnic and socioeconomic patterns of urban residential heating consumption and efficiency in Detroit, Michigan

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### ABSTRACT

Residential energy conservation and efficiency programs are strategic interventions to reduce consumption and increase affordability. However, the inability to identify and distinguish between high energy consumers and highly energy inefficient households has led to ineffective program targeting. Additionally, little is known about the spatial, racial and socioeconomic patterns of urban residential energy consumption and efficiency. Publicly available data from the U.S. Energy Information Administration and the U.S. Census Bureau are used with bottom-up modeling and small-area estimation techniques to predict mean annual heating consumption and energy use intensity (EUI), an energy efficiency proxy, at the census block group level in Detroit (Wayne County), Michigan. Using geographic information systems, results illustrate spatial disparities in energy consumption and EUI. Bivariate analysis show no statistical relationship between race/ethnicity and energy consumption; however, EUI is correlated with racial/ethnic makeup; percent White (−0.28), African American (0.24) and Hispanic (0.16). Income and housing tenure reveal inverse relationships with consumption and efficiency. Though areas with higher median incomes and homeownership exhibited higher consumption (0.28 and 0.56, respectively), they had lower EUIs (−0.48 and −0.38, respectively). This study provides evidence supporting approaches for conservation and energy efficiency program targeting that recognizes the significance of race, ethnicity, place and class.

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### 1. Introduction

Residential utility costs place a disproportionate burden on low-income households. Following the Great Recession, nearly 14 million American households had utility bills in arrears and 2.2 million households experienced utility shutoffs [1]. Residential energy burdens, or the percentage of annual income spent on energy costs are a major source of utility hardship. While the average American household spends 7.2% of their annual income on residential energy costs, the average low-income household has an energy burden nearly double, spending 13.8% [2]. Energy burden disparities are often expressed through the concept of fuel poverty, also referred to as energy insecurity [3,4]. Fuel poverty reflects an inability of a household to meet basic energy needs or to adequately heat or cool their home [3]. Fuel poverty results from the interplay between

low household incomes, rising energy costs and energy inefficient homes [3].

Amid solutions to alleviate fuel poverty, energy conservation and efficiency retrofit programs have proven successful [5–8]. However, the inability to identify and distinguish between households with high energy consumption compared to those that are highly energy inefficient has halted interventions from utilizing systematic approaches to appropriately and effectively target energy conservation and efficiency programs.

The need for more effective targeting is supported by previous studies exploring the spatial dynamics of energy consumption that find distinguishable spatial disparities in both consumption and energy use intensity (EUI).<sup>1</sup> For instance, Heiple and Sailor [9] using national data, building energy simulation and geospatial modeling

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<sup>1</sup> According to the U.S. Department of Energy, “Declines in energy intensity are a proxy for efficiency improvements, provided a) energy intensity is represented at an appropriate level of disaggregation to provide meaningful interpretation, and b) other explanatory and behavioral factors are isolated and accounted for” (DOEa) [52].

techniques found variations in peak energy profiles for electricity and natural gas across building types in Houston, Texas. Howard et al. [10] built models from citywide data to estimate building sector EUI finding major differences in the magnitude of consumption and spatial variation across New York City. Santamouris et al. [11] conducted interviews on household and housing unit characteristics finding higher costs per person and unit area for low-income residence in Athens. These studies provide rich information on the relationship between place and energy consumption; however, their focus on both commercial and residential energy consumption makes it difficult to identify residential energy disparities for program targeting. Moreover, few studies investigate correlations between residential energy consumption, efficiency, race/ethnicity and socioeconomic status for a more holistic understanding of urban residential energy dynamics. Reames [12] developed a model estimating urban residential heating EUI and found positive relationships with areas with higher percentages of racial minorities and lower socioeconomics. Albeit some exploration, little remains known about the spatial, racial and socioeconomic differences between residential energy consumption and efficiency.

To this end, this paper develops models for residential heating consumption and efficiency at the census block group level and explores the spatial patterns alongside racial and socioeconomic relationships in Detroit (Wayne County), Michigan. The remainder of this paper is structured as follows. Section 2 presents background information on modeling energy consumption, efficiency and disparities. Section 3 describes the study area, data and methodological framework for first developing two regression models to estimate residential heating energy consumption and heating EUI, then secondly, using small area estimation techniques to predict consumption and EUI in the study area. Section 4 presents results of the regression models, spatial distributions of results mapped using geographic information systems (GIS) and bivariate analysis of the relationship between predicted energy consumption and efficiency with selected racial and socioeconomic block group characteristics. Section 5 discusses key results, policy implications and study limitations. Lastly, concluding remarks and areas of future research are presented in Section 6.

## 2. Background

To understand the factors that impact energy consumption, scholars apply two general frameworks: the physical-technical-economic model (PTM) and the lifestyle and social-behavioral tradition (LSB) [13–23]. In 1993, Lutzenhiser proposed the PTM tradition arguing that the physical characteristics of buildings, investment in technical energy efficiency, energy prices and environmental factors are integral to understanding and managing energy consumption. On the other hand, the LSB tradition contends that these factors alone can only offer minimal explanation of energy consumption in the built environment and draws attention to the importance of human occupants of the building, such as, social (noneconomic), behavioral, cultural and lifestyle factors [13,14,17–20,24,25]. The models developed for this study include variables merging the PTM and LSB modeling traditions for a more holistic understanding of residential energy consumption and efficiency.

Individual housing unit energy data is often not readily available for exploring residential energy dynamics at various spatial scales. Thus, the absence of detailed information on residential energy use presents an impediment to spatially identifying fuel poor households and developing strategic conservation and efficiency program targeting. As a result, scholars have employed small area estimation statistical techniques to spatially explore residential energy patterns. This approach requires finding the

best predictors to model energy consumption and efficiency, for instance, energy characteristics of housing structure and a selection of householder characteristics; then, connect to matching spatial data (i.e. census data).

A growing body of literature investigating geographical approaches to target fuel poverty in Europe have used this approach [26–29]. Fahmy [26] developed regression models to predict the incidence of fuel poverty in England using sample survey data and applied resultant weights to Census spatial data sets. Similarly, Walker and Day [30] developed a small area fuel poverty risk index using environmental and socioeconomic variables via geographical methods finding significant clusters of high and low-risk areas. “The underlying idea is that there are higher probabilities of fuel poverty in particular areas and/or housing types” [31].

In the U.S., Min et al. [32] applied this approach for spatially modeling national residential energy consumption end uses. Combining regression models based on national data from the U.S. Energy Information Administration’s (EIA) Residential Energy Consumption Survey (RECS) with U.S. Census data, they mapped energy consumption estimates for space heating, cooling, water heating and all other electrical uses at the zip code level. Reames [12] used both the RECS and Census data to explore racial and socioeconomic disparities in the spatial distribution of urban heating EUI. Both studies found that significant predictors of energy consumption and EUI included age of housing unit, type of housing unit, number of rooms, type of heating fuel and household income.

## 3. Data and methodology

### 3.1. Description of study area

Detroit (Wayne County) is the largest urban area in the State of Michigan and represents nearly 20% of the state population. According to the 2010 decennial census, the county had a total population of 1,820,584 residents in 821,693 housing units. Michigan homes are typically older than homes in other states. Nearly three-quarters of housing stock in Detroit (Wayne County) was built before 1970. Fig. 1 illustrates the distribution of housing stock age, displaying the median year built for block group housing structures.

Socioeconomic characteristics vary in the study area. Detroit exhibits a high and increasing level of residential segregation by income. The Pew Research on Social and Demographic Trends found that the Detroit metropolitan area’s RISI score increased from 43 in 1980–54 in 2010 [33].<sup>2</sup> Fig. 2 displays the spatial distribution of block group median household incomes, ranging from \$6833 to \$183,462 per year. Households in the Detroit metropolitan were hit particularly hard during the economic recession and recovery. A survey of Detroit metropolitan area households found that 1 in 2 respondents reported experiencing some type of material hardship [34]. While roughly 14% of high-income households fell behind on utility payments, nearly 40% of low-income households reported being behind and were seven times more likely to have a utility shutoff [34].

Detroit has long been the most segregated metropolitan area in the nation, having a majority African American and Hispanic city population and a majority White suburban population [35]. This segregation is evident in Fig. 3, a dot density map illustrating

<sup>2</sup> The Pew Research Center developed a single Residential Income Segregation Index (RISI) score for the nation’s top 30 metropolitan areas. The score is calculated by summing the share of lower-income households living in a majority lower-income tract and the share of upper-income households living in a majority upper-income tract. The maximum possible RISI score is 200, indicating that 100% of lower-income and 100% of upper-income households would be situated in a census tract where most households were in their same income bracket.

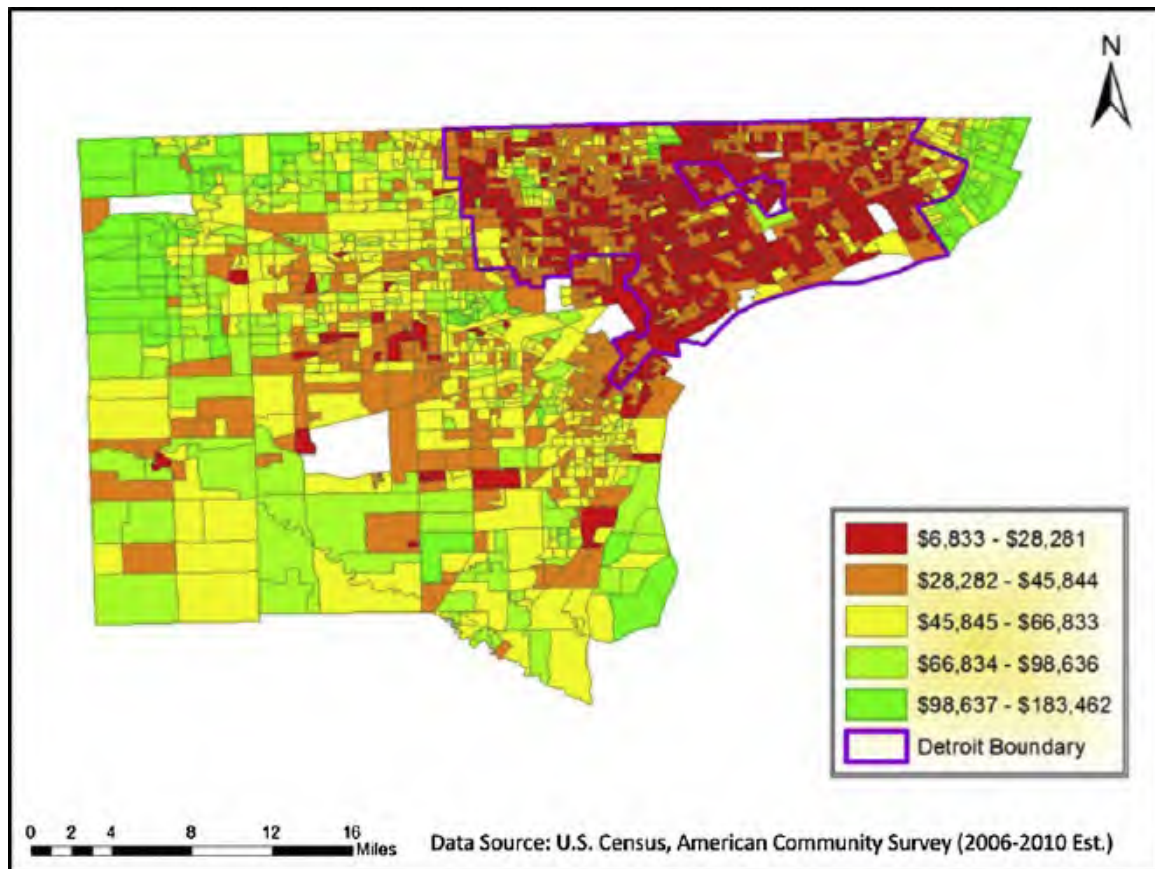


Fig. 1. Block group median structure year built.

the spatial distribution of residents by race/ethnicity. The household racial/ethnic composition included 52.3% White, 40.5% African American and 5.2% Hispanic households. Historically marginalized communities of color in Detroit experience higher rates of arrears and shutoffs. For instance, African Americans were almost twice as likely as non-African Americans to report being behind on utilities payments and more than three times more likely to experience a utility service shutoff than non-blacks [34].

Michigan households experience harsher winters increasing the average household demand for space heating to 55% of total energy consumption compared to 41% nationally [2]. Consequently, Michigan households also consume 38% more energy and spend six percent more than the average U.S. household [2]. Thus, space heating is the ideal energy end use for investigating patterns and disparities in consumption and efficiency.

### 3.2. Data

In the absence of detailed individual energy data for every household in the study area, the EIA's RECS provides household-level data for a representative sample of occupied, primary residences at the state-level. First conducted in 1978, RECS collected data on energy consumption, annual expenditure, energy-related behavior, household demographics and housing unit characteristics. Using a multi-stage, area probability design, carefully controlled at specific levels of precision, the 2009 RECS microdata set (released in 2013) has a sample size of 12,083 housing units representing the U.S. Census Bureau's statistical estimate of 113.6 million occupied primary residences [36]. The RECS allows for state-level analysis with the collection of representative samples in 12 states, including Michigan. A sample of 274 Michigan

households were surveyed to represent the state's 4.5 million occupied housing units. Since the scope of this study focuses on annual space heating, six of the total 274 observations were removed from the sample because of missing heating data, resulting in 268 total observations for this study.<sup>3</sup>

Spatial data for modeling and mapping the study area were obtained from U.S. Census Bureau 2006–2010 American Community Survey (ACS) [37,38] 5-year estimates. This survey is issued each year to provide current information about social and economic needs of the community. Households are sampled randomly in each state, including Puerto Rico to provide a representative sample. The census block group was used as the unit of analysis, as the most appropriate spatial resolution for household and housing unit characteristics data [12]. A GIS data layer of Wayne County census block groups was created by clipping the U.S. Census Bureau TIGER/Line Shapefile with demographic and economic data from the 2006–2010 ACS [37,38] 5-year estimates. Block groups were only retained if both population and number of occupied housing units were greater than zero. Subsequently, 1808 of 1822 block groups were included in this analysis.

The RECS microdata set can be used to develop a bottom up statistical model. These models have been used to explore relationships between household energy consumption and various exogenous variables [39,40,32,12,41]. Statistical models also allow for capturing consumption variations due to demographic and

<sup>3</sup> For a 95 percent confidence interval, a sample size of 246 RECS observations are needed to prove statistical significance. For geographic domain estimation purposes, base sampling  $w(\hat{Y}_{Heat})$  or  $(\hat{Y}_{EU})$ , eights were applied to each housing unit. Each sampling weight value was used as a weighting factor in the weighted regression model.

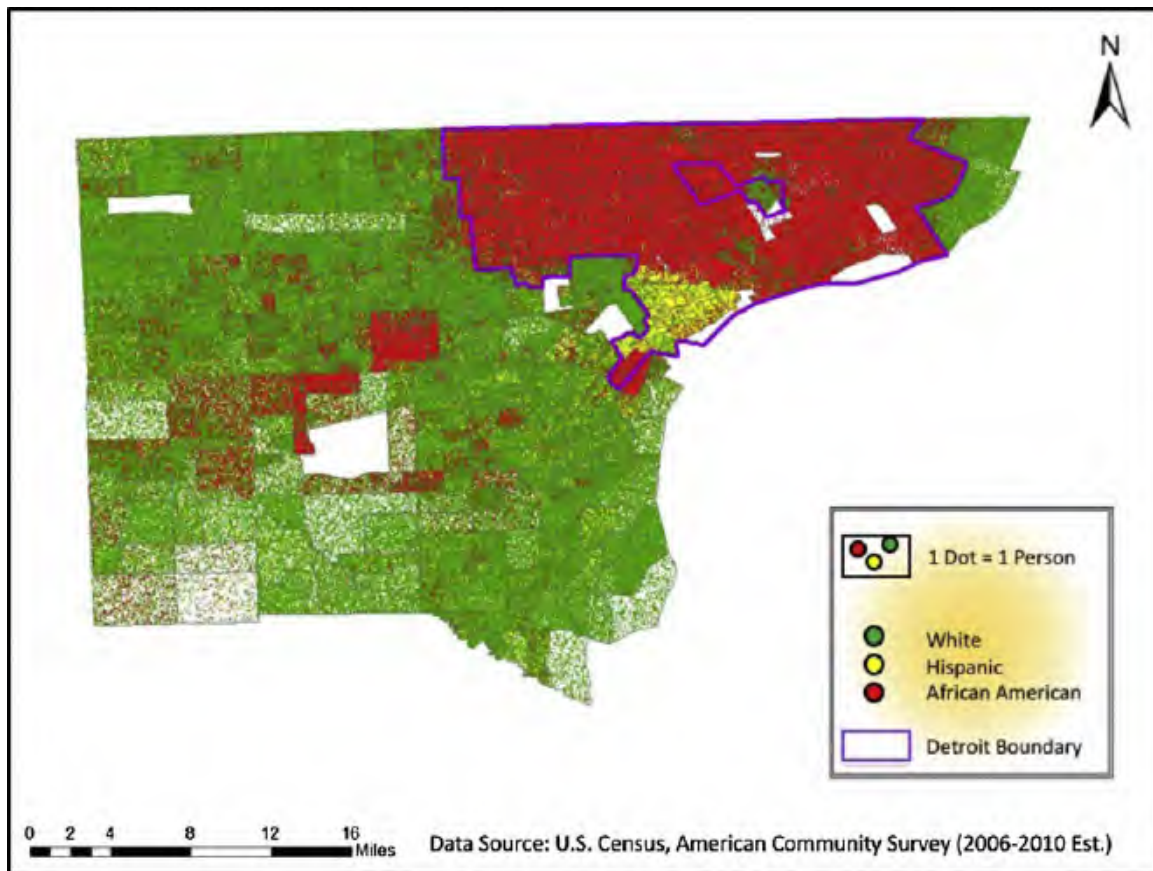


Fig. 2. Block group median household income.

socioeconomic characteristics. Similar variables found in both the RECS and ACS allow relationships derived from statistical models using RECS, known as direct estimates, to be applied to block group level ACS spatial data as indirect estimators for constructing small-area estimates with the assumption that the small area exhibits the same characteristics as the large area [42]. The next section clarifies this methodological framework.

### 3.3. Methodological framework for estimating block group heating consumption and efficiency

The goal of this study is to explore residential heating consumption and efficiency at a geographic domain smaller than the RECS microdata, which is collected with adequate precision at a state-level scale. Fig. 4 displays a schematic of the methodological framework for estimating heating energy consumption and EUI at the block group level.

The first step uses household and housing unit variables  $\chi_{RECS}$ , from the RECS microdata set, specifying two robust regression models – one to predict residential heating energy consumption and the other to predict heating EUI (Blue ovals). The second step uses census data for small area estimations at the block group level (purple rectangles). Resultant weights,  $\beta_i$ , derived from the aforementioned robust regression models are multiplied to matching household and housing unit spatial variables (e.g. housing unit type, housing units built in each decade, housing unit heating fuel type, median household income),  $X_{CENSUS}$ , from the U.S. Census 2006–2010 ACS 5-year estimates.

The objective of the first step is to develop two robust statistical regression models that explain the relationship between the two response variables, heating energy consumption and EUI, with

the predictor variables, housing unit characteristics (age of home, type of heating fuel, type of home and size of home) and controlling for household characteristics (household ownership, number of household members and household income). Dependent variables were natural log values of per-household final consumption and EUI for heating. The models are formulated as:

$$\ln(Y_{Heat}) = \beta_0 + (\beta_{Housing\ unit} * \chi_{RECS}) + (\beta_{Household} * \chi_{RECS}), \quad (1)$$

$$\ln(Y_{EUI}) = \beta_0 + (\beta_{Housing\ unit} * \chi_{RECS}) + (\beta_{Household} * \chi_{RECS}) \quad (2)$$

where:

$Y_{Heat}$  is energy consumption in MJ,

$Y_{EUI}$  is EUI in MJ/m<sup>2</sup>,

$\beta_0$  is the regression intercept,

$\beta_{HousingUnit}$  is the resultant weight for housing unit characteristics,

$\beta_{Household}$  is the resultant weight for household characteristics,

$\chi_{RECS}$  is household and housing unit RECS data.

The RECS notation is used to differentiate for model creation in this step, and estimation in the subsequent step using Census data. Step one uses resultant weights,  $\beta_i$ , from the RECS, 2009 data to model energy consumption and EUI. Using the observed data from the state of Michigan, a statewide ordinary least squares (OLS) regression model is developed for each response variable, measured in mega joules (MJ) and MJ per square meter per annum. The goal of the OLS is to model the relationship between the response and predictor variables; simply, how housing units and household characteristics influence total heating fuel consumption and EUI. Total heating consumption is the total annual heating energy consumed from all fuel types (i.e. natural gas, electric, fuel oil, liquid petroleum gas, and kerosene). The EUI is measured as the ratio of total heating consumption to total square meters of heated space. A

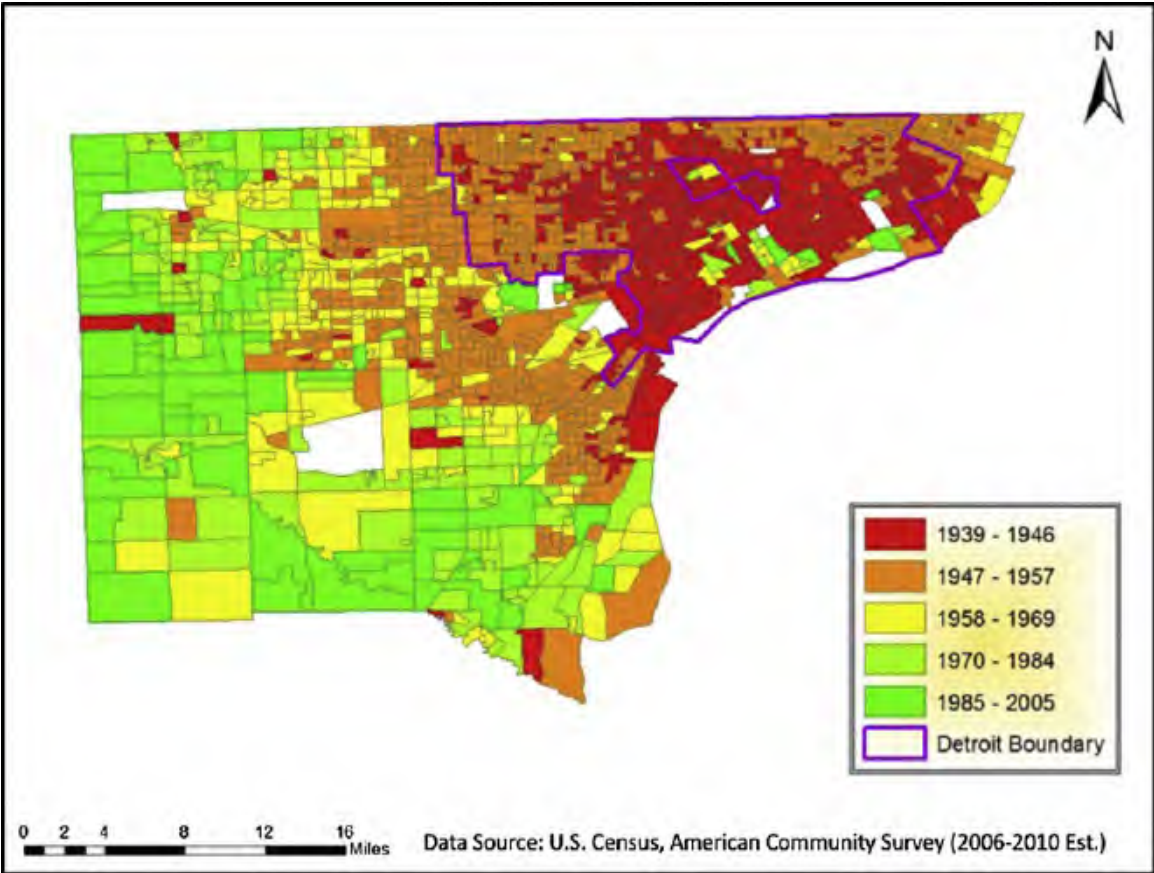


Fig. 3. Block group racial/ethnic segregation dot density map.

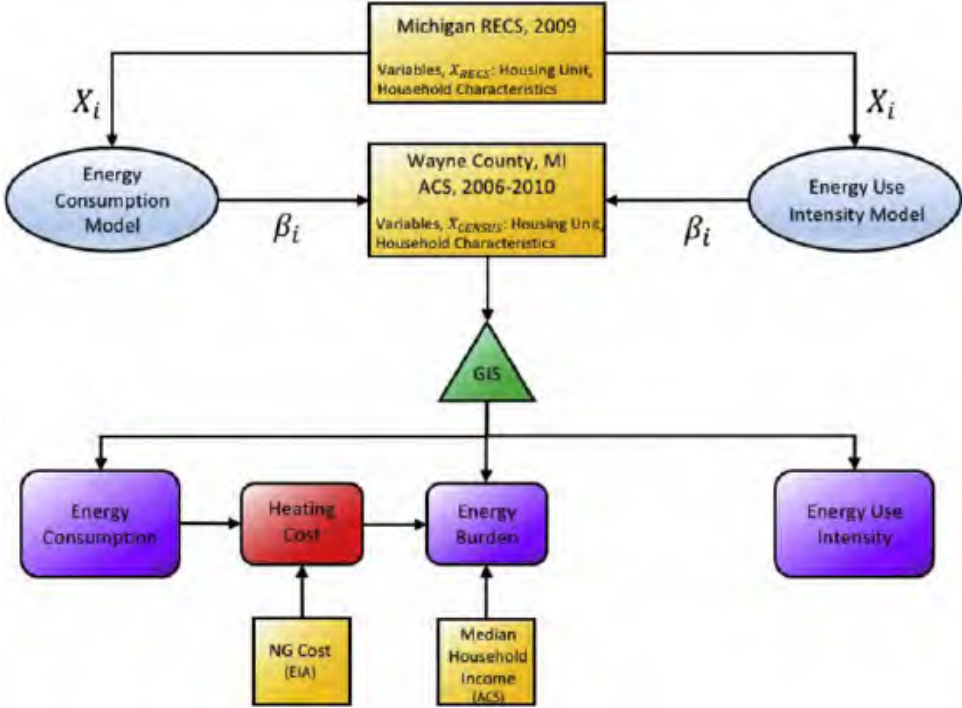


Fig. 4. Methodological framework for modeling and mapping.

larger EUI value indicates relatively less efficiency when compared to another housing unit.

Step two applies resultant weights from the regression models,  $\beta_i$  as weighting factors to corresponding variables in the ACS to estimate, then map the median annual heating energy consumption and EUI at the block group level in Wayne County. The corresponding variables are standardized as the ratio of the number of housing units in a block group with a certain characteristic to the total number of housing units in the block group.<sup>4</sup> This is done for each corresponding variable (age of home, type of heating fuel, type of home, size of home, household ownership, number of household members and household income). These values then become comparable with binary variables in the RECS data set. Values are then mapped via GIS to estimate<sup>5</sup> heating consumption and EUI:

$$\ln(\hat{Y}_{Heat}) = \hat{\beta}_0 + \left( \hat{\beta}_{Housing\ unit} * \chi_{Census} \right) + \left( \hat{\beta}_{Household} * \chi_{Census} \right), \quad (3)$$

$$\ln(\hat{Y}_{EUI}) = \hat{\beta}_0 + \left( \hat{\beta}_{Housing\ unit} * \chi_{Census} \right) + \left( \hat{\beta}_{Household} * \chi_{Census} \right) \quad (4)$$

where:

- $\hat{Y}_{Heat}$  is estimated energy consumption, in MJ
- $\hat{Y}_{EUI}$  is estimated EUI, in MJ/m<sup>2</sup>,
- $\hat{\beta}_0$  is the estimated regression intercept,
- $\hat{\beta}_{Housing\ Unit}$  is the estimated sampling weight for housing unit characteristics,
- $\hat{\beta}_{Household}$  is the estimated sampling weight for household characteristics,
- $\chi_{Census}$  is household and housing unit Census data.

#### 4. Results

The final regression models for estimating annual heating consumption and EUI are summarized in Table 1, expressed as natural logs. Model 1, heating consumption, consists of five statistically significant variables representing housing unit type, primary heating fuel and number of household members. Model 2, heating EUI, consists of six statistically significant variables representing housing unit type, primary heating fuel, number of household members and housing unit size. Both models explained a considerable proportion of the variability in heating consumption and EUI ( $R^2 = 0.52$ ,  $F(18,249) = 15.18$ ,  $p < 0.001$  and  $R^2 = 0.52$ ,  $F(18,249) = 11.09$ ,  $p < 0.001$ , respectively). Based on the F-values, the final models' sample sizes are large enough to make them significant.

Figs. 5 and 6 display the spatial distribution in quintiles of the estimated mean annual block group heating energy consumption and heating EUI, respectively. Red shading represents higher estimates, while green shading represents lower estimates. The 14 uninhabited block groups were left uncolored. It is important to note that estimates represent the block group mean rather than any specific house [32,43].

Among the 1808 block groups, there was a significant range in estimated heating consumption (Fig. 5) values, from a minimum

18,658 MJ to a maximum 123,120 MJ. The study area mean heating consumption, 85,107 MJ ( $SD=16,342$  MJ), was lower than the state mean heating consumption, 131,883 MJ. The 104,451 MJ variation in heating consumption estimates demonstrates that within the study area some homes consume a disproportionate amount of energy when compared to others. Block groups exhibiting the highest quintiles of heating consumption primarily surround Detroit on the east, north and west sides of city.

Estimated heating EUI (Fig. 6) values ranged from a minimum 285 MJ/m<sup>2</sup> to a maximum 1108 MJ/m<sup>2</sup>. The study area mean heating EUI, 613 MJ/m<sup>2</sup> ( $SD=9.8$ ), was lower than the state mean heating EUI, 727 MJ/m<sup>2</sup>. The 818 MJ/m<sup>2</sup> variation in heating EUI estimates demonstrates that within the study area some homes are far less energy efficient than others. Block groups exhibiting the lowest quintile EUI (shown in green) are located along the west, southwest and east sides of the county, representing homes with higher levels of energy efficiency. Moderate estimated EUIs, (shown in yellow) are located in the north central portion of the county, while a majority of the higher EUIs, (shown in red) are located in the central region of Detroit, indicating lower levels of energy efficiency. This matches areas where houses are older (Fig. 3) and may suggest that older homes are less energy efficient than newer homes a few miles outward.

To understand the relationship between heating consumption and EUI with measures of race/ethnicity and socioeconomic status, bivariate analysis using pairwise correlation was conducted. Pearson correlations, shown in Table 2, reveal statistically significant relationships between socioeconomics, education, and housing tenure with estimated heating consumption ( $p < 0.001$ ). Heating consumption is positively correlated with block groups with median household income (0.28) and percent of homeowners (0.56). Furthermore, heating consumption is negatively correlated with number of households in poverty (−0.25) and the percentage of adults without a diploma (−0.07). There are no significant correlations between heating consumption or EUI with householders above the age of 65. Table 2 also shows statistically significant relationships between socioeconomics, education, race/ethnicity, housing tenure and estimated heating consumption and EUI ( $p < 0.001$ ). Contrary to heating consumption, heating EUI is positively correlated with block groups with a higher number of adults without a high school diploma (0.32), higher number of households in poverty (0.32), percentage of African American (0.24) and Hispanic householders (0.16). Heating EUI is negatively correlated with median household income (−0.28), percentage of White householders (−0.28) and percent of homeowners (−0.38). Thus, census block groups with lower socioeconomics, lower median household incomes, and higher percentages of African American or Hispanic householders are more likely to have higher heating EUIs. Simply put, low-income, African American and Hispanic households reside in housing areas where homes consume more and are less energy efficient.

#### 5. Discussion

Results mapped using GIS illustrate inverse spatial disparities in heating consumption and EUI, with higher estimated consumption in block groups surrounding the central city, while block groups with higher estimated EUIs are concentrated within the city of Detroit. The findings also demonstrated that inverse relationships exist between the racial and socioeconomic correlations with block group predicted consumption and EUI. While areas with greater percentages of minority households and lower socioeconomic statuses exhibited lower predicted heating consumption, those same areas exhibited higher EUI, signaling that although low-income,

<sup>4</sup> If block group A has 100 homes, and 50 are single family attached, then the corresponding variable for single family attached is  $50/100=0.5$  which would be multiplied by 0.015 (from Table 1).

<sup>5</sup> From the estimated log values  $\ln(\hat{Y}_{Heat})$  and  $\ln(\hat{Y}_{EUI})$  that we obtain from the regression models, actual estimated energy can be obtain by this equation: ( $\hat{Y}_{Heat}$ ) =  $\exp(RMSE^2/2) \cdot \ln(\hat{Y}_{Heat})$ ; ( $\hat{Y}_{EUI}$ ) =  $\exp(RMSE^2/2) \cdot \ln(\hat{Y}_{EUI})$ . The scaling value  $\exp(RMSE^2/2)$  is needed when using a log-linear model because without it we systematically underestimate the expected value of ( $\hat{Y}_{Heat}$ ) or ( $\hat{Y}_{EUI}$ ). (Wooldridge 2006: 219). RMSE means root mean square error of each model.

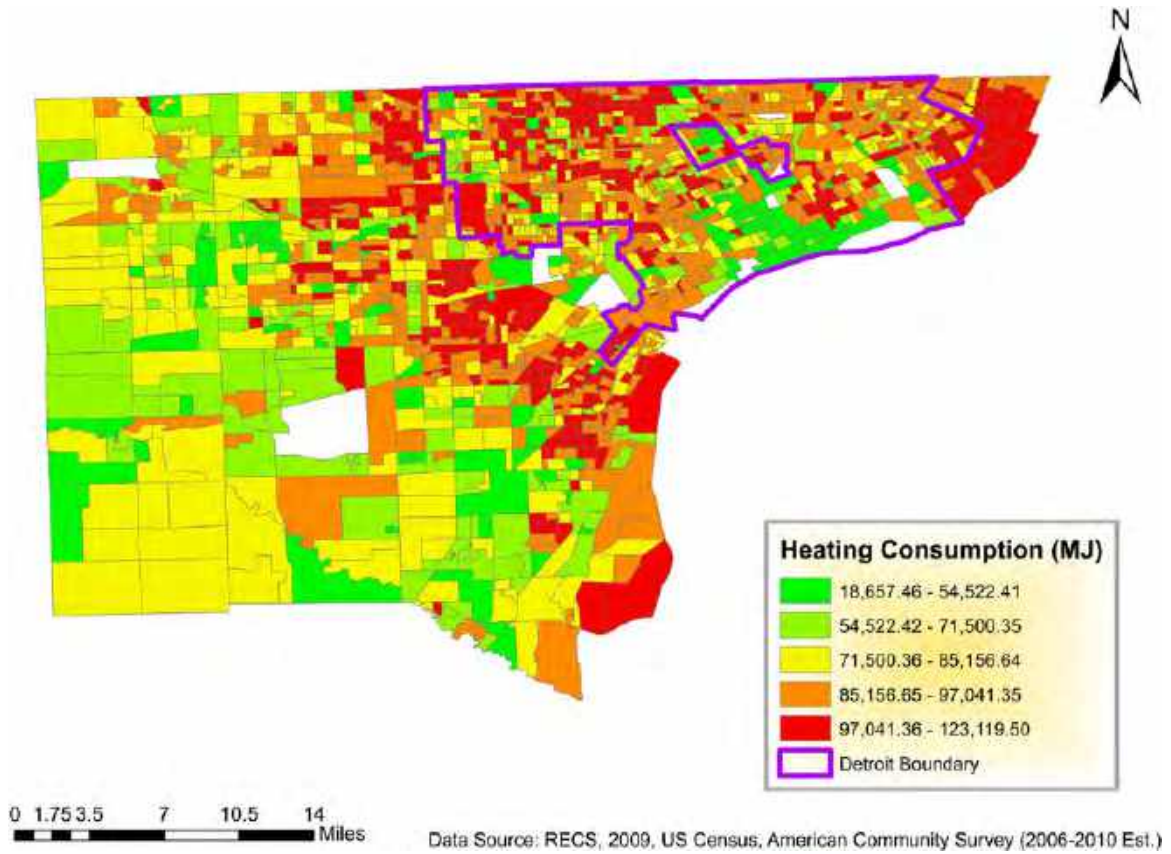


Fig. 5. Estimated residential heating consumption in MJ.

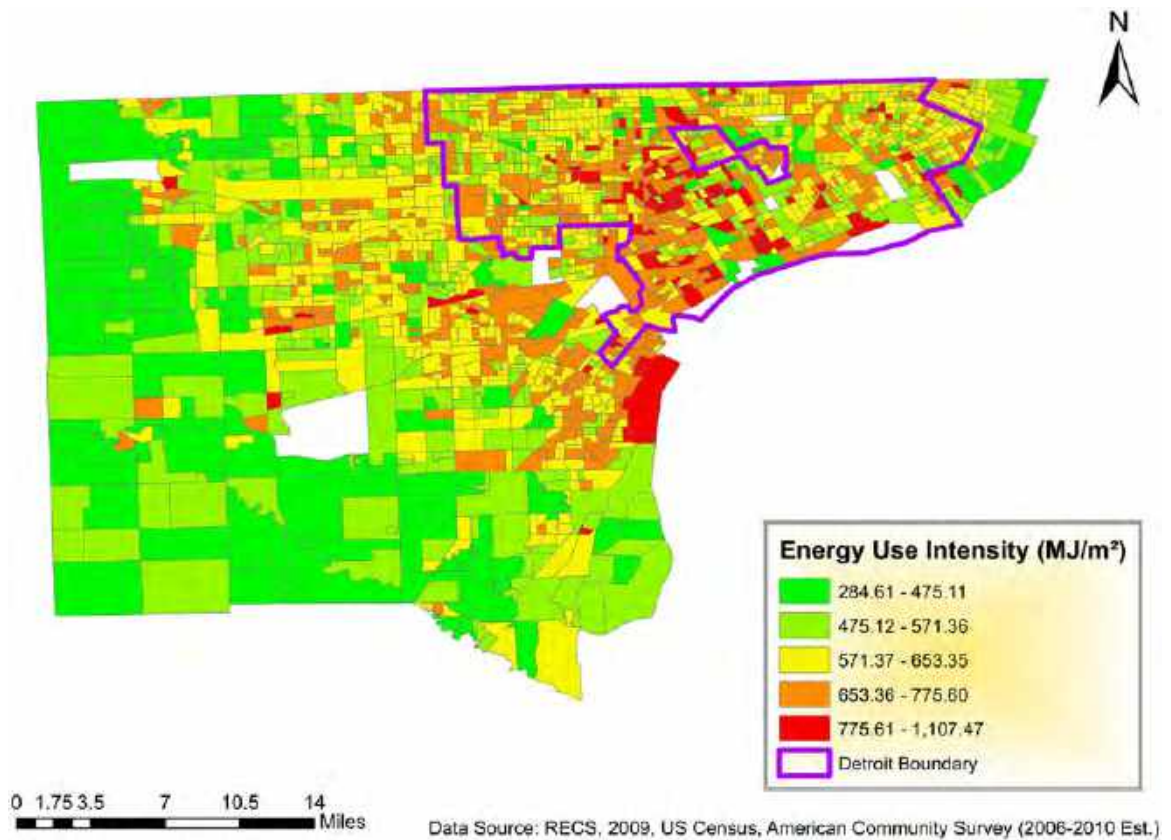


Fig. 6. Estimated residential energy use intensity (Efficiency) in MJ/m<sup>2</sup>.

**Table 1**  
OLS regression models for small-scale heating consumption and EUI estimation.

Categories	Model 1: Heating Consumption (MJ)		Model 2: Energy Use Intensity (MJ/m <sup>2</sup> )	
	$\beta$	Robust S.E.	$\beta$	Robust S.E.
Type of Housing				
Apt 2–4	0.1431	0.1317	0.6728***	0.1864
Apt 5+	−0.2989*	0.1401	0.2987*	0.1511
Mobile Home	0.5173*	0.2361	0.1090	0.2271
Single Family Detached	Reference		Reference	
Single Family Attached	0.01531	0.1402	0.0948	0.1809
Decade Constructed				
Before 1950s	0.3317	0.1739	0.328	0.17
1950s	0.3223	0.1802	0.3521	0.1786
1960s	0.0681	0.1769	0.1126	0.1848
1970s	−0.0026	0.1832	−0.0159	0.188
1980s	0.0383	0.1693	0.0843	0.1808
1990s	−0.0124	0.216	−0.1232	0.2125
2000s	Reference		Reference	
Primary Heat (MJ)				
Natural Gas	Reference		Reference	
Propane	0.0138	0.0855	−0.098	0.1055
Electricity	−1.627***	0.1404	−1.381***	0.1677
Wood	−1.170	0.6978	−1.198	0.6732
Fuel Oil Heat	−0.6926*	0.270	−0.6823**	0.2061
Control Variables				
Household Income (\$)	0.0228	0.026	−0.0012	0.0259
No. Household Members	−0.0506*	0.0256	−0.0619*	0.0266
Home Ownership (own = 1)	0.0806	0.0853	−0.01029	0.0874
Total No. of rooms	0.0203	0.0279	−0.1048***	0.0254
Model Statistics				
Intercept, $\beta_0$	10.87375	0.2568	4.269	0.248
N	268	–	268	–
F (18,249)	–	15.18	–	11.09
Adjusted R <sup>2</sup>	0.5242	–	0.5183	–
RMSE	–	0.514	–	0.574

\* Significance  $p < 0.05$ .

\*\* Significance  $p < 0.01$ .

\*\*\* Significance  $p < 0.001$ .

**Table 2**  
Pairwise Correlation of Estimated Heating Energy Consumption and Energy Use Intensity.

Category	Description	Pearson's Correlation	
		Heating Consumption	Heating Intensity
Socioeconomic Status	Median Household income	0.28***	−0.48***
	Percent households below poverty level	−0.25***	0.32***
Education	Percent Population with Less Than High School Diploma	−0.07**	0.31***
Age	Percent Households with Householder aged 65+	0.01	0.02
Race/Ethnicity	Percent White Householders	0.23	−0.28***
	Percent African American Householders	−0.01	0.24***
	Percent Hispanic Householders	0.02	0.16***
Housing Tenure	Percent Owners	0.56**	−0.38***

\*\* Significance  $p < 0.01$ .

\*\*\* Significance  $p < 0.001$ .

minority households on average consume less energy, they are more likely to live in less efficient housing.

Studying cities like Detroit is important because they often have older housing stock central to the city with much newer, suburban developments outside the city. As shown, householders occupying much older housing stock are at a greater risk for increased demand and a greater need for energy assistance programs. Although this study is focused in the south-east region of Michigan within the United States, this study could be replicated in other urban areas, as well as other countries using a similar household energy consumption survey (i.e. Zheng [44]; ODYSSEE MURE Project) and that country's census data. The significance of the results presented call for an integrated approach that tackles fuel poverty from both a physical and policy standpoint – evaluating building energy efficiency and energy assistance programs.

### 5.1. Policy implications

Energy assistance programs provide eligible householders with monetary or housing unit efficiency upgrade support. The federally funded Low Income Heating Energy Affordability Program (LIHEAP) provides energy assistance to residents whom are unable to afford their high utility bills. Identifying concentrated areas of high EUI and energy burden is still a concern given the aforementioned support from government. LIHEAP eligibility primarily depends on income; however, many qualified householders do not receive energy assistance. While attenuating exorbitant utility bills provides temporary relief for some householders, it perpetuates fuel poverty by not combatting a root cause, energy inefficiency.

The U.S. Department of Energy Weatherization Assistance Program's (WAP) purpose, as established by law, "provides low-to no-cost energy efficiency improvements of dwellings owned or

occupied by low-income persons, reduces their total residential expenditures, and improves their health and safety, especially low-income persons who are particularly vulnerable such as the elderly, person with disabilities, families with children, high residential energy users, and households with high energy burden” [45]. WAP is monitored by the Department of Energy’s Oak Ridge National Laboratory (ORNL). ORNL provides technical support to the program and conducts the evaluations. Led by ORNL, the Department of Energy sponsored two major national evaluations: The Retrospective Evaluation (covering Program Year 2008, which is reflective of a typical year in WAP operations) and the Recovery Act Evaluation (covering Program Year 2010, providing insight to the national effort of job creation and economic recovery as a part of the American Recovery and Reinvestment Act of 2009 [Recovery Act]) were multiyear, peer-reviewed and statistically robust efforts. The former was performed to provide a cost-benefit analysis of WAP services for varying housing unit types and locations across the country. Additionally, to assess program administration and to provide a comprehensive overview of the program, including information on its clients, housing stock and service providers ORNL, 2014. Effective and optimal funding of the system is verified through “whole-house” weatherization approaches via energy audits and the three-pronged WAP funding allocation formula: percent of low-income population, climatic conditions and approximate residential energy burden. Challenges of WAP presented revolve around maintaining and improving work quality, handling health and safety issues discovered in homes and meeting a growing demand for program services. Further, the Recovery Act did not address renewable energy measures average costs per home.

Though LIHEAP and WAP help mitigate energy burdens, these programs do not permit the use of sustainable energy, such as renewable energy for heating and cooling. Renewable energy systems have proven beneficial for energy generation with respect to retrofits [46–48]. There is an opportunity for growth that introduces renewables as a conduit for greater efficiency; however, a community based approach would be more fruitful for effective targeting.

Community-based energy programs have shown success for overcoming various barriers and increasing participation in the adoption of energy technologies [43]. A community-based approach to energy efficiency that targets low-income and minority communities recognizes the unique characteristics and needs of the community and can better foster equity and justice over typical self-referral, broad-based program development and implementation which relies on a homogeneous view of energy users [49,43,30].

## 5.2. Limitations

As with all research, this study is limited in its scope to fully understand individual households in fuel poverty. Information obtained from this data is often not precise enough to identify individual households; rather, only census block groups at risk of suffering from fuel poverty. Although, some homes that are not considered fuel poor may become integrated spatially with surrounding ones that are, this study provides a model of mean block group estimates to inform policy and program targeting while exploring relationships with race/ethnicity and class. Specific information about individual household utility bills is not accessible. Further, the influence of behavior on disparities in energy consumption or efficiency are not observed in these models.

## 6. Conclusion

This study used publically available data from the U.S. Energy Information Administration’s Residential Energy Consumption Sur-

vey (RECS) and the U.S. Census Bureau’s American Community Survey (ACS), bottom-up modeling, and small-area estimation techniques to predict mean annual heating consumption and energy use intensity (EUI), an energy efficiency proxy, for census block groups in Detroit (Wayne County), Michigan. This study’s relevance provides a best estimate of areas where householders may experience the greatest threat of fuel poverty. The key findings of the study illustrate inverse spatial disparities in heating consumption and EUI throughout Detroit (Wayne County), Michigan. Inverse relationships were also found between the racial and socioeconomic correlations with block group predicted consumption and EUI.

Modeling both heating consumption and efficiency provides a useful tool that may assist policymakers, energy conservation and efficiency program administrators and retrofit installers develop more effective targeting strategies. Combining consumption and efficiency information with an understanding of the racial and socioeconomic context of neighborhoods may also improve program implementation effectiveness.

Using spatial proximity as a guide to identifying fuel poor householders eliminates onerous applications to determine eligibility and provides a quicker and more robust response to householders in need. Furthermore, there is a need to understand the cultural/racial differences within identified neighborhoods. Simply creating energy assistance programs without effective marketing, maintains the energy divide, leaving many in fuel poverty. To overcome cultural and social barriers, community-based approaches would enable more access to help that is readily available. Future research should pursue a more granular level of understanding, such as, incorporating individual parcel data. Additionally, spatially modelling of energy burdens would provide a more holistic view of residential energy assistance demands. With this information in hand, program administrators could target local churches, community centers and neighborhood groups to more effectively and efficiently assist those with the greatest need.

Addressing fuel poverty and energy consumption more broadly, requires an integrated approach to identify the specific energy needs of communities. The modeling framework presented in this study is one approach to understand those needs both visually and statistically. Moreover, this research unpacks disparities in consumption and efficiency concluding that one-size-fits-all approaches to conservation and efficiency are not appropriate for all energy users in an urban area.

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# Data Update: City Energy Burdens

SEPTEMBER 2024

## *Energy Equity for Homeowners*

In cities across the country, many low-income families and other disinvested communities struggle with high energy burdens, including many homeowners. In this data update, we find that 25% of all low-income households in the United States have an energy burden above 15.2%. In many cases, low-income homeowners in particular experience very high energy burdens, with 25% of low-income homeowners having energy burdens over 17.2% and half having burdens over 9.4%.

Owner-occupied housing (especially in single-family homes and buildings with four units or fewer) makes up a significant portion of housing in cities. To reach their goals for climate action and energy affordability, local governments need to equitably include the owner-occupied sector as they tackle residential efficiency. ACEEE launched the [Energy Equity for Homeowners Initiative](#) in 2022 to help cities reach these goals.

ACEEE publishes data on energy burdens<sup>1</sup> (the percentage of household income spent on energy bills) to help governments, advocates, and other entities understand the scale of energy insecurity and inequity and prioritize energy investment (Drehobl, Ross, and Ayala 2020).<sup>2</sup> Households with high energy burdens are more likely to experience poor health and poverty (Lima, Ferreira, and Leal 2022; Hernández and Laird 2021; Partnership for the Public Good and PUSH Green 2022; Bohr and McCreery 2020; Goodson Bell et al. 2023; National Energy Assistance Directors' Association 2018).

We are presenting a limited data update to our [2020 energy burdens report](#) (which included energy burdens from 2017) to share more recent data on energy burdens faced by demographic groups across the country in the 25 cities included in the American Housing Survey (AHS).<sup>3</sup> These data are especially important as many governments are actively working to equitably accelerate a clean energy transition that includes both the rental and owner-occupied residential sectors.

We highlight the energy burdens of metropolitan areas for a selection of highly impacted groups below.<sup>4</sup> Consistent with previous research, energy burdens are higher for low-income communities and many communities of color than for all households overall, often due to inefficient housing.

<sup>1</sup> Energy burden is a term used to describe the percentage of annual household income that goes toward household energy costs. Households that exceed 6% or 10% of their income on energy costs are typically considered highly or severely energy burdened, respectively (APPRISE 2005).

<sup>2</sup> ACEEE's [energy burden page](#) provides more information on previous energy burden research.

<sup>3</sup> Energy burdens were calculated using data from the Census Bureau's American Housing Survey (AHS), published in odd years. AHS includes a selection of metropolitan areas (based on the Census Bureau's designated [metropolitan statistical areas](#)), some of which are included in each edition of the survey and some of which are included in alternating editions. For a more detailed discussion of ACEEE's methodology for calculating energy burdens, see Drehobl, Ross, and Ayala 2020.

<sup>4</sup> This data update includes a selection of highly impacted groups including low-income households, Black households, and Hispanic households. These groups were selected based on the previous publication and sample size in the AHS. However, other groups also face disproportionately high energy burdens, including Native American households, people with disabilities, and older adults. Additionally, energy burden is just one indicator of energy insecurity, and a low average burden does not indicate an absence of energy insecurity or broader systemic discrimination.

In this data update, we find that many households continue to pay excessive amounts of their incomes on energy bills, continuing a trend noted in earlier research and highlighting the importance of policy action. Key insights include:

- Low-income households in the United States spent a median of 8.3% of their annual income on energy bills (exceeding the threshold of 6% that traditionally indicates a high energy burden), while households overall spent a median of 2.9%.
- In many cities, 25% or more of households experience burdens above 6%.
- A quarter of low-income households have an energy burden above 15.2%, significantly above the traditional threshold of 10% to indicate severe burdens.
- A quarter of all households in the United States have an energy burden above 5.7%.
- Consistent with previous research, low-income residents, renters, Black households, and Hispanic households tend to experience higher median energy burdens than the median for all households in an area.
- Many of the most burdened low-income residents in cities own their homes and require support to affordably meet their energy needs.<sup>5</sup> For example, of the low-income households included in the AHS survey, roughly half own their own homes. Low-income homeowners have higher energy burdens on average than low-income renters in many cities, and they require attention in city energy efficiency efforts in addition to renters.<sup>6</sup>

While this data update does not include a regional analysis, burdens were often particularly high for low-income households in cities in the Northeast and Mid-Atlantic, like Boston, Baltimore, New York, and Washington, DC, indicating a particular need for action in those locations.

## DISCUSSION

Low-income households face high energy burdens across the country, with upper quartile burdens reaching over 15% in many cities (figure 1).

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<sup>5</sup> Renters also face extreme challenges with energy burdens and face additional barriers to accessing energy investment. ACEEE's [Energy Equity for Renters initiative](#) provides resources to equitably deploy energy efficiency to this burdened group. These findings emphasize the importance of including low-income homeowners in local energy efficiency efforts, in addition to the important focus on renters.

<sup>6</sup> The data used for this resource include owners and renters living in all building sizes. However, most owners, 97% nationally, live in small buildings (four units or fewer). Therefore, efforts to lower energy burdens for homeowners should prioritize small buildings.

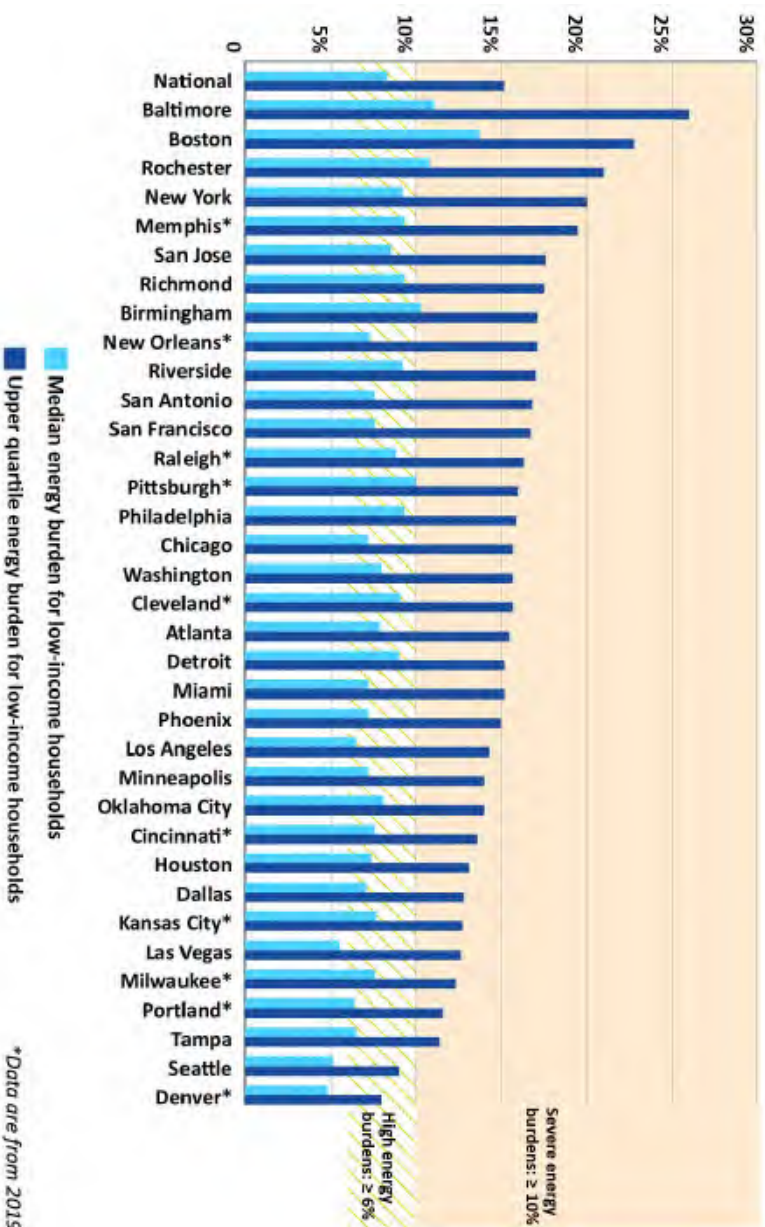


Figure 1. Upper quartile and median energy burden rate by city. A quarter of low-income households have an energy burden higher than the upper quartile threshold, while half experience energy burdens above the median. Energy burdens above 6% are traditionally considered high, while burdens above 10% are considered severe. \*Data are from 2019.

Table 1 presents the upper quartile energy burden rates for each group, indicating that 25% of households in the group experience a burden higher than the rate listed in the table.

Table 1. Upper quartile energy burdens in metro areas a selection of highly impacted groups<sup>1</sup>. 25% of households in a group experience an energy burden above this number. Orange cells indicate high energy burdens, over 6%, while red cells indicate severe energy burdens, over 10%.

Metro Area	All households			Low-income households			Black households			Hispanic households		
	All	Owner	Renter	All	Owner	Renter	All	Owner	Rental	All	Owner	Renter
National	5.7%	5.4%	6.3%	15.2%	17.2%	13.2%	7.2%	6.7%	7.8%	6.2%	5.8%	6.8%
Atlanta	5.4%	5.1%	6.2%	15.5%	20.6%	11.0%	6.2%	6.2%	6.7%	6.5%	6.2%	7.4%
Baltimore	5.4%	4.9%	7.2%	26.0%	48.0%	17.7%	8.6%	7.6%	10.5%	7.2%	5.9%	8.0%
Birmingham	7.5%	7.0%	9.7%	17.1%	16.8%	17.1%	10.3%	9.6%	11.0%	7.6%	7.0%	9.5%
Boston	6.1%	6.0%	6.7%	22.8%	37.2%	19.4%	8.5%	6.6%	10.5%	7.4%	5.3%	8.1%
Chicago	4.1%	4.0%	4.7%	15.7%	14.9%	18.6%	9.1%	10.2%	6.9%	4.8%	3.8%	6.2%
Dallas	4.5%	4.3%	4.8%	12.8%	17.1%	10.0%	5.1%	5.3%	5.0%	5.2%	5.6%	5.0%
Detroit	6.0%	5.4%	8.3%	15.2%	14.1%	16.4%	8.8%	7.6%	9.7%	6.0%	5.4%	6.9%
Houston	5.3%	4.9%	5.9%	13.1%	18.3%	10.4%	6.3%	5.5%	7.2%	6.2%	6.3%	6.0%

Metro Area	All households			Low-income households			Black households			Hispanic households		
	All	Owner	Renter	All	Owner	Renter	All	Owner	Rental	All	Owner	Renter
Las Vegas	4.1%	3.9%	4.3%	12.6%	13.0%	12.4%	4.8%	4.3%	6.4%	4.2%	4.0%	4.3%
Los Angeles	4.1%	3.8%	4.4%	14.3%	17.3%	13.0%	5.7%	3.5%	6.0%	4.7%	4.4%	5.0%
Miami	5.0%	5.0%	5.4%	15.2%	16.6%	13.2%	4.9%	4.4%	6.0%	5.8%	5.5%	5.8%
Minneapolis	3.7%	3.5%	4.9%	14.0%	15.9%	12.2%	4.4%	2.7%	6.0%	4.6%	3.3%	9.0%
New York	5.4%	5.6%	5.1%	20.0%	25.1%	16.0%	5.1%	6.3%	4.9%	5.6%	4.5%	7.7%
Oklahoma City	5.7%	4.7%	7.2%	14.0%	14.6%	13.5%	6.9%	5.8%	9.1%	6.2%	5.7%	7.0%
Philadelphia	5.4%	5.1%	6.2%	15.9%	19.7%	15.4%	7.4%	6.0%	8.0%	6.6%	6.8%	6.6%
Phoenix	4.4%	4.3%	4.5%	15.0%	20.0%	10.0%	4.3%	3.8%	4.4%	5.6%	5.6%	5.4%
Richmond	5.1%	4.7%	6.6%	17.5%	17.5%	16.8%	6.9%	5.8%	7.8%	6.4%	7.2%	6.0%
Riverside	6.2%	5.8%	7.3%	17.0%	20.0%	15.4%	6.9%	4.2%	10.1%	6.2%	6.1%	6.8%
Rochester	7.3%	6.9%	8.4%	21.0%	23.3%	17.6%	10.4%	6.4%	14.8%	8.5%	9.9%	8.0%
San Antonio	5.4%	5.1%	6.5%	16.8%	17.3%	15.0%	5.6%	5.1%	7.0%	6.1%	5.5%	7.0%
San Francisco	3.1%	3.0%	3.2%	16.7%	20.0%	14.6%	5.9%	3.8%	7.2%	3.2%	3.7%	3.0%
San Jose	2.7%	2.7%	2.8%	17.6%	31.3%	14.0%	3.4%	3.7%	3.4%	3.9%	4.4%	3.7%
Seattle	2.4%	2.5%	2.2%	9.0%	10.2%	8.0%	3.4%	3.0%	3.4%	2.8%	3.0%	2.8%
Tampa	4.7%	4.6%	4.8%	11.4%	13.3%	8.7%	5.9%	7.7%	4.9%	5.6%	5.4%	5.8%
Washington	3.7%	3.6%	3.8%	15.7%	23.3%	11.4%	4.4%	4.4%	4.4%	4.3%	4.2%	4.6%
Cincinnati*	4.4%	4.3%	4.8%	13.6%	14.8%	10.9%	5.0%	4.3%	6.5%	6.5%	4.9%	6.5%
Cleveland*	6.3%	5.5%	8.3%	15.7%	15.7%	15.5%	8.8%	8.4%	9.1%	9.5%	4.9%	15.5%
Denver*	2.6%	2.6%	2.9%	8.0%	10.0%	6.7%	3.8%	3.9%	3.4%	3.2%	2.8%	3.3%
Kansas City*	4.9%	4.2%	6.6%	12.7%	13.6%	12.0%	6.3%	4.8%	8.6%	5.5%	4.0%	5.8%
Memphis*	7.3%	6.1%	8.3%	19.5%	27.8%	15.4%	8.6%	8.4%	9.0%	7.9%	4.4%	9.0%
Milwaukee*	5.1%	4.5%	6.3%	12.3%	16.0%	10.9%	7.5%	6.3%	8.0%	6.0%	5.7%	6.2%
New Orleans*	5.3%	5.1%	5.7%	17.1%	27.6%	10.9%	7.0%	7.2%	6.9%	5.4%	4.9%	6.5%
Pittsburgh*	5.8%	5.3%	8.4%	16.0%	15.5%	18.4%	7.6%	6.5%	12.6%	4.3%	3.5%	12.0%
Portland*	3.5%	3.4%	3.8%	11.6%	15.0%	8.2%	4.9%	4.5%	5.1%	4.5%	4.5%	4.8%
Raleigh*	4.9%	4.8%	5.3%	16.3%	19.2%	14.3%	6.9%	7.3%	6.2%	5.3%	5.5%	5.3%

Two example cities demonstrate the severity of energy burdens faced by too many households. For example, in Richmond, low-income households have a median annual income of \$20,000 and median annual utility bills of \$1,800. A household with a median income and utility cost would pay 9% of their income on energy bills. For a low-income Richmond household earning an income in the 25<sup>th</sup> percentile (\$11,700) and having energy bills in the 75<sup>th</sup> percentile (\$2,640), the energy burden skyrockets to 22.6%.

Boston provides another example, with a quarter of low-income homeowners in Boston having an energy burden over 37% of their annual income.<sup>7</sup>

## CALL TO ACTION

The scale of energy insecurity across the country necessitates major action. Governments and utilities have a role to play in reducing these burdens and ensuring that all households can meet their energy needs and access the benefits of energy efficiency and weatherization. Doing so successfully requires prioritizing the most burdened households for energy investment and eliminating barriers that many disinvested households face to accessing energy programs. Appendix A lists resources on strategies to lower the energy burdens of low-income households and advance energy equity. Appendix B provides median energy burden data for a selection of highly impacted groups, providing additional information to help steer cities' efforts.

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<sup>7</sup> As the AHS includes a limited number of metropolitan statistical areas (MSAs), other jurisdictions can explore tools like the Department of Energy's [Low-Income Energy Affordability Data](#) (LEAD) tool and the White House Council on Environmental Quality's [Climate and Economic Justice Screening Tool](#) (CEJST) to better understand burdens faced by their specific community.

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## APPENDIX A: RESOURCES TO REDUCE ENERGY BURDENS

The following ACEEE resources provide actionable guidance on the ways to meet the energy needs of low-income households and advance energy equity:

- [Adapting Energy Efficiency Programs to Reach Underserved Residents](#)
- [Strengthening Equity in Energy Efficiency Programs: Case Studies of Two Utilities](#)
- [Toward Affordable Energy Access: Approaches to Reducing Energy Unaffordability, Arrearages, and Shutoffs](#)
- [Equity and Electrification-Driven Rate Policy Options](#)
- [Energy Equity for Homeowners: Policy and Program Guide for Local Governments](#)
- [Toward More Equitable Energy Efficiency Programs for Underserved Households](#)
- [Advancing Equity through Energy Efficiency Resource Standards](#)
- [Leading with Equity: Recommendations for State Decision Makers, Utilities, and Regulators to Advance Energy Equity](#)
- [Meeting the Challenge: A Review of Energy Efficiency Program Offerings for Low-Income Households](#)
- [Energy Equity for Renters Toolkit](#)
- [Fostering Equity Through Community-Led Clean Energy Strategies](#)
- [A New Lease on Energy: Guidance for Improving Rental Housing Efficiency at the Local Level](#)

## APPENDIX B: MEDIAN ENERGY BURDEN RATES

Median energy burdens in metro areas a selection of highly impacted groups.<sup>8</sup> 50% of households in a group experience an energy burden above this number. Orange cells indicate high energy burdens, over 6%, while red cells indicate severe energy burdens, over 10%.

Metro area	All households			Low-income households			Black households			Hispanic households		
	All	Owners	Renters	All	Owners	Renters	All	Owners	Renters	All	Owners	Renters
National	2.9%	2.8%	3.1%	8.3%	9.4%	7.0%	3.5%	3.4%	3.6%	3.1%	2.9%	3.3%
Atlanta	2.9%	2.9%	1.7%	7.9%	10.3%	7.1%	3.2%	3.3%	3.2%	3.8%	3.0%	4.2%
Baltimore	2.8%	2.7%	3.1%	11.1%	14.6%	10.1%	3.7%	3.5%	3.8%	3.0%	2.6%	3.4%
Birmingham	3.8%	3.6%	4.4%	10.3%	11.0%	9.5%	5.1%	5.2%	4.9%	4.9%	5.1%	4.8%
Boston	3.2%	3.1%	3.2%	13.7%	16.8%	11.7%	3.9%	3.5%	4.1%	4.0%	3.1%	4.2%
Chicago	2.2%	2.2%	2.3%	7.2%	7.6%	5.7%	3.2%	3.6%	2.6%	2.5%	2.4%	2.5%
Dallas	2.5%	2.4%	2.6%	7.1%	8.8%	5.7%	3.0%	2.5%	3.2%	3.0%	3.2%	2.6%
Detroit	3.2%	3.0%	3.7%	9.0%	8.9%	9.0%	4.0%	4.0%	4.5%	2.8%	2.8%	3.2%
Houston	2.9%	2.6%	3.3%	7.4%	9.1%	6.2%	3.3%	2.9%	3.5%	3.5%	3.5%	3.5%
Las Vegas	2.2%	2.1%	2.4%	5.5%	6.0%	5.0%	2.5%	2.1%	2.6%	2.6%	2.4%	2.6%
Los Angeles	2.0%	1.9%	2.1%	6.5%	8.8%	5.9%	2.4%	2.5%	2.3%	2.4%	2.4%	2.4%
Miami	2.4%	2.4%	2.4%	7.2%	8.4%	5.8%	2.6%	2.5%	2.9%	2.6%	2.6%	2.5%
Minneapolis	2.2%	2.1%	2.7%	7.2%	8.3%	5.6%	2.6%	1.8%	3.4%	2.4%	2.0%	3.5%
New York	2.7%	2.9%	2.4%	9.2%	12.2%	6.8%	2.8%	3.1%	2.3%	2.8%	2.6%	3.3%
Oklahoma City	3.0%	2.7%	4.0%	8.1%	8.4%	7.4%	4.3%	3.6%	4.6%	3.4%	3.1%	4.0%
Philadelphia	2.7%	2.6%	3.0%	9.3%	10.5%	7.8%	3.6%	3.4%	3.7%	4.1%	4.5%	3.2%
Phoenix	2.3%	2.3%	2.3%	7.2%	8.3%	5.6%	2.1%	2.4%	1.8%	2.9%	2.9%	2.9%
Richmond	2.8%	2.7%	3.2%	9.3%	10.9%	7.8%	3.5%	3.4%	3.6%	3.2%	3.6%	3.0%
Riverside	3.1%	3.0%	3.4%	9.2%	9.8%	8.3%	3.0%	2.8%	3.8%	3.1%	3.1%	3.3%

<sup>8</sup> Data in this table come from the 2021 AHS, with the exception of cities marked with \*, for which data are available only from 2019.

Metro area	All households			Low-income households			Black households			Hispanic households		
	All	Owners	Renters	All	Owners	Renters	All	Owners	Renters	All	Owners	Renters
Rochester	4.0%	3.8%	4.6%	10.8%	12.5%	8.9%	4.8%	4.0%	5.8%	5.0%	4.2%	5.2%
San Antonio	2.8%	2.7%	3.1%	7.6%	8.2%	7.0%	2.7%	2.5%	3.6%	3.2%	3.0%	3.6%
San Francisco	1.5%	1.5%	1.5%	7.6%	8.8%	6.0%	2.5%	2.3%	2.8%	1.7%	1.9%	1.6%
San Jose	1.3%	1.3%	1.4%	8.5%	13.5%	6.5%	2.3%	2.4%	2.2%	2.1%	2.2%	2.1%
Seattle	1.2%	1.3%	1.2%	5.1%	6.4%	4.2%	1.7%	1.4%	1.9%	1.4%	1.4%	1.3%
Tampa	2.5%	2.5%	2.4%	6.5%	8.0%	5.3%	2.9%	3.4%	2.6%	3.1%	3.2%	3.0%
Washington	2.1%	2.1%	1.9%	8.0%	11.5%	6.7%	2.5%	2.7%	2.4%	2.5%	2.5%	2.2%
Cincinnati*	2.7%	2.6%	3.0%	7.6%	8.6%	7.2%	3.1%	2.9%	3.6%	3.2%	2.5%	3.6%
Cleveland*	3.1%	2.8%	3.9%	9.1%	9.1%	9.1%	4.3%	4.6%	3.9%	4.8%	3.5%	7.2%
Denver*	1.7%	1.6%	1.7%	4.8%	6.0%	4.0%	2.1%	1.9%	2.1%	2.0%	1.8%	2.1%
Kansas City*	2.8%	2.6%	3.5%	7.7%	8.3%	7.2%	4.0%	3.2%	5.2%	3.4%	3.2%	3.5%
Memphis*	3.8%	3.3%	4.8%	9.3%	12.0%	8.0%	4.9%	4.3%	5.1%	4.1%	2.4%	4.8%
Milwaukee*	3.0%	2.7%	3.5%	7.6%	9.0%	6.6%	4.0%	3.6%	4.2%	3.6%	3.7%	3.4%
New Orleans*	2.8%	2.7%	3.1%	7.3%	9.4%	5.7%	3.4%	3.1%	3.6%	3.0%	3.1%	3.0%
Pittsburgh*	3.4%	3.2%	4.4%	10.0%	10.1%	8.7%	4.4%	3.7%	5.1%	2.0%	1.9%	2.0%
Portland*	2.1%	2.1%	2.1%	6.4%	8.6%	4.8%	2.4%	2.7%	2.3%	2.7%	2.5%	2.8%
Raleigh*	2.9%	2.8%	3.0%	8.8%	10.8%	7.1%	3.7%	4.1%	3.4%	3.7%	3.7%	3.7%



# Understanding ‘energy insecurity’ and why it matters to health



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## ABSTRACT

Energy insecurity is a multi-dimensional construct that describes the interplay between physical conditions of housing, household energy expenditures and energy-related coping strategies. The present study uses an adapted grounded theory approach based on in-depth interviews with 72 low-income families to advance the concept of energy insecurity. Study results illustrate the layered components of energy insecurity by providing rich and nuanced narratives of the lived experiences of affected households. Defined as an inability to adequately meet basic household energy needs, this paper outlines the key dimensions of energy insecurity-economic, physical and behavioral- and related adverse environmental, health and social consequences. By thoroughly examining this understudied phenomenon, this article serves to raise awareness of an increasingly relevant issue that merits more attention in research and policy.

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*“I mean, no bill drives me crazy like my gas bill.” – Erica, mother of two and market rate renter*

*“My apartment was huge but it was awful too because of the heating system. It was never constant, consistent heat. So that basically was the start of my high gas bill ‘cause I had to keep running that ‘senseless’ heat.”–Nicole, mother of three and housing subsidy recipient*

## 1. Introduction

### 1.1. Energy as a critical social and public health matter

Erica and Nicole’s experiences are emblematic of a source of hardship that affects an estimated 16 million low-income households in the United States (Power, 2006). For this segment of the population, the struggle to meet basic household energy needs is a common strain that remains hidden in plain sight (Hernández, 2013). The World Health Organization (2006) affirms that “energy is essential to meeting our basic needs: cooking, boiling water, lighting and heating. It is also a prerequisite for good health-a

reality that has been largely ignored by the world community.” The lack of attention to energy-related hardship, particularly in the U.S. context impels a need to further explore this issue in order to better understand its implications at the nexus of place, health and socioeconomic factors.

Energy is an increasingly important social and public health concern. As costs for residential heating, cooling and other household energy needs steadily increase, they account for a higher percentage of household budgets and represent emerging disparities between richer and poorer households (American Coalition for Clean Coal Electricity, 2012). An economic ratio, represented as “low household income/high energy expenditures,” is used to estimate energy burden in the US and fuel poverty in Europe (Residential Energy Consumption Survey, 2012; Power, 2008; Moore, 2012). Both energy burden and fuel poverty ensue when energy expenditures exceed ten percent of a household’s income. Recent data shows that most U.S. households at or near the federal poverty line are significantly burdened by energy costs (Hernández et al., 2014, 2016). However, this economic ratio captures only one dimension of energy-related hardship and otherwise fails to account for additional factors that contribute to energy burden such as housing conditions and energy behavior.

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## 1.2. Energy insecurity as a needed conceptual framework

One factor that contributes to energy as an ignored hardship is the lack of an appropriate label and related conceptual framing. While the term “energy insecurity” exists in the literature, the phenomenon is not well understood. Existing studies have utilized the term to understand its connection to low socioeconomic status and other social disadvantages, negative health outcomes, and in conjunction with other economic and environmental insecurities. First, socioeconomic status and race/ethnicity are closely linked to the experience of economic energy insecurity. [Hernández et al. \(2016; 2014\)](#) demonstrated that households near or below the federal poverty line were more likely to surpass the ten percent threshold on energy expenditures. The authors also found that African Americans across the economic spectrum experienced economic energy insecurity at the highest rates while Asian and Latino immigrants were the least burdened ([Hernández et al., 2014, 2016](#)). Second, energy insecurity has been linked to health and other hardships ([Cook et al., 2008; Smith et al., 2007 Frank et al., 2006; Nord and Kantor, 2006](#)). [Cook et al. \(2008\)](#) found that children in moderately and severely energy insecure homes are more prone to food insecurity, hospitalizations, poorer health ratings, and developmental concerns than children in ‘energy secure’ homes. The “heat or eat” dilemma demonstrates the trade-offs that low-income householders make in order to meet the basic necessities of life whereby at-risk groups are forced to decide between food and energy, often sacrificing one for the other ([Frank et al., 2006; Nord and Kantor, 2006; Food Research and Action Center, 2005; Bhattacharya et al., 2002](#)). Third, energy insecurity has also been linked to other insecurities such that rising energy costs have also impacted access to clean and safe water ([Eichelberger, 2010](#)). Beyond these limited examples, attention to energy insecurity remains scant and research in this area is severely underdeveloped ([Hernández, 2013](#)).

This article fills a critical gap in the literature by more comprehensively operationalizing the concept of “energy insecurity.” Energy insecurity is defined here as “an inability to adequately meet basic household energy needs.” Besides offering this definition, the present study advances this concept by highlighting its primary dimensions-economic, physical and behavioral- and exploring the mutually reinforcing nature of this phenomenon. Based on an adapted grounded theory analytical framework, this paper gives meaning to the term *energy insecurity*-by providing real world examples of how energy insecurity is experienced and the different forms it takes in the lives of vulnerable groups.

## 2. Methods

### 2.1. Research questions

The key dimensions of energy insecurity emerged using an adapted grounded theory approach in a qualitative study originally conducted to explore broad housing problems among low-income families ([Hernández, 2016a; 2016b](#)). The present analysis focused on energy as a unique housing problem and addressed the following research questions: (a) What are the primary dimensions of energy insecurity? (b) How is the experience of energy insecurity related to the larger landscape of material hardship for low-income households? and (c) What are the health and social implications of energy insecurity?

### 2.2. Sample

A convenience sample of 72 participants was recruited from community health centers in the Boston area. The author

approached families in the waiting areas of pediatric departments and asked willing parties to answer a 10-question screen to determine their eligibility for the study. Eligible participants included those with: a) at least one self-reported housing hardship, ranging from housing affordability, to frequent moves, to hazardous housing conditions, b) an income at or below \$32,000, which equals 150 percent of the 2008 federal poverty level and c) residence in Dorchester, Massachusetts.

A sample consisting of 70 female and 2 male heads of household ranging in age from 18 to 59 were enrolled in the study. Most participants were single mothers (97%), racial/ethnic minorities (47% African American; 29% Latino), native-born (62%), English (72%) or Spanish (25%) speakers, and had a high school education or higher (85%). The median annual income was \$30,000 and the majority received housing subsidies (65%).

### 2.3. Data collection

Participants underwent a home-based, semi-structured interview to understand their housing and neighborhood environments, the coping strategies that participants used to deal with housing problems, the use of safety net resources, and parental and child health. The housing, energy and health questions included: “Please describe any problems you’ve had with respect to your housing” “What have you done to deal with/fix this problem?” “Now, I’m going to ask you about your housing expenses including the rent and utilities.” “How, if at all, has your housing affected you and/or your children in terms of health?” In addition, respondents were asked to give the interviewer a tour of their home in order to document the housing conditions described in the interview such as drafty windows, faulty thermostats, poor lighting, electrical hazards, outdated appliances and pest infestations. Observations from the walkthroughs were captured in field notes. Interviews were conducted in English and Spanish by the author and in Vietnamese with the assistance of a translator. Interviews were digitally recorded and transcribed; the average duration was 90 min. Respondents were compensated \$25 in cash.

This study was approved by Institutional Review Boards at Cornell University, Boston University Medical Center, and Beth Israel Deaconess Medical Center, and by participating community health centers not affiliated with academic institutions. All study participants provided informed consent. Identifying information has been removed to protect the confidentiality of study participants.

### 2.4. Data analysis

Interview transcripts and field notes were systematically coded for emergent themes using an adapted grounded theory analytical approach involving a two-phase coding process ([Charmaz, 2006](#)). Two coders (the principal investigator and a graduate-level research assistant) reviewed the transcripts and field notes several times in order to become deeply familiar with the data. This process was aided by qualitative data analysis software (Atlas.TI version 6.0), which facilitates the systematic analysis of qualitative data and assists in the process of categorization and coding, developing themes and organizing data segments ([Creswell, 2012](#)). Following an inductive analytic approach characteristic of grounded theory, we employed open and axial coding techniques. In the open coding phase small segments of the data were summarized to offer basic descriptions of the text and enable the grouping and categorization of thematically similar codes. These codes included descriptive terms such as “light,” “gas,” “heat,” “bills,” “boiler,” “utilities,” and “shut-offs” and *in vivo* terms (in participant’s own language) such as “NSTAR” and “ABCD,” which respectively

referenced the local utility company and a popular fuel assistance organization. During the axial coding phase, several codes were selected for in-depth analysis on the evolving topic of energy-related hardship. The analysis yielded emergent themes that demonstrate repeated categories of information and the nature of

their associations. The process of analysis linked codes and traced processes that ultimately led to the observed outcomes related to the three dimensions of energy insecurity and related consequences (see Tables 1–4). Collectively the data conveyed a tale of material hardship, inefficient building infrastructure, complex

**Table 1**

Economic Energy Insecurity- Definition, related codes and exemplary quotes.

Dimension	Related codes	Exemplary quotes
<b>Economic energy insecurity</b>	Poverty, material hardship and tenuous employment	<i>We're definitely not making ends meet between the price of food, the gas is killing us, just the normal day [things] ... It's hard to keep up.</i>
<u>Definition:</u>		<i>At the time I was working part-time and I just couldn't give them anything. I know sooner or later they'd probably be taking me to court for non-payment but it's sad because even then I could never get no help also for my high gas bills.</i>
<i>Financial hardship associated with the cost of energy relative to income and other expenses.</i>		<i>If I had access to a job or a little bit more money it would be so much easier to pay these bills and stuff, you know, 'cause I don't like owing anybody anything.</i>
		<i>I'm playing catch-up with my light bill because like I said, for two years, I wasn't really working. When I moved here my light bill was I think 800, almost 1000 dollars. So shortly after I moved here, I went back to my real job. Then I got laid-off in January but I went back to work in February. It's just playing catch-up</i>
		<i>If I go back to work he says that I will lose the food stamps. We'll lose the fuel assistance, and he feels like we really won't be any better off. So I feel like it's a catch-22.</i>
	Energy-specific financial hardship	<i>I'm having a hard time keeping up with the utilities. It's just really throwing me over the edge financially.</i>
		<i>The only difficulty we have is the lights. Other than that, we make it.</i>
		<i>It's just been high, high, high! And it's like when you pay all the bills, they let you know you're gonna get another light bill ... It's like it's not going anywhere.</i>
		<i>My electric bill has gone way out of whack. I mean, I have a 700 dollar electric bill.</i>
		<i>The bill is at \$7000.00. I told the representative to do a payment plan that is no more than \$60.00, because I honestly can't pay any more than \$60.00 plus the regular bill. It's too much for me.</i>
	Priorities and trade-offs	<i>If I had to choose between paying my rent, paying my utilities, and feeding my children, I'd feed my children and I'd worry about that later. But I do. My rent's always paid. He'll tell you. My rent's right there. Because I figure, at least I've got a roof over their head, you know.</i>
		<i>I have difficulty paying the utilities. Sometimes I have to pay one and then pay the other. I'm always pay my rent 'cause I'm not trying to be out there on the [street] you know what I'm sayin'.</i>
		<i>It's either pay the electricity bill or do what I gotta do for my kids and to be honest with you I'd rather just turn all this stuff off.</i>
	Seasonal variations	<i>The bills vary by season. For example, summertime gas is slightly lower than electricity and then you know, wintertime gas is much, much higher – extremely higher than electricity. As for summertime, electricity is obviously higher because of air-conditioning. It's so hot and we live on the third floor. It is burning hot. It is extremely hot.</i>
	Billing issues	<i>Sometimes your gas bill you get charged twice on your gas bill. You get charged a gas supply charge and a delivery charge. So that's what gets you.</i>
		<i>They had to give my niece \$2000 back 'cause they overcharged her. She was paying for [her neighbors too].</i>
	Landlord improprieties	<i>I never took any landlords to court though I should've one time because this landlord was using my electricity to clean out his units and ran me a bill for almost \$9000. When I wasn't home, I was at school, he's using my socket from outside.</i>
	Discontinued service due to non-payment	<i>Well the light just came as a new bill for \$120.00. Earlier it was disconnected because the account went up to \$3000.</i>
		<i>I have difficulty paying the utilities, sometimes I have to pay one and then pay the other. They threatened to shut off my gas and I was like, 'Listen, I can't do it. I only get one check.' I can't afford it, you know what I'm sayin'. I got the rent, lights, gas and everything but it's just me ...</i>

**Table 2**  
Physical Energy Insecurity- Definition, related codes and exemplary quotes.

Dimension	Related codes	Exemplary quotes
<b>Physical energy insecurity</b>  <u>Definition:</u>  Deficiencies in the physical infrastructure of the home environment that impact thermal comfort, induce harmful indoor exposures and increase energy costs.	Poor overall housing quality	<p><i>The disadvantage of having a Section-8 voucher is that these landlords tend to take advantage. In a lot of Section-8 apartments, none of them provide you with heat and hot water. It's always no utilities. It's not the best apartments. I'm quite sure it's not the best heating systems 'cause like I said, I've lived there. I'm a prime example. That's why people have to know their rights as a tenant.</i></p> <p><i>There's no insulation in the house. That's why it's cold, and the heating's always gone so ... The electrical is outdated, and the plumbing.</i></p>
	Faulty building infrastructure	<p><i>If I open this door you feel like you're standing outside. There's no heat in here and there's no heat in the kitchen but it's big, huge, empty house.</i></p> <p><i>Our heater goes down to 60, 61, 62 [degrees] tops all year-round but the walls were never insulated, so the heat goes right out the window.</i></p> <p><i>The thermostat, if you turn it off, the heat will still be on, and that runs up the bill.</i></p> <p><i>I want Boston Gas to come out here so they can look at the boiler for themselves 'cause the first [inspector], when I first got my energy report he told me it looked like I was heating the whole of Boston. Then I get the next [inspector's] report and his report is just as bad as the first man's report. What don't they understand? Don't go after me. Go after the landlord 'cause I can only afford to give you \$200 a month and that's all I can give you</i></p>
	Changes in building energy systems	<p><i>We didn't have to pay for the heat, it was oil based and the landlords paid for it themselves. Then about a year later they changed it, without notice and they didn't even tell us. The bill just came. It was very warm before, now you put that thing on and you'll still feel cold ...</i></p>

coping strategies, and limited options for assistance as illustrated below.

### 3. Results

#### 3.1. The three dimensions of energy insecurity: economic, physical and behavioral

An understanding of the challenges associated with energy insecurity was shaped by the rich and detailed narratives of participants who described energy as a main source of hardship. Three primary dimensions of energy insecurity emerged: economic, physical and behavioral. The presentation of findings is organized to explain each dimension followed by a discussion of the environmental, health and social consequences of this phenomenon.

#### 3.2. Economic energy insecurity

Economic energy insecurity represents the disproportionate financial burden that high energy costs impose on low-income households. Participants reported a wide range of household energy expenditures, from as low as \$30 a month to, in some cases, as high as \$650 a month at the height of the heating season. On average, participants reported monthly bills between \$100 and \$300 dollars, with considerable variations by season and housing type. To put this economic burden in perspective, according to Massachusetts State guidelines in 2012 a household of four receiving public assistance would net \$691 in cash assistance, a portion of which would need to be allocated to utility expenses ([Community Resources Information](#)). Utilities bills at \$200 per month would represent nearly thirty percent of household income and therefore a significant, and likely unaffordable, expense. This would also render those at the federal poverty line (\$23,050 for a family of four in 2012) as energy insecure using the 10 percent threshold.

The experience of economic energy insecurity is linked to financial hardship and the prioritization of basic needs. Many participants attributed low household incomes to unstable employment, low wages and the “cliff effect” ([Prenovost and Youngblood, 2010; Romich et al., 2007](#)). “Cliff effects” occur when households become ineligible for safety net benefits despite not experiencing full economic self-sufficiency through employment, a circumstance described by one participant as a “catch-22.” Further, in comparison to other household expenses such as housing and food, utilities were often considered less of a priority and were handled with more flexibility because service interruptions take time to ensue and can be avoided. Nevertheless, participants expressed an ethos of responsibly “paying the bills,” except many simply could not afford the monthly utility payments and were often “playing catch up.” This vicious economic cycle borne from a process of prioritization and trade-offs complicates the already fragile financial profiles of low-income ratepayers.

The economic hardships associated with unaffordable utility bills resulted in arrearages often marked by thousands of dollars of debt to utility companies and brought consequences which included limits to energy access as well as restrictions on the ability to change residences. Utility arrearages reflected financial hardship but were also linked to billing issues, landlord improprieties and seasonal variations as well as building-level inefficiencies that increased costs. Shut-off threats and the disruption of utility service were a persistent cause for concern among those behind on their bills, though some families were able to seek shut-off protection by leveraging medical vulnerabilities.

Moving represented a challenge for families with accumulated utilities debt seeking to transfer service accounts to a new residential address. Under these circumstances, some participants elected to put services in the name of other household members including underage householders. As a vivid illustration of this point, Nicole accumulated \$5000 in utilities debt after a year and a half of paying for the “senseless heat” (meaning: inadequate) she

**Table 3**  
Behavioral Energy Insecurity- Definition, related codes and exemplary quotes.

Dimension	Related codes	Exemplary quotes
<b>Behavioral energy insecurity</b>  <u>Definition:</u>  <i>Behavioral strategies used to cope, improvise and counteract the impacts of economic and structural energy insecurity.</i>	Energy conservation	<i>I use my gas wisely, you know. Only time it's on is to cook real quick or hot water for showers ... Right before its time for them to take showers I turn the heat on, and then when they get ready for bed, sometimes I'll turn it down or turn it off 'cause they're underneath the blankets. You just gotta manage how you do it ... If you don't need it you shut it off."</i>  <i>I don't use heat all that much and we manage because the gas is budgeted ... We have been watching what we keep the thermostat at.</i>  <i>During the day we keep off lights. The only thing that's running is the TV ... We also don't burn that much gas. We don't use that much electricity 'cause I know the electricity be sky-high if you leave the lights on and stuff.</i>
	Seeking thermal comfort	<i>In the wintertime if something happens to the heat by chance, I turn the oven on, which is my electricity. The heat goes through the place like that and then I cut it off. That's what I do.</i>  <i>Some people also came in here and showed me how to save electric ... I pretty much did it myself—the insulation. I put the stuff under the doors and plastic over the windows [to keep the cold out].</i>
	Lump sum and partial bill payments	<i>I'm praying that I get enough money back from my tax return to pay everyone off so they can leave me alone, don't bother me no more.</i>  <i>So the whole week [during a shut off], all we did was took a bucket like we were having a cookout. You know those buckets that you use to put sodas and stuff. Put some ice in it, it lasted for a week. Eating sandwiches, takeout. My kids said, 'Mommy, when they gonna put the gas back so we cook the fish?' I finally got two checks and turned the lights back on. You gotta sacrifice.</i>  <i>My mother's pays like 50 dollars here, 100 dollars there, whatever she can.</i>  <i>But even if I give them \$100 right now, I can't pay because even if I give them \$80 the bill is \$100, \$120 every month. That's why I give them \$80 'cause I can't pay the whole bill.</i>
	Fuel assistance	<i>I can go to certain places if I need help to get fuel assistance</i>  <i>After running around trying to get help there but they helped me out finally. I did that ... fuel assistance helped me.</i>  <i>I just started with them last year ... they gave me \$350 for the bill. Then I got a letter from them a couple of weeks ago to fill out and send back [to renew].</i>  <i>I could never get no help for my high gas bills. I would call the local foundations, the Salvation Army, churches and they would always say that they had no money.</i>
	Leveraging medical vulnerability	<i>They can't turn it off, basically, because my baby has asthma, for one thing. My mother has a bad heart, for another thing. I don't care how high it gets. They can keep on sending us [bills]; we'll pay what we can ...</i>  <i>I had my son's doctor fax a letter to [the utility company] saying they can't turn off my lights because he's on an asthma machine and he needs it. So that's the only reason my lights stayed on.</i>  <i>I have called the electric company. We're protected from our lights getting shut off for now from financial difficulties and because of [my son's] asthma.</i>
	Faith, hope and despair	<i>That's [a shut off] what was worrying me before, but I'm trusting in God.</i>  <i>My outlook on it is that, I want better for my children. To have better for my children I need better housing.</i>  <i>Inside these neighborhoods ain't no way for us to save no money on no electricity 'cause they come out when they want to come out and it's hard to find people to talk to [for good information]. There's nothing you can do ...</i>

referenced in the opening quote. She considered moving, but essentially was stuck until she could pay off the debt as the utility company barred arrearage transfers. Nicole attributed this conundrum to living in subsidized housing. She noted that while mobile voucher program recipients have more housing choices they are

often limited to subpar units where they cannot control the efficiency of the dwelling's appliances and heating/cooling systems and seldom have utilities included in the rent.

Economic energy insecurity thus reflects the financial hardship associated with making ends meet on limited budgets and the

**Table 4**  
Environmental, health and social consequences of energy insecurity.

Consequence	Related codes	Exemplary quotes
Environmental	Hazardous exposures	<i>For three months there was a gas leak and I ended up going to the hospital. ... The smell kept on coming up [but] the [stove] pilot wasn't lit. I had to call the gas company. I said, "Look, you have to come down here. This gas is killing me." ...</i>
	Heat stress	<i>As for summertime, electricity is obviously higher because of air-conditioning. It's so hot and we live on the third floor. It is burning hot. It is extremely hot.</i>
	Cold stress	<i>If I open this door you feel like you're standing outside. There's no heat in here and there's no heat in the kitchen. He [the landlord] says it's a four bedroom but really it's a big, huge, empty house.</i>
Health	Asthma	<i>In the wintertime its more [of a problem] 'cause he [child] gets sick more with asthma.</i>
	Chronic stress	<i>"Stress. It adds stress. It's silly sometimes, but I think like, "Geez. My lights are gonna shut off." Even though I know they won't but even if I'm behind a few days a week I worry. I worry about a lot of things. I do. I mean, I know it won't happen but I worry about it. I do. I worry a lot."</i>
	Mental health trigger	<i>Every time I call I get nowhere, that's why I told my psychiatrist. Then I went into a depression, you know, 'cause I'm trying to show them my bill and everything and don't nobody ever have funds for me. So I told her I feel like I'm being targeted, which I know better, but I was just feeling low, you know ...</i>
Social	Parental fear and stigma	<i>One day I didn't have no money to pay my bill and they was gonna turn off my lights. When they turn off your lights people look at that and I didn't want nobody coming in here and take my children from me because I don't have my lights on.</i>
	Family disruption	<i>My bills started raising up and raising up and I went to the doctor's because they turned off my gas. So, I sent my kids to their aunt's house 'cause I didn't want them in the house since you can't cook or give them a bath or nothing. I didn't want them here. And then I went through my depression thing- it just went down for me.</i>
	Residential instability	<i>From all my apartments I've always had faulty heating systems and I always had to pay my own utilities. That's one of the reasons why we moved so much.</i>

consequences of exorbitant utility bills. The economic challenges are further exacerbated by surplus costs stemming from inefficiencies in the physical environment, reflecting the second dimension of energy insecurity.

### 3.3. Physical energy insecurity

Physical energy insecurity is defined as deficiencies in the physical infrastructure of the home environment that impact thermal comfort, induce harmful exposures and increase energy costs. Examples of such deficiencies include but are not limited to malfunctioning heating and cooling systems, outdated plumbing and electrical systems, poor lighting, and inefficient appliances. In some instances physical energy insecurity stemmed from the overall poor quality of the housing unit marked by a lack of upgrading in older housing, the use of subpar building materials and inadequate maintenance practices. Facing limited housing options due to lack of affordability, many poor renters and homeowners alike are at increased risk of living in lower-quality housing. Renters are at a significant disadvantage when landlords have little incentive to improve older, less efficient building systems and appliances particularly when the onus of payment falls on the tenants (Bird and Hernández, 2012). In this sample, energy-specific inefficiencies deriving from drafty doors and windows, faulty thermostats and lack of insulation resulted in significant heat loss and thermal discomfort. Further, participants noted that the transition from oil to gas, often a more efficient option, resulted in less comfort and unexpected bills. These conditions not only caused further economic hardship, but contributed to unsafe living conditions. In response to these challenges, study participants often devised a variety of behavioral strategies to manage the physical and economic facets of energy insecurity.

### 3.4. Behavioral energy insecurity

Behavioral energy insecurity is defined by strategies used to cope, improvise and counteract the impacts of economic and physical energy insecurity. This dimension is marked by both positive and negative behavioral approaches. Positive strategies had environmental and economic benefits and demonstrated resourcefulness; negative strategies presented risks to health, safety and residential stability. Strategies revolved around three inter-related categories: energy conservation and/or thermal

comfort compensation, bill-paying, and shut-off avoidance and compensation.

Participants described a range of energy conservation strategies, some more elaborate than others. Many practiced vigilance in energy consumption using lights, heating equipment and other appliances sparingly so as to minimize costs. Some participants sought thermal comfort by insulating their homes to reduce drafts and addressing other sources of heat loss. However, the inability to regulate temperatures and the consideration of costs led some to sacrifice comfort and jeopardize health and safety. For example, under desperate circumstances, some described using space heaters to compensate for inadequate thermal comfort, and others used the stove or oven as improvisational heating methods.

Bill-paying behaviors described by participants included juggling expenses by paying down utilities debt using funds from annual tax returns when available or making partial payments to keep the services on while simultaneously accruing debt for the unpaid portion. Some enrolled in "balanced billing" to better predict expenses based on a monthly average of the annual energy costs for the home, that is then billed evenly across the year by the utility company. Other participants drew on external resources such as fuel assistance administered through local organizations to help pay bills. Fuel assistance is typically applied directly to the utility bill and renewed annually for those fortunate to qualify and enlist when resources are available. However, several participants described being turned away as federal and state-sponsored fuel assistance resources are often quickly exhausted in high demand areas such as Boston, leaving needy households with few options for relief.

In the event of a shut-off, households sacrificed by drawing on basic survival skills using non-energy sources to store and prepare food until they obtained the needed funds to reinstate the services. Many utility companies offer shutoff protection for eligible households, including those with very young children and elderly inhabitants or those with medical conditions that require household energy, though this stipulation varies by utility company and state-level policy (U.S. Department of Health and Human Services). At the time of data collection, shut-off protection in Massachusetts required a letter from a qualified medical provider and was subject to renewal every 90 days. Many study participants with young children or medical conditions such as asthma, diabetes or mental health disabilities qualified for this renewable protection. However, leveraging medical vulnerabilities proved an insufficient and

unsustainable method of shielding a household from energy insecurity since arrearages mounted and participants were, in essence, trapped when unable to transfer accounts with balances to a new residence.

Participants noted key challenges in receiving helpful information on energy savings and available resources in marginalized communities, feeling that nothing could be done to improve the circumstances. Still others simply hoped for more and had faith that they would overcome the energy hardships they encountered. Ultimately, the persistence of such economic and physical deficiencies posed significant environmental, health and social risks.

### 3.5. Adverse consequences of energy insecurity

Study participants identified a number of adverse environmental, health and social consequences related to the energy insecurity problem. Whether renters or owners, the economic and physical housing hardships and negative behavioral strategies significantly compromised resident health and environmental quality as well as exacerbated conditions of social disadvantage. Poor housing quality and lack of proper maintenance (i.e. poor insulation, limited ventilation, and malfunctioning heating and cooling systems) often caused harmful environmental exposures including extreme home temperatures, gas leaks and dampness, mold and humidity. Further, the use of stoves for heat was a common strategy for seeking thermal comfort yet doing so induces harmful exposures shown to jeopardize health and safety (Lanphear et al., 2001; Garrett et al., 1998). The lack of comfortable home temperatures also exacerbated asthma symptoms, particularly during winter months.

Economic hardships and poor physical conditions also contributed to chronic stress (Evans and Kantrowitz, 2002; McEwen, 1998). Participants described feeling worried about fuel bills and the deteriorated conditions of their home environments. The experience of energy insecurity also triggered mental health disorders such as anxiety and depression. Several participants mentioned involvement with medical providers for adversity-related mental health treatment or to leverage a medical vulnerability for shut-off protection purposes. The constant threat of service interruptions due to non-payment fueled parental fear and stigma. Parents felt judged by persistent surveillance on the part of child protective services and feared losing parenting privileges to the State with the concern that being unable to “keep the lights on” could be considered a marker of inadequate parenting. Some participants expressed feelings of shame and a disruption of family life when living through a utility service disconnection. Moving represented a way out of the discomfort with some participants moving frequently to escape both faulty heating systems and high bills. However, this coping strategy brings with it negative consequences, as residential instability spurs the loss of social network and institutional ties, which comes at a significant cost in terms of social capital.

## 4. Strengths, limitations and future directions

This article presents a comprehensive view of a hidden source of hardship–energy insecurity. Although the original purpose of this study was to examine housing problems experienced by low-income householders, the phenomenon of energy insecurity emerged from a rigorous examination of the data using an adapted grounded theory approach. This process uncovered the dimensions of energy insecurity along with its adverse environmental, health and social consequences. Notwithstanding these strengths, the exploratory nature of the research may omit other critical aspects of this phenomenon that did not surface in the analysis. Also, this

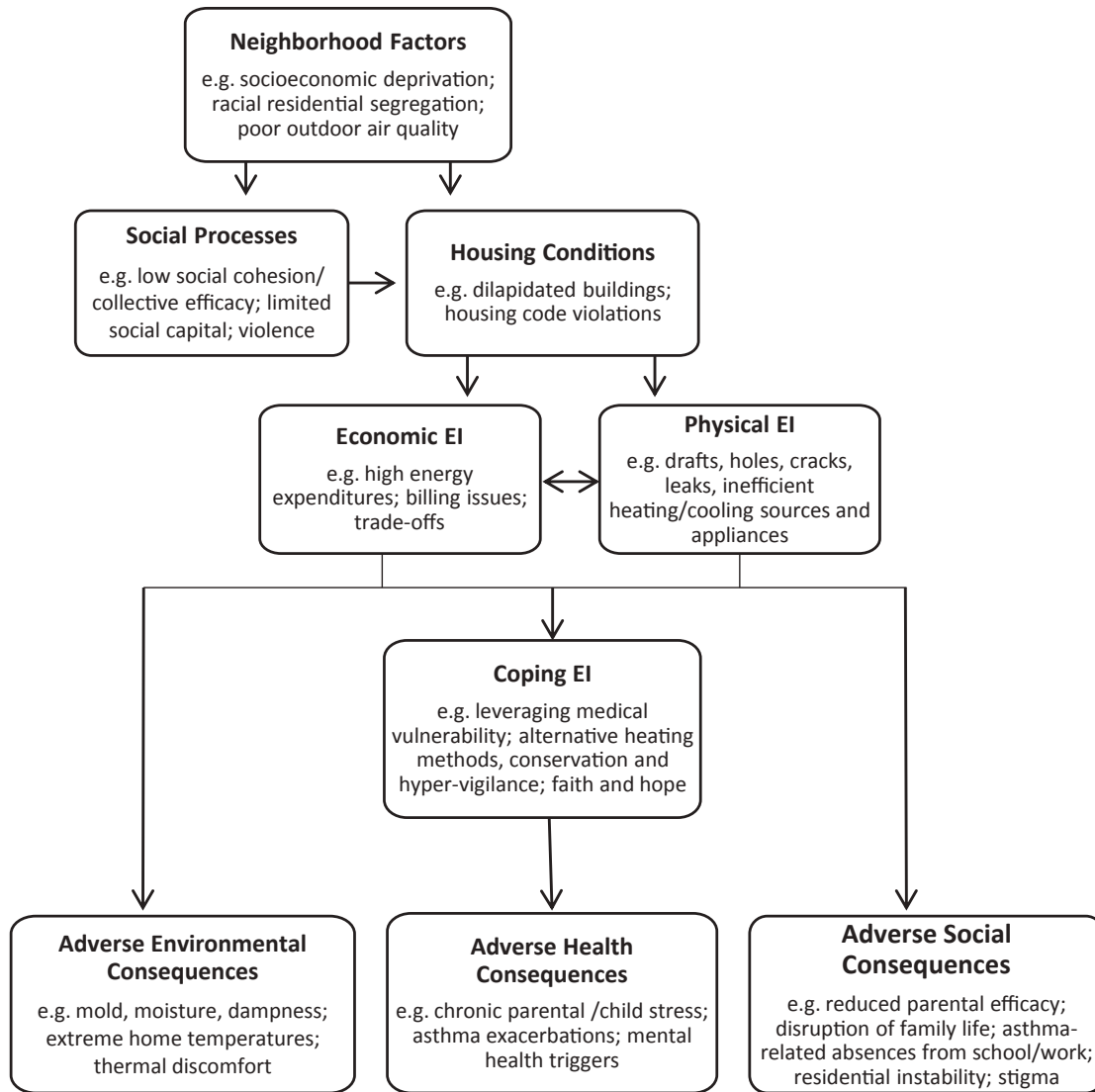
study was conducted in the Northeast where cold weather and home heating issues factored prominently into participants' narratives. Warm weather burdens and cooling hardships borne by those in hotter climates should be explored in future research. These results should be used to inform larger epidemiological studies to validate the links between energy insecurity and various health outcomes pertaining to overall health and in particular respiratory and mental health. These findings should also motivate refinement of existing measures of energy insecurity, which to date focus heavily on shut-offs, inability to pay and using alternative heating sources rather than the more comprehensive dimensions of energy insecurity exposed in the present article (U.S. Department of Health and Human Services, Office of the Administration for Children and Families).

## 5. Discussion

### 5.1. The energy insecurity pathway to disease and disadvantage

The present analysis focused on the lived experiences of energy insecurity among low-income householders. The evocative narratives presented above highlight the salience of material hardship in determining an outcome of vulnerability that renders keeping the lights on and staying warm an everyday challenge for poor households throughout the United States. As demonstrated by the results, energy insecurity is an important social, economic and environmental determinant of health. It is a manifestation of poverty comprised not only of an imbalanced ratio of household income to energy expenditures but also one that includes physical and behavioral realms of hardship. In this way, energy insecurity is akin to food insecurity. In fact, an almost equal number of U.S. households encounter food insecurity as do experience energy insecurity (16 million versus 17 million, respectively) (Power, 2006; Coleman-Jensen et al., 2015). Many are burdened by both. Similar to food insecurity, where affordability and access to quality food matters, energy insecurity is determined by access to decent, efficient and affordable housing. Both are embedded within larger contexts of material deprivation and neighborhood disadvantage. Still, food is generally considered indispensable whereas energy is often perceived as an amenity. As most of people would cringe at the thought of hunger-prone families, few shudder at the notion of poor households living in the cold and in the dark, accruing debt to fulfill a basic need (Fig. 1).

The energy insecurity phenomenon is predicated on markers of social disadvantage such as low socioeconomic status, race, ethnicity, family composition and housing tenure; all considered key social determinants of health. In addition, energy insecurity acts as a mediator in the poor housing to poor health continuum. Set within the larger context of neighborhood disadvantage, factors such as racial residential segregation, concentrated poverty, limited social cohesion and deficient institutions produce a backdrop of structural challenges with direct implications for the availability of a decent housing stock. Unsafe neighborhood conditions also amplify the salience of the home environment as people stay home more often to avoid violence and danger (Hernández, 2016a,b). As an additional layer of disadvantage, housing marked by deficiencies in quality and lacking modern efficiencies affect the conditions of the home environment and the costs associated with its operation (i.e. utility expenses). Individuals living under these circumstances proceed to interact with the physical and economic aspects of housing and energy according to available material, informational and institutional resources. If limited by poverty and low social capital, householders may cope in ways that are detrimental to health and well-being (i.e. experiencing a shut-off, thermal discomfort). The environmental, health and social consequences of



**Fig. 1.** Energy insecurity: a pathway to disease and disadvantage.

this phenomenon are thus the result of a “pathway of disadvantage” in which energy insecurity plays a unique mediating role. Its position reflects and exacerbates layers of ecological disadvantage from household income at the micro-level to housing cost and quality at the meso-level to low resource neighborhood settings and lack of adequate policies at the macro-level.

Literature suggests that housing interventions that promote warmth and energy efficiency are among the most effective options to improve health outcomes by way of housing conditions and the socio-economic determinants of health (Thomson and Thomas, 2015). While evidence in this area is still emerging in the U.S. context, researchers in Europe and New Zealand have established that investments in warmth and energy efficiency improve housing conditions, reduce fuel costs, and increase comfort and a sense of pride in one's home, which then lead to direct and indirect improvements in general health, respiratory health and mental health. Further, cycles of disadvantage are thwarted by reduced time off from school and work thereby increasing parental and child productivity (Thomson and Thomas, 2015). The intergenerational promise of such interventions is critical given the deleterious impact of adverse childhood experiences and chaotic environments on child development (Shonkoff et al., 2012; Evans et al., 2005). Therefore, addressing energy insecurity through energy efficiency

interventions has the potential to break chronic cycles of hardship along this path of disadvantage.

### 5.2. Energy insecurity and housing-related factors

Energy insecurity is impacted by housing type, tenure and quality whereby one's status as an owner or renter determines if and how one experiences this phenomenon. The majority of study participants that experienced economic energy insecurity were either a) housing choice voucher recipients, which provides the option to rent market rate apartments using a subsidy that covers two-thirds of the rental amount; b) renters in market rate apartments or c) low-income homeowners; all in a low resource neighborhood context. For renters, subsidized and market rate alike, decisions regarding the quality of the building and energy infrastructure remain outside of their control and mostly favored the interests of landlords and property managers. At times, energy-related infractions qualified as housing violations and in most instances exhibited egregious abuses of power and privilege on the part of landlords. As shown above, landlord improprieties, maintenance practices and choices to improve property (or not) had a direct impact on the quality of household energy, with implications for cost and comfort on the part of tenants. The “split-incentive

problem,” whereby landlords lack clear incentives to invest in the most efficient options when they are not responsible for utility costs, further exacerbates the dilemma of energy insecurity for renters (Bird and Hernández, 2012). Renters would have further recourse with revised and better enforced housing codes related to energy as well as further financial incentives for landlords to upgrade properties in order to decrease costs, mitigate risks and increase comfort.

Among renters, energy expenditures were often cited as a significant consideration in choosing to move to or from apartments that required tenants to pay utilities. Many ultimately chose poorer quality apartments in lieu of utilities payments. Public housing residents and a handful of participants for whom utilities were included in the rent were spared from the financial hardships associated with economic energy insecurity. Nonetheless, these economic protections did not always shield against the physical and behavioral aspects of energy insecurity, for instance, over- and under-heating, poor insulation, drafts and malfunctioning appliances. In fact, the experience of those who did not pay for utilities but still encountered energy challenges formed the basis for further exploration of the various dimensions of energy insecurity beyond the economic component. In order to address both the cost and conditions issues presented by energy insecurity, the U.S. should consider adopting an energy rating system for all buildings, already implemented throughout Europe, to increase transparency in energy performance in all housing types but especially in rental properties (Bio Intelligence Service et al., 2013).

Unlike renters, low-income homeowners shouldered the entire burden of economic responsibilities related to housing and energy expenditures, and as such the onus and associated trade-offs were more severe for this group. Further, the costs to properly maintain and upgrade older homes were often prohibitively expensive given the upfront costs of upgrades and the broader housing and economic crises occurring at the time of data collection. So, while homeowners enjoyed some measure of control over the structural conditions of their home, their low-income status constrained opportunities to increase the energy efficiency of their property. Safety net benefits should look to especially target low-income homeowners with subsidies to improve housing conditions, increase efficiency, and decrease costs so as to promote economic and residential stability in this vulnerable group.

### 5.3. Addressing energy insecurity through policy and advocacy

Energy insecurity is impacted by gaps in energy-related safety net policies and by the lack of sufficient protection for low-income energy consumers. As a critical component in alleviating poverty, addressing energy insecurity at the policy level necessitates a closer look at the current options to support affected populations. The Low-Income Home Energy Assistance Program and the Weatherization Assistance Program are the most relevant federal-level initiatives seeking to provide fuel assistance and weatherization services to eligible households. However, both programs have historically been underfunded and subject to budget cuts particularly in recent years, thus preventing low-income households from accessing needed resources to address energy-related hardships (Hernández and Bird, 2010). Greater awareness of the dimensions of energy insecurity and accompanying advocacy may lead to more comprehensive policy measures to expand existing programs in order to ensure that the needs of low-income householders are better met (Bird and Hernández, 2012; Hernández and Bird, 2010).

State-level policy and utility companies play critical roles in the problem of energy insecurity. State disconnection policies vary substantially but most cover medically vulnerable households and often contain seasonal policies barring shut-offs during extreme

weather (U.S. Department of Health and Human Services). Nevertheless, many of these policies are time limited taking effect for a year or less on average and thereby dismissing the chronic nature of energy-related hardship (U.S. Department of Health and Human Services). Comprehensive measures are needed to a) better protect households from the experience and threat of utility disconnection; b) mandate more favorable rates for indigent households; and c) defend against the accumulation of debt and related account transfer restrictions. Utility companies may be compelled to realize such priorities as non-payment marks a financial liability and shut-offs are an encumbrance for all. Pressure by lawmakers and advocates may help propel these changes as utility companies (like landlords) may otherwise lack incentives to act in the best interest of low and moderate-income ratepayers.

The present research has implications for revising standards for healthy and sustainable housing to ensure that low-income households across the U.S. can access higher quality, health-conducive and energy secure housing environments. The Centers for Disease Control and the U.S. Department of Housing and Urban Development (HUD) have issued healthy housing guidelines in order to reduce exposure to environmental hazards in the home and promote healthful indoor living environments (Centers for Disease Control and Prevention and U.S. Department of Housing and Urban Development, 2006). However, thermal comfort and energy efficiency are not comprehensively included in the various health and safety measures covered by current national-level initiatives. For example, HUD-subsidized housing, including the housing choice voucher program and public housing, does not enforce an energy efficiency standard leaving tenants more susceptible to energy insecurity. Nevertheless, energy and health are becoming more integrated in affordable housing development via mechanisms such as the Enterprise Green Communities Criteria and Certification, which provides a framework to ensure that low-income housing is healthier, more efficient and incorporated into the fabric of communities thereby promoting resident well-being and sustainability. Improved standards and integrative housing development are a critical application of “health in all policies” that should apply to both new construction and existing buildings.

Finally, the concept of energy insecurity provides a useful framework to fuel advocacy. “Energy justice”, which seeks equity for vulnerable populations along the energy production and consumption continuum, recognizes sacrifice and insecurity as central tenets of the present energy landscape in the U.S. (Hernández, 2015). While the call for energy justice is broad and includes imperatives to move toward healthy, sustainable energy production and access to the best available energy infrastructure, the movement relates directly to energy insecurity with demands for affordable energy and uninterrupted energy service. Housing, poverty and public health advocates should consider promoting energy justice in order to address the complex social, environmental and public health problem that is energy insecurity.

## 6. Conclusion

This article describes three key dimensions of energy insecurity: economic, physical, and behavioral that are premised on poverty and carry adverse environmental, health and social consequences. Study results help to uncover the layered components of energy insecurity by providing rich and nuanced narratives of the lived experiences of those affected by this form of hardship. As a construct, energy insecurity reveals and amplifies other chronic and interactive vulnerabilities that low-income householders encounter. The economic hardship associated with energy insecurity is indicative of low incomes relative to high energy expenditures. In addition to the constraints caused by poverty, the problem

of economic energy insecurity might be viewed from a structural perspective, as exemplified by the participant who aptly attributed energy insecurity to the poorer quality of housing available to low-income renters. In its physical form, energy insecurity encompasses inadequate housing conditions such as drafts from windows/doors and holes/cracks in the walls, floors or ceilings that induce energy inefficiencies and reduce “tightness” in the home. These conditions, in turn, create difficulties in regulating home temperatures and produce vulnerabilities in a home’s physical infrastructure that provoke mental health risks and unhealthy exposures. Combined, the physical and economic challenges associated with energy insecurity prompt coping strategies in the form of behavioral responses to energy inefficiencies that sacrifice comfort and potentially safety in response to energy costs (e.g. using space heaters or ovens for heating, carrying utility arrearages due to making partial bill payments). Paradoxically, these practices may lead to higher utility bills compared to more efficient alternatives. Some energy conservation methods used by study participants did result in economic and environmental benefits and the ingenuity employed under these circumstances demonstrated resourcefulness. However, there were several adverse health and social consequences to the energy insecurity problem including environmental hazards, parental fear and stigma as well as residential instability. Critical issues pertaining to energy insecurity such as the role this phenomenon plays along the pathway of disadvantage and the salience of housing type, tenure and quality were discussed alongside the need for policy-level changes to better address energy insecurity and advance energy justice.

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# Energy Insecurity Indicators Associated With Increased Odds Of Respiratory, Mental Health, And Cardiovascular Conditions

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**ABSTRACT** Energy insecurity, defined as the inability to meet household energy needs, has multiple economic, physical, and coping dimensions that affect health. We conducted the first citywide representative survey of energy insecurity and health in a sample of 1,950 New York City residents in 2022. We compiled ten indicators that characterize energy insecurity as experienced in New York City housing settings and then examined associations between number and types of indicators and health conditions. Nearly 30 percent of residents experienced three or more indicators, with significantly higher levels among Black non-Latino/a and Latino/a residents compared with White non-Latino/a residents, renters compared with owners, recent immigrants compared with those living in the United States for longer, and those in households with children compared with those with no children. Residents with three or more indicators of energy insecurity had higher odds of respiratory, mental health, and cardiovascular conditions and electric medical device dependence than residents with no indicators. Our study demonstrates that broadening the understanding of energy insecurity with context-specific metrics can help guide interventions and policies that address disparities relevant to health and energy equity.

**E**nergy insecurity, the inability to meet household energy needs, has economic, behavioral, and physical dimensions.<sup>1</sup> Energy insecurity and its associations with health are increasingly important to document as climate change increases energy needs and governments enact and implement clean energy policies.<sup>2–5</sup> Known detrimental impacts of energy insecurity on health and well-being include poor sleep and mental health and respiratory ailments resulting from the use of a stove or oven for heat.<sup>6</sup> In high-risk populations, dangerous temperatures at home stemming from energy insecurity may result in hypothermia, heat stress, dehydration, and even death.<sup>7,8</sup>

The issue of energy insecurity has long been understudied, and there remains a need for large-scale, comprehensive studies of how it affects population health. The nationally representative Residential Energy Consumption Survey collects data on household energy use every four to five years, including indicators such as receiving a service disconnection notice, keeping the home at an unhealthy temperature, and reducing or forgoing spending for basic needs to pay for utilities.<sup>9</sup> However, it does not inquire about household debt or health status, nor does it capture the full range of coping behaviors that people experiencing energy insecurity may employ.<sup>10,11</sup>

John Cook and colleagues administered a brief energy insecurity indicator focused on heating

and service disconnections in a hospital-based study conducted during 2001–06 and found that household energy insecurity was associated with household and child food insecurity, increased hospitalizations, and poorer-rated health in children; severe household energy insecurity was also associated with developmental concerns in children.<sup>12</sup> Similarly, in a 2015 community-based survey, Diana Hernández and Eva Siegel found that positive responses to the brief energy insecurity indicator were associated with poor respiratory, sleep, and mental health outcomes among adults in northern Manhattan.<sup>6</sup> At the national level, Diana Hernández and Jennifer Laird analyzed 2015 Residential Energy Consumption Survey data and found that the escalating risk for disconnections leads to health-compromising coping strategies, including trade-offs with food and medicine and keeping homes at an unhealthy temperature,<sup>13</sup> showing that energy insecurity is an embodied hardship.<sup>14</sup>

A more comprehensive array of indicators can aid in capturing the energy insecurity experience and assess differences in energy insecurity exposures and outcomes among subpopulations. The goal of the current study was not to develop or test an energy insecurity measure for potential use in other settings but, instead, to present a compilation of ten energy insecurity indicators that extends prior conceptual and empirical work to better reflect the multidimensional nature of energy insecurity. Informed by scholarship that established the energy insecurity conceptual framework, including how it affects health,<sup>1,15</sup> these indicators encompass economic dynamics such as difficulty paying, arrearages, and the threat and experience of disconnections; physical conditions including exposure to extreme heat and cold; and coping responses such as reducing energy consumption to save money on utility bills and relying on a stove or oven for heat. Previous studies have examined only a subset of these indicators (that is, disconnections, energy-limiting behavior, energy burden, or high energy use intensity), mostly in an isolated fashion,<sup>11,13,16–19</sup> or they missed key elements such as warm weather burdens and debt.<sup>6,12</sup>

Our representative survey of energy and health employed this multifaceted set of energy insecurity indicators to increase understanding of how energy insecurity manifests and to explore health correlates across chronic illness conditions, disease states, and mental health status in New York City.

## Study Data And Methods

**SURVEY** From February 28 to April 1, 2022, the New York City Department of Health and Mental

Hygiene fielded the New York City Household Energy and Health Survey in a sample of New York City adults. The survey instrument was developed using a core set of indicators, initially created by Hernández,<sup>20</sup> based on a national study of energy insecurity, which included qualitative interviews and a survey, that has influenced recent research in the field.<sup>19</sup> In partnership with the Bureau of Environmental Surveillance and Policy and the Bureau of Epidemiology Services at the New York City Department of Health and Mental Hygiene, survey questions were adapted, further codeveloped, and user tested. The New York City Household Energy and Health Survey was self-administered online or with an interviewer over the telephone in the respondent's language of choice: English, Spanish, Simplified or Traditional Chinese (Mandarin or Cantonese), or Russian. A stratified random sample of 6,405 adults was selected from the NYC Health Panel (formerly called Healthy NYC), a probability-based survey panel of 13,000 adults ages eighteen and older that was designed to be representative of New York City adults.<sup>21</sup> Of the 6,405 sampled panelists, 1,950 completed the survey (1,787 online and 163 by phone), for a participation rate of 30.4 percent. The final data set was weighted to account for probability of selection and nonresponse (see the online appendix for further details, including the unweighted sample numbers by category).<sup>22</sup>

**PRIMARY OUTCOME VARIABLES** Participants were asked whether they or anyone in their household had ever been diagnosed with certain health conditions or a group of conditions. Mental health conditions were specified as anxiety, depression, or other. Respiratory conditions were included as asthma or chronic obstructive pulmonary disease. We also inquired about other chronic conditions: cardiovascular disease, chronic kidney disease, diabetes, and hypertension (high blood pressure). In addition, we asked whether anyone in the household regularly used any electric medical devices at home (for example, a dialysis machine or asthma nebulizer).

**ENERGY INSECURITY MEASUREMENT** Our primary independent variable was the number of positive energy insecurity indicators, measured using our ten-indicator instrument, which comprised six new indicators alongside four previously used ones. Incorporating the four-indicator instrument used in prior studies,<sup>6,12</sup> we asked whether participants had received a shut-off notice in the past six months, used a stove or oven for heat during the most recent heating season, went without heat because of inability to pay in the prior heating season, or experienced a shut-off of utility service because

of nonpayment in the past twelve months. Building on this base to describe energy insecurity in New York City across a wider range of dimensions, we also asked whether, during the past twelve months, participants experienced being extremely cold at home, being uncomfortably hot at home, reducing energy use because of concerns about not being able to afford the bill, or having difficulty paying the energy bill. We further inquired whether participants used air conditioning less often because of the cost of bills during the past summer or owed \$100 or more on electricity, gas, or combined electricity and gas bills at the time of the survey (see EI indicator questions in the appendix for details).<sup>22</sup>

For our analysis, we compared residents who experienced three or more energy insecurity indicators with those who experienced two, one, or no indicators. This decision was based on the distributions of energy insecurity indicators in this sample and the patterning of those distributions across several health and social axes (see appendix exhibit S2 for details).<sup>22</sup>

**DEMOGRAPHIC VARIABLES** We used demographic variables available from the NYC Health Panel data set: age group (adjusted to time of survey completion), sex assigned at birth, race and ethnicity, educational attainment, place of birth, length of residence in the US, and household language. We inquired about employment status and household poverty in the New York City Household Energy and Health Survey.

**STATISTICAL ANALYSIS** We conducted analyses using SAS, version 9.4, and SUDAAN, version 11.0.4, and we used survey weights in all analyses. We calculated the prevalence of each energy insecurity indicator and the prevalence of multiple indicators. We calculated descriptive statistics including weighted prevalence, mean, 95% confidence intervals, and relative standard error, and we conducted *t*-tests to test for significant differences between groups of at least 0.05. We modeled adjusted logistic regressions with PROC SURVEYLOGISTIC to examine associations between self-reported health conditions (categorized as ever diagnosed or not) as the outcome and a categorical energy insecurity variable (zero, one, two, and three or more indicators of energy insecurity) as the predictor. We adjusted models for age group, sex assigned at birth, self-reported race and ethnicity, education level, presence of children in the home younger than age eighteen, presence of household members age sixty or older, household income as a percentage of the federal poverty level, and employment status (see appendix exhibits S3–S6 for details).<sup>22</sup>

**LIMITATIONS** This work includes several important limitations. All demographic and health

## In this study, a consistent pattern of unequal sociodemographic distribution of energy insecurity indicators emerges.

characteristics were self-reported, potentially introducing measurement error. Educational attainment was collected during panel registration and may have since changed. Because respondents were not necessarily heads of households, they might not have had full knowledge of utility bills, debt, and coping strategies employed. This study was only representative of survey participants (noninstitutionalized New York City adults), and findings should not be generalized to other contexts. Even within New York City, this sample should not be considered representative or descriptive of the experience of the energy insecurity of adults living in nursing homes, jails, homeless shelters, and other congregate settings. The prevalence of energy insecurity indicators in New York City may also have been underestimated because of a temporary moratorium on utility shut-offs during the COVID-19 pandemic: Terminations for nonpayment of bills were paused through December 2021 for all residential customers and until September 2022 for low-income customers participating in an energy assistance program. Moreover, several income support programs, such as enhanced unemployment benefits and utility debt forgiveness,<sup>23</sup> may have served as economic buffers during the pandemic.

### Study Results

#### PREVALENCE OF ENERGY INSECURITY INDICATORS

More than one in four New York City residents experienced thermal discomfort at indoor temperatures that were too cold (30 percent) or too hot (28 percent) in 2022 (exhibit 1). Twenty-one percent had difficulty paying utility bills. Of those, 66 percent were in debt for energy costs (data not shown), and 14 percent of all New York City residents owed \$100 or more in utility bills (exhibit 1). Receipt of a service disconnection

notice for electricity or gas because of debt or nonpayment and any service shutoffs for heat, electricity, and gas were experienced by 8 percent and 3 percent of residents, respectively. Thirty-nine percent of residents reduced their energy use because of cost. Some coped with energy bills by reducing use for cooling or heating, with 14 percent using air conditioning half the time, less than half the time, or never when it was hot and 7 percent not using heat in cold weather because of run cost. Twenty-one percent coped with being too cold at home by using a stove or oven for heat.

#### PREVALENCE AND DEMOGRAPHIC VARIABILITY BY NUMBER OF ENERGY INSECURITY INDICATORS

Thirty-one percent of New York City residents experienced none of the ten energy insecurity indicators, 22 percent experienced one indicator, 18 percent experienced two indicators, and 28 percent experienced three or more indicators (exhibit 2). The prevalence of three or more indicators was significantly higher among Black non-Latino/a and Latino/a residents (40 percent and 33 percent, respectively) compared with White non-Latino/a residents (18 percent). People with a household income less than 200 percent the federal poverty level and those in households with children were also more likely to experience three or more indicators of energy insecurity (38 percent and 37 percent, respectively) compared to those with an income of 200 percent of poverty or more and those in households without children (19 percent and 24 percent, respectively). Renters had a higher prevalence of three or more indicators of energy insecurity (31 percent) compared with owners (23 percent). Foreign-born New York City residents had a higher prevalence of three or more indicators of energy insecurity (38 percent) than that of their US- and US territory–born counterparts (22 percent and 21 percent, respectively), as did recent immigrants compared with those residing in the US for longer. Residents with a college degree or higher were less likely to experience three or more indicators compared to those with lower educational attainment, and households with members age sixty or older were less likely to experience three or more indicators compared to those without an older adult.

#### ASSOCIATIONS BETWEEN ENERGY INSECURITY AND HEALTH CONDITIONS

In adjusted models, we observed increased odds of mental health conditions, respiratory conditions, cardiovascular disease, and use of electric medical devices among residents with one, two, or three or more indicators of energy insecurity compared to those with zero indicators (exhibit 3). Among those with three or more indicators of energy

#### EXHIBIT 1

#### Weighted prevalence of energy insecurity indicators among New York City residents, 2022

Energy insecurity dimensions and associated indicators	Weighted prevalence <sup>a</sup> (%)	95% CI
Physical conditions		
Home too cold	29.5	26.1, 33.1
Home too hot	27.5	24.3, 30.9
Economic dynamics		
Difficulty paying bill	21.2	18.5, 24.2
Utility debt \$100 or higher	14.0	11.6, 16.7
Disconnection notice	8.2	6.4, 10.5
Service shut offs	3.2	2.0, 5.1
Coping responses		
No or reduced air conditioning during hot weather because of run cost	14.3	12.1, 16.9
No heat because of run cost	6.7	5.1, 8.6
Reduced energy use because of cost	38.7	35.3, 42.3
Stove or oven used for heat	21.3	18.3, 24.7

**SOURCE** New York City Household Energy and Health Survey, March 2022. **NOTE** Weighted estimates based on responses of  $N = 1,950$  survey participants. <sup>a</sup>Percent of individuals.

insecurity, the adjusted odds ratio of mental health conditions was 3.9, the adjusted odds ratio of respiratory conditions was 2.2, and the adjusted odds ratio of cardiovascular disease was 2.5 compared to those with zero indicators. The adjusted odds ratio of using electric medical devices was 3.4 among those with three or more indicators of energy insecurity compared to those with none. The other three conditions (chronic kidney disease, diabetes, and hypertension) were not consistently associated with energy insecurity indicators.

## Discussion

In 2022 we conducted the first citywide survey to characterize energy insecurity and its correlates with health and social vulnerability in New York City, laying the groundwork for new avenues of exploration connecting energy insecurity and health. The citywide prevalence of three or more indicators of energy insecurity in this study (28 percent) was similar to the prevalence of energy insecurity reported at the community scale locally (27 percent), based on indicators from Cook and colleagues,<sup>6,12</sup> and nationally, using Residential Energy Consumption Survey indicators (27 percent).<sup>9,24</sup>

Early research in this field called for more comprehensive measures of the impact of energy insecurity on quality of life and mental health.<sup>25</sup> Using our expanded, ten-indicator instrument, we found that experiencing three or more indicators of energy insecurity correlated with mental health, respiratory, and cardiovascular conditions and with the use of electric medical

## EXHIBIT 2

**Weighted prevalence of energy insecurity indicators, by number of indicators, among New York City residents, overall and by demographic characteristics, 2022**

	No. of indicators (out of 10)			
	0	1	2	3+
Overall, %	31.1	22.3	18.1	28.4
Age (years), %				
18-24 (ref)	15.3 <sup>a</sup>	26.3 <sup>a</sup>	23.5 <sup>a</sup>	35.0 <sup>a</sup>
25-44	30.5 <sup>***</sup>	19.3	19.8	30.3
45-64	30.3 <sup>***</sup>	22.9	16.9	29.9
65+	39.1 <sup>****</sup>	26.8	14.5	19.6 <sup>*</sup>
Sex assigned at birth, %				
Male (ref)	33.0	24.1	15.5	27.5
Female	29.8	21.0	19.9	29.3
Race and ethnicity, %				
White non-Latino/a (ref)	40.0	26.8	15.7	17.6
Black Latino/a	23.4 <sup>****</sup>	21.8	14.6	40.2 <sup>****</sup>
Latino/a	24.8 <sup>****</sup>	20.4 <sup>*</sup>	21.8 <sup>*</sup>	32.9 <sup>***</sup>
Asian or Pacific Islander non-Latino/a	33.4	20.6	18.4	27.5
Other or multiracial non-Latino/a	45.9 <sup>a</sup>	16.7 <sup>a</sup>	18.3 <sup>a</sup>	19.0 <sup>a</sup>
Education, <sup>b</sup> %				
High school diploma or less (ref)	27.0	20.3	19.9	32.8
Some college	26.7	20.8	18.9	33.5
College degree or more	38.6 <sup>***</sup>	25.6 <sup>*</sup>	15.5	20.3 <sup>***</sup>
Household income, %				
Less than 200% FPL (ref)	25.4	18.9	18.1	37.6
200% FPL or more	37.3 <sup>****</sup>	26.5 <sup>**</sup>	17.1	19.2 <sup>****</sup>
Housing tenure				
Owned by resident or family (ref), %	40.1	21.6	15.3	23.0
Rented or occupied without payment of rent, %	26.9 <sup>****</sup>	22.6	19.4	31.0 <sup>**</sup>
Household size (mean no.)	2.6	2.9	3.0	3.3
Household members, by age, %				
With members <18 (ref)	25.6	20.0	17.4	36.9
Without members <18	34.0 <sup>**</sup>	23.5	18.5	24.0 <sup>***</sup>
With members >60 (ref)	33.7	25.0	18.4	23.0
Without members >60	29.1	20.2 <sup>*</sup>	18.0	32.8 <sup>***</sup>
Place of birth, <sup>c</sup> %				
US-born (ref)	35.8	24.1	17.9	22.1
US territory-born	37.0 <sup>a</sup>	18.0 <sup>a</sup>	24.1 <sup>a</sup>	20.9 <sup>a</sup>
Foreign-born	24.0 <sup>****</sup>	19.9	17.7	38.4 <sup>****</sup>
Length of residence in US, <sup>d</sup> %				
Less than 5 years (ref)	22.3 <sup>a</sup>	— <sup>e</sup>	— <sup>e</sup>	64.4 <sup>a</sup>
5-10 years	28.7 <sup>a</sup>	30.7 <sup>***</sup>	18.1 <sup>a</sup>	22.6 <sup>****</sup>
More than 10 years	23.8	18.8 <sup>**</sup>	17.4 <sup>**</sup>	40.0 <sup>*</sup>

**SOURCE** New York City Household Energy and Health Survey (selected demographic characteristics obtained from respondents' enrollment in the NYC Health Panel), March 2022. **NOTES** Weighted estimates based on responses of N = 1,950 survey participants. Weighted prevalence is percent of individuals. FPL is federal poverty level. <sup>a</sup>Estimate must be interpreted with caution: relative standard error is greater than 30 percent, 95% confidence interval half-width is greater than 10, or sample size is too small. <sup>b</sup>Education estimates based on responses of survey participants ages 25 and older. <sup>c</sup>Place of birth is applicable to the person participating in the survey. <sup>d</sup>Based on responses of survey participants not born in the US or in US territories. <sup>e</sup>Suppressed value: estimate is not given because potentially unreliable. \*p < 0.10 \*\*p < 0.05 \*\*\*p < 0.01 \*\*\*\*p < 0.001

devices. The sensitivity of the respiratory tract to temperature and air quality<sup>26,27</sup> may explain the association between energy insecurity indicators and respiratory conditions. Moreover, we found that having three or more indicators of energy insecurity was strongly associated with mental health conditions, as reported elsewhere.<sup>28</sup> The energy insecurity-mental health association can

be explained by the physical and psychological disturbances produced by inhospitable temperatures and by the anxiety and stress associated with debt and economic trade-offs. The accumulation of energy insecurity-related burdens (that is, an extremely cold home, difficulty paying utility bills, and disconnection threats) requires a more intensive response<sup>13</sup> and high-effort cop-

**EXHIBIT 3****Association of self-reported health conditions and electric medical device use among New York City residents with number of energy insecurity indicators, 2022**

	No. of indicators (out of 10)					
	1		2		3+	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
Mental health conditions	1.4	0.9, 2.2	1.5	1.0, 2.3	3.9	2.4, 6.3
Respiratory conditions	1.7	1.1, 2.7	0.7	0.4, 1.3	2.2	1.3, 3.6
Cardiovascular disease	2.0	1.2, 3.5	1.5	0.8, 2.9	2.5	1.3, 4.8
Chronic kidney disease	1.2	0.4, 3.5	1.9	0.7, 5.2	1.6	0.6, 4.3
Diabetes	1.2	0.7, 1.9	0.8	0.4, 1.5	1.3	0.8, 2.2
Hypertension	1.3	0.8, 2.1	0.8	0.5, 1.3	1.7	1.0, 2.7
Use of electric medical device	2.4	1.3, 4.6	2.4	1.3, 4.5	3.4	1.9, 6.0

**SOURCE** New York City Household Energy and Health Survey, March 2022. **NOTES** Weighted estimates based on responses of  $N = 1,950$  survey participants. Logistic regression models adjusted for age group, sex assigned at birth, self-reported race and ethnicity, education level, presence of children in the home younger than age 18, presence of household members age 60 or older, household income as percentage of the federal poverty level, and employment status. Health condition questions asked about diagnosis or electric medical equipment use for the respondent and the members of the respondent's household. Adjusted odds ratios (aORs) are compared to those with zero indicators of energy insecurity.

ing strategies,<sup>29</sup> which can be stressful to manage<sup>10</sup> and can magnify risks for cardiovascular disease.<sup>30</sup>

The links between energy insecurity and health identified in this study may have been magnified by additional factors, including the synergistic effects of the COVID-19 pandemic.<sup>31</sup> A recent study found that people with a disability were disproportionately affected by energy insecurity during the COVID-19 pandemic,<sup>32</sup> and our findings suggest that people living with some chronic diseases are also more likely to experience energy insecurity. The present study did not find that older New York City adults were more likely to experience energy insecurity; however, according to AARP, older adults are particularly susceptible to the intersecting issues of thermal comfort, health, and safety.<sup>33</sup> Our findings do, however, expand on prior research linking power outages to electric medical devices and socioeconomic disparities,<sup>34</sup> indicating the need for enhanced safeguards, such as bill assistance and resilient power access.<sup>35</sup>

**ENERGY INSECURITY, HOUSING, AND HEALTH** Energy insecurity and its linked health risks are known to be exacerbated by poor-quality housing, marked by inefficiencies, outages due to faulty systems, and high prevalence of asthma triggers such as indoor air pollution and mold.<sup>1,15</sup> In this study, as in previous research,<sup>3,6</sup> a consistent pattern of unequal sociodemographic distribution of energy insecurity indicators emerges, with low-income, Black non-Latino/a, and Latino/a residents disproportionately affected. The implications of these disparities are relevant from a health equity perspective, given that the

burden of disease inequitably falls on many of the same populations.<sup>36</sup>

Historic redlining policies and widespread disinvestment in urban centers, along with other strategies to maintain wealth and health disparities across generations, have effectively created concentrations of poverty, poor health, and inadequate housing in specific areas.<sup>36-40</sup> Racial segregation along with financial, language, and education barriers are often associated with poorly maintained housing, especially in rental properties, so the resultant higher risks of energy insecurity observed in these communities is, unfortunately, unsurprising.<sup>41</sup>

Energy insecurity in New York City is distinctive, given that many residents live in large, multiunit buildings where heating is not controlled by the occupants. Many residents also do not pay for heat directly, and although housing ordinances require landlords to provide heat for renters during the winter,<sup>42</sup> heating may remain unsatisfactory. Cold apartments may force residents to find alternatives such as using a stove or oven for heat, as 21 percent of participants in our study did. Heating of buildings may also be excessive, making apartments stiflingly hot; therefore, survey responses may reflect exposure to this form of extreme heat. In contrast, residents (regardless of owner or renter status) largely control the use and cost of air conditioning and other methods of cooling, which we saw reflected in the higher prevalence of forgoing cooling (versus forgoing heating) because of cost.

**THE USE OF ENERGY INSECURITY INDICATORS TO INFORM POLICY** Indicators that document res-

idents' lived experience of indoor temperatures that are too hot or too cold are important in understanding energy insecurity and can draw attention to issues that are modifiable through policy. For example, our survey indicates that nearly 9 percent of New York City residents lacked air conditioning (data not shown), and among those with air conditioning, 14 percent reduced its use during hot weather (using it about half the time or less during very hot weather), most often because of cost. The underuse of cooling devices because of costs has been found in another recent New York City–based study,<sup>43</sup> as well as in Arizona.<sup>44</sup> Enduring extreme indoor heat to save on energy costs poses preventable health risks that will increase with climate change, as air conditioner use can be a matter of life and death.<sup>7</sup> Equipping housing units with cooling options and subsidizing cooling costs during hot weather are policy interventions that can be implemented even on small scales.

The use of an expanded set of energy insecurity indicators allows for identifying key mechanisms of this phenomenon, as well as documenting both positive impacts and unintended consequences of policy and programmatic interventions. As New York City works to institute residential cooling regulations by 2030,<sup>45</sup> measuring energy insecurity indicators related to extreme heat and cost barriers to cooling can support the design and evaluation of related policies. For example, concerns regarding cost shifting onto low-income populations were previously identified by the New York City government with the implementation of residential building electrification policies, such as the 2019 Local Law 97,<sup>46</sup> which sets carbon emission standards and enforcement timelines for large buildings. Routine energy insecurity surveillance can help determine whether cooling access policies result in the unintended consequence of cost shifting onto residents who cannot afford them, thereby exacerbating energy insecurity.

**ACADEMIC-GOVERNMENT PARTNERSHIPS** Our academic-government collaboration was an outgrowth of efforts to advance the New York City Department of Health and Mental Hygiene's ongoing work to prevent negative health impacts from heat. The partners initially developed an evaluation of a citywide air conditioner distribution program, which indicated that energy costs were a major barrier to cooling at home.<sup>43</sup> The partners wanted to better understand the citywide burden of energy insecurity and how it manifests in New York City to support the implementation and evaluation of major climate policies.

The current, joint endeavor demonstrates the potential of health departments to support ener-

## The current, joint endeavor demonstrates the potential of health departments to support energy insecurity measurement.

gy insecurity measurement and the value of academic-government partnerships in informing policy development and tracking impacts. Researchers at academic institutions can conduct exploratory and complementary research, working in concert with public health agencies to share approaches, leverage available data and established data collection mechanisms, and develop instruments and targeted metrics.

In recent years, municipal health departments have promoted air conditioning as life-sustaining medical equipment for high-risk populations,<sup>7</sup> measured heat vulnerability,<sup>47-49</sup> estimated air conditioning and cooling access at the population scale,<sup>50</sup> and evaluated the impact of cooling interventions,<sup>43</sup> in some cases with academic partners. Regular energy insecurity surveillance can be implemented more widely by leveraging public health infrastructure at the local, state, and federal levels in partnership with academic institutions to assess policy efforts.<sup>5</sup> For instance, surveillance is imperative to understanding the health impacts of residential cooling in response to climate change and other energy-related policies such as the Inflation Reduction Act of 2022.

**FUTURE DIRECTIONS** We aimed to demonstrate the use of a broad set of energy insecurity indicators that reflects both qualitative and quantitative emerging evidence on this complex phenomenon. The ten-indicator energy insecurity instrument, although useful as a basis for surveys in other populations, might not be fully applicable to the lived experience of energy insecurity across contexts. Differences in infrastructure, resources, and responses are to be expected across geographic locations, generations, and individuals (for example, the definitions of “uncomfortably hot” and “extremely

cold” likely vary depending on local climate and individual traits).<sup>51</sup>

We selected these ten indicators to describe energy insecurity in a large, highly diverse city across a range of dimensions, not to develop a universally applicable energy insecurity instrument. The individual indicators are not weighted, so although having multiple indicators likely indicates a higher risk for energy insecurity–related consequences, each indicator might not be equally impactful. The development and validation of other locally appropriate sets of energy insecurity indicators can build on our findings, considering which indicators and in what combination would be suitable for various modalities (that is, surveys, clinical screens). For example, energy insecurity indicators related to power outages and fuel shortages may be im-

portant in some settings, although less relevant in New York City. Ultimately, an instrument that assesses the level of severity based on thresholds, weights, or specific combinations of energy insecurity indicators could be developed and validated across contexts, so that community-specific expressions of energy insecurity are adequately and consistently captured.

## Conclusion

As the policy community responds to climate change and the clean energy transition, our study demonstrates that broadening the understanding of energy insecurity with context-specific metrics can help guide interventions and policies that address disparities relevant to health and energy equity. ■

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# THE MORTALITY EFFECTS OF WINTER HEATING PRICES\*

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This paper examines how the price of home heating affects mortality in the United States. Exposure to cold is one reason that mortality peaks in winter, and a higher heating price increases exposure to cold by reducing heating use. Our empirical approach combines spatial variation in the energy source used for home heating and temporal variation in the national prices of natural gas and electricity. We find that a lower heating price reduces winter mortality, driven mostly by cardiovascular and respiratory causes. Our estimates imply that the 42% drop in the natural gas price in the late 2000s, mostly driven by the shale gas boom, averted 12,500 deaths per year in the United States. The effect appears to be especially large in high-poverty communities.

Many families worldwide struggle to heat their homes each winter. Their heating bills are so high relative to their income that they are considered to be living in ‘fuel poverty’. In the European Union, 8% of households are unable to keep their homes adequately warm in winter (Eurostat, 2021). In the United States, 17% of households spend over 10% of their income on home energy; winter heating is the largest contributor (RECS, 2009). The problem becomes even more acute during energy crises. For example, when natural gas supply was disrupted after Russia’s invasion of Ukraine in 2022, heating prices soared in many parts of the world, pushing millions of additional households into fuel poverty.

Households face a difficult trade-off when heating prices are high: they have to keep their home uncomfortably cold to save on heating, or they have to forgo other spending to afford their high heating bill. Either choice could be harmful to their health. Using less heating means exposure to lower ambient temperature, which has been linked to cardiovascular, respiratory and other health problems. But if families do not cut back heating usage one for one when the price rises, their energy bills will increase, leaving less money for other expenditures that affect health such as food and health care. For these reasons, morbidity and mortality are potentially important consequences of high heating prices.

This paper estimates the effect of heating prices on mortality in the United States. A large literature has documented that mortality peaks in winter (see [Online Appendix Figure A1](#)) and

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The data and codes for this paper are available on the Journal repository. They were checked for their ability to reproduce the results presented in the paper. The authors were granted an exemption to publish parts of their data because access to these data is restricted. However, the authors provided a simulated or synthetic dataset that allowed the Journal to run their codes. The synthetic/simulated data and the codes for the parts subject to exemption are also available on the Journal repository. They were checked for their ability to generate all tables and figures in the paper; however, the synthetic/simulated data are not designed to reproduce the same results. The replication package for this paper is available at the following address: <https://doi.org/10.5281/zenodo.8206902>.

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that cold weather is associated with higher mortality. Our contribution is to examine whether high home heating costs exacerbate this pattern of ‘excess winter mortality’.

Our empirical design uses spatial variation across the United States in the energy source used for home heating. Natural gas and electricity are used for heating by 58% and 30% of US households, respectively. Importantly, there is considerable variation across counties in whether natural gas versus electricity is mainly used. We combine this spatial variation with temporal variation in the national prices of natural gas and electricity. The price of natural gas varied substantially over the 2000 to 2010 study period, relative to the price of electricity; it first rose, partly due to supply disruption from Gulf of Mexico hurricanes, and then fell after 2005, mostly due to the supply influx from shale production of natural gas (Hausman and Kellogg, 2015). We use the fact that, when the price of natural gas rose or fell, households in areas that rely on natural gas for heating experienced a rise or fall in their home heating price, relative to households in areas reliant on electricity.

We find that lower heating prices reduce mortality in winter months.<sup>1</sup> The estimated effect size implies that the 42% drop in the price of natural gas in the late 2000s averted 12,500 winter deaths per year in the United States. Moreover, we find that this effect does not just represent a short-run postponement of mortality. We also show that the effect, which is driven mostly by cardiovascular and respiratory causes and is larger in high-poverty communities, is robust to several stress tests of the empirical specification.

Our findings have implications for policies that reduce households’ heating costs such as the federal Low Income Home Energy Assistance Program (LIHEAP) and state energy price subsidy programs in the United States (see, e.g., Hahn and Metcalfe, 2021) and analogous policies worldwide, and are also relevant for cost-benefit analysis of weatherization programs that reduce households’ need for heating. In addition, our findings highlight a health benefit of increases in US energy supply that has not received much prior attention.

Our paper contributes to the literature on the effects of cold weather on mortality (Eurowinter Group, 1997; Analitis *et al.*, 2008; Deschênes and Moretti, 2009) and other dimensions of well-being (Bhattacharya *et al.*, 2003; Cullen *et al.*, 2004; Ye *et al.*, 2012; Beatty *et al.*, 2014). To our knowledge, no prior study has estimated the causal effect of heating prices—an important and policy-relevant mediating factor—on health. Previous work has found that the winter spike in mortality is especially large for people living in older housing, which tends to be poorly insulated, which is suggestive, but not dispositive that indoor temperature is a mediating factor (Wilkinson *et al.*, 2007).

Another related line of research examines adaptations that mitigate the temperature-health relationship. Previous research has examined the role of technological and medical advances (Deschênes and Greenstone, 2011; Barreca *et al.*, 2016), migration (Deschênes and Moretti, 2009) and weatherization and energy-efficiency programs (Critchley *et al.*, 2007; Howden-Chapman *et al.*, 2007; El Ansari and El-Silimy, 2008; Green and Gilbertson, 2008). Increased heating use is another important household-level adaptation, and we contribute by analysing how high fuel prices stymie this adaptation. A study concurrent to ours analyses the aftermath of the Fukushima nuclear power plant accident in Japan and finds that higher electricity prices exacerbate the relationship between cold temperatures and mortality (Neidell *et al.*, 2021). An advantage of our research design is that we can directly identify changes in the price of heating

<sup>1</sup> We define ‘winter’ as November to March, the coldest months of the year in the United States (see [Online Appendix Figure A1](#)). We also show the results using December to March, similar to analyses of excess winter mortality in the UK and Europe where those are the coldest months (Wilkinson *et al.*, 2004).

(by incorporating geographic variation in the energy source used for heating) instead of energy prices more broadly, which might also affect health through other channels. Additionally, we shed light on the relative importance of the different mechanisms through which a higher heating price increases mortality.<sup>2</sup>

Our paper also contributes to the literature on the health effects of the shale gas (or ‘fracking’) boom by highlighting a national-level health benefit—the drop in energy prices reduced winter mortality. Prior work has highlighted the health benefit of fracking displacing pollutive coal in electricity generation (Knittel *et al.*, 2015; Cullen and Mansur, 2017; Holladay and LaRiviere, 2017; Fell and Kaffine, 2018; Linn and Muehlenbachs, 2018). Fracking has also been shown to be harmful because of local contamination from the chemicals used (Groundwater Protection Council and ALL Consulting, 2009; Jackson *et al.*, 2014; Muehlenbachs *et al.*, 2015; Casey *et al.*, 2016; Currie *et al.*, 2017; Hill, 2018). The health harm from the toxic chemicals is likely much larger per person affected than the health benefits from lower energy prices; however, the latter channel affects a much larger population. Thus, the net health effect of fracking aggregated for the whole US population is ambiguous. Finally, our empirical strategy is similar to that of Myers (2019), who compared households that use heating oil or natural gas in Massachusetts to study whether home energy costs are capitalised into home values.

## 1. Empirical Strategy

To identify the effect of heating prices on mortality, we combine information on whether a locality typically uses natural gas or electricity for heating with data on national energy prices. This approach enables us to control for average differences across localities and time.

### 1.1. Estimating Equations

In principle, we want to estimate the following equation:

$$\log(m_{jt}) = \alpha + \beta \log(p_{jt}^H) + \epsilon_{jt}. \quad (1)$$

Each observation is a county-month. The outcome  $\log(m_{jt})$  is the log of age-adjusted mortality in county  $j$  in month  $t$ . (We use the log of the mortality rate following Stevens *et al.*, 2015, but also report the results in levels.) The key regressor is  $\log(p_{jt}^H)$ , the log of the heating price for the county-month. The coefficient  $\beta$  measures the elasticity of mortality with respect to the heating price. The hypothesis is that  $\beta > 0$ : a higher heating price increases mortality.

There are no data on  $p_{jt}^H$  because utilities do not set a price specifically for heating, just for different energy sources. Instead, we construct a proxy for the heating price by interacting  $\text{ShareGas}_{jt}$ , the proportion of households in the area that used natural gas for heating in that year, with  $\log(\text{RelPrice}_{jt})$ , the ratio of the price of gas to electricity in the state-month. To see why this interacted variable tracks the heating price for households, note that when natural gas prices increase (high  $\text{RelPrice}$ ), areas with high  $\text{ShareGas}$  face relatively higher heating prices. Conversely, when electricity prices increase (low  $\text{RelPrice}$ ), areas with higher  $\text{ShareGas}$  face

<sup>2</sup> Other studies have focused on financial assistance for energy bills or heating subsidies for low-income families (Frank *et al.*, 2006; Grey *et al.*, 2017; Crossley and Zilio, 2018).

relatively low heating prices. In practice, most of the identifying variation comes from the natural gas price because it fluctuates more over the study period.<sup>3</sup>

Utilities markets within the United States vary considerably in terms of prices and regulations, which means that  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$  could be endogenous to local demand. To solve this problem, our empirical strategy relies on national-level energy prices combined with (pre-period) local variation in the energy source for heating. That is, we instrument for  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$  with  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{\text{US},t})$ .<sup>4</sup>

We estimate the following equation with this instrumental variables approach:

$$\begin{aligned} \log(m_{jt}) = & \alpha + \beta \text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt}) + \gamma_j + \tau_t + \boldsymbol{\theta} \cdot \mathbf{Z}_j \times \log(\text{RelPrice}_{\text{US},t}) \\ & + \boldsymbol{\delta} \cdot \mathbf{X}_{jt} + \epsilon_{jt} \end{aligned} \quad (2)$$

with the first-stage equation given as

$$\begin{aligned} \text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt}) = & \tilde{\alpha} + \tilde{\beta} \text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{\text{US},t}) + \tilde{\gamma}_j + \tilde{\tau}_t \\ & + \tilde{\boldsymbol{\theta}} \cdot \mathbf{Z}_j \times \log(\text{RelPrice}_{\text{US},t}) + \tilde{\boldsymbol{\delta}} \cdot \mathbf{X}_{jt} + \nu_{jt}. \end{aligned}$$

In addition to replacing  $\log(p_{jt}^H)$  with  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$ , we augment (1) by including county fixed effects,  $\gamma$ , and month-year fixed effects,  $\tau$ . We also include several control variables, denoted by the vector  $\mathbf{X}$ . Because the study period spans the housing market boom and bust as well as the Great Recession, we control for a housing price index, the unemployment rate and the manufacturing share of local employment income. Vector  $\mathbf{X}$  also includes factors that might affect mortality, namely air pollution—particulate matter 2.5 and 10 microns, separately, and nitrogen dioxide—absolute humidity and the heating degree days (HDDs) of the area (a measure of coldness, described in Section 2). We additionally include nitrogen dioxide as a quadratic term to control for it more flexibly because we find that it is correlated with  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{\text{US},t})$ . The humidity-mortality relationship is non-linear (Barreca and Shimshack, 2012), so we also control for a quadratic term in absolute humidity. Finally, we control for area characteristics  $\mathbf{Z}$ , specifically pre-period log income (25th, 50th and 75th percentiles) and the share of the population over age 70, interacted with  $\log(\text{RelPrice}_{\text{US},t})$ ; these controls help safeguard against a spurious correlation due to the Great Recession (or another phenomenon with a similar temporal pattern as  $\log(\text{RelPrice}_{\text{US},t})$ ) having a differential impact on mortality across socioeconomic or demographic groups (Hoynes *et al.*, 2012).

The identification assumption is that, when natural gas prices are high relative to electricity, places with more natural gas usage for heating have higher mortality only because of the higher heating price they face, conditional on fixed effects and control variables. Throughout, we cluster SEs by state to allow for serial correlation plus spatial correlation among counties in a state.

For our baseline specification, we restrict the data to only winter months (when possible) when most of the year's heating is consumed. We also estimate a winter/non-winter specification that

<sup>3</sup> Our results are similar if we replace RelPrice with the price of natural gas, with or without controlling for ShareGas interacted with the electricity price.

<sup>4</sup> Formally,  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{\text{US},t}) = \text{ShareGas}_{j,2000} \log(p_{\text{US},t}^G) + \text{ShareElec}_{j,2000} \log(p_{\text{US},t}^E) - \log(p_{\text{US},t}^E)$ , where  $\text{ShareElec}_{j,2000}$  is the proportion of households in 2000 that use electricity for heating, and  $p_{\text{US},t}^G$  and  $p_{\text{US},t}^E$  are the national prices of natural gas and electricity, respectively. Month-year fixed effects absorb  $\log(p_{\text{US},t}^E)$ . The first two terms on the right capture the average proportional change in the heating price across households in a county (some use gas, while others use electricity as their main heating source), i.e., it is an exogenous proxy for  $\log(p_{jt}^H)$ .

uses the non-winter months as an additional comparison group, testing the prediction that the price of heating affects mortality more in winter than in the remaining, warmer months:

$$\begin{aligned} \log(m_{jt}) = & \alpha + \lambda_1 \text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt}) \times \text{Winter}_t \\ & + \lambda_2 \text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt}) \\ & + \lambda_3 \text{ShareGas}_{j,2000} \times \text{Winter}_t + \lambda_4 \log(\text{RelPrice}_{US,t}) \times \text{Winter}_t \\ & + \theta_1 \mathbf{Z}_j \times \log(\text{RelPrice}_{US,t}) \times \text{Winter}_t + \theta_2 \mathbf{Z}_j \times \log(\text{RelPrice}_{US,t}) \\ & + \theta_3 \mathbf{Z}_j \times \text{Winter}_t + \gamma_j + \tau_t + \delta \mathbf{X}_{jt} + \epsilon_{jt}. \end{aligned}$$

Analogous to before, the first two regressors are instrumented using  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{US,t})$  and  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{US,t}) \times \text{Winter}_t$ . The prediction is  $\lambda_1 > 0$ .

Some winters or particular months in winter are colder than others, so we can also replace *Winter* with *HDD*. In this specification, we control for the county's average HDDs in winter,  $\overline{\text{HDD}}_j$ , in parallel to  $\text{HDD}_{jt}$  to adjust for systematic differences (e.g., demographics) between colder regions such as the Midwest and warmer ones such as the South.

### 1.2. *Assessing the Heating and Non-Heating Consumption Channels*

Heating prices can affect mortality through two channels: a cutback in heating use ('heating channel') and a reduction in the income left over for other consumption after paying the heating bill ('non-heating channel'). To gauge the potential relevance of each channel, we analyse two additional outcomes.

The first one is the (log) quantity of home energy use. Here, the coefficient  $\beta$  from (2) can be interpreted as a price elasticity. We expect it to be negative: consumers substitute away from heating when it becomes more expensive. The data on home energy use do not disaggregate it by purpose (e.g., heating, lighting). Thus, while the variation in the price of natural gas is mainly measuring variation in a household's heating price, the outcome combines heating plus other energy uses, so the coefficient represents a lower bound magnitude for the price elasticity of heating demand. The use of natural gas in homes is mostly for heating (space heating and water heating), with an additional small contribution from kitchen ranges and clothes dryers. Non-heating home energy needs such as lighting, refrigeration and air conditioning predominantly use electricity throughout the United States. Home heating is the largest component of home energy use, accounting for 42% of annual home energy consumption, with water heating accounting for an additional 18% (RECS, 2009).

The second outcome is expenditures on home energy, again with the caveat that we cannot distinguish spending on heating from other energy uses (although in winter months, heating accounts for most energy use). If households are not cutting back one for one when the price rises then higher energy prices will lead to higher energy bills (and thus less income left for other consumption).

### 1.3. *Geographic Variation in Heating Source*

Natural gas and electricity are the two most common energy sources for home heating in the United States, with considerable geographic variation. In some communities, almost every household uses natural gas for heating, and in other communities, almost no one does.

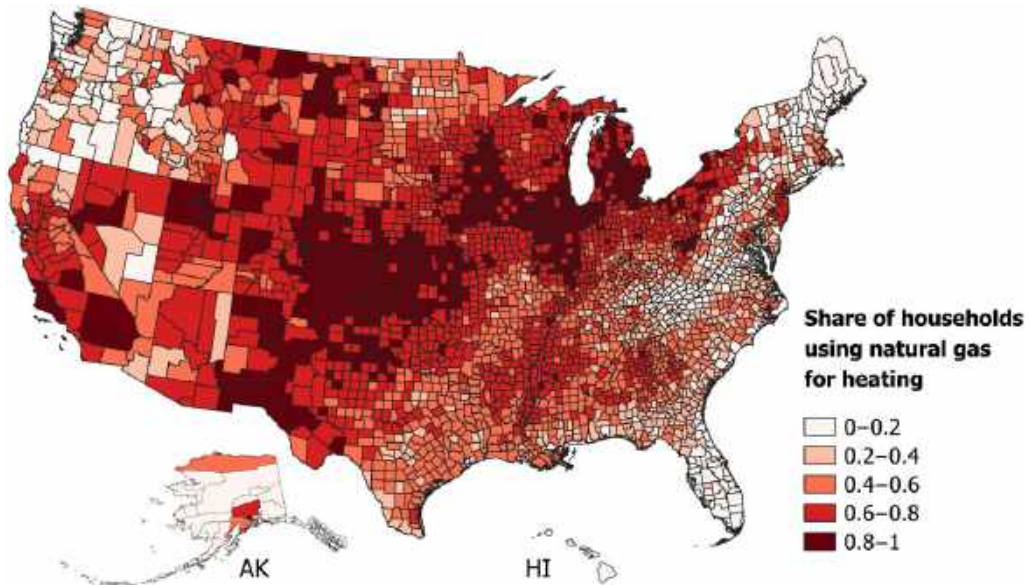


Fig. 1. *Share of Households Using Natural Gas for Heating, by US County.*

Notes: The figure shows the proportion of occupied housing units in each county that report using natural gas as their main heating source. Data are from the 2000 US census.

Figure 1 shows the share of households using natural gas as their heating source across counties, based on the 2000 US census data.

Whether a locality uses natural gas, electricity or another heating source is not random, and various factors explain the differences. Natural gas pipelines do not extend to some parts of the United States, such as Maine. Areas that are well suited for hydroelectric power generation have low electricity costs and thus rely more on electricity. For historical reasons, much of the Northeast uses heating oil, a petroleum product, instead of gas or electricity. Importantly, the geographic differences were determined long before the study period and are highly persistent. Being predetermined does not rule out that an area's heating source is correlated with other factors affecting mortality, so the analysis controls for other locality characteristics in parallel to the heating source. This guards against the endogeneity of shares emphasised by Goldsmith-Pinkham *et al.* (2020).<sup>5</sup>

#### 1.4. Temporal Variation in Energy Prices

Figure 2 plots the national prices of natural gas and electricity over the 2000 to 2010 study period. The data source is the US Energy Information Administration (EIA). Natural gas is one of the fuel sources used in electricity generation, so the two prices co-move, but far from in lockstep. Electricity prices changed somewhat over the time period, while natural gas prices rose and then

<sup>5</sup> Users of natural gas can partially substitute to electric space heaters in the short run, but there is no low-cost short-run way to substitute in the other direction. In [Online Appendix Table A1](#), we find little evidence of changes in heating source in response to changes in relative prices.

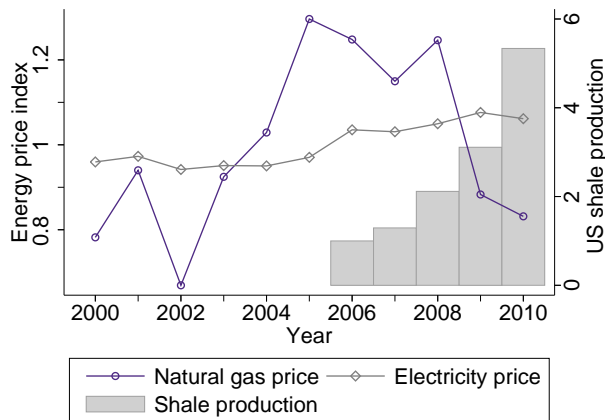


Fig. 2. US Natural Gas and Electricity Prices, 2000 to 2010.

Notes: The data series depicted with lines are the national prices of natural gas and electricity, normalised by their respective averages between 2000 and 2010 (left axis). National shale gas production in trillion cubic feet is shown as the bar chart (right axis). Data are from the US Energy Information Administration.

fell much more dramatically. As a result, the relative price of natural gas to electricity rose and then fell over the period.

Natural gas prices rose from 2004 to 2005 due in part to supply disruptions from major hurricanes along the Gulf coast (Hurricane Ivan in 2004 and Hurricanes Katrina and Rita in 2005) (Brown and Yücel, 2008). In addition, increased efficiency of producing electricity from natural gas boosted demand for natural gas during the early 2000s (Hartley *et al.*, 2008). A main cause of the natural gas price decline in the mid-2000s was the sharp increase in shale gas production (plotted in Figure 2); Hausman and Kellogg (2015) estimated that increased supply from shale gas explains 83% of the 2007–13 decline in the price of natural gas.<sup>6</sup>

### 1.5. Home Heating versus Other Heating

While we sometimes refer to our results as due to home heating, the analysis cannot isolate home heating from other indoor (e.g., workplace) heating. Some policy implications, such as whether to promote increased energy supply, are similar whether the channel is home heating or other indoor heating. For other policies, such as subsidies for consumer heating bills, it would be valuable to isolate heating costs at home, which our research design does not permit. A related, more minor limitation is that we cannot separate the effect of space heating from water heating; the energy source is the same in most households (RECS, 2014), and both types of heating likely affect health through similar mechanisms.

## 2. Data

Our analysis focuses on the contiguous United States between 2000 and 2010. This section describes our data sources, with further details in [Online Appendix B](#).

<sup>6</sup> To investigate whether the price decline is also due to lower demand for natural gas during the Great Recession, we estimated the relationship between  $RelPrice_{jt}$  and the unemployment rate (a proxy for the Great Recession intensity). The regression coefficient is small and statistically insignificant (see [Online Appendix Table A2](#)).

## 2.1. Mortality

We construct the county-year-month age-adjusted mortality rate from restricted-use vital statistics microdata (National Center for Health Statistics, 2017). We exclude counties with a small population over age 50, specifically those in the bottom decile of counties, as they have few (often zero) deaths per month.<sup>7</sup>

We focus on causes of mortality that exhibit a high degree of excess winter mortality (EWM). Overall mortality is higher in winter than the rest of the year, but the pattern is more pronounced for some causes than others. We zoom in on these causes because it is most plausible that they are exacerbated by exposure to cold and also because doing so increases statistical power. We use a data-driven approach to determine these causes. Using monthly data, we estimate a regression of log age-adjusted mortality for the entire United States on a dummy for winter, separately for each of the 113 National Center for Health Statistics (NCHS) selected causes of death. Causes with a large positive winter coefficient have more excess mortality in winter. We also estimate the model in levels to exclude minor causes that might have spuriously large coefficients. We select the causes whose winter coefficients are in the top quartile in both levels and logs, excluding two causes where there is no clear direct physiological link to cold exposure ('deaths from smoke, fire, and flames' and the residual category, 'all other diseases'). The final 14 causes are within four alphabetic (i.e., broad) categories, and generally match the causes highlighted in the literature as exacerbated by cold (e.g., cardiovascular, respiratory). These high-EWM causes (hereafter, EWM causes) account for 61% of total mortality and 63% of total mortality in winter. [Online Appendix Table A3](#) lists the 14 EWM causes, and [Online Appendix Figure A2](#) shows the seasonality for EWM and non-EWM causes.

## 2.2. Independent Variables

We construct county-level  $\text{ShareGas}_{j,2000}$  using the 2000 census summary files. For subsequent years, we use the American Community Survey (ACS), which is available starting in 2005, and linearly interpolate for years without data. (ShareGas is highly correlated over time—the correlation between ShareGas in 2000 and 2010 is 0.95.)

RelPrice, the ratio of the price of gas to electricity, is constructed using monthly state (for the endogenous heating price proxy) and national (for the instrument) price data from EIA. The appropriate specification depends on the timing of consumers' response to RelPrice. Similar to Auffhammer and Rubin (2018), we find that residential energy use responds to RelPrice with a lag of three months. Consumers seem to cut back on usage only after seeing their energy bill, which typically arrives a few weeks after the billing period ends. In addition, the health effects of cutbacks in heating use or paying higher bills might not be instantaneous. Hence, we use the average of the three- and four-month lagged price to construct RelPrice. We find similar results when we reduce the lag by one month or use annual prices. To investigate if the mortality effects materialise with a longer delay, we also estimate models that incorporate mortality effects in subsequent, post-winter months; the effect in subsequent months could also be negative if deaths are hastened by only a short duration ('harvesting').

The analysis also incorporates temperature data. We use daily average temperature (PRISM Climate Group, 2016) to compute the HDDs for each county-month. HDDs are a commonly

<sup>7</sup> These small counties constitute 0.37% of the total population and 0.45% of the total deaths in 2000. Among our retained counties, less than 0.03% of all county-month observations have zero deaths.

used measure of coldness—or need for heating—based on the idea that heating demand is linear in temperature when the temperature falls below 65 °F. That is,  $HDD_{jt} = \sum_{x=1}^T \max\{65 - tmean_{jtx}, 0\}$ , where  $tmean$  is the mean temperature of area  $j$  on day  $x$  of month  $t$ , and  $T$  is the number of days in month  $t$ . [Online Appendix B](#) provides details on the data sources for our control variables.

### 2.3. Other Dependent Variables

An auxiliary outcome we examine is the average price of home energy that consumers face. Our specification uses  $ShareGas_{jt} \times \log(RelPrice_{jt})$  as a proxy for the home *heating* price faced by households. We do not have household-level data on heating prices, but we can use aggregate administrative data on residential energy prices to verify that our regressor is a good proxy for household heating prices. The dependent variable we use for this is the weighted average of the local prices of natural gas and electricity, where weights are the local consumption levels of each energy source. Price and usage data are aggregated state-month-level data from EIA.

As discussed in Section 1.2, we also examine residential energy use. We sum natural gas and electricity usage from EIA data. To examine household spending on home energy, we combine 2000 census microdata and ACS data for 2005 to 2010, aggregated to the county-year level.

## 3. Results

We first present results on the intermediate outcomes of home energy prices, quantity of energy consumed and energy bills. We then present the mortality results.

### 3.1. Effect of Heating Price on Energy Use and Spending

We start by examining the usage-weighted average price of residential natural gas and electricity prices. Each observation is a state-month. As shown in Table 1, columns (1) and (2), home energy prices are strongly positively correlated with the heating price proxy. In column (1), we include only state and month-year fixed effects. In column (2), we add our other control variables. The coefficient on the heating price proxy is less than 1 because the outcome is the average *energy* price, while the regressor is a proxy for the average *heating* price. Heating comprises roughly 40% of annual home energy use, so we would expect a 10% change in the heating price to lead to a 4% change in the home energy price, or a coefficient of 0.4. The estimated coefficient of 0.36 is quite close to this.

We next quantify how heating prices affect households' energy use and energy bills. (In principle, once we know one of these numbers, we could calculate the other, but showing both is useful given that the data are available at different geographic levels and based on different samples.) First, we examine the impact on energy usage, shown in Table 1, columns (3) and (4). As expected, higher prices lead to less energy consumption.<sup>8</sup> Both the outcome and key regressor are in logs, so the coefficient represents an elasticity. The coefficient of  $-0.093$  implies that households cut back usage quite a bit, but not one for one with price. To quantify the energy-use elasticity, one needs to scale the coefficient by the corresponding price-change coefficient from

<sup>8</sup> [Online Appendix Table A4](#) shows that this cutback in usage occurs three months after the increase in the heating price, as stated in Section 2.2.

Table 1. *Effect of Heating Price on Energy Use and Energy Spending.*

	Dependent variable:							
	Log of average electricity and gas price		Log of total energy consumption		Log of total monthly energy bill		Total monthly energy bill	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Heating price proxy	0.351*** [0.0671]	0.361*** [0.0700]	-0.125*** [0.0391]	-0.0932** [0.0393]	0.270*** [0.0369]	0.246*** [0.0352]	57.4*** [7.33]	50.9*** [6.94]
Observations	2,695	2,695	2,695	2,695	21,665	21,665	21,665	21,665
Mean price/quantity	21.1	21.1	22.1	22.1	220.7	220.7	220.7	220.7
Basic fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All other controls	No	Yes	No	Yes	No	Yes	No	Yes
Implied elasticity			-0.36	-0.26				

Notes: SEs clustered by state in brackets. Asterisks denote significance: \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Columns (1) to (4): the sample comprises state-year-month observations in the contiguous United States for winter months (November–March) between 2000 and 2010. Outcomes are constructed from EIA data. Columns (5) to (8): the sample comprises county-year observations in the contiguous United States, aggregated and crosswalked from microdata in the 2000 census and the ACS PUMS data between 2005 and 2010. *Heating price proxy* is  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$ , where  $\text{ShareGas}_{jt}$  is the state-year (columns (1) to (4)) or county-year (columns (5) to (8)) proportion of occupied housing units with natural gas as their main heating source, and  $\text{RelPrice}_{jt}$  is the ratio of the citygate price of natural gas to the residential price of electricity. Prices are state-month prices averaged over the three- and four-month lag in columns (1) to (4), and state-year prices in columns (5) to (8). *Heating price proxy* is instrumented using  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{US,t})$ , i.e., the interaction of  $\text{ShareGas}_{jt}$  in 2000 with the US-level  $\log(\text{RelPrice}_{jt})$ . Average electricity and gas price is the state's consumption-weighted average of the residential prices of electricity and gas, in dollars per million British thermal units (BTUs). Total energy consumption is the state's total delivery of natural gas and electricity to residential consumers, in trillion BTUs. Total monthly energy bill is the mean monthly bill from electricity, gas and other fuels in the county. *Basic fixed effects* are state and year-month fixed effects for columns (1) to (4), and county and year fixed effects for columns (5) to (8). *All other controls* are the interactions of  $\log(\text{RelPrice}_{US,t})$  with the log state or county household income in 1999 (25th, 50th and 75th percentiles) and the share of people aged 70 and above in 2000, the state housing price index, the unemployment rate, the state's manufacturing sector share of total employee compensation, HDDs, a quadratic in absolute humidity, the air quality indices (AQIs) for  $\text{PM}_{2.5}$ ,  $\text{PM}_{10}$  and  $\text{NO}_2$ , and the AQI for  $\text{NO}_2$  squared. Implied elasticity is the ratio of the coefficient reported in that column to the corresponding coefficient from the first two columns. Monetary variables are in constant 2016 US dollars.

columns (1) and (2).<sup>9</sup> We report the implied elasticity, which is  $-0.26$ , at the bottom of the table. This elasticity is similar to the winter natural gas demand elasticity for California estimated by Auffhammer and Rubin (2018) and Hahn and Metcalfe (2021). In [Online Appendix Table A5](#), we show that the estimates based on our winter/non-winter specification are similar.

The elasticity having a magnitude less than 1 implies that households are spending more money on energy expenses when the heating price increases. We verify this using census/ACS data. Columns (5) and (6) of Table 1 show that the heating price shock is associated with a 25 log point increase in energy expenses. If the result is driven by changes in winter expenses then the coefficient is an underestimate of the impact during winter months. (We cannot isolate spending in winter because the ACS does not release the survey month, and the Census asks about annual spending on energy bills.) Columns (7) and (8) examine the outcome in levels: a 10% increase in the price of heating is associated with a \$5 (in 2016 USD) increase in the monthly home energy bill, averaged over the year. To help interpret these magnitudes, note that the relative price of natural gas fell by 42% (54 log points) between 2005 and 2010. This price decline led to a 13%

<sup>9</sup> The relevant scale factor to convert our mortality results into an elasticity of mortality with respect to the heating price is 1;  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$  incorporates information on heating sources and is hence a better proxy of the heating price than the average energy price.

or \$330 annual decrease in energy bills for natural gas users, using the estimates in columns (6) and (8), respectively.

To summarise, we find that households meaningfully reduce their heating use in response to an increase in their heating price, and they also experience an increase in their energy bills.<sup>10</sup>

### 3.2. *Effect of Heating Price on Mortality*

We now turn to estimating the effect of heating prices on mortality. Table 2 shows that a higher (log) heating price increases the (log) mortality rate.<sup>11</sup> Column (1) reports results for all-cause mortality, controlling for all fixed effects and control variables listed earlier. The elasticity of all-cause mortality with respect to the heating price is 0.032 ( $p < 0.05$ ).<sup>12</sup>

Column (2) presents results for EWM mortality. An increase in the heating price increases EWM mortality, with an elasticity of EWM mortality with respect to price of 0.059 ( $p < 0.01$ ).<sup>13</sup> Given that EWM causes account for 63% of total mortality in winter, the implied elasticity of total mortality is 0.037, similar to the elasticity using all-cause mortality.

We next examine non-EWM mortality. As shown in column (3), the coefficient for the heating price proxy is very close to 0 and statistically insignificant. Non-EWM causes are, by and large, not exacerbated by exposure to cold, so the heating use channel is not applicable. However, this is not a placebo test because the non-heating consumption channel (less income to spend on non-heating expenditures) should affect non-EWM mortality. Under the assumption that the non-heating channel has similar effects on EWM and non-EWM mortality, the lack of an effect of heating prices on non-EWM mortality indicates the importance of the heating channel—changes in heating use seem to drive the effect of heating prices on mortality.

Columns (4) to (7) disaggregate the effects by broad EWM category: the overall effect on EWM mortality is mainly driven by circulatory and respiratory causes. [Online Appendix Table A11](#) reports results separately for each of the 14 EWM causes. The largest effect sizes are for emphysema, other chronic lower respiratory diseases, acute myocardial infarction and pneumonia. Interestingly, the price of heating does not exacerbate influenza mortality.

The effects we estimate are not due to deaths being moved earlier by just a short duration, or ‘harvesting’. [Online Appendix Table A12](#) shows that the cumulative mortality effect is stable in magnitude when we incorporate effects in subsequent months. (For simplicity, the table reports reduced-form estimates.) The cumulative effect is statistically significant at at least the 5% level when we add up to three subsequent months and marginally significant up to six months. There is not enough statistical power to determine at what point the cumulative effect becomes essentially zero. (Note that the coefficient for any specific lag is difficult to interpret because RelPrice is serially correlated and we have a finite number of months in the sample.)

<sup>10</sup> We also investigated the impact of heating prices on households’ other non-energy expenditure patterns using the Consumer Expenditure Survey (CEX) data ([Online Appendix Table A6](#)). We find statistically insignificant effects, with large confidence intervals, for all broad categories of expenditure, including food and alcoholic beverages, non-durable goods and all non-energy expenditures. The effect on health expenditures is significant at the 10% level.

<sup>11</sup> [Online Appendix Table A7](#) shows the first stage of the instrumental variables regression. [Online Appendix Tables A8, A9 and A10](#) show robustness to using the age-adjusted mortality rate in levels, weighting regressions by the population in 2000, and using only natural gas variation for identification.

<sup>12</sup> We also investigated the effect on morbidity using the Health and Retirement Study and on hospitalisations using the National Inpatient Sample, but due to the smaller sample sizes, we were underpowered to detect even elasticities much larger than our estimated elasticity for mortality.

<sup>13</sup> [Online Appendix Figure A3](#) shows a binned scatterplot of the relationship between EWM mortality and the instrument.

Table 2. *Effect of Heating Price on Mortality from All Causes and EWM Causes of Death.*

	Dependent variable: log of mortality rate								
	All causes (1)	All EWM causes (2)	Non-EWM causes (3)	Group A EWM: non-viral, non-respiratory infections (4)	Group G EWM: neurological diseases (5)	Group I EWM: circulatory system diseases (6)	Group J EWM: respiratory system diseases (7)	All EWM causes (8)	All EWM causes (9)
Heating price proxy	0.032** [0.014]	0.059*** [0.017]	0.0033 [0.021]	0.021 [0.025]	0.021 [0.029]	0.054** [0.020]	0.099*** [0.020]	-0.015 [0.015]	0.090** [0.037]
Heating price proxy × Winter								0.073*** [0.019]	
Heating price proxy × HDD									0.090*** [0.032]
Observations	153,296	152,927	151,113	108,659	110,742	151,589	148,583	366,668	366,668
Mean mortality rate	929.5	577.6	358.4	74.16	74.01	371.8	259.8	527.8	527.8
Months used	Winter	Winter	Winter	Winter	Winter	Winter	Winter	All	All

Notes: SEs clustered by state in brackets. Asterisks denote significance: \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The sample comprises county-year-month observations in the contiguous United States between 2000 and 2010. In columns (1) to (7), the sample is restricted to winter months (November–March). Mortality rates are age-adjusted mortality rates expressed as annual deaths per hundred thousand population; see [Online Appendix B](#) for further details. *Heating price proxy* is  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$ , where  $\text{ShareGas}_{jt}$  is the county-year proportion of occupied housing units with natural gas as their main heating source, and  $\text{RelPrice}_{jt}$  is the ratio of the state-month citygate price of natural gas, averaged over the three- and four-month lag, to the corresponding residential price of electricity. *Winter* is a binary variable that equals one in winter months (November to March). *HDD* is the number of heating degree days in the county for the month, based on thresholds of 65 °F, in units of °F days divided by 1000, and scaled to a 30-day month. *Heating price proxy* and its interaction with *Winter/HDD* are instrumented using  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{us,t})$  and its interaction with *Winter/HDD*. Columns (1) to (7): all columns control for county and year-month fixed effects, the interactions of  $\log(\text{RelPrice}_{us,t})$  with the log county household income in 1999 (25th, 50th and 75th percentiles) and the share of people aged 70 and above in 2000, the state housing price index, the unemployment rate, the state’s manufacturing sector share of total employee compensation, HDDs, a quadratic in absolute humidity, the AQIs for  $\text{PM}_{2.5}$ ,  $\text{PM}_{10}$  and  $\text{NO}_2$ , and the AQI for  $\text{NO}_2$  squared. Columns (8) and (9): all columns control for the above set plus the following: all possible two-way interactions between  $\text{ShareGas}_{j,2000}$ ,  $\log(\text{RelPrice}_{us,t})$  and *Winter/HDD*; and the two- and three-way interactions among  $\log(\text{RelPrice}_{us,t})$ , *Winter/HDD* and each of the log county household income in 1999 (25th, 50th and 75th percentiles) and the share of people aged 70 and above in 2000. Column (9) also includes the interaction of the average county HDDs in winter months with  $\log(\text{RelPrice}_{us,t})$ ; and the three-way interactions of the average county HDDs in winter months,  $\log(\text{RelPrice}_{us,t})$  and each of  $\text{ShareGas}_{j,2000}$ , the log county household income in 1999 and the share of people aged 70 and above in 2000.

We next bring in data for non-winter months to estimate the winter/non-winter specification. We use either Winter (Table 2, column 8) or HDD (column (9)) to construct the additional comparison. Column (8) shows that the effect of heating prices on mortality is stronger in winter than the rest of the year. Reassuringly, the coefficient on the non-interacted heating price proxy is close to zero: the price of heating having no effect on mortality in non-winter months can be thought of as a placebo test.

Using HDD, we find that the price of heating increases mortality more in colder months. HDD is normalised so that a unit change is the difference between every day in the month being 65 °F or above and being 32 °F. As reported in column (9), a one-unit increase in  $HDD_{jt}$ , relative to the county's average winter HDD, leads to a 0.090 higher elasticity of EWM mortality with respect to the heating price.<sup>14</sup>

The results are similar, but somewhat weaker, when we do not control for average HDD and thus use average differences across places in the severity of their winters as additional identifying variation (see [Online Appendix Table A13](#)). This is consistent with previous findings that, due to adaptation (e.g., better insulated homes in colder places), atypical cold for an area is what especially affects mortality (Eurowinter Group, 1997).

[Online Appendix Tables A14 and A15](#) show robustness of our results to varying the definitions of winter, RelPrice, or ShareGas; excluding states with high shares of other heating fuel sources; excluding shale-gas-producing states; dropping the Great Recession period; controlling for LI-HEAP, additional air pollutants or a richer set of controls using a double-selection post-LASSO method; estimating the effects at the state level or using only within-census division variation for identification and varying the main set of control variables. [Online Appendix C.2](#) discusses these robustness checks.

### 3.3. *Heterogeneous Effects on Mortality*

Table 3 augments the baseline specification to examine heterogeneous effects by poverty. Heating bills comprise a larger share of expenditures for the poor. For this reason, as well as the poor having lower baseline health and less access to health care, we expect heating prices to have larger effects on mortality among the poor. Columns (1) to (4) each use a different poverty proxy. In column (1), the proxy is whether the county's median income is in the bottom half of the distribution across counties. Columns (2) and (3) use the county's share of households below 150% of the federal poverty line, as either a continuous variable or an indicator for being below the sample median. Column (4) uses the decedent's education level, specifically an indicator for no high school degree. Across the board, the point estimates suggest larger effects among the poor, but the finding is only statistically significant in columns (2) and (3), which use the share of households below 150% of the poverty line.

Finally, Table 3, columns (5) and (6), show that the mortality effects do not significantly differ by sex or race. In [Online Appendix C.3](#), we discuss heterogeneity by age groups.

## 4. Conclusion

This paper finds that lower heating prices reduce winter mortality. To put the estimated elasticity of all-cause mortality with respect to the price of heating of 0.032 in context, the price of natural

<sup>14</sup> The coefficient on the heating price proxy is not interpretable because we control for the county's average winter HDD in parallel to  $HDD_{jt}$  (see [Online Appendix C.1](#)).

Table 3. *Heterogeneous Effects on Mortality.*

	Dependent variable: log of all-EWM-cause mortality rate. Trait is:					
	Below- median county income (1)	Proportion below 150% of poverty line (2)	Above- median proportion below 150% of poverty line (3)	No high school degree (4)	Male (5)	Black (6)
Heating price proxy × Trait	0.021 [0.032]	0.36** [0.17]	0.057** [0.026]	0.033 [0.039]	0.013 [0.026]	0.013 [0.044]
Heating price proxy	0.049*** [0.016]	-0.025 [0.037]	0.038** [0.016]	0.027 [0.045]	0.058*** [0.017]	0.053*** [0.017]
Observations	152,927	152,927	152,927	284,700	300,311	218,275
Mean mortality rate	577.6	577.6	577.6	999.4	605.3	739.4
Implied effect for Trait = 1	0.07** [0.03]	0.33** [0.14]	0.10*** [0.03]	0.06 [0.05]	0.07*** [0.02]	0.07 [0.04]

Notes: SEs clustered by state in brackets. Asterisks denote significance: \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . For columns (1) to (3), the sample comprises county-year-month observations in the contiguous United States for winter months (November–March) between 2000 and 2010. For columns (4), (5) and (6), the sample comprises county-year-month-education, county-year-month-sex and county-year-month-race groups, respectively, for winter months. Mortality rates are age-adjusted mortality rates expressed as annual deaths per hundred thousand population; see [Online Appendix B](#) for further details. *Heating price proxy* is  $\text{ShareGas}_{jt} \times \log(\text{RelPrice}_{jt})$ , where  $\text{ShareGas}_{jt}$  is the county-year proportion of occupied housing units with natural gas as their main heating source, and  $\text{RelPrice}_{jt}$  is the log of the ratio of the state-month citygate price of natural gas, averaged over the three- and four-month lag, to the corresponding residential price of electricity. Column (1): *Trait* is an indicator variable that equals one if the county's median household income is below the median of all counties in the sample in 1999. Column (2): *Trait* is the proportion of households in the county with income in 1999 below 150% of the poverty threshold. Column (3): *Trait* is an indicator variable that equals one if the proportion from column (2) is above the median of all counties in the sample. Column (4): *Trait* is an indicator variable that equals one for the subgroup that did not complete high school. Column (5): *Trait* is an indicator variable that equals one for the male population. Column (6): *Trait* is an indicator variable that equals one for the Black population; non-Black and non-White populations are excluded from the sample. *Heating price proxy* and its interaction with *Trait* are instrumented using  $\text{ShareGas}_{j,2000} \times \log(\text{RelPrice}_{\text{US},t})$  and its interaction with *Trait*. All columns include all fixed effects and control variables from column (2) of Table 2, the main effect for *Trait* and the interaction of each fixed effect or control variable with *Trait*.

gas relative to electricity fell by 42% between 2005 to 2010. Our findings imply that this price decline caused a 1.7% decrease in the winter mortality rate for households using natural gas for heating. Given that 58% of American households use natural gas for heating, the drop in natural gas prices reduced the US winter mortality rate by 1.0%, or, equivalently, the annual mortality rate by 0.4%. This represents 12,500 deaths per year. In terms of welfare, our results map to approximately \$103 billion using a value of statistical life year of \$369,000 in 2016 dollars (Kniesner and Viscusi, 2019). This national-level benefit from averted deaths is twice as large as the local economic gains from fracking and should not be ignored when evaluating the effects of shale gas production (see [Online Appendix C.4](#) for details). This estimate includes only relatively immediate effects, and the total benefit could be larger if there are also morbidity effects that affect mortality further out than six months. Our results suggest that reduced heating use (as opposed to other spending cutbacks households make when they face high heating bills) is the key channel through which expensive heating increases mortality.

Soaring energy prices in Europe caused by Russia's 2022 invasion of Ukraine have brought renewed attention to policies that can reduce home energy costs. Our findings highlight the health benefits of such policies. While price interventions can distort allocative efficiency, our

estimates suggest that the health gains from these policies can be large, particularly for low-income households.

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Additional Supporting Information may be found in the online version of this article:

## Online Appendix Replication Package

## References

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**Highlights for appliances in U.S. homes by state, 2020****Number (million) and percentage of housing units**

	Household has...										
	Total <sup>a</sup>	Electric cooking appliance <sup>b</sup>		Natural gas cooking appliance <sup>c</sup>		Two or more refrigerators		Separate freezer		Clothes washer	
All homes	123.53	83.94	68%	47.10	38%	42.53	34%	41.14	33%	103.96	84%
Alabama	1.90	1.53	81%	0.35	18%	0.69	36%	0.79	41%	1.75	92%
Alaska	0.26	0.17	66%	0.10	38%	0.07	27%	0.15	60%	0.21	84%
Arizona	2.68	1.99	74%	0.80	30%	0.98	37%	0.70	26%	2.43	91%
Arkansas	1.14	0.87	76%	0.34	30%	0.30	26%	0.55	48%	1.06	92%
California	13.18	5.98	45%	9.22	70%	4.18	32%	2.55	19%	10.10	77%
Colorado	2.26	1.70	75%	0.71	31%	0.83	37%	0.72	32%	1.94	86%
Connecticut	1.38	1.00	72%	0.37	27%	0.40	29%	0.35	26%	1.07	77%
Delaware	0.38	0.27	70%	0.10	27%	0.15	39%	0.13	35%	0.34	90%
District of Columbia	0.32	0.16	49%	0.20	62%	0.05	15%	0.04	14%	0.18	58%
Florida	8.06	7.44	92%	0.64	8%	2.62	33%	1.75	22%	7.11	88%
Georgia	3.88	2.87	74%	1.35	35%	1.45	37%	1.36	35%	3.53	91%
Hawaii	0.47	0.40	85%	0.05	11%	0.18	39%	0.15	31%	0.39	83%
Idaho	0.66	0.52	79%	0.18	28%	0.31	47%	0.34	52%	0.61	93%
Illinois	4.90	1.99	41%	3.28	67%	1.65	34%	1.57	32%	3.89	79%
Indiana	2.60	1.58	61%	1.05	40%	1.04	40%	1.15	44%	2.37	91%
Iowa	1.28	0.81	63%	0.42	33%	0.54	42%	0.66	51%	1.17	91%
Kansas	1.13	0.90	80%	0.26	23%	0.43	38%	0.50	44%	0.98	87%
Kentucky	1.74	1.47	84%	0.34	20%	0.62	35%	0.71	41%	1.59	91%
Louisiana	1.73	1.30	75%	0.57	33%	0.61	35%	0.81	47%	1.56	91%
Maine	0.56	0.42	74%	0.04	7%	0.14	25%	0.19	34%	0.48	85%
Maryland	2.28	1.59	70%	0.91	40%	0.78	34%	0.81	36%	1.97	86%
Massachusetts	2.71	1.71	63%	1.20	44%	0.72	27%	0.59	22%	2.04	75%
Michigan	3.92	2.39	61%	1.77	45%	1.43	36%	1.63	42%	3.40	87%
Minnesota	2.23	1.63	73%	0.65	29%	0.86	39%	1.17	52%	1.90	85%
Mississippi	1.08	0.88	81%	0.18	17%	0.36	34%	0.52	48%	0.96	89%
Missouri	2.43	1.88	77%	0.65	27%	0.95	39%	1.17	48%	2.11	87%
Montana	0.43	0.33	77%	0.11	26%	0.15	34%	0.24	56%	0.40	91%
Nebraska	0.77	0.63	83%	0.17	23%	0.30	40%	0.38	50%	0.63	83%
Nevada	1.14	0.55	48%	0.69	60%	0.38	33%	0.25	22%	1.00	88%
New Hampshire	0.54	0.37	69%	0.08	14%	0.19	35%	0.18	34%	0.44	83%
New Jersey	3.39	1.38	41%	2.36	69%	1.32	39%	0.73	22%	2.55	75%
New Mexico	0.79	0.44	55%	0.39	50%	0.25	31%	0.33	42%	0.69	88%
New York	7.52	3.30	44%	4.68	62%	1.94	26%	1.71	23%	4.66	62%
North Carolina	4.01	3.62	90%	0.56	14%	1.32	33%	1.26	31%	3.67	92%
North Dakota	0.32	0.28	89%	0.03	11%	0.13	42%	0.20	64%	0.26	83%

Preliminary data release date: June 2022

Final data release date: March 2023

**Highlights for appliances in U.S. homes by state, 2020****Number (million) and percentage of housing units**

	Household has...										
	Total <sup>a</sup>	Electric cooking appliance <sup>b</sup>		Natural gas cooking appliance <sup>c</sup>		Two or more refrigerators		Separate freezer		Clothes washer	
All homes	123.53	83.94	68%	47.10	38%	42.53	34%	41.14	33%	103.96	84%
Ohio	4.74	3.40	72%	1.63	34%	1.74	37%	1.91	40%	4.02	85%
Oklahoma	1.49	1.01	67%	0.55	37%	0.53	36%	0.66	44%	1.32	88%
Oregon	1.65	1.34	81%	0.41	25%	0.58	35%	0.73	44%	1.49	90%
Pennsylvania	5.13	3.35	65%	1.91	37%	2.02	39%	1.93	38%	4.43	86%
Rhode Island	0.42	0.27	65%	0.15	36%	0.14	33%	0.08	20%	0.32	77%
South Carolina	1.97	1.70	86%	0.35	18%	0.61	31%	0.67	34%	1.80	91%
South Dakota	0.35	0.30	86%	0.05	15%	0.14	41%	0.23	65%	0.30	87%
Tennessee	2.66	2.38	89%	0.38	14%	0.88	33%	1.02	38%	2.41	91%
Texas	10.26	7.58	74%	3.84	37%	3.51	34%	3.14	31%	9.03	88%
Utah	1.04	0.79	76%	0.37	35%	0.41	40%	0.49	48%	0.96	92%
Vermont	0.26	0.17	64%	0.03	11%	0.08	29%	0.12	46%	0.21	80%
Virginia	3.24	2.50	77%	0.88	27%	1.25	39%	1.08	33%	2.90	90%
Washington	2.94	2.48	84%	0.71	24%	1.02	35%	1.09	37%	2.49	85%
West Virginia	0.70	0.51	73%	0.17	25%	0.24	34%	0.29	42%	0.62	89%
Wisconsin	2.39	1.66	69%	0.80	34%	0.97	40%	1.20	50%	2.00	84%
Wyoming	0.23	0.18	79%	0.05	24%	0.09	39%	0.12	55%	0.19	86%

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Form EIA-457A of the *2020 Residential Energy Consumption Survey*

Notes: Because of rounding, data may not sum to totals. Percentages are calculated on unrounded numbers. See RECS Terminology for the definitions of terms used in these tables. Differences in characteristics between states may not be statistically significant.

<sup>a</sup> Total includes all primary occupied housing units. Vacant housing units, seasonal units, second homes, military houses, and group quarters are excluded.

<sup>b</sup> This estimate includes electric ranges, cooktops, and ovens. Microwave ovens and small kitchen appliances are not included in this estimate.

<sup>c</sup> This estimate includes natural gas ranges, cooktops, and ovens. Natural gas outdoor grills are not included in this estimate.

Q = Data withheld because either the relative standard error (RSE) was greater than 50% or fewer than 10 households were in the reporting sample.

N = No households in reporting sample.

Preliminary data release date: June 2022

Final data release date: March 2023

**Relative standards errors (RSEs) for Highlights for appliances in U.S. homes by state, 2020****RSEs for number and percentage of housing units**

	Household has...										
	Total <sup>a</sup>	Electric cooking appliance <sup>b</sup>		Natural gas cooking appliance <sup>c</sup>		Two or more refrigerators		Separate freezer		Clothes washer	
All homes	0.00	0.51	0.51	0.92	0.92	0.80	0.80	1.18	1.18	0.30	0.30
Alabama	0.00	3.30	3.30	13.92	13.92	9.10	9.10	7.26	7.26	1.92	1.92
Alaska	0.00	3.73	3.73	7.52	7.52	9.98	9.98	5.29	5.29	2.99	2.99
Arizona	0.00	2.30	2.30	6.44	6.44	5.06	5.06	6.75	6.75	1.55	1.55
Arkansas	0.00	3.36	3.36	8.72	8.72	10.26	10.26	6.35	6.35	2.44	2.44
California	0.00	2.68	2.68	1.83	1.83	4.19	4.19	6.14	6.14	1.33	1.33
Colorado	0.00	2.92	2.92	7.69	7.69	6.26	6.26	7.38	7.38	2.17	2.17
Connecticut	0.00	4.26	4.26	11.72	11.72	8.69	8.69	10.61	10.61	3.89	3.89
Delaware	0.00	5.43	5.43	14.02	14.02	11.12	11.12	13.89	13.89	3.36	3.36
District of Columbia	0.00	6.42	6.42	5.55	5.55	15.29	15.29	17.42	17.42	6.18	6.18
Florida	0.00	1.13	1.13	13.13	13.13	5.24	5.24	6.85	6.85	1.69	1.69
Georgia	0.00	3.08	3.08	7.37	7.37	6.94	6.94	5.89	5.89	1.81	1.81
Hawaii	0.00	2.57	2.57	17.26	17.26	7.02	7.02	8.56	8.56	2.76	2.76
Idaho	0.00	2.81	2.81	10.32	10.32	7.26	7.26	5.68	5.68	2.26	2.26
Illinois	0.00	5.28	5.28	3.00	3.00	6.54	6.54	5.18	5.18	2.22	2.22
Indiana	0.00	4.52	4.52	6.29	6.29	6.83	6.83	6.54	6.54	1.82	1.82
Iowa	0.00	4.94	4.94	8.37	8.37	6.35	6.35	5.03	5.03	2.49	2.49
Kansas	0.00	3.71	3.71	13.25	13.25	8.97	8.97	6.92	6.92	2.94	2.94
Kentucky	0.00	2.28	2.28	9.35	9.35	7.16	7.16	6.45	6.45	1.70	1.70
Louisiana	0.00	3.32	3.32	8.60	8.60	8.04	8.04	6.38	6.38	1.84	1.84
Maine	0.00	3.87	3.87	23.92	23.92	11.94	11.94	9.63	9.63	3.28	3.28
Maryland	0.00	3.64	3.64	7.66	7.66	6.50	6.50	8.13	8.13	2.48	2.48
Massachusetts	0.00	3.06	3.06	4.94	4.94	6.32	6.32	7.23	7.23	2.85	2.85
Michigan	0.00	4.25	4.25	5.94	5.94	7.35	7.35	6.71	6.71	2.28	2.28
Minnesota	0.00	3.27	3.27	9.22	9.22	7.82	7.82	5.81	5.81	2.80	2.80
Mississippi	0.00	3.57	3.57	15.64	15.64	10.48	10.48	8.82	8.82	3.23	3.23
Missouri	0.00	3.12	3.12	9.79	9.79	7.14	7.14	6.29	6.29	2.55	2.55
Montana	0.00	4.25	4.25	13.39	13.39	11.26	11.26	7.70	7.70	3.53	3.53
Nebraska	0.00	3.25	3.25	14.25	14.25	8.62	8.62	7.24	7.24	4.10	4.10
Nevada	0.00	7.25	7.25	5.50	5.50	9.92	9.92	12.90	12.90	2.95	2.95
New Hampshire	0.00	5.02	5.02	19.24	19.24	9.46	9.46	10.74	10.74	4.17	4.17
New Jersey	0.00	5.85	5.85	3.08	3.08	5.38	5.38	8.67	8.67	2.85	2.85
New Mexico	0.00	7.40	7.40	8.37	8.37	12.13	12.13	10.01	10.01	3.31	3.31
New York	0.00	3.47	3.47	2.26	2.26	4.40	4.40	5.66	5.66	2.61	2.61
North Carolina	0.00	1.38	1.38	9.68	9.68	6.80	6.80	7.38	7.38	1.48	1.48
North Dakota	0.00	2.13	2.13	15.42	15.42	7.63	7.63	4.71	4.71	3.67	3.67

Preliminary data release date: June 2022

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	Household has...										
	Total <sup>a</sup>	Electric cooking appliance <sup>b</sup>		Natural gas cooking appliance <sup>c</sup>		Two or more refrigerators		Separate freezer		Clothes washer	
All homes	0.00	0.51	0.51	0.92	0.92	0.80	0.80	1.18	1.18	0.30	0.30
Ohio	0.00	3.22	3.22	7.24	7.24	6.53	6.53	6.14	6.14	2.76	2.76
Oklahoma	0.00	5.21	5.21	9.75	9.75	9.66	9.66	9.10	9.10	2.94	2.94
Oregon	0.00	2.40	2.40	9.72	9.72	8.04	8.04	6.86	6.86	2.34	2.34
Pennsylvania	0.00	3.39	3.39	5.65	5.65	5.07	5.07	5.21	5.21	1.66	1.66
Rhode Island	0.00	5.75	5.75	11.57	11.57	11.44	11.44	16.83	16.83	5.27	5.27
South Carolina	0.00	2.01	2.01	12.51	12.51	8.62	8.62	7.75	7.75	1.53	1.53
South Dakota	0.00	2.94	2.94	18.20	18.20	9.04	9.04	5.52	5.52	3.40	3.40
Tennessee	0.00	1.44	1.44	10.27	10.27	6.43	6.43	5.82	5.82	1.63	1.63
Texas	0.00	1.75	1.75	3.98	3.98	3.87	3.87	4.99	4.99	1.17	1.17
Utah	0.00	4.17	4.17	9.52	9.52	9.97	9.97	7.47	7.47	2.73	2.73
Vermont	0.00	4.79	4.79	18.82	18.82	9.83	9.83	7.02	7.02	4.00	4.00
Virginia	0.00	2.50	2.50	8.56	8.56	5.77	5.77	7.16	7.16	1.65	1.65
Washington	0.00	1.77	1.77	7.48	7.48	5.00	5.00	5.80	5.80	2.57	2.57
West Virginia	0.00	4.97	4.97	14.51	14.51	10.43	10.43	9.80	9.80	2.98	2.98
Wisconsin	0.00	3.90	3.90	7.37	7.37	6.01	6.01	4.93	4.93	2.56	2.56
Wyoming	0.00	3.89	3.89	13.46	13.46	7.88	7.88	6.04	6.04	3.29	3.29

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Form EIA-457A of the *2020 Residential Energy Consumption Survey*

Notes: See RECS Terminology for the definitions of terms used in these tables. Differences in characteristics between states may not be statistically significant.

<sup>a</sup> Total includes all primary occupied housing units. Vacant housing units, seasonal units, second homes, military houses, and group quarters are excluded.

<sup>b</sup> This estimate includes electric ranges, cooktops, and ovens. Microwave ovens and small kitchen appliances are not included in this estimate.

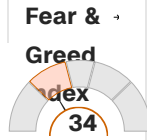
<sup>c</sup> This estimate includes natural gas ranges, cooktops, and ovens. Natural gas outdoor grills are not included in this estimate.

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# Predatory lenders are making money off rising gas and food prices

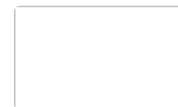
By [Nicole Goodkind](#), CNN Business

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**New York (CNN Business)** — In the last few months, Yumekia Jones, a legal assistant at the Mississippi Center for Justice’s Indianola office, has fielded an unusually high number of calls — a roughly 400% spike — from people in dire need of immediate financial assistance.

Most want to avoid payday loans, which offer quick cash against future paychecks without a credit check and come with an interest rate above 500%. But the rapidly increasing prices of food, fuel and rent gives them few options.

Inflation rates are at a 40-year high and unemployment is near a half-century low. To most economists those two realities spell out significant economic trouble.

To payday lenders, however, they signal happy days and good times ahead.

“Low unemployment plus inflation generally mean consumers may need loans for additional capital to manage through unexpected spikes and expenses while earning money to pay back these loans,” said David Fisher, CEO of short-term, subprime lender Enova said during an earnings call in May. The company, an online-only lender, beat quarterly earnings estimates by 7.7%.

Enova declined to comment for this story.

Given the economic dynamics at play, Fisner said his company has meaningfully leaned into the demand with our marketing efforts, <sup>CNN</sup> and <sup>RELATED</sup> spent more to attract new customers. ✕

That has paid off. About 44% of all loans were issued to new customers in the last quarter, he said.

That increase in first-time borrowers came as US consumer inflation reached its highest level in more than four decades and Americans struggled to put food on their tables and gas in their tanks.

## Working to drive to work

The national average for a gallon of gas stands at just under \$5, a 61% increase since last year. The jump comes just as many employers are requiring workers to return to in-person work. The federal minimum wage, meanwhile, still stands at \$7.25 per hour, where it's been since 2009. Low-wage workers must labor for about 14 hours to fill up their tank.

About two thirds of Americans now live paycheck to paycheck, a June LendingClub survey found. That number jumps to 82% among workers earning less than \$50,000.

The average credit score for low-earners in the US is also dropping, according to LendingClub data. About 40% of Americans earning less than \$50,000 and living paycheck to paycheck have a subprime credit score of below 650 making it difficult for them to get a loan through a traditional lending institution or to qualify for additional credit. The average credit score in the US is 714, according to Experian.

For those Americans, high-interest payday loans are still easily accessible. These small-dollar amount loans, typically between \$100 and \$1,000, are available in more than half of all US states with little regulation. Proof of income and a bank account is all most borrowers need to walk out with cash in hand.

Current data that tracks the number of payday loans has yet to be released, but based on past trends there is likely an increase in borrowing, said Alex Horowitz, principal officer for Pew's consumer finance project. "Our survey data shows that about 70% of payday loan borrowers use the loan primarily for routine expenses and to cope with increased or volatile expenses."

## The debt trap

These loans are often incredibly expensive but borrowers either lack the financial literacy to seek out alternatives or don't think they have any other option. There is currently no federal cap on maximum interest rates for small-dollar loans. Not all states allow them, and it is up

to ~~that~~ states that do to decide whether they'll implement their own caps. X

In the 32 US states that allow payday lending, average annual interest rates range from 200% in Minnesota to 664% in Texas.

Borrowers often can't pay the full amount of the loan back when it comes due, typically in two to four weeks, leading them to take out a second loan with additional fees. That creates a cycle of debt that is hard to break. Nearly 1 in 4 payday loan recipients take additional loans nine times or more, the Consumer Financial Protection Bureau found.

Studies show that Black and Latino communities are disproportionately targeted by providers of high-cost loans. In Michigan, where the average payday loan interest rate is 370%, there are 7.6 payday stores for every 100,000 people in areas where the population is more than a quarter Black and Latino. That's about 50% more than other areas, according to data provided by the Center for Responsible Lending.


Companies that offer high cost loans say they provide a needed service to low income communities by issuing loans to Americans that traditional banks refuse to serve. They claim the high interest rates are necessary because of the high risk of default. But consumer advocates say this is a false narrative.

Seven large US banks, including Bank of America, Wells Fargo and Truist, have created programs that offer small-dollar borrowing options with low annual interest rates, Horowitz said. They plan to look at banking history — not credit scores — to determine who qualifies for loans.

“There are 18 states and the District of Columbia that have banned payday loans and have survived just fine without these predatory lending products,” said Nadine Chabrier, senior policy counsel at the Center for Responsible Lending. “There are fair and responsible lending products that have low interest rates and fees that are available and that people can use.”

Shortly after the Covid-19 pandemic hit the US, the Consumer Financial Protection Bureau repealed major parts of a 2017 rule that required lenders to evaluate consumers' ability to repay loans. The rule, they said, would have wiped out much of the money they make from borrowers who miss payments on their loans. By repealing portions of the rule, the CFPB said it would ensure “the continued availability of small-dollar lending products for consumers who demand them.”

In a blog post, Former CFPB director Dave Ueijo expressed concern with the rule changes, saying that he has problems with “any lenders' business model that is dependent on

consumers' inability to repay their loans." 

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## Buy now pay later

Advocates also worry about new forms of lending that have emerged in recent years that are generally far less regulated than even payday lending.

Buy now, pay later (BNPL) companies saw their total market share grow between 200% and 350% during the past two years, according to the Center for Responsible Lending. Companies including Klarna and Zip have partnered with Chevron and Texaco to allow Americans to fill their tanks now and pay in installments over six weeks.

BNPL customers tend to be millennial and Gen Z-aged and two-thirds of applicants are subprime borrowers, according to research by Marshall Lux, a research fellow at the Harvard Kennedy School.

These companies don't brand themselves as lenders. BNPL is not credit but debit, with repayments taken automatically from customers' bank accounts and no interest or fees.

In California, 91% of consumer loans made in 2020 were BNPL loans, and 24% of financially vulnerable BNPL recipients report challenges making payments.

BNPL lenders are not required by law to determine a borrower's ability to repay loans. There are no regulations regarding the disclosure of fees for late payments, account reactivation or rejected payments.

"If people are using a credit product like this for their basic needs I'm concerned," Chabrier said.

A Klarna representative said in a statement to CNN that the majority of their users pay on time and that they make a new lending decision on each transaction. "Using Klarna is never guaranteed, and we restrict the use of our services until missed payments are fulfilled to prevent debt accumulating."

But Chabrier worries that because BNPL customers are able to open multiple loans at once, they could lose track or have difficulty paying them all back.

"Many people use buy now and pay later to stack their purchases through multiple vendors," Chabrier said. "Because of the lack of underwriting and the consideration of whether or not they can pay for these items, it becomes really unaffordable for them."

Klarna caps late fees at 25% of the purchase amount, a far cry from the 400% interest rates

payday lenders charge, but Chabrier sees this as a less severe symptom of a larger problem.



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“They’re continuing this process of extracting money from low-income people,” she said. “If people have less buying power with their wages it will just get worse.”

Back in Mississippi, which has the highest rate of poverty in the country, Jones has struggled to keep distressed callers out of the hands of loan sharks and into financial literacy programs sponsored by local banks. But it’s difficult to work against so many payday lenders with huge advertizing budgets, she said. The state has the highest concentration of payday lenders per capita in the nation, mostly in low-income areas or in communities of color.

Payday lenders are so prevalent in Mississippi, Jones said, that they outnumber McDonald’s restaurants by more than 5 to 1.

## Up next

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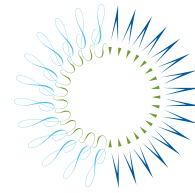
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PAYDAY LENDING  
IN AMERICA:

# Who Borrows, Where They Borrow, and Why

This report series, *Payday Lending in America*, presents original research findings from the Pew Safe Small-Dollar Loans Research Project on how to create a safe and transparent marketplace for those who borrow small sums of money.

[www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans)

JULY 2012

The Pew Charitable Trusts is driven by the power of knowledge to solve today's most challenging problems. Pew applies a rigorous, analytical approach to improve public policy, inform the public, and stimulate civic life.

The Safe Small-Dollar Loans Research Project focuses on small-dollar credit products such as payday and automobile title loans, as well as emerging alternatives. The project works to find safe and transparent solutions to meet consumers' immediate financial needs.

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# Contents

Executive Summary . . . . .	2
Key Findings. . . . .	4
Introduction . . . . .	6
1. Who Uses Payday Loans?. . . . .	8
Exhibit 1: Payday Loan Usage by Demographic . . . . .	10
Exhibit 2: Payday Loan Borrowing More Common in Cities . . . . .	12
Exhibit 3: Payday Loan Usage by Geographic Grouping. . . . .	12
2. Why Do Borrowers Use Payday Loans? . . . . .	13
Exhibit 4: Most Borrowers Use Payday Loans for Recurring Expenses . . . . .	14
3. What Would Borrowers Do Without Payday Loans? . . . . .	16
Exhibit 5: Alternatives if Payday Loans Were Unavailable . . . . .	16
4. Does Payday Lending Regulation Affect Usage? . . . . .	19
Exhibit 6: How States Regulate Payday Lending . . . . .	21
Exhibit 7: In Restrictive States, 95 of 100 Choose Not to Borrow . . . . .	22
Exhibit 8: Number of Borrowers per 10,000 Population . . . . .	23
Exhibit 9: Method of Acquiring Payday Loans by State Law Type . . . . .	23
Exhibit 10: Payday Loan Storefronts. . . . .	24
Exhibit 11: State Laws Are Not Driving Payday Loan Complaints . . . . .	25
Exhibit 12: How People Obtain Payday Loans. . . . .	27
Exhibit 13: Method of Acquiring Payday Loans by Borrower Demographic Group . . . . .	28
Conclusion . . . . .	29
Methodology: Opinion Research. . . . .	31
Appendix A . . . . .	35
Exhibit 14: Payday Loan Borrower Demographic Snapshot. . . . .	35
Appendix B. . . . .	36
Exhibit 15: Logistic Regression Analysis of Likelihood of Payday Loan Usage by Select Demographics. . . . .	37
Endnotes . . . . .	38

# Executive Summary

Payday loan borrowers spend approximately \$7.4 billion<sup>1</sup> annually at 20,000 storefronts and hundreds of websites, plus additional sums at a growing number of banks. The loans are a highly controversial form of credit, as borrowers find fast relief but often struggle for months to repay obligations marketed as lasting only weeks.<sup>2</sup> While proponents argue that payday lending is a vital way to help underserved people solve temporary cash-flow problems, opponents claim that the practice preys on overburdened people with expensive debt that is usually impossible to retire on the borrower's next payday.

Many state officials have acted to curb payday lending. However, there has been little opportunity for federal policy on payday lending until now. Resolving the debate over the ways in which payday loans and lender practices may help or harm borrowers will fall to the Consumer Financial Protection Bureau (CFPB), which Congress recently created and charged with regulating payday lending. Other federal agencies, such as the Federal Deposit Insurance Corporation (FDIC), Office of the

Comptroller of the Currency (OCC), and Federal Trade Commission (FTC), also will have important roles to play as banks and online providers continue to enter the payday loan field.<sup>3</sup>

Existing data show that, in at least two significant respects, the payday lending market does not function as advertised. First, payday loans are sold as two-week credit products that provide fast cash, but borrowers actually are indebted for an average of five months per year. Second, despite its promise of “short-term” credit, the conventional payday loan business model requires heavy usage to be profitable—often, renewals by borrowers who are unable to repay upon their next payday. These discrepancies raise serious concerns about the current market's ability to provide clear information that enables consumers to make informed decisions.

This report, *Who Borrows, Where They Borrow, and Why*, is the first in Pew's *Payday Lending in America* series. The findings provide policy makers with research to address concerns about small-dollar loans and to promote a safe and

## EXECUTIVE SUMMARY

transparent marketplace. In addition to discussing Pew's focus groups, the report presents selected results from a first-ever nationally representative telephone survey of payday borrowers. The report answers six major questions: Who are borrowers,

demographically? How many people are borrowing? How much do they spend? Why do they use payday loans? What other options do they have? And do state regulations reduce payday borrowing or simply drive borrowers online instead?



## Key Findings

### **1 Who Uses Payday Loans? Twelve million American adults use payday loans annually. On average, a borrower takes out eight loans of \$375 each per year and spends \$520 on interest.**

Pew's survey found 5.5 percent of adults nationwide have used a payday loan in the past five years, with three-quarters of borrowers using storefront lenders and almost one-quarter borrowing online. State regulatory data show that borrowers take out eight payday loans a year, spending about \$520 on interest with an average loan size of \$375. Overall, 12 million Americans used a storefront or online payday loan in 2010, the most recent year for which substantial data are available.

Most payday loan borrowers are white, female, and are 25 to 44 years old. However, after controlling for other characteristics, there are five groups that have higher odds of having used a payday loan: those without a four-year college degree; home renters; African Americans; those earning below \$40,000 annually; and those who are separated or divorced. It is notable

that, while lower income is associated with a higher likelihood of payday loan usage, other factors can be more predictive of payday borrowing than income. For example, low-income homeowners are less prone to usage than higher-income renters: 8 percent of renters earning \$40,000 to \$100,000 have used payday loans, compared with 6 percent of homeowners earning \$15,000 up to \$40,000.

### **2 Why Do Borrowers Use Payday Loans? Most borrowers use payday loans to cover ordinary living expenses over the course of months, not unexpected emergencies over the course of weeks. The average borrower is indebted about five months of the year.**

Payday loans are often characterized as short-term solutions for unexpected expenses, like a car repair or emergency medical need. However, an average borrower uses eight loans lasting 18 days each, and thus has a payday loan out for five months of the year. Moreover, survey respondents from across the demographic

## KEY FINDINGS

spectrum clearly indicate that they are using the loans to deal with regular, ongoing living expenses. The first time people took out a payday loan:

- 69 percent used it to cover a recurring expense, such as utilities, credit card bills, rent or mortgage payments, or food;
- 16 percent dealt with an unexpected expense, such as a car repair or emergency medical expense.

**3 What Would Borrowers Do Without Payday Loans? If faced with a cash shortfall and payday loans were unavailable, 81 percent of borrowers say they would cut back on expenses. Many also would delay paying some bills, rely on friends and family, or sell personal possessions.**

When presented with a hypothetical situation in which payday loans were unavailable, storefront borrowers would utilize a variety of other options. Eighty-one percent of those who have used a storefront payday loan would cut back on expenses such as food and clothing. Majorities also would delay paying bills, borrow from family or friends, or sell or pawn possessions. The options selected the most often are those that do not involve a financial institution. Forty-four percent report they would take a loan from a bank or credit union, and even fewer would use a credit card (37 percent) or borrow from an employer (17 percent).

**4 Does Payday Lending Regulation Affect Usage? In states that enact strong legal protections, the result is a large net decrease in payday loan usage; borrowers are not driven to seek payday loans online or from other sources.**

In states with the most stringent regulations, 2.9 percent of adults report payday loan usage in the past five years (including storefronts, online, or other sources). By comparison, overall payday loan usage is 6.3 percent in more moderately regulated states and 6.6 percent in states with the least regulation. Further, payday borrowing from online lenders and other sources varies only slightly among states that have payday lending stores and those that have none. In states where there are no stores, just five out of every 100 would-be borrowers choose to borrow payday loans online or from alternative sources such as employers or banks, while 95 choose not to use them.

## Introduction

Deborah is a young mother who works full time as a teacher and is studying for a graduate degree. She has struggled to make ends meet. “It just seems like one thing after another,” she said; “I can’t seem to catch up.” A few years ago, Deborah needed money when she could not afford both her monthly bills and her daughter’s routine vaccinations. Deborah said that she has used student loans, bank loans, and credit cards when she was short on money. When she needed more, she thought she could get help from family or friends, but “I didn’t want to ask somebody for it.” Instead, Deborah borrowed a couple hundred dollars from a payday lender. “I was scared when I went in there, but I needed the money, and I knew it was a fast fix,” she said. Deborah’s loan was due in full on her next payday, but she could not come up with enough extra cash to pay the lump sum and meet her other expenses. So she renewed the loan, paying fees to push the due date to her next payday but receiving no reduction in the principal owed. It took nearly six months of renewals before she had enough money for a payment large enough to eliminate her payday

loan debt. “Once my taxes came in, I just paid it off and walked away,” said Deborah. “I was like ‘I’m done.’”<sup>4</sup>

Like Deborah, a former payday loan borrower in one of Pew’s focus groups, millions have turned to payday lenders when finances are tight, finding fast relief but struggling for months to repay loans that, according to marketing, are supposed to last only weeks. Payday loans are small-dollar credit products that typically range from \$100 to \$500, though may be larger depending on state law; the average loan is about \$375.<sup>5</sup> Lenders usually charge about \$15 per \$100 borrowed per two weeks (391 percent Annual Percentage Rate or APR).<sup>6</sup> The loans are secured by a claim to the borrower’s bank account with a post-dated check or electronic debit authorization.

Payday loans are due in full on the borrower’s next payday; yet if the borrower cannot pay off the full loan plus interest, she pays a fee to extend the due date, or pays back the loan but quickly takes out a new one to cover other expenses. The loans do not amortize, so this payment does

## INTRODUCTION

not reduce the loan principal owed. For example, a person who borrows \$400 for a \$60 fee for two weeks would have paid approximately \$480 in fees after renewing the loan for four months, but would still owe the original \$400. Most payday loans come from storefront providers with specialized state lending licenses, but similar types of small-dollar loan products are available elsewhere, including from online lenders and banks that offer “deposit advance” loans.<sup>7</sup>

Existing data show there are two clear problems in this market. First, payday loans are sold as two-week credit products that provide fast cash for emergencies in exchange for a fee. But the lump-sum repayment model appears to make it difficult for borrowers to avoid renewal. Pew’s analysis of state and industry data indicates that borrowers are indebted for an average of about five months of the year.<sup>8</sup> According to one study, 76 percent of these loans, including renewals, are borrowed within two weeks following an existing payday loan’s due date, meaning the borrower could not pay back the loan and make it to the next payday without another loan.<sup>9</sup> In addition, Pew’s analysis of data from Oklahoma finds that more borrowers use at least 17 loans in a year than use just one.<sup>10</sup>

Second, the conventional<sup>11</sup> payday loan business model depends upon heavy usage—often, renewals by borrowers who are unable to repay upon their next

payday—for its profitability.<sup>12</sup> Researchers at the Federal Reserve Bank of Kansas City concluded that, “the profitability of payday lenders depends on repeat borrowing.”<sup>13</sup> According to industry analysts, “In a state with a \$15 per \$100 rate, an operator ... will need a new customer to take out 4 to 5 loans before that customer becomes profitable.”<sup>14</sup> For example, an analysis of North Carolina data found that 73 percent of lender revenue came from borrowers using seven or more loans per year.<sup>15</sup> Despite these realities, payday loans continue to be packaged as short-term or temporary products.

Pew’s research seeks to explore these discrepancies between packaging and reality, and to demonstrate borrower experiences and outcomes. The survey discussed in this report is a first-ever nationally representative telephone poll of payday loan borrowers about their usage, conducted in two parts. Demographic data derive from 33,576 responses, representative of all adult Americans, while information about why borrowers used payday loans and what alternatives they have come from 451 interviews representative of all storefront payday loan borrowers.



#### PROFILE

**Borrower A: Female, white, married, non-parent, disabled, homeowner, high school, age 39, \$28,000**

A slight majority of payday loan borrowers are female, and a slight majority of borrowers are also white. Those who are unable to work because of a disability have used a payday loan at higher rates than those who are employed, unemployed, homemakers, students, or retired.

## 1 Who Uses Payday Loans?

**Twelve million American adults use payday loans annually. On average, a borrower takes out eight loans of \$375 each per year and spends \$520 on interest.**

The Pew survey found that 5.5 percent<sup>16</sup> of American adults report having used a payday loan in the past five years.<sup>17</sup> In addition, using the most recent available data,<sup>18</sup> we calculate approximately 12 million<sup>19</sup> Americans used a storefront or online payday loan in 2010, a figure that is consistent with the 5.5 percent finding.

Although Pew's survey reveals that borrowing is concentrated among younger, low-to-moderate-income individuals, people of most ages and incomes use payday loans. Importantly, while these findings indicate which individuals are most likely to borrow, they do not imply that a given characteristic *causes* people to use payday loans.

Pew's survey found that borrowers are 52 percent women and 55 percent white; 58 percent rent their homes; 85 percent do not have a four-year college degree; 72 percent have a household income of less than \$40,000; and 52 percent fall in the 25 to 44 age category. (See Appendix A for a complete demographic breakdown of payday loan borrowers.) However, these figures do not necessarily reflect the likelihood of payday loan usage among different demographic groups. For example, while slightly more women use payday loans than men, gender is not a significant predictor of payday loan usage. Similarly, like the general population, most payday loan borrowers are white, but white respondents are less likely to have used a payday loan than people of other races or ethnicities. The results presented in this section are largely consistent with prior research.<sup>20</sup>

## WHO USES PAYDAY LOANS?

**WHAT DO BORROWERS SPEND?**

Lenders sell payday loans as a temporary bridge to the next payday, though in reality most borrowers are indebted for much longer than one pay cycle. Payday loan consumers take out an average of eight payday loans a year,<sup>21</sup> often renewing an existing loan or taking out a new loan within days of repaying the previous one. Data from Florida indicate that borrowers who take at least 12 loans in a year use 63 percent of all payday loans.<sup>22</sup> The average loan is about \$375.<sup>23</sup> Three-quarters of payday loans come from storefronts, with an average fee of \$55 per loan, and roughly one-quarter originate online, with an average fee of \$95. Using these figures, we calculate that the average borrower spends about \$520 on interest each year.<sup>24</sup>

How much borrowers spend on loans depends heavily on the fees permitted by their state. The same \$500 storefront loan would generally cost about \$55 in Florida, \$75 in Nebraska, \$87.50 in Alabama, and \$100 in Texas, even if it were provided by the same national company in all of those states. Previous research has found that lenders tend to charge the maximum permitted in a state.<sup>25</sup>

For an analysis of how borrowers in each demographic group obtain their loans (i.e., from storefronts versus online), see Exhibit 13 on page 28. For more information on the findings regarding these groups, see our website at [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans).

### Which demographic traits best predict loan usage, after controlling for other factors?

Pew researchers developed a logistic regression model to evaluate how certain characteristics relate to usage, while controlling for other factors. Among these characteristics, the odds of payday loan usage are:

**57 percent higher** for renters than for homeowners;

**62 percent higher** for those earning less than \$40,000 annually than for those earning more;

**82 percent higher** for those with some college education or less than for those with a four-year degree or more;

**103 percent higher** for those who are separated or divorced than for those of all other marital statuses (single, living with a partner, married, or widowed); and

**105 percent higher** for African Americans than for other races/ethnicities.

For more on the model and the characteristics tested, see Appendix B.

## EXHIBIT 1:

# PAYDAY LOAN USAGE BY DEMOGRAPHIC

Percentage of Each Subgroup Reporting Payday Loan Usage

Certain demographic groups are more likely than others to have used a payday loan in the past five years.

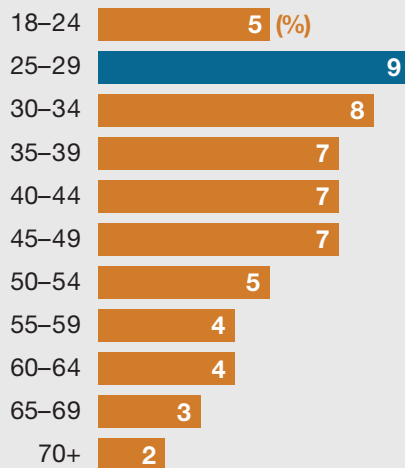
## OVERALL

**5.5 percent of all adult Americans have used a payday loan.**

All adults **5.5** (%)

## AGE

**9 percent of adults aged 25-29 have used a payday loan.**



People ages 25 to 49 have used payday loans at a higher rate than the general population. By contrast, loan use is below average among 18-to-24-year-olds and those age 50 or older. There is relatively little usage by senior citizens, with just 2 percent of those 70 and older having used payday loans.

NOTE: Data represent percentage of adults in each category who report having used a payday loan in the past five years. Results are based on 33,576 interviews conducted from August through December 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## RENTERS VS. HOMEOWNERS

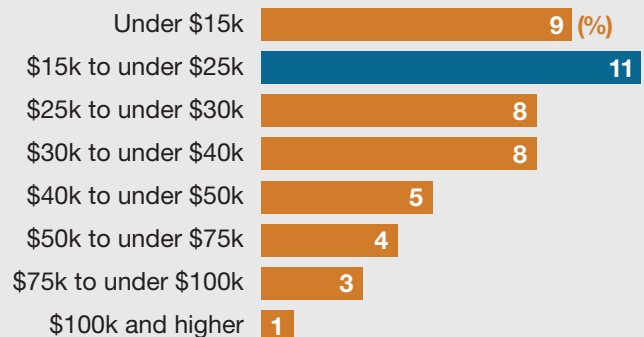
**10 percent of renters have used a payday loan.**



Renters have used payday loans at more than double the rate of homeowners. This sharp difference in usage between homeowners and renters persists in every age cohort. While payday loan usage is largely concentrated among those ages 25 to 49, among 50-to-69-year-old renters, fully one in 10 has used a payday loan, more than triple the rate for 50-to-69-year-old homeowners. Furthermore, renters' usage of payday loans is far higher than that of homeowners across the income distribution. For example, 8 percent of renters earning \$40,000 to \$100,000 have used payday loans, compared with 6 percent of homeowners earning \$15,000 up to \$40,000.

## INCOME

**11 percent of those earning \$15,000 up to \$25,000 have used a payday loan.**



Respondents with household incomes less than \$40,000 are almost three times as likely to have used payday loans as respondents with household incomes of \$50,000 or more. Respondents from every income group report using payday loans, with loan usage the highest (11 percent) for those earning \$15,000 up to \$25,000 and lowest (1 percent) for those earning over \$100,000. Except for those earning under \$15,000, the relationship between income and payday loan usage is an inverse one, with borrowing decreasing as income increases.

EXHIBIT 1:

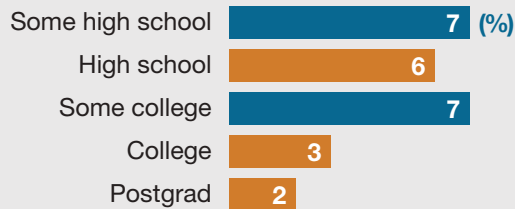
# PAYDAY LOAN USAGE BY DEMOGRAPHIC

Percentage of Each Subgroup Reporting Payday Loan Usage

(CONTINUED)

## EDUCATION STATUS

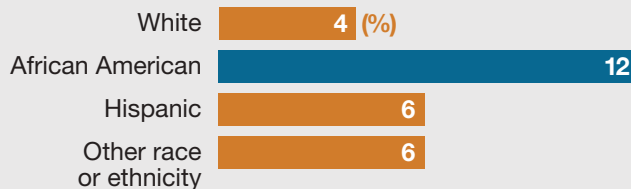
**7 percent of those with some high school or some college have used a payday loan.**



Those without a four-year college degree are much more likely to have used payday loans than those who have a degree. But among those without a four-year degree, further differences in education level do not correspond with significant differences in payday loan usage.

## RACE AND ETHNICITY

**12 percent of African Americans have used a payday loan.**



African American respondents are more than twice as likely as others to have used a payday loan but make up less than a quarter of all payday borrowers, as compared with whites who comprise 55 percent of all borrowers.

## PARENTAL STATUS

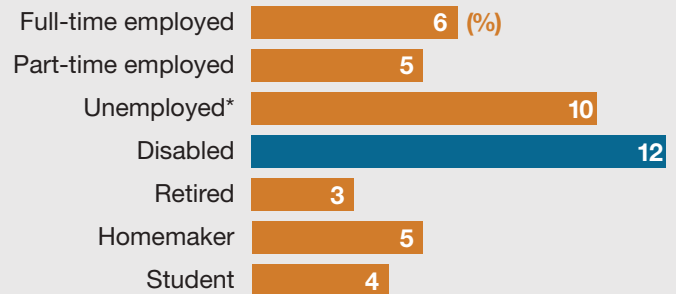
**8 percent of parents have used a payday loan.**



Parents are more likely to have used payday loans than those who are not parents, especially among those earning less than \$50,000. Twelve percent of parents earning less than \$50,000 have used a payday loan, compared with just 4 percent of parents earning \$50,000 or more.

## EMPLOYMENT STATUS

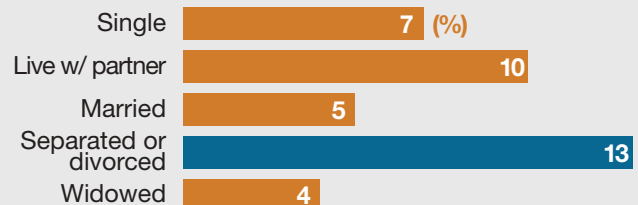
**12 percent of those who are disabled have used a payday loan.**



Those who are currently disabled or unemployed have used payday loans at the highest rates in the past five years, although it is possible that they were employed at the time they borrowed. However, those who are employed make up a majority of all payday borrowers, and an income stream is a requirement for obtaining a payday loan.

## MARITAL STATUS

**13 percent of those who are separated or divorced have used a payday loan.**



Those who are separated or divorced are most likely to have borrowed. Thirteen percent of separated or divorced individuals report payday loan usage, a rate twice that of all other respondents.

\* Payday lenders generally will lend only to someone with an income stream. It is possible that unemployed people were employed at the time of their last payday loan, or they are receiving a loan based on some other form of income, such as a benefits check.

NOTE: Data represent percentage of adults in each category who report having used a payday loan in the past five years. Results are based on 33,576 interviews conducted from August through December 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## PAYDAY LOAN USAGE BY GEOGRAPHY

Pew's survey revealed that payday loan usage is highest in parts of the South and Midwest Census regions (e.g., 13 percent of adults have borrowed in Oklahoma and 11 percent in Missouri, two of the leading payday loan states) and is significantly higher in urban areas as compared with the suburbs. A major factor causing the significant variation in payday loan usage by Census region and division is the difference in how states regulate payday loans, detailed on page 20.

EXHIBIT 2:

## PAYDAY LOAN BORROWING MORE COMMON IN CITIES

7 percent of those living in cities have used a payday loan.

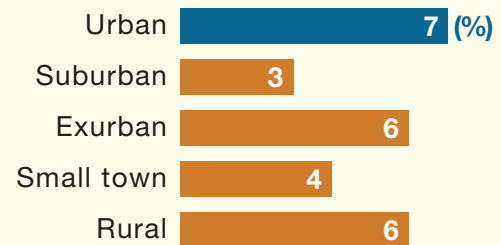
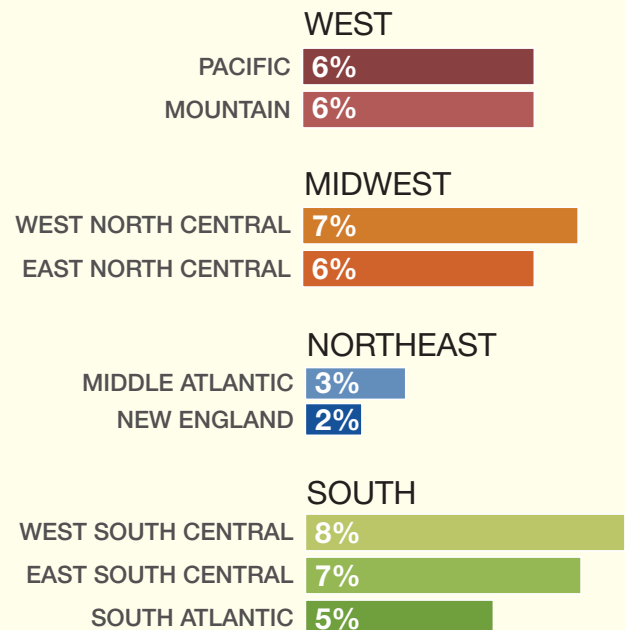
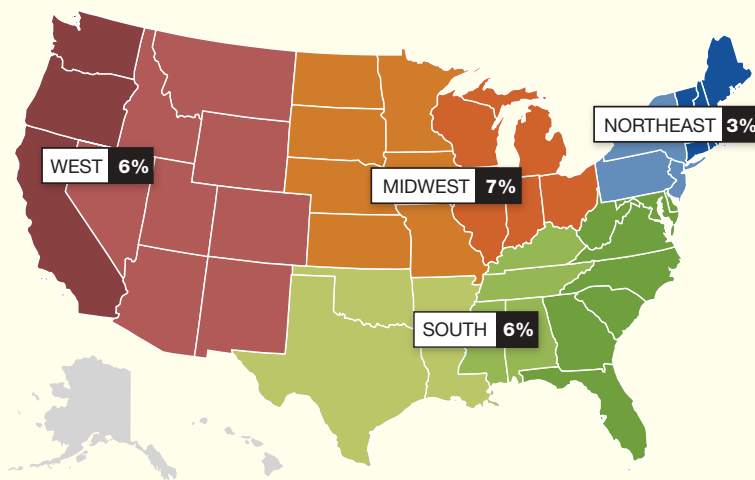


EXHIBIT 3:

## PAYDAY LOAN USAGE BY GEOGRAPHIC GROUPING



NOTES: Exhibit 2: **Exurban** (Inside a Suburban County of the MSA); **Small town** (In an MSA that has no Center City); **Rural** (Not in an MSA), **Urban** (In the Center City of an MSA), **Suburban** (Outside the Center City of an MSA, but inside the county containing the Center City). The Office of Management and Budget classifies geographic areas into Metropolitan and Micropolitan Statistical Areas (MSA), and these groupings are used by the U.S. Census Bureau. The higher usage in cities is consistent with previous research demonstrating that, historically, payday lending has been tied to relatively densely populated areas, as described in Robert Mayer's *Quick Cash*. This rate is significantly higher than the 3 percent of suburban-area residents who report having used payday loans. Data represent payday loan usage by geographic area in the contiguous United States.

Exhibit 3: Regions and divisions are those used by the U.S. Census Bureau. Data represent payday loan usage by geographic area in the contiguous United States. For state-level data, see [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans).

No surveys were conducted in AK and HI.

Results from Exhibits 3 and 4 are based on 33,576 interviews conducted from August to December 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## 2 Why Do Borrowers Use Payday Loans?

**Most borrowers use payday loans to cover ordinary living expenses over the course of months, not unexpected emergencies over the course of weeks. The average borrower is indebted about five months of the year.**

Pew's survey asked borrowers why they first took out a payday loan. As illustrated in Exhibit 4, borrowers' initial reasons stem from an ongoing need for income, rather than a short-term need to cover an unexpected expense.<sup>26</sup> Four times more storefront borrowers used their first payday loans for a recurring expense (69 percent) than for an unexpected expense (16 percent).

These findings provide a sharp contrast with the conventional image of payday

loans, which are advertised as short-term, small-dollar credit intended for emergency or special use. Industry, advocates, and regulators all suggest that using payday loans for recurring expenses is not an effective use of high-cost credit and that, rather, such credit should be used to cover unexpected expenses for a short period of time.<sup>27</sup> Yet, previous research, as well as discussions with industry leaders, and state-level reports, all make clear that a typical borrower uses payday loans many times per year,<sup>28</sup> and much of this borrowing comes in relatively quick succession once someone begins using payday loans.<sup>29</sup> Pew's analysis of existing data found that an average borrower is in payday loan debt for five months per year, using eight loans that last 18 days each.<sup>30</sup>



### PROFILE

**Borrower B: Male, Hispanic, divorced, non-parent, full-time employed, renter, associate's degree, age 44, \$17,000**

Divorced or separated men are more likely to have used a payday loan than their female counterparts. Renters are three times more likely to have used a payday loan than homeowners, while those earning \$15,000-\$25,000 are the most likely to have used a payday loan.

## WHY DO BORROWERS USE PAYDAY LOANS?

### ■ Regular, Ongoing Expenses

Female borrower, Chicago:

“I was behind on my mortgage and cable bill.”

Male borrower, Chicago:

“Just need to get to the next paycheck. And I need, you know, either pay the bill to keep the lights on, or need some food, or whatever it is.”

Female borrower, San Francisco:

“If I have bills to pay, or say I need food on the table, I am going.”

Male borrower, San Francisco:

“Well, I was a little short and was thinking I could use some more money and I was at the ATM actually, and it was there, offering me a direct deposit advance. So, I thought I would try it.”

### ■ Unexpected Emergency/Expense

Male borrower, New York:

“I got mine because my son got in a car accident.”

Male borrower, New York:

“I had to get money for my car to get fixed.”

### ■ Something Special

Female borrower, San Francisco:

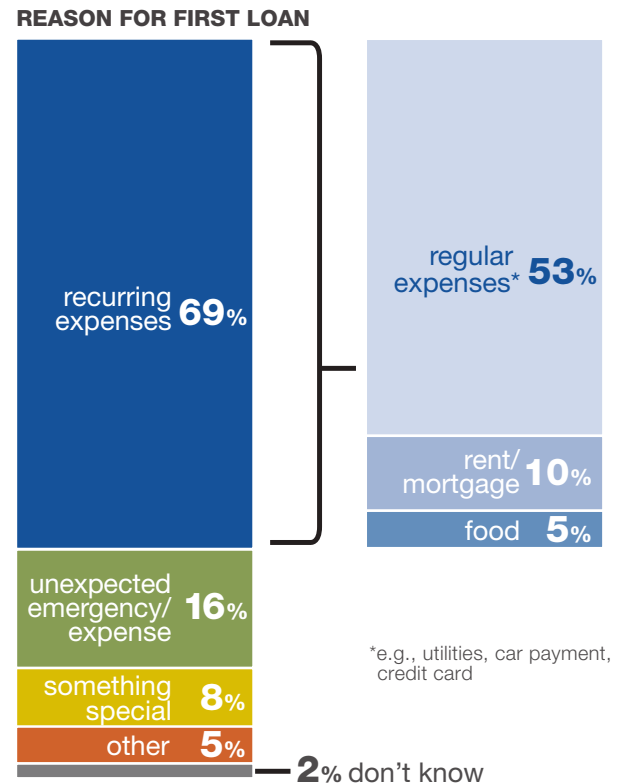
“It was the holidays and I just needed some extra cash to get gifts and help out with Christmas dinner and do my part.”

Male borrower, San Francisco:

“It was a frivolous expense. Some friends wanted us to accompany them on an out-of-town trip... and I thought, ‘why not?’”

EXHIBIT 4:

## MOST BORROWERS USE PAYDAY LOANS FOR RECURRING EXPENSES



NOTES: Data represent percentage of borrowers who reported the reason for using their first payday loan based on 451 interviews. December 2011 - March 2012. Sampling error for the full-length survey of storefront payday loan borrowers is +/- 4.6 percentage points.

Survey participants were asked: Thinking back now to (that FIRST/the) time you took out a (online payday loan/payday loan/auto title loan), which of the following best describes what specifically you needed the money for?

- 1 To pay rent or a mortgage
- 2 To pay for food and groceries
- 3 To pay a regular expense, such as utilities, car payment, credit card bill, or prescription drugs
- 4 To pay an unexpected expense, such as a car repair or emergency medical expense
- 5 To pay for something special, such as a vacation, entertainment, or gifts
- 6 (Do not read) Other (specify)

The combined results for “Recurring Expenses” include Regular Expense (53 percent), Rent or Mortgage (10 percent), and Food (5 percent) and add to 69 rather than the expected 68 because of rounding decimals. The response options were randomized in this and other survey questions, so the order in which the respondent heard them varied to eliminate order bias.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## WHY DO BORROWERS USE PAYDAY LOANS?

## PAYDAY LOAN MARKETING VS. PRACTICE

Payday loans are frequently described as short-term credit for unexpected expenses, and marketing materials sometimes inform borrowers that payday loans are not intended for long-term use.<sup>31</sup> The industry advertises this small-dollar form of credit as a product that offers borrowers “access to a financial option intended to cover small, often unexpected, expenses,” but states that a payday loan “is not meant to be a long-term solution.”<sup>32</sup> A large payday lender warns in its direct mail advertisements: “Short-term loans are not intended to be long-term financial solutions.”<sup>33</sup> Another warns: “Payday advances should be used for short-term financial needs only, not as a long-term financial solution.”<sup>34</sup>

Despite these warnings, repeat borrowing is the norm. Prior research indicates that borrowers are indebted for an average of five to seven months of the year.<sup>35</sup> As a report by the Federal Reserve Bank of Kansas City Economic Research Department concluded, “The profitability of payday lenders depends on repeat borrowing.”<sup>36</sup>

The dependence on repeat borrowing is illustrated by the reaction of payday lenders to a recent Washington State law limiting borrowers to eight loans per year. The largest storefront lender in the United States “decided to close an additional 30 centers in the State of Washington where changes in the law there have greatly affected our ability to operate profitably in that state.”<sup>37</sup> Similarly, according to industry analysts, “In a state with a \$15 per \$100 rate, an operator ... will need a new customer to take out 4 to 5 loans before that customer becomes profitable.”<sup>38</sup>

The industry’s stated best practices include limiting rollovers to four per person (or the state maximum) and providing extended repayment plans to borrowers who are unable to repay their loan within the original term.<sup>39</sup> Despite the promotion of these standards, marketing practices differ greatly. One key area of inconsistency is the practice among lenders of offering incentives to encourage habitual loan usage, such as discounts for repeat borrowing and referral bonuses.<sup>40</sup> As an example, one of the largest online payday lenders, which is affiliated with the largest storefront lender, offers a “Preferred Member Bonus” (Silver Status after five payday loans, Gold Status after 10 payday loans, and Platinum Status after 15 payday loans).<sup>41</sup>



### PROFILE

**Borrower C: Female, African American, married, parent, part-time employed, renter, some college, age 28, \$32,000**

African Americans are more likely than people of other races to have used a payday loan. People ages 25-29 are more likely to have used payday loans than those in any other age group. Parents are much more likely than non-parents to have used a payday loan, regardless of marital status.

### 3 What Would Borrowers Do Without Payday Loans?

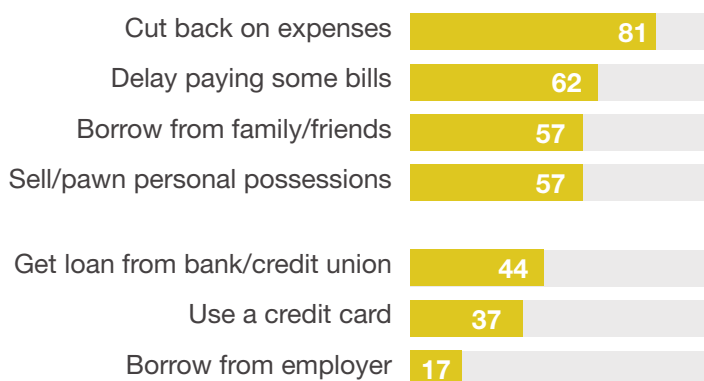
**If faced with a cash shortfall and payday loans were unavailable, 81 percent of borrowers say they would cut back on expenses. Many also would delay paying some bills, rely on friends and family, or sell personal possessions.**

Even though most borrowers use payday loans for recurring expenses, rather than for emergencies, survey respondents indicated they would use a variety of

options to deal with those needs if payday loans were no longer available. In general, borrowers are more likely to choose options—such as adjusting their budgets, delaying bills, selling or pawning personal items, or borrowing from family or friends—that do not connect them to a formal institution. Eighty-one percent of payday borrowers say they would cut back on expenses if payday loans were unavailable.

#### EXHIBIT 5:

### ALTERNATIVES IF PAYDAY LOANS WERE UNAVAILABLE



Borrowers are more likely to choose options that do not connect them to a formal institution.

NOTES: Data represent percentage of borrowers who would use each of these strategies if payday loans were unavailable, based on 451 interviews, December 2011 to March 2012.

Survey participants were asked: "I'm going to read you several options. For each, tell me whether you would use this option if you were short on cash and short-term loans of any kind no longer existed. How about (method)? Would you use this option or not?" The "borrow from employer" item was only asked of employed respondents.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## WHAT WOULD BORROWERS DO WITHOUT PAYDAY LOANS?

These survey findings are consistent with tactics described by former payday loan borrowers in a focus group Pew conducted in late 2011 near Manchester, New Hampshire, to find out what residents are doing now that there are no longer storefront payday lenders there. In that group, payday loan borrowers discussed various strategies they use in place of payday loans, such as re-budgeting, prioritizing bills, pawning or selling belongings, borrowing from family members, or, as one borrower stated, working out “payment plans with utility companies.” Another borrower discussed prioritizing money: “I budget. I do my best, but the main thing that has to get paid is that mortgage . . . I pay that mortgage, I pay my car, I pay my insurance, and whatever is left over, that’s what everything else gets paid with.”

While a majority of surveyed borrowers said they would not take out a loan from a bank or credit union, many focus group participants throughout the country expressed that they would rather borrow from a bank or a credit union than from a payday lender if that option were available to them. The fact that a majority of survey respondents failed to list banks or credit unions as options may reflect an expectation, demonstrated among many focus group members, that they would not be approved for a loan.

Similarly, the fact that most survey respondents would not use credit cards

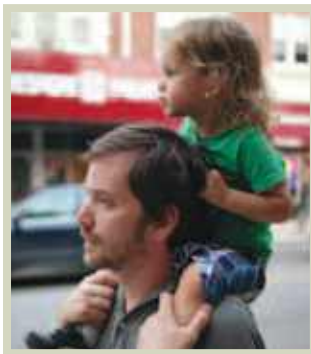
may reflect a sentiment that those products are not available to them. Most, though not all, focus group participants nationwide indicated that they had maxed out their credit cards or believed they would not qualify. The reluctance to view credit cards as an alternative also may stem from confusion among some borrowers about whether the interest rate on a credit card is higher or lower than the interest rate on a payday loan. On several occasions, borrowers in focus groups equated the simple interest rate (e.g., 15 percent for a loan with a \$15 per \$100 fee for two weeks) with the Annual Percentage Rate disclosed for a credit card (which might be 15 percent on an annual basis). For example, a borrower from Alabama stated: “Because the interest on . . . some credit cards [is] 23.99 percent. So if you go charge \$300, and then you don’t pay that \$300 off at the end of the month . . . they’re going to tack that 23.99 percent on to it, so you’re going to still be paying more than you would if you had to [get a payday loan].”

Previous surveys have found similar results to Pew’s findings about payday loan alternatives. A study of former storefront payday loan borrowers in North Carolina found households have other ways to cope with cash shortfalls. For example, borrowers who experienced a shortfall within the previous three years chose instead to delay expenses (52 percent), use savings (44 percent), or borrow from family or friends (42 percent).<sup>42</sup> A study of

## WHAT WOULD BORROWERS DO WITHOUT PAYDAY LOANS?

California payday loan borrowers found that of those who decided not to take out a payday loan explicitly because of the interest rate or fee, 47 percent chose to borrow from family or friends and 26 percent elected to wait until payday. In addition, for borrowers who were unable to obtain the full amount they needed from a payday lender, most chose to

borrow the additional amount from family or friends.<sup>43</sup> Another survey of low- to moderate-income people in parts of Texas revealed that while 23 percent had used a payday loan, far more (60 percent) had borrowed from family or friends. Among payday loan borrowers in that study, 45 percent indicated they also borrowed from family or friends.<sup>44</sup>



## PROFILE

**Borrower D: Male, white, separated, parent, full-time employed, renter, associate's degree, age 32, \$41,000**

Separated people are far more likely to have used a payday loan than those of any other marital status. People who do not have a four-year college degree are much more likely to have used a payday loan than college graduates.

## 4 Does Payday Lending Regulation Affect Usage?

**In states that enact strong legal protections, the result is a large net decrease in payday loan usage; borrowers are not driven to seek payday loans online or from other sources.**

Modern payday loans owe their existence to efforts, mostly in the 1990s, to create custom exemptions to state laws that otherwise

would prohibit such small-dollar loans or apply usury interest rate caps. Since then, the wisdom of allowing payday lending has been a hotly contested issue among state policy makers and stakeholders. States have deployed a variety of strategies designed to prohibit, control, or enable this form of small-dollar credit.

### EXAMPLES OF STATE LAW TYPES

#### MISSOURI (PERMISSIVE)

Missouri permits single-repayment payday loans with finance charges and interest not to exceed 75 percent of the borrowed principal. The 2011 payday lending report from Missouri's Division of Finance cites a fee of \$52.45 for a 14-day loan of \$307.56 (444.61 percent APR).<sup>45</sup> Payday loans are available for up to \$500.

*Incidence: 9.7 percent storefront, 1.5 percent online*

#### FLORIDA (HYBRID)

Florida permits single-repayment payday loans with fees of 10 percent of the borrowed principal, along with a \$5 fee for borrower verification with a state database of payday loan users. Payday loans are available for up to \$500 and each borrower may have out only one payday loan at any given time.

*Incidence: 6.6 percent storefront, 0.6 percent online*

#### GEORGIA (RESTRICTIVE)

Georgia state statute prohibits payday lending in most forms. As in other jurisdictions, many banks and credit unions are exempt from the restriction on payday lending in the state.

*Incidence: 1.9 percent storefront, 0.5 percent online*

## DOES PAYDAY LENDING REGULATION AFFECT USAGE?

In the past decade, some states—most recently including Arizona, Arkansas, Montana, and New Hampshire—have revived consumer protections and rolled back laws that authorized payday loans. These states have reimposed usury interest rate caps or discontinued payday lenders’ exemptions from these usury limits. Other states have limited the number of high-cost loans or renewals that a lender may offer to an individual, in an attempt to enhance borrowers’ ability to repay debts in a timely fashion.<sup>46</sup>

Following a thorough review, Pew identified three categories of state payday loan regulation. (See Exhibit 6 for a complete breakdown of the states. See [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans) for a compilation of relevant laws by state and a short history of payday lending law.)

■ **Permissive states are the least regulated and allow initial fees of 15 percent of the borrowed principal or higher.** Most of these states have some regulations, but allow for payday loans due in full on a borrower’s next payday with Annual Percentage Rates (APRs) usually in the range of 391 to 521 percent (\$15 to \$20 per \$100 borrowed per two weeks). Payday loan storefronts are readily available to borrowers located in these states.<sup>47</sup> Most Americans—55 percent—live in the 28 Permissive states.

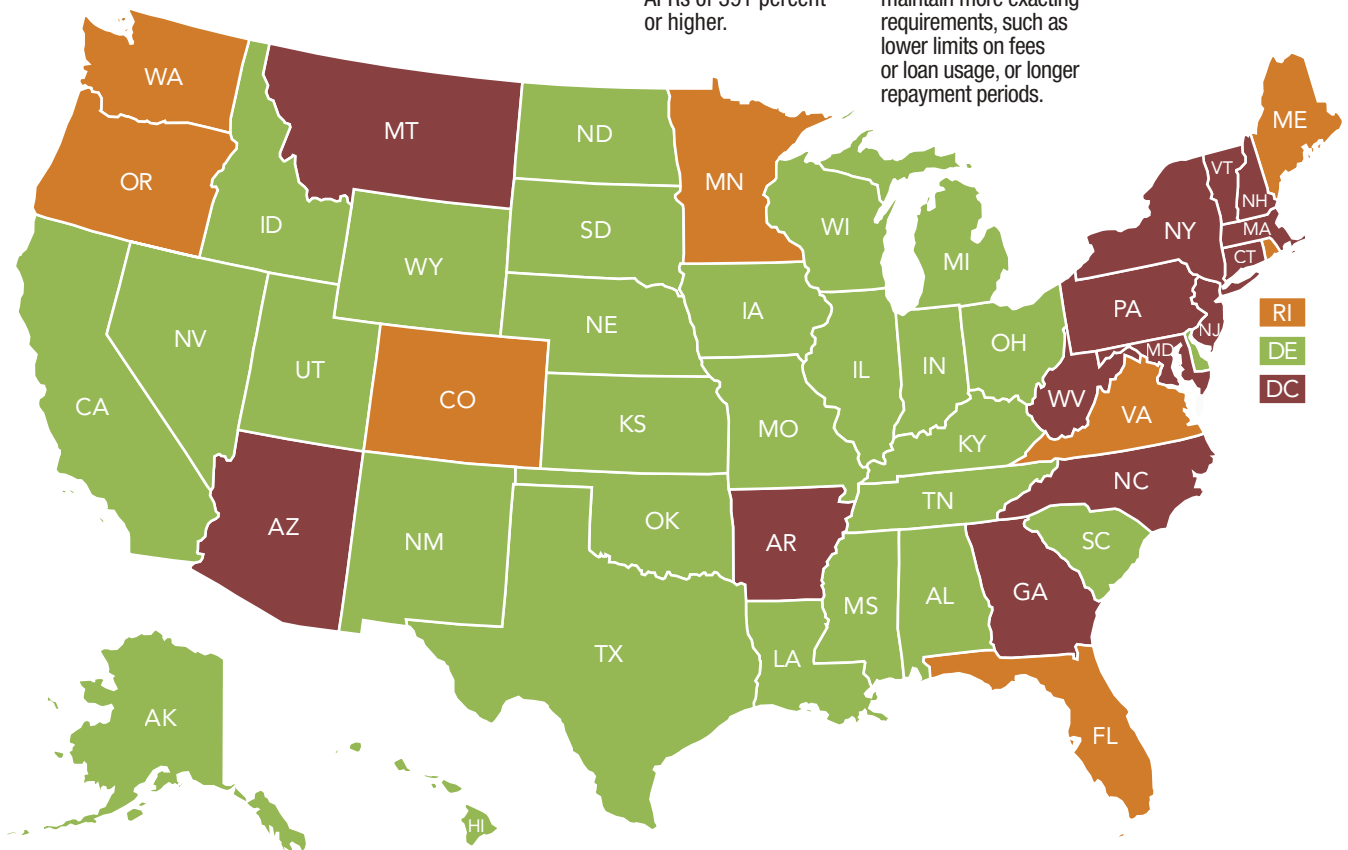
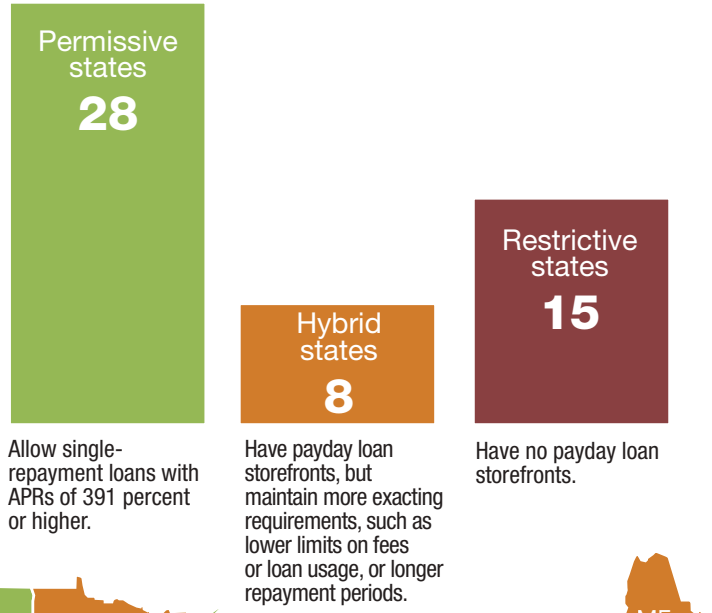
■ **Hybrid states have relatively more exacting requirements than Permissive states,** with at least one of the following three forms of regulation: (1) rate caps, usually around 10 percent of the borrowed principal, which are lower than most states but still permit loans to be issued with triple-digit APRs; (2) restrictions on the number of loans per borrower, such as a maximum of eight loans per borrower per year; or (3) allowing borrowers multiple pay periods to repay loans. Storefronts that offer payday loans exist in substantial numbers in these states,<sup>48</sup> though the market may be more consolidated and per-store loan volume may be higher here than in less restrictive states.<sup>49</sup> Sixteen percent of Americans live in the eight Hybrid states.

■ **Restrictive states either do not permit payday lending or have price caps low enough to eliminate payday lending in the state.** This rate cap often is 36 percent APR. Generally, payday loan storefronts are not found in these states. This category includes states where deferred presentment transactions (post-dated checks) are not authorized, are not specifically exempted from general state laws on usury, or are explicitly prohibited by state statute. Twenty-nine percent of Americans live in the 14 states and the District of Columbia that have a Restrictive payday loan regulatory structure.

DOES PAYDAY LENDING REGULATION AFFECT USAGE?

**EXHIBIT 6:  
HOW STATES  
REGULATE  
PAYDAY LENDING**

States have deployed a variety of strategies designed to prohibit, control, or enable this form of small-dollar credit.



SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## DOES PAYDAY LENDING REGULATION AFFECT USAGE?

## Payday Lending Regulation Not Leading to Increased Online Borrowing

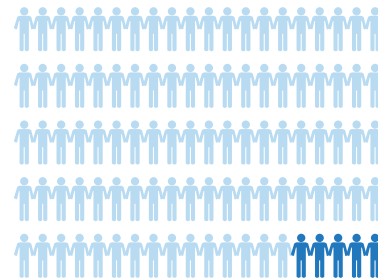
A key issue being discussed in state legislatures is whether restricting storefront payday lenders will lead borrowers to obtain loans from the Internet or other sources instead.<sup>50</sup> Consumer advocates<sup>51</sup> and some storefront lenders<sup>52</sup> have warned that other forms of lending, particularly online payday lending, could harm borrowers because they often occur outside the reach of state regulators. (Pew has seen evidence of fraud, abuse, and other problems with online payday lending, and will explore these later in this report series.)

However, Pew found that in Restrictive states, payday loan usage from all sources combined is far lower as compared with other states (see Exhibit 8).<sup>53</sup> Storefront payday loan usage is 75 percent lower in Restrictive than in Permissive states,<sup>54</sup> while online and other payday loan usage is only slightly higher (this difference is not statistically significant). Thus, the vast majority of would-be storefront borrowers in Restrictive states are not going online or to other providers to obtain payday loans instead.

Our data show that, in states that enact strong legal protections, the result is a large net decrease in payday loan usage (see page 23).

### EXHIBIT 7:

**In states that restrict storefront payday lending, 95 of 100 would-be borrowers elect not to use payday loans at all—just five borrow online or elsewhere.**



SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

- Restrictive payday loan laws lead to 393 fewer storefront borrowers per 10,000 people;
- Of these, just 21 (5 percent) go online or elsewhere to get a payday loan; and
- The remaining 372 (95 percent) do not use payday loans.

In other words, in states that restrict storefront payday lending, 95 of 100 would-be borrowers elect not to use payday loans at all—just five borrow online or elsewhere.

# PAYDAY BORROWING FAR LOWER IN RESTRICTIVE STATES THAN IN PERMISSIVE STATES

There is significantly less payday loan usage in states with strong legal protections because most people are not getting payday loans from the Internet or other sources instead. Although online payday lending and other sources may continue to experience substantial growth in coming years, these data give no indication that regulation of payday loan storefronts would fuel this growth. While online borrowing often is discussed as a problem in states without storefronts, it is nearly as prevalent in states with payday loan stores. In Permissive states, fully one-third of online borrowers also have borrowed from stores, choosing both methods rather than one or the other.

EXHIBIT 8:

## NUMBER OF BORROWERS PER 10,000 POPULATION

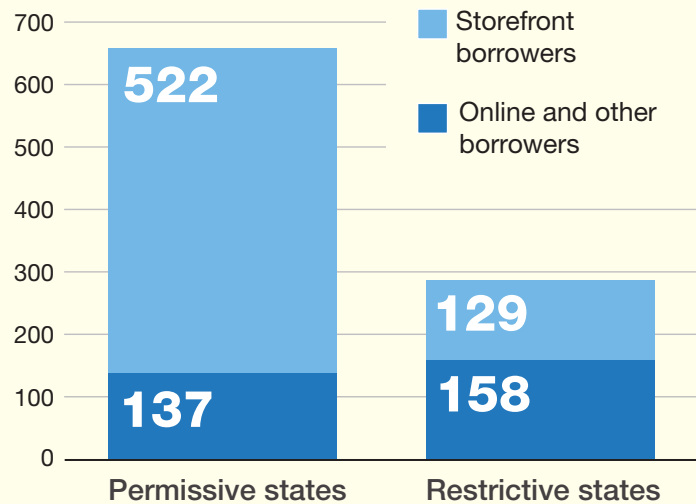


EXHIBIT 9:

## METHOD OF ACQUIRING PAYDAY LOANS BY STATE LAW TYPE

Percentage of adults reporting payday loan usage in the past five years

	BORROW FROM STOREFRONT ONLY	BORROW FROM ONLINE OR OTHER*	NUMBER OF INTERVIEWS
National	4.01%	1.48%	33,576
Permissive states	5.22%	1.37%	17,881
Hybrid states	5.06%	1.28%	5,565
Restrictive states	1.29%	1.58%	10,130

NOTES: \*Online or other represents all borrowers who have indicated online usage (including those who have borrowed both online *and* from a storefront), plus usage from other lenders that may include banks, credit unions, or employers, among others. Results are reported to two decimal places, but this reporting is not intended to imply such a detailed level of precision. Rather, two decimal places are used in order to avoid inaccurate calculations between groupings that could be caused by rounding. Because of sampling error, it is possible that the true level of usage in any of these groupings is slightly higher or lower.

Restrictive states are those that have no payday loan storefronts. Permissive states allow single-repayment loans with APRs of 391 percent or higher. Hybrid states have payday loan storefronts, but maintain more exacting requirements, such as lower limits on fees or loan usage, or longer repayment periods.

Data represent percentage of adults in each category who report having used a payday loan in the past five years. Results are based on 33,576 interviews conducted from August 2011 through December 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## DOES PAYDAY LENDING REGULATION AFFECT USAGE?

This analysis makes an evidence-based assumption backed by strong empirical data that inherent demand for payday loans is similar in Restrictive and Permissive states. Store counts from 2006 in the four states that have most recently adopted a Restrictive regulatory strategy after previously being Permissive—Arkansas, Arizona, Montana, and New Hampshire—show a similar number of stores per capita as in the other then-Permissive states: 5.5 percent fewer stores (0.64 fewer stores) per 100,000 residents in 2006 than their counterparts that remain Permissive (see Exhibit 10).<sup>55</sup> This fairly small difference in payday lenders per capita suggests there is not large variation between these two state groupings in demand for payday loans.<sup>56</sup> Other Restrictive states, such as North Carolina and Georgia, that were previously Permissive, also had heavy payday loan activity before changing their laws.<sup>57</sup>

## EXHIBIT 10:

**PAYDAY LOAN STOREFRONTS**

STATE LAW TYPE	STOREFRONTS PER 100,000 RESIDENTS IN 2006
PERMISSIVE IN 2012 (WERE PERMISSIVE IN 2006)	11.57
RESTRICTIVE IN 2012 (WERE PERMISSIVE IN 2006)	10.93

NOTES: These figures are based on our analysis of state-by-state storefront data from Steven Graves and Christopher Peterson. Restrictive states are those that have no payday loan storefronts. Permissive states allow single-repayment loans with APRs of 391 percent or higher.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012; Graves and Peterson (2008).

Pew also conducted a logistic regression analysis to examine the effect of state law type on the odds of payday borrowing, controlling for borrower demographic characteristics. The findings are that the odds of payday loan usage for people who live in a Permissive or Hybrid state are 169 percent higher than for those who live in a Restrictive state, meaning a person's state of residence is a highly significant factor in predicting payday loan usage, even after controlling for borrower demographics.

To examine whether these data were considerably impacted by changes in state laws during the period of inquiry in our survey, Pew compared incidence in states that changed their laws during the past five years and those that did not.<sup>58</sup> There was relatively little difference in incidence of payday loan usage between states that had Restrictive regulation prior to 2007 (2.93 percent) and those five states that implemented Restrictive regulation after January 2007 (2.46 percent). Usage rates are similarly close for states with Hybrid regulation prior to 2007 (6.14 percent) and the five states that implemented Hybrid regulation in 2007 or later (6.43 percent).

Prior research has found “no evidence that prohibitions and price caps on one AFS (Alternative Financial Services) product lead consumers to use other AFS products.”<sup>59</sup> Our research builds on that finding, revealing that the vast majority of would-be borrowers do not even substitute a new method (using the Internet instead of a storefront) to obtain the same AFS product, which in this case is a payday loan.<sup>60</sup>

## DOES PAYDAY LENDING REGULATION AFFECT USAGE?

## Payday Lending Regulation Not Driving Increase in Borrower Complaints

Another issue that state legislators and regulators have considered is whether payday lending restrictions could be driving an increase in borrower complaints.<sup>61</sup>

Consumer advocates also have been concerned that an increase in complaints may be driven by online lenders.<sup>62</sup>

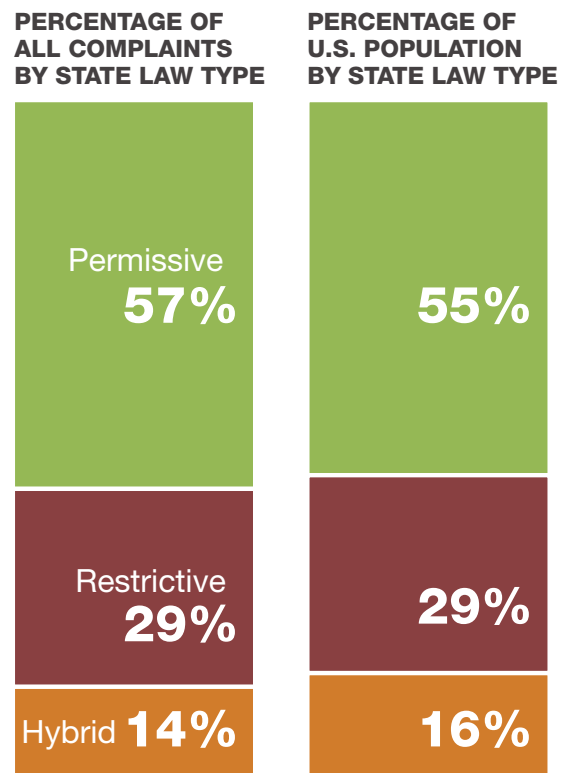
Given that online borrowing is nearly as prevalent in Permissive states (1.08 percent) as in Restrictive ones (1.21 percent), the rate of complaints increasing more in one type of state than another seems unlikely.

The Better Business Bureau reports that complaints against payday lenders are on the rise.<sup>63</sup> While online borrowing generally may indeed be driving this increase, there is no indication that the increase is attributable to efforts to regulate storefront payday lending. As shown in Exhibit 11, Pew's analysis of the complaints received by the Better Business Bureau in 2011 finds state regulations are not driving complaints against payday lenders. Twenty-nine percent of all complaints against payday lenders were filed by residents of Restrictive states, identical to the 29 percent of Americans who live in those states. Similarly, 55 percent of Americans live in Permissive states, and they filed 57 percent of complaints against payday

EXHIBIT 11:

## STATE LAWS ARE NOT DRIVING PAYDAY LOAN COMPLAINTS

The percentage of complaints against payday lenders received by the Better Business Bureau in each state law grouping closely mirrors the percentage of the population living in those states, suggesting that regulation is not driving complaints.



NOTE: Complaints are those received by the Better Business Bureau about payday lenders in 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012; Better Business Bureau.

lenders. Sixteen percent of the population lives in Hybrid states, and they filed 14 percent of payday lending complaints.

More evidence that complaints are not driven by consumer protections

## DOES PAYDAY LENDING REGULATION AFFECT USAGE?

comes from Washington State, where complaints have been increasing, but the increase does not coincide with the recent change from a Permissive to a Hybrid regulatory model. Complaints increased 76 percent from 2008 to 2009, when there was no change in the law, and 50 percent from 2009 to 2010,

when a change in the law took place.<sup>64</sup> Similarly, data Pew collected from state regulators show that from 2009 to 2011, Arkansas (Restrictive) had a 128 percent increase in complaints, Maine (Hybrid) had a 52 percent increase, and Missouri (Permissive) had a 107 percent increase.<sup>65</sup>

## FORMER BORROWERS SPEAK ABOUT THE CHOICE BETWEEN STOREFRONT AND ONLINE

During a focus group in New Hampshire, former storefront payday loan borrowers dismissed the online option:

“I won’t leave my information there.”

“There’s no face-to-face contact ... [I]f my identity was to be stolen, well who stole it?”

“It’s too risky, in my opinion.”

“With the identity theft the way it is ... who’s going to see it?”

“I’m not going to put [my] information out there.”

Another former borrower noted that she had used online payday loans in New Hampshire when storefronts were still present, in order to pay off her storefront payday loans:

“I had to come up with money [when] my husband was out of work, and I actually was up to \$900 [in storefront payday loan debt] ... My entire check was gone the next two weeks, so that’s when I went to the online ones ... And then after I did the online ones, and got in that loop, and got stuck in there, I went back to the store again, and, yeah, it got bad. And my [checking] account ended up pretty negative. I had to close it out totally.”

NOTE: The focus group comprised only those people who had taken payday loans from storefronts before a recent New Hampshire law eliminated storefront payday lending.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## WHERE DO BORROWERS GET PAYDAY LOANS?

Pew's survey shows that retail storefronts are the exclusive source of payday loans for nearly three out of every four borrowers, while only one in six borrowers reports having used online providers exclusively (see Exhibit 12). About one in 10 borrowers has used both storefront and online providers or other types of providers, which may include banks or employers.<sup>66</sup>

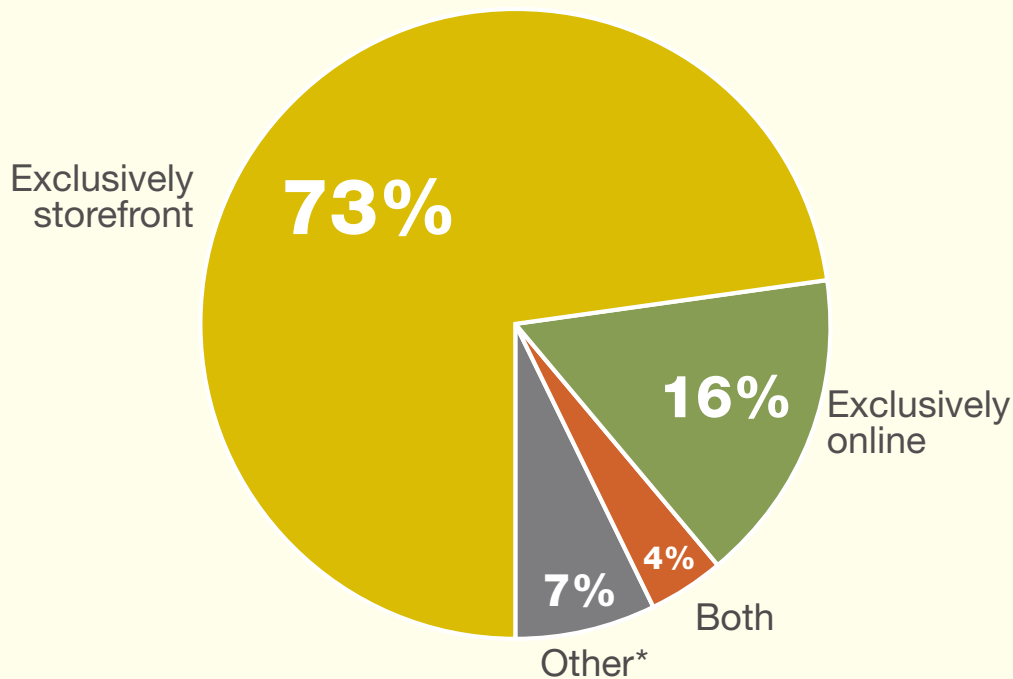
While the overwhelming majority of borrowers use storefronts to get payday loans, certain groups are more likely than others to use online lenders (see Exhibit 13). Those who most often go online for loans tend to be younger, have

incomes above \$50,000, and have a college degree (for example, 41 percent of payday loan borrowers with a college degree used online lenders, and 66 percent used storefront lenders). These are the groups that use the Internet at higher rates generally throughout the population.<sup>67</sup>

The groups that are heavily skewed toward storefront borrowing are older, do not have a college degree, and have incomes below \$50,000. White borrowers are especially likely to borrow from storefront lenders, as are disabled borrowers.

EXHIBIT 12:

### HOW PEOPLE OBTAIN PAYDAY LOANS



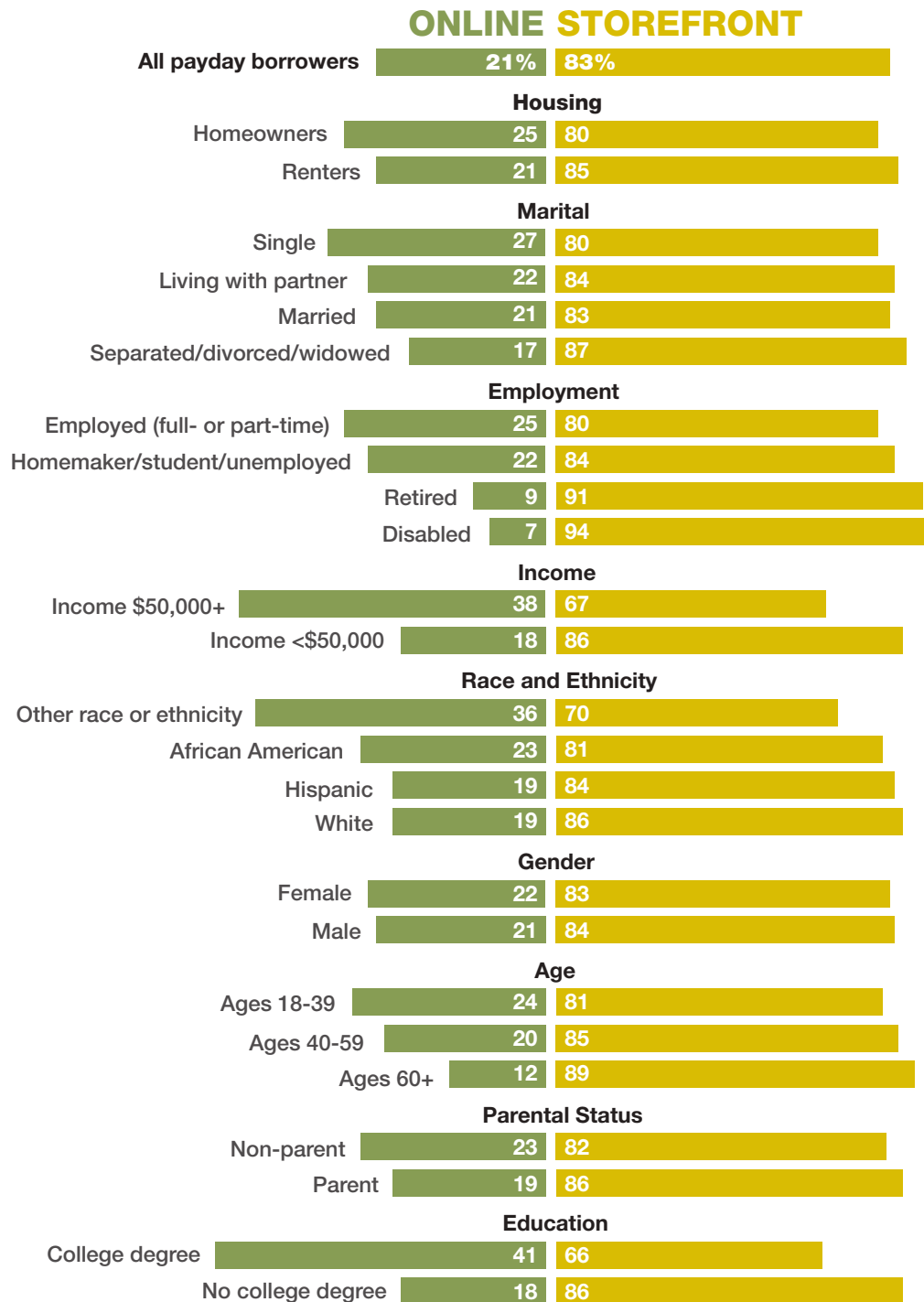
NOTES: In absolute terms, 4.0 percent of all survey respondents have used payday loans exclusively from storefronts, 0.9 percent have used payday loans exclusively from the Internet, 0.2 percent have used payday loans from both storefront locations and the Internet, and 0.4 percent of respondents have used payday loans that were neither storefront-based nor Internet-based. \*Other sources may include banks, credit unions, or employers, among others.

Data represent percentage of payday borrowers who have used this type of provider in the past five years. Results are based on 33,576 interviews conducted from August 2011 through December 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## DOES PAYDAY LENDING REGULATION AFFECT USAGE?

EXHIBIT 13:

**METHOD OF ACQUIRING PAYDAY LOANS  
BY BORROWER DEMOGRAPHIC GROUP**

NOTES: Numbers add to greater than 100 percent because of borrowers who have borrowed both from a storefront and online; they are counted in both columns and exist in greater numbers in some subgroups. The 7 percent of borrowers who have taken a payday loan from another source, such as a bank or employer, are excluded from this section, as are the 1 percent of borrowers who declined to state which method of borrowing they utilized. Results represent the percentage of payday loan borrowers in each category who report having used the specified type of payday loan in the past five years. Results are based on 33,576 interviews conducted from August through December 2011.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

## Conclusion

Payday loans are marketed as short-term credit products intended for emergency use, and they usually are depicted as a fix for an unexpected expense. However, Pew's first-of-its-kind survey reveals that seven in 10 borrowers use payday loans to deal with recurring expenses, while only one in six uses the loans for unexpected emergencies. Pew's analysis shows that the vast majority of borrowers use the loans on a long-term basis, not a temporary one. Thus it seems that the payday loan industry is selling a product that few people use as designed and that imposes debt that is consistently more costly and longer lasting than advertised. This circumstance is especially troubling because the conventional payday loan business model fundamentally relies on repeat usage—often, renewals by borrowers who are unable to repay the full loan amount upon their next payday—for its profitability.

Pew's research shows that certain demographic groups are more likely to use payday loans, including those without a four-year college degree; African Americans; those who rent rather than

own a home; people earning below \$40,000 annually; and those who are separated or divorced. However, it also clearly demonstrates that the payday loan is a product that crosses lines of gender, race and ethnicity, income, and education, touching most segments of society.

These findings raise serious concerns about payday lending, including whether a two-week product with an APR typically around 400 percent is a viable solution for people dealing with a chronic cash shortage.

To date, payday loans have been regulated primarily at the state level. Pew's findings show that states that have chosen to implement statutory controls on these products have been successful in realizing policy makers' goal of curbing payday lending, with 95 out of 100 would-be borrowers electing not to use payday loans rather than going online or finding payday loans elsewhere. These findings are particularly important as policy makers discuss what happens to payday borrowers when storefront lenders are not present because of regulatory action.

## CONCLUSION

Moving forward, the recently created Consumer Financial Protection Bureau has the authority to regulate the payday loan market at the federal level. With this ongoing series, *Payday Lending in America*, and other research, Pew will present

in-depth findings to help identify the features of a safe and transparent marketplace for such consumer financial services, to inform efforts to protect consumers from harmful practices, and to promote safe and transparent small-dollar credit.

# Methodology: Opinion Research

*Findings in this report are based on a screening survey to measure incidence and identify payday loan borrowers, a full-length survey of people who answered that they had used a storefront payday loan in the past five years, and a series of 10 focus groups with small-loan borrowers, as described below.*

## Survey Methodology

### **Social Science Research Solutions (SSRS) Omnibus Survey**

The Pew Safe Small-Dollar Loans Research Project contracted with SSRS to conduct the first-ever nationally representative in-depth telephone survey with payday loan borrowers about their loan usage. To identify and survey a low-incidence population such as payday loan borrowers, SSRS screened 1,000 to 2,000 adults per week on its regular omnibus survey, using random-digit-dialing (RDD) methodology, from August 2011 to April 2012. The term “omnibus” refers to a survey that includes questions on a variety of topics. This survey likely minimized payday loan borrowers’ denying their usage of this product, because the omnibus survey included mostly non-financial questions purchased by other clients, and the payday loan questions were

asked after other, less sensitive questions, giving interviewers a chance to establish a rapport with respondents.

If during the months of August through mid-December, respondents answered that they had used a payday loan, they were placed in a file to be recontacted later. Once the full-length survey was ready to field, in order to maximize participation, people who had used a payday loan were then given the full-length survey and paid an incentive of \$20 for participating. Because of their relative scarcity, online payday loan borrowers were given an incentive of \$35 for participating. Respondents were told about the compensation only after having indicated that they had used a payday loan. Further, online payday loan borrowers identified during the early months of screening were sent a letter with a five-dollar bill informing them that they would be recontacted to take the full-length survey. The second phase of the research involved recontacting all respondents who answered that they had used a payday loan, and immediately giving the full-length survey to anyone newly identified in the weekly omnibus survey as a payday loan borrower.

## METHODOLOGY

### Sample and Interviewing

In the first phase of the survey, The Pew Safe Small-Dollar Loans Research Project purchased time on Social Science Research Solutions' omnibus survey, *EXCEL*, that covers the continental United States. Analysis of the incidence was conducted after 33,576 adults had been screened and answered a question about payday loan usage.

Sampling error for the omnibus survey of borrowers is +/- 0.24 percentage points. In the second phase, another 16,108 adults were screened in order to find a sufficient number of storefront payday loan, online payday loans, and auto title loan borrowers to complete a 20-minute survey about their usage and views. A total of 451 adults completed the full-length storefront payday loan survey, and two questions from that survey were included in this publication. Sampling error for the full-length survey of storefront payday loan borrowers is +/- 4.6 percentage points. In total, 49,684 adults were screened to complete the research.

*EXCEL* is a national weekly, dual-frame bilingual telephone survey. Each *EXCEL* survey consists of a minimum of 1,000 interviews, of which 300 interviews are completed with respondents on their cell phones and at least 30 are conducted in Spanish, ensuring unprecedented representation on an omnibus platform. Completes are representative of the U.S. population of adults 18 and older.

*EXCEL* uses a fully replicated, stratified, single-stage, RDD sample of telephone households, and randomly generated cell phones. Sample telephone numbers are computer-generated and loaded into online sample files accessed directly by the Computer-Assisted Telephone Interviewing (CATI) system. Within each sample household, a single respondent is randomly selected. Further details about *EXCEL* and its weighting are available at [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans).

### Question Wording— Omnibus Survey

The data from the nationally representative omnibus survey of 33,576 adults are based on responses to the following questions. Wording for demographic and other questions is available at [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans).

Screening Phase (measuring incidence and compiling sample for callbacks):

- In the past five years, have you used payday loan or cash advance services, where you borrow money to be repaid out of your next paycheck?
- And was that physically through a store, or on the Internet?

Recontact Phase (calling back respondents who answered affirmatively, and identifying additional borrowers to take the full-length survey immediately):

## METHODOLOGY

- In the past five years, have you or has someone in your family used an in-person payday lending store or cash advance service?

## Question Wording—Full-Length Survey of Storefront Payday Loan Borrowers

The data from the nationally representative, full-length survey of 451 storefront payday loan borrowers are based on responses to the following questions, which Pew designed with assistance from SSRS and Hart Research Associates. All other questions from this survey are being held for future release. The sample for this telephone survey was derived from the RDD omnibus survey.

**Thinking back now to (that FIRST/the) time you took out a (online payday loan/payday loan/auto title loan), which of the following best describes what specifically you needed the money for? (READ LIST. ACCEPT ONE RESPONSE.)**

(IF MORE THAN ONE, ASK:) Well, if you had to choose just one, which best describes what specifically you needed the money for?

- 1 To pay rent or a mortgage
- 2 To pay for food and groceries
- 3 To pay a regular expense, such as utilities, car payment, credit card bill, or prescription drugs

- 4 To pay an unexpected expense, such as a car repair or emergency medical expense
- 5 To pay for something special, such as a vacation, entertainment, or gifts
- 7 (DO NOT READ) Other (SPECIFY) \_\_\_\_\_
- D (DO NOT READ) Don't know
- R (DO NOT READ) Refused

**I'm going to read you several options. For each, tell me whether you would use this option if you were short on cash and short-term loans of any kind no longer existed. How about (INSERT)?**

- a. Borrow from family or friends
- b. Borrow from your employer
- c. Sell or pawn personal possessions
- d. Delay paying some bills
- e. Cut back on expenses such as food and clothing
- f. Take out a loan from a bank or credit union
- g. Use a credit card

Would you use this option or not?

- 1 Yes, would use
- 2 No, would not use
- D (DO NOT READ) Don't know
- R (DO NOT READ) Refused

## METHODOLOGY

## Focus Group Methodology

On behalf of the Safe Small-Dollar Loans Research Project, Hart Research Associates and Public Opinion Strategies conducted eight two-hour focus groups, with two groups per location in New York City, New York; Chicago, Illinois; Birmingham, Alabama; and Manchester, New Hampshire. Those groups were conducted during weekday evenings from September 7, 2011 through September 19, 2011. The Safe Small-Dollar Loans Research Project conducted two additional groups in San Francisco, California, on November 16, 2011. All quotations come from these 10 focus groups.

## APPENDIX A

## EXHIBIT 14:

**PAYDAY LOAN BORROWER DEMOGRAPHIC SNAPSHOT**

Demographic	Percentage of All Payday Borrowers	Percentage of All American Adults
Renters	58	35
Homeowners	41	65
Single	24	31
Living with partner	14	N/A*
Married	33	50
Separated/divorced	25	13
Widowed	4	6
Full-time employed	49	59**
Part-time employed	13	
Unemployed	14	6
Disabled	8	N/A*
Retired	8	23
Homemaker	5	6
Student	3	5
Income <\$15,000	25	13
Income \$15,000 to under \$25,000	24	11
Income \$25,000 to under \$30,000	11	
Income \$30,000 to under \$40,000	13	25**
Income \$40,000 to under \$50,000	8	
Income \$50,000 to under \$75,000	10	19
Income \$75,000 to under \$100,000	5	12
Income \$100,000+	1	21
White (non-Hispanic)	55	64
African American (non-Hispanic)	23	12
Hispanic	14	16
Other race/ethnicity	6	8
Ages 18-24	12	13
Ages 25-29	16	9
Ages 30-34	12	9
Ages 35-39	11	9
Ages 40-44	13	9
Ages 45-49	11	10
Ages 50-54	10	10
Ages 55-59	5	8
Ages 60-64	5	7
Ages 65-69	3	5
Ages 70+	3	12
Parent	38	30
Non-parent	62	70
<High school	16	15
High school	38	29
Some college	31	30
College	11	16
Postgrad	3	9
Male	48	49
Female	52	51

This table describes the demographic characteristics of payday loan users overall, based on responses to Pew's survey. For example, 58 percent of all payday loan users rent (as opposed to own) their homes. For more on the survey, see the Methodology.

NOTES: All payday borrower data come from payday borrowers identified through 33,576 interviews conducted from August through December 2011 on behalf of Pew's Safe Small-Dollar Loans Research Project.

All comparative data except for employment status come from the Census Bureau's 2010 Decennial Census, the 2006–2010 American Community Survey 5-Year Estimates, and the 2008–2010 American Community Survey 3-Year Estimates. Employment status data come from a three-month average (March, April, and May 2012) of the NBC News/Wall Street Journal Survey, a nationally representative monthly telephone survey.

Data may not equal 100 percent due to rounding or because respondents declined to answer.

Marital status is based on residents 15 years of age and older. Educational attainment is based on adults 25 to 64 years of age. Other data, including Pew's survey data, represent adults 18 years of age and older.

\*N/A Certain data were unavailable and/or are not comparable to Pew's survey.

\*\*The Census uses slightly different income and employment categories in its survey.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012; U.S. Census Bureau; NBC News/Wall Street Journal Survey.

## APPENDIX B

## Modeling the Likelihood of Borrowing by Demographics

To test the relationship between specific demographics and payday loan usage, Pew developed a statistical model to analyze the predictive strength of each demographic while holding all others constant. For example, the model tests whether there is a strong relationship between renting a home and borrowing a payday loan, regardless of a borrower's other characteristics such as income. The following eight demographics were examined and compared with those people who were not in the selected category (e.g., those who have annual household incomes below \$40,000 are compared with those who have annual household incomes of \$40,000 or higher).

- Ages 25 to 34
- Annual household income below \$40,000
- Parents (with minor, financially dependent children)
- Some college education or less
- Renters
- African Americans
- Females
- Marital status is separated or divorced

It is important to reiterate that a limitation of our analysis is the time frame. While the survey recorded current demographics,

payday loan borrowers were asked about loans they had taken out in the past five years. We are not implying any causality, and it would be incorrect to assume that certain characteristics are necessarily causing an increase in payday loan usage. Rather, the findings show strong relationships between certain characteristics and payday loan usage, many of which previous studies also have identified.<sup>68</sup>

In interpreting the logistic regression, the analysis focuses especially on the odds ratio, which shows the likelihood of payday loan usage based on the presence of a particular characteristic.

All relationships are significant at the 99 percent confidence level, with the exception of gender. This is not a surprising finding, as differences between males and females in Pew's initial analysis were slight and sometimes decreased when other variables were introduced. Thus, it is likely that the initial difference in usage by gender is being caused by other characteristics that correlate with gender, such as parental status or income.

Again, the baseline for payday loan usage is 5.5 percent across all adults. The figures resulting from this analysis describe only how much more likely it is that one type of person is to have used payday loans relative to another.

## APPENDIX B

EXHIBIT 15:

**LOGISTIC REGRESSION ANALYSIS OF LIKELIHOOD OF PAYDAY LOAN USAGE BY SELECT DEMOGRAPHICS**

The percentages described in the body of the report as coming from a logistic regression model are derived from the Odds Ratio, and are calculated by subtracting 1 from the Odds Ratio. Thus, those who are Separated or Divorced, with an Odds Ratio of 2.034, are 103.4 percent more likely to have used a payday loan.

	<b>Coefficient <math>\beta</math></b>	<b>S.E. <math>\beta</math></b>	<b>Wald's <math>X^2</math></b>	<b>Odds Ratio</b>
AfAm	0.717***	0.073	95.322	2.048
SepDiv	0.71***	0.072	96.729	2.034
NonCollege	0.6***	0.088	46.295	1.823
Income<\$40k	0.479***	0.071	45.167	1.615
Rent	0.452***	0.066	47.118	1.572
Parent	0.352***	0.065	29.246	1.422
Age25to34	0.349***	0.071	23.786	1.417
Female	-0.122**	0.062	3.928	0.885
Constant	-3.94	0.093	1781.417	0.019

NOTE: \* p<.10, \*\* p <.05, and \*\*\* p<.01.

SOURCE: Pew Safe Small-Dollar Loans Research Project, 2012.

# Endnotes

1 David Burtzlaff and Brittany Groce. “Payday Loan Industry,” (2011). Stephens Inc.

2 Marketers of payday loans routinely characterize the products as short-term solutions that are not meant to be used for long periods of time. For example, the Financial Service Centers of America (FiSCA), an industry trade group, describes a payday advance as a “short-term loan to cover expenses between paydays.” “FiSCA Consumer Financial Services Factsheet,” available at [http://www.fisca.org/Content/NavigationMenu/ConsumerCenter/ConsumerFactSheet/CONSUMERCENTER-ConsumerFactSheet\\_Final\\_withlogo.pdf](http://www.fisca.org/Content/NavigationMenu/ConsumerCenter/ConsumerFactSheet/CONSUMERCENTER-ConsumerFactSheet_Final_withlogo.pdf) (accessed March 30, 2012).

3 Pew’s research shows that the vast majority of borrowers report obtaining their loans from retail storefronts, which are non-bank, state-licensed entities that specialize in this form of lending. However, payday and similar types of loans are available online and from a growing number of banks. A small number of national and regional banks have developed small-dollar loan products that mimic or closely resemble conventional payday loans. These bank products are sometimes called “deposit advance” loans. The acting chairman of the Federal Deposit Insurance Corporation (FDIC) recently expressed “deep concern” about banks engaging in payday lending and announced an intention to investigate this trend. See FDIC letter at [www.responsiblelending.org/payday-lending/policy-legislation/regulators/fdic-invests-bank-payday-lending.html](http://www.responsiblelending.org/payday-lending/policy-legislation/regulators/fdic-invests-bank-payday-lending.html).

4 In the fall of 2011, Pew contracted with research firms to hold focus groups of current and former payday loan borrowers. Participants told their stories and discussed a variety of questions related to their use of payday loans and other financial products. Deborah’s story and her

quotations are taken from one such focus group, which was conducted in New Hampshire (Deborah discussed experiences with storefront payday lenders that occurred prior to 2009, when New Hampshire enacted a 36 percent annual interest rate cap that effectively eliminated storefront payday lending in that state). “Deborah” is not the borrower’s real name. We have used a pseudonym to protect the participant’s privacy, but all other details are unaltered.

5 In 2011, the average payday loan at the nation’s largest payday lender—Advance America—was \$375, based on its annual report. Industry analyst Stephens Inc. uses Advance America as a proxy for the payday lending industry. Stephens Inc., “Payday Loan Industry,” (2011).

6 Fees from online lenders often are higher, averaging \$25 per \$100 borrowed per two weeks, or 652 percent APR. Consumer Federation of America, “CFA Survey of Online Payday Loan Websites,” (2011). See [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans) for more information on state payday lending laws.

7 Although payday loans are not a new form of credit, the modern payday lending industry arose in the 1990s when a number of states modified their consumer lending laws, enacting special exceptions to interest rate caps and other laws that had traditionally regulated credit. See [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans) for more information on the history of payday lending laws.

8 This calculation is based on a borrower using eight loans (the average number used annually according to state reports) for 18.2 days (the average duration of a payday loan, according to Advance America’s annual (10-K) report). Multiplying these figures indicates an average of 146 days of indebtedness per year.

## ENDNOTES

9 Leslie Parrish and Uriah King, “Phantom Demand,” (Center for Responsible Lending, June 2009), <http://www.responsiblelending.org/payday-lending/research-analysis/phantom-demand-final.pdf>.

10 Oklahoma probably is not an outlier, as the average number of loans used by borrowers in Oklahoma per year (8.7) is similar to the average from other states, based on state reports. Calculations use data in “Oklahoma Trends in Deferred Deposit Lending, 2010,” [www.ok.gov/okdocc/documents/2010\\_10\\_OK%20Trends\\_Final\\_Draft.pdf](http://www.ok.gov/okdocc/documents/2010_10_OK%20Trends_Final_Draft.pdf).

11 Payday and similar types of loans are available online and from a growing number of banks; however, Pew’s research shows that the vast majority of borrowers report obtaining their loans from retail storefronts, which are non-bank, state-licensed entities that specialize in this form of lending.

12 A study funded by the payday lending industry found that 78 percent of borrowers take out five or more payday loans each year; Gregory Elliehausen, “An Analysis of Consumers’ Use of Payday Loans,” *Financial Services Research Program Monograph* No. 41, (George Washington University, 2009). Another study by consumer advocacy group Center for Responsible Lending found that Oklahoma borrowers who use payday loans take out an average of nine loans in their first year of borrowing; Uriah King and Leslie Parrish, “Payday Loans, Inc.: Short on Credit, Long on Debt,” (Center for Responsible Lending, 2011). See also: “Report on the Business of Providing Deferred Presentment Service Transactions in Michigan,” (2007), [www.michigan.gov/documents/cis/OFIS\\_DPST\\_REPORT\\_204749\\_7.pdf](http://www.michigan.gov/documents/cis/OFIS_DPST_REPORT_204749_7.pdf); and “Florida Trends in Deferred Presentment,” (2010), [www.veritecs.com/Docs/2010\\_06\\_FL\\_Trends-UPDATED.pdf](http://www.veritecs.com/Docs/2010_06_FL_Trends-UPDATED.pdf).

13 Robert DeYoung and Ronnie J. Phillips. “Payday Loan Pricing,” (Federal Reserve Bank of Kansas City Economic Research Department, 2009), [www.kansascityfed.org/PUBLICAT/RESWKPPAP/PDF/rwp09-07.pdf](http://www.kansascityfed.org/PUBLICAT/RESWKPPAP/PDF/rwp09-07.pdf).

14 Stephens Inc., “Payday Loan Industry,” (2011).

15 Michael A. Stegman and Robert Faris, “Payday Lending: A Business Model that Encourages Chronic Borrowing,” *Economic Development Quarterly* (2003), [www.ccc.unc.edu/abstracts/0203\\_Payday.php](http://www.ccc.unc.edu/abstracts/0203_Payday.php).

16 Our 5.5 percent payday loan usage number closely mirrors the 5 percent number found by the FINRA Foundation in their telephone survey conducted in 2009; Applied Research and Consulting, “Financial Capability in the United States,” prepared for the FINRA Investor Education Foundation, (2009). It is somewhat higher than the 3.5 percent of households who reported ever having used payday loans in the 2009 FDIC supplement to the Current Population Survey; “Addendum to the 2009 FDIC National Survey of Unbanked and Underbanked Households: Use of Alternative Financial Services,” (2010), [www.fdic.gov/householdsurvey/AFS\\_Addendum.pdf](http://www.fdic.gov/householdsurvey/AFS_Addendum.pdf). The number also is higher than the 3.9 percent of households who reported having used a payday loan in the past year in the Federal Reserve Board’s Survey of Consumer Finances, although that survey asked just about the past year, whereas our survey asked about the past five years; [www.federalreserve.gov/pubs/bulletin/2012/pdf/scf12.pdf](http://www.federalreserve.gov/pubs/bulletin/2012/pdf/scf12.pdf). Earlier research has found and discussed evidence of known payday loan borrowers denying their usage of these loans in survey research: Gregory Elliehausen and Edward Lawrence, “Payday Advance Credit In America: An Analysis Of Customer Demand,” (Monograph #35, 2001); Dean Karlan and Jonathan Zinman, “Lying About Borrowing,” *Journal of the European Economic Association Papers and Proceedings* (2007); and Applied Management & Planning Group and Analytic Focus, “2007 Department of Corporations Payday Loan Study,” (2008). To minimize underreporting in this survey, borrowers were asked about payday loan usage as part of an omnibus poll that covered mostly non-financial topics. In addition, the questions about payday loans were asked well into the survey, giving the interviewer a chance to establish a rapport with respondents before asking about this relatively sensitive issue.

## ENDNOTES

17 The margin of error for payday loan usage in the omnibus survey is +/-0.2 percentage points. Margins of error for subgroups are included on our website at [www.pewtrusts.org/small-loans](http://www.pewtrusts.org/small-loans).

18 We calculate the number of unique payday loan borrowers in 2010 using three different methods that all point toward roughly 12 million people having used payday loans that year. Based on our survey data, 18 percent of traditional payday loan borrowers (storefront or online, not other sources such as employers or banks) are borrowing exclusively online. All of these calculations refer to storefront data and then treat that population as 82 percent of the universe of payday loan borrowers, adding in the online-only borrowers afterwards. All of these calculations also utilize the Stephens estimate that there were 19,700 payday lending stores in the U.S. in 2010. Numbers have been rounded to avoid giving the impression that these calculations are precise, because they all involve reliance on data that are either incomplete or from a handful of states. Thus, each of these calculations is likely flawed because of data limitations, but the results cluster around, and average, 12 million borrowers.

*Method 1: Estimating transactions per store, multiplying by the number of stores, and dividing by the number of loans per borrower.*

We used the data from the 2010 published state payday loan reports that include number of transactions and number of storefronts: California, Florida, Oklahoma, and Washington. States that had reports from previous years but not reports based on 2010 data were reviewed but not included, such as Illinois, Michigan, North Dakota, and Virginia. Dividing the number of payday loan transactions by the number of payday loan stores yields 4,236 payday loans per store in 2010. Multiplying that figure by 19,700 yields 83.4 million loans. Dividing this figure by the eight loans per borrower figure, which is the average in the state reports, implies just over 10.4 million borrowers. Adding back in the 18 percent of borrowers who are borrowing only online adds to roughly 12.7 million.

*Method 2: Using the state reports to record or derive the number of unique borrowers in each state, and dividing by the number of stores in those states to create a borrowers per store ratio. This calculation, based on the three*

states with published 2010 data on unique borrowers (Florida, Oklahoma, and Washington), yields a figure of approximately 486 unique borrowers per store. We then multiply that ratio by the number of stores in the country to reach roughly 9.6 million. Adding back in the 18 percent of borrowers who are borrowing only online adds to roughly 11.7 million.

*Method 3: Recording the number of unique borrowers in the reported states, dividing that figure by the adult population to determine a usage rate, and then multiplying that figure by the population in all of the states where payday loans are allowed. Using this method gives us a usage rate of 4.8 percent in the states that publish detailed reports. Seventy-one percent of the population lives in states that have payday loan stores, while 29 percent do not. We multiply the 4.8 percent by the 163 million adults who live in states with stores, and then multiply the other 66 million adults by 1.2 percent, because our survey data show that storefront usage in restrictive states is one-fourth the level that it is in other states. This calculation suggests 8.7 million storefront borrowers, somewhat lower than the other methods. One reason for this disparity may be that most of the highest-usage states do not publish reports, so the 4.8 percent usage figure we derived may be slightly lower than the true usage figure in nonrestrictive states. Adding back in the 18 percent of borrowers who are only online would yield an estimate of 10.6 million borrowers per year.*

19 This figure of 12 million borrowers is lower than some earlier estimates of payday loan usage, which may be partially explained by the fact that payday lenders have left some states because of regulations, and by high unemployment (given that a regular income stream is a prerequisite for obtaining a payday loan). Social insurance programs for individuals out of work also may provide an income stream on which a payday loan can be secured. Nonetheless, the high rate of unemployment in recent years and particularly the unprecedented rates of the unemployed who have been out of work for an extended period of time likely have a dampening effect on overall payday loan usage. The estimate of 12 million borrowers refers only to those using payday loans from storefronts or the Internet, not those using payday loans from banks, employers, or other sources.

## ENDNOTES

20 Amanda Logan and Christian E. Weller, “Who Borrows from Payday Lenders?” (2009); Gregory Elliehausen, “An Analysis of Consumers’ Use of Payday Loans,” *Financial Services Research Program*, Monograph #41. (2009).

21 This figure is the average number of loans used based on the 2010 state reports from Florida, Oklahoma, and Washington. It also is consistent with data released by other states that either lack a database or did not publish a 2010 report, such as Michigan’s 2007 data, Virginia’s 2008 data, and California’s data from 2006-2010.

22 “Florida Trends in Deferred Presentment,” Program Status Report, (May 2010), [www.veritecs.com/Docs/2010\\_06\\_FL\\_Trends-UPDATED.pdf](http://www.veritecs.com/Docs/2010_06_FL_Trends-UPDATED.pdf).

23 In 2011, the average payday loan at the nation’s largest payday lender—Advance America—was \$375, based on its annual (10-K) report. Industry analyst Stephens Inc., uses Advance America as a proxy for the payday lending industry. Stephens Inc. “Payday Loan Industry,” (2011).

24 This figure is based on using the average loan size (\$375 in Advance America’s 2011 Annual Report), the average number of times (eight—based on data in state reports) in a year. Three quarters of these are storefront loans, charging an average of \$55 per loan, based on the average fee disclosed in Advance America’s 2011 Annual Report, and similar fees in the other publicly traded lenders’ annual reports. Roughly one-quarter are online loans, charging an average of \$95 for an equivalent loan, based on the rates cited by industry analyst Stephens Inc., in its 2011 report. Six fees of \$55 and two fees of \$95 yield our estimate of \$520 spent by each borrower. If all eight loans came from a storefront, this figure would be \$440, while if all eight loans were obtained online, the figure would rise to \$760. These calculations assume the borrower does not incur any extra fees. The Center for Responsible Lending has made similar calculations in its publications, finding that a typical borrower pays back \$793 on a \$325 loan, spending \$468 on interest. This calculation was based on storefront lending and was made before online lending had expanded to its present level with higher interest rates charged. See Uriah King, Leslie Parrish, and Ozlem Tanik. “Financial Quicksand: Payday Lending Sinks Borrowers in Debt with \$4.2 Billion in Predatory Fees Every Year,” (November 2006), [http://](http://www.responsiblelending.org/payday-lending/research-analysis/financial-quicksand-payday-lending-sinks-borrowers-in-debt-with-4-2-billion-in-predatory-fees-every-year.html)

[www.responsiblelending.org/payday-lending/research-analysis/financial-quicksand-payday-lending-sinks-borrowers-in-debt-with-4-2-billion-in-predatory-fees-every-year.html](http://www.responsiblelending.org/payday-lending/research-analysis/financial-quicksand-payday-lending-sinks-borrowers-in-debt-with-4-2-billion-in-predatory-fees-every-year.html).

25 Robert DeYoung and Ronnie J. Phillips, “Payday Loan Pricing,” (Federal Reserve Bank of Kansas City Economic Research Department, 2009), [www.kansascityfed.org/PUBLICAT/RESWKPAP/PDF/rwp09-07.pdf](http://www.kansascityfed.org/PUBLICAT/RESWKPAP/PDF/rwp09-07.pdf).

26 Previous surveys also have found that a substantial percentage of borrowers use payday loans to cover regular household expenses and other nonemergency needs. A 2007 study conducted for the California Department of Corporations reports that half of borrowers (50.2 percent) selected “pay other bills” as their reason for using a payday loan (an additional 22.3 percent selected “groceries/necessary household goods”). The “pay other bills” category is separate from groceries/necessary household goods, emergency situations, car repairs, and medical services. While categories differ slightly between each survey, both surveys separate regular expenses from food/groceries, emergencies, car repairs, and other, therefore providing a comparable benchmark for usage; Applied Management Planning Group and Analytic Focus, “2007 Department of Corporations Payday Loan Study,” (2008), [www.corp.ca.gov/Laws/Payday\\_Lenders/Archives/pdfs/PDLStudy07.pdf](http://www.corp.ca.gov/Laws/Payday_Lenders/Archives/pdfs/PDLStudy07.pdf). Also, the Federal Reserve’s 2010 Survey of Consumer Finances (SCF), which asks about the most recent payday loan, found 42.4 percent of borrowers indicated it was for an emergency “and similar urgent needs or a lack of other options.” The difference in overall incidence (3.9 percent payday usage in the 2010 survey) between Pew’s results and results from the SCF may be explained by differences in time period queried (five-year versus one-year time span). The large difference in reason for usage in the “emergency” category is likely a result of survey wording, or including “a lack of other options” in the SCF question, which makes its emergency category far broader. Pew’s survey question was seeking to capture something different than the SCF, to ascertain the purpose of the loan (“emergency”), without attempting to combine that with why the borrower chose a payday loan provider (“lack of other options”). A borrower may have both a regular

## ENDNOTES

expense and a lack of other options, or an emergency expense but multiple options, so we did not seek to pair the reason for a loan with the reason for choosing a payday loan provider. SCF data are available at <http://www.federalreserve.gov/pubs/bulletin/2012/pdf/scf12.pdf>.

27 The industry's largest trade association, Community Financial Services Association of America (CFSA), as well as many payday loan companies, note on their websites and in advertisements that payday loans are an expensive form of credit and intended for short-term or emergency use, and not as long-term solutions. For examples, see websites for CFSA (<http://cfsaa.com>), QC Holdings ([www.QCHoldings.com](http://www.QCHoldings.com)), and Cash America ([www.cashamerica.com/loanoptions/cashadvances.aspx](http://www.cashamerica.com/loanoptions/cashadvances.aspx)). See also: Gregory Elliehausen and Edward C. Lawrence, "Payday Advance Credit in America: An Analysis of Customer Demand," (April 2001), 37, 40; and Gregory Elliehausen, "An Analysis of Consumers' Use of Payday Loans," (January 2009). "While payday loans might rarely if ever make sense for financing household investment directly, payday loans may provide rationed borrowers with a source of emergency funds that allows greater levels of debt-financed investment," as quoted from [www.cfsaa.com/portals/0/RelatedContent/Attachments/GWUAnalysis\\_01-2009.pdf](http://www.cfsaa.com/portals/0/RelatedContent/Attachments/GWUAnalysis_01-2009.pdf).

28 See endnote 12.

29 Parrish and King, "Phantom Demand," (2009).

30 The exact figure is 18.2 days, and comes from the 2011 Annual Report (10-K) filed with the Securities and Exchange Commission by the largest storefront payday lender, Advance America.

31 For example, the website of Check Into Cash, one of the largest payday lenders, notes that a payday loan "is not intended to be used as a long-term budget solution." Available at: <http://checkintocash.com/faq/how-often-do-most-people-use-cash-advance-services/>.

32 The industry's largest trade association, Community Financial Services Association of America (CFSA), provides a detailed overview of the industry and product on its website (<http://cfsaa.com>).

33 Quoted from Advance America direct mail piece "Your Line's Slowed. Your Bills Haven't," (2011).

34 Quoted from QC Holdings website, [www.QCHoldings.com](http://www.QCHoldings.com).

35 These estimates vary somewhat based on the law, and especially the minimum loan term, in the state analyzed, but the most detailed analysis is the Center for Responsible Lending's finding of 212 days of indebtedness for Oklahoma borrowers in *Payday Loans, Inc.*

36 Robert DeYoung and Ronnie J. Phillips, "Payday Loan Pricing," (Federal Reserve Bank of Kansas City Economic Research Department, 2009), [www.kansascityfed.org/PUBLICAT/RESWKPAP/PDF/rwp09-07.pdf](http://www.kansascityfed.org/PUBLICAT/RESWKPAP/PDF/rwp09-07.pdf).

37 James A. Ovenden, "Quarterly Earnings Call, Advance America," Q2, (2011), <http://seekingalpha.com/article/283283-advance-america-cash-advance-centers-ceo-discusses-q2-2011-results-earnings-call-transcript>.

38 Stephens Inc., "Payday Loan Industry," (2011).

39 Community Financial Services Association of America (CFSA) Member Best Practices, <http://cfsaa.com/cfsa-member-best-practices.aspx>.

40 California Department of Corporations "Table 7: Amount of Referral Bonus Offered," [www.corp.ca.gov/Laws/Payday\\_Lenders/Archives/pdfs/PDLStudy07.pdf](http://www.corp.ca.gov/Laws/Payday_Lenders/Archives/pdfs/PDLStudy07.pdf).

41 Information from CashNetUSA website, [www.cashnetusa.com/rewards.html](http://www.cashnetusa.com/rewards.html).

42 UNC Center for Community Capital, "North Carolina Consumers After Payday Lending," (2007), [www.ccc.unc.edu/documents/NC\\_After\\_Payday.pdf](http://www.ccc.unc.edu/documents/NC_After_Payday.pdf).

43 Applied Management & Planning Group and Analytic Focus, "2007 Department of Corporations Payday Loan Study," (2008), [www.corp.ca.gov/Laws/Payday\\_Lenders/Archives/pdfs/PDLStudy07.pdf](http://www.corp.ca.gov/Laws/Payday_Lenders/Archives/pdfs/PDLStudy07.pdf).

44 Texas Appleseed, "Short-term Cash, Long-term Debt: The Impact of Unregulated Lending in Texas," (2009), [www.appleseednetwork.org/Portals/0/Documents/Publications/Center%20Pubs/TX%20Payday%20Lending.pdf](http://www.appleseednetwork.org/Portals/0/Documents/Publications/Center%20Pubs/TX%20Payday%20Lending.pdf).

45 Missouri Division of Finance. "Report to General Assembly on Survey of Payday Lenders," (2011), <http://finance.mo.gov/consumercredit/documents/2011PaydayLenderSurvey.pdf>.

## ENDNOTES

46 Subsequent to passing legislation authorizing payday lending, Arizona, Arkansas, the District of Columbia, Georgia, Montana, North Carolina, and New Hampshire reimposed double-digit usury caps on deferred presentment transactions, allowed the authorizing legislation to expire, or prohibited the transaction. Colorado, Florida, Maine, Minnesota, Oregon, Rhode Island, Virginia, and Washington have lowered permissible loan fees while retaining triple-digit annual percentage rates, implemented structural requirements to permit borrowers multiple pay periods to repay their loans, or limited to the single digits the number of payday loans per borrower per year. Ohio passed legislation and also passed a ballot initiative restricting interest on payday loans to 28 percent APR, but payday lending has continued with effective loan terms and APRs that often are similar to those before the law change.

47 Stephens Inc., “Payday Loan Industry,” (2011).

48 Steven Graves and Christopher Peterson, “Usury Law and the Christian Right: Faith-Based Political Power and the Geography of American Payday Loan Regulation,” *Catholic University Law Review*, Vol. 57, 2008: 637.

49 Robert B. Avery and Katherine A. Samolyk, “Payday Loans versus Pawn Shops: The Effects of Loan Fee Limits on Household Use,” (preliminary draft, 2011).

50 For example, “House Mulls Reviving Payday Loans,” *New Hampshire Business Review*, [www.nhbr.com/businessnewsstatenews/935663-257/house-panel-mulls-reviving-payday-loans.html](http://www.nhbr.com/businessnewsstatenews/935663-257/house-panel-mulls-reviving-payday-loans.html).

51 Consumer Federation of America, “CFA Survey of Online Payday Loan Websites,” (2011).

52 “Analysis: U.S. Payday Lenders Point Fingers to Blunt Crackdown,” *Reuters*, (January 20, 2012), [www.reuters.com/article/2012/01/20/us-financial-regulation-payday-idUSTRE80I04R20120120](http://www.reuters.com/article/2012/01/20/us-financial-regulation-payday-idUSTRE80I04R20120120).

53 This section includes results reported to two decimal places, but this reporting is not intended to suggest a greater level of precision. Rather, two decimal places are used in order to avoid inaccurate calculations between groupings that could be caused by rounding to one decimal place or the nearest integer. Even with these large sample

sizes, there is a degree of sampling error. It is possible, therefore, that the actual number of would-be storefront borrowers who are going online is slightly lower or higher, because the results reported are based on survey research, and thus have a margin of error. These figures are fairly consistent with estimates from Stephens Inc., that roughly one-quarter of payday loan volume is online. Our survey data suggest just under one-quarter of traditional (storefront or online, but not “other”) payday loan borrowers have borrowed online. Note that the 7 percent “other” finding may include products from banks or employers but should not be taken as a general estimate of bank payday or “deposit advance” lending.

54 This finding that storefront payday borrowing is lower in Restrictive states is consistent with prior research. Examples include: Applied Research & Consulting, “Financial Capability in the United States,” (2009); and “Addendum to the 2009 FDIC National Survey of Unbanked and Underbanked Households: Use of Alternative Financial Services,” (2010), [www.fdic.gov/householdsurvey/AFS\\_Addendum.pdf](http://www.fdic.gov/householdsurvey/AFS_Addendum.pdf).

55 These figures are based on our analysis of state-by-state storefront data from Graves and Peterson, “Usury Law and the Christian Right,” (2008). Peterson and Graves’ data were used because of the level of detail, recording individual storefronts by ZIP code. The same calculations using Stephens’ 2006 data yield similar results, with 10.71 storefronts per 100,000 residents in now-Restrictive states, and 11.50 storefronts per 100,000 residents in now-Permissive states, or 6.9 percent fewer. To calculate storefronts per capita, we obtained population estimates from the 2006 American Community Survey (available at [www.factfinder2.census.gov](http://www.factfinder2.census.gov)). We selected 2006 because none of these states had begun to change their regulatory structure yet, and detailed data on storefronts by state were available. Restrictive states either cap payday loan interest rates at double-digit APRs or prohibit deferred presentment transactions. Permissive states either do not cap interest rates or tend to cap them at 391 percent APR or higher, and generally allow the entire loan to be due on a borrower’s next payday. Alaska and Hawaii are included in this example and in all exercises that do not rely on the survey data.

## ENDNOTES

56 Similarly, there is little difference in Internet access between Restrictive and Permissive states. Data from the U.S. Census Bureau's 2012 Statistical Abstract (Table 1156) show that at least 70 percent of people in every state report having Internet access. In both the average Permissive state and average Restrictive state, exactly 80 percent of residents report having Internet access either inside or outside the home. If this calculation is limited to in-home access, in the average Restrictive state 72 percent of residents have Internet access, compared with 71 percent in the average Permissive state. Data available at [www.census.gov/compendia/statab/cats/information\\_communications/internet\\_publishing\\_and\\_broadcasting\\_and\\_internet\\_usage.html](http://www.census.gov/compendia/statab/cats/information_communications/internet_publishing_and_broadcasting_and_internet_usage.html).

57 For example, the North Carolina Commissioner of Banks report using 1999 data notes more than 2.9 million payday loan transactions were made in the state, [www.nccob.gov/Public/docs/News/Pub%20And%20Research/Check%20Cashers%20Report%20to%20Gen%20Assembly.pdf](http://www.nccob.gov/Public/docs/News/Pub%20And%20Research/Check%20Cashers%20Report%20to%20Gen%20Assembly.pdf). Or for a discussion of payday lending in North Carolina and Georgia, including figures on stores in those states operated by major national lenders, see Donald P. Morgan and Michael R. Strain, "Payday Holiday: How Households Fare after Payday Credit Bans," (2007).

58 During the period of inquiry in our survey, the five years prior to the survey being administered, or roughly late 2006 to early 2012, 10 states implemented substantial changes to the laws regulating payday lending in their state. Five jurisdictions—Arizona, Arkansas, the District of Columbia, Montana, and New Hampshire—became newly Restrictive between January 2008 and January 2011. In Arizona, the legislation authorizing payday lending in the state expired; the other four jurisdictions implemented double-digit APR rate caps. Five additional states moved into the Hybrid category in recent years. Colorado and Virginia implemented longer minimum loan terms, among other regulations, and Rhode Island lowered the fees that may be charged for a payday loan. Washington State capped at eight the number of loans borrowers may take out each year. Oregon reduced allowable fees and now requires a 31-day minimum loan term.

59 Signe-Mary McKernan, Caroline Ratcliffe, and Daniel Kuehn. "Prohibitions, Price Caps, and Disclosures: A Look at State Policies and Alternative Financial Product Use" Urban Institute, (November 2010).

60 This publication does not present data related to the issue of whether borrowers could be substituting other forms of credit for storefront payday loans.

61 For example, "House Mulls Reviving Payday Loans," *New Hampshire Business Review*, [www.nhbr.com/businessnewsstatenews/935663-257/house-panel-mulls-reviving-payday-loans.html](http://www.nhbr.com/businessnewsstatenews/935663-257/house-panel-mulls-reviving-payday-loans.html).

62 For example, Alexandra Alper, "Complaints vs. Banks Drop, Payday Lenders Rise," *Reuters*, (March 1, 2012), [www.reuters.com/article/2012/03/01/financialregulation-bbb-idUSL2E8E1FMB20120301](http://www.reuters.com/article/2012/03/01/financialregulation-bbb-idUSL2E8E1FMB20120301).

63 The Better Business Bureau reports that complaints against payday lenders increased 159 percent from 2010 to 2011. Figure available at: <http://tulsa.bbb.org/article/Complaints-Down-But-Huge-Jump-in-Inquiries-Means-Shoppers-Are-Doing-Their-Homework-33509>.

64 "Washington State Department of Financial Institutions, 2010 Payday Lending Report," [www.dfi.wa.gov/cs/pdf/2010-payday-lending-report.pdf](http://www.dfi.wa.gov/cs/pdf/2010-payday-lending-report.pdf).

65 Data obtained by Pew in telephone calls and e-mails with state regulators.

66 These figures are fairly consistent with estimates from Stephens Inc., that roughly one-quarter of payday loan volume is online. Our survey data suggest just under one-quarter of traditional (storefront or online, but not "other") payday loan borrowers have borrowed online. Note that the 7 percent "other" finding may include products from banks or employers but should not be taken as a general estimate of bank payday or "deposit advance" lending.

67 "Digital Differences," Pew Internet & American Life Project, (2012), [www.pewinternet.org/~media/Files/Reports/2012/PIP\\_Digital\\_differences\\_041312.pdf](http://www.pewinternet.org/~media/Files/Reports/2012/PIP_Digital_differences_041312.pdf).

68 McKernan, Ratcliffe, and Kuehn. "Prohibitions, Price Caps, and Disclosures," (2010).

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The Safe Small-Dollar Loans Research Project focuses on small-dollar credit products such as payday and automobile title loans, as well as emerging alternatives. The project works to find safe and transparent solutions to meet consumers' immediate financial needs.

The Pew Charitable Trusts is driven by the power of knowledge to solve today's most challenging problems. Pew applies a rigorous, analytical approach to improve public policy, inform the public, and stimulate civic life.

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## Predatory *Lending*

Unfair, deceptive, or abusive loan terms that can trap borrowers in a cycle of debt.

### What is *Predatory Lending*?

Predatory lending is any lending practice that uses deceptive or unethical means to convince you to accept a loan under unfair terms or to accept a loan that you don't actually need. Predatory lenders often target minorities, the elderly, the less educated, and the poor.

### Payday *Loans*

Payday loans are typically predatory in nature. Payday loans are short-term, high-interest loans, usually for small amounts (\$500 or less), that are due your next pay day. Often, you are required to give the lender your bank

account information or write a check for the full amount upfront, which the lender then cashes when the loan is due. These loans are often advertised as quick help for an unexpected emergency.

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## The Harms of *Payday Loans*

There are many downsides to taking a payday loan; below are several of the most problematic issues:

- **Payday loans are expensive.** Interest rates for payday loans are often extremely high. The cost of the loan (the finance charge) typically ranges from \$10–\$30 for every \$100 borrowed, so a \$500 loan would include an extra \$50–\$150. If you have difficulty repaying the loan when it is due, these fees can increase.
- **Payday loans can damage your credit.** Lenders usually require a check upfront to cover the cost of the loan, which they then cash when the loan is due. If you have trouble repaying the loan when it is due or if there is an issue with the loan money getting to you on time, that check may bounce and cause you to default on the loan. When this happens, the lender could report your default to credit bureaus, which will damage your credit. The lender could also attempt to sue you, which could be recorded in your credit report and also cause damage.
- **Payday lenders can require you to give them your bank information.** Instead of requiring a check for the loan amount upfront, the lender may require your bank account information. If the time comes to pay the loan and your account does not have sufficient funds, the lender may try several times to withdraw the money, which can lead to overdraft charges from your bank.
- **Payday loans can lead to debt collection issues.** Many payday lenders are debt collection-minded. They might also sell your debt to an actual debt collector. If you are unable to pay the loan on time, you may be harassed with debt collection calls (<https://www.consumeradvocates.org/for-consumers/debt-collection/>).

---

## Car Title *Loans*

Car title loans are also typically predatory. Like payday loans, car title loans are marketed as small emergency loans lent to you for a short time, but they also have extremely high annual interest rates. To get such a loan, you would need to give the lender the title of your vehicle. Typically, you would need to repay the loan within 30 days, along with borrowing fees (these can be high: sometimes 25% of the amount you borrow). If you cannot repay the loan, the lender can take your vehicle.

---

## Alternatives to *Payday or Car Title Loans*

Before taking a risky and high-interest payday or car title loan, consider other options:

- Look into a loan from a bank, credit union, or small-loan company. These places usually have more reasonable interest rates.
- Ask to borrow the money from family or friends.
- Talk to a credit counselor (<https://www.debt.org/credit/counseling/>) for advice.

---

## Debt *Collection*

If you were unable to pay a loan on time and are now dealing with debt collection calls, check out our debt collection (<https://www.consumeradvocates.org/for-consumers/debt-collection/>) and robocalls (<https://www.consumeradvocates.org/for-consumers/robocalls-telemarketing/>) pages for information on your rights in these situations.



## Contacting *an Attorney*

Search our **Find An Attorney** directory  
**(<https://www.consumeradvocates.org/findanattorney/>)**  
to find a NACA attorney who can assist you with loan issues.

Find an Attorney  
(<https://www.consumeradvocates.org/findanattorney/>)

## Resources

If you are serving or have served in the military, there are special protections from predatory lending for you under the Military Lending Act (<https://www.consumerfinance.gov/ask-cfpb/what-are-my-rights-under-the-military-lending-act-en-1783/>). You can also find more information on our military consumers page (<https://www.consumeradvocates.org/for-consumers/military-consumers/>).

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NACA provides links to attorneys, organizations, and governmental entities that promote justice for consumers and are involved in curbing abusive and predatory business practices. We do not intend such links to be referrals or endorsements of the linked entities.

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## Issue *Areas*

As an organization devoted to consumer justice, we are committed to educating consumers like you about their rights and helping them achieve justice for themselves and for their communities. Look around our website to learn about some of your basic rights, to find some help, and to join with us in our effort to build a fair and just consumer marketplace.

Arbitration (<https://www.consumeradvocates.org/for-consumers/arbitration/>) →

Auto Issues (<https://www.consumeradvocates.org/for-consumers/auto-issues/>) →

Bankruptcy (<https://www.consumeradvocates.org/for-consumers/bankruptcy/>) →

Credit Reporting (<https://www.consumeradvocates.org/for-consumers/credit-reporting/>) →

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## Share Your *Story*

We realize that your experience has likely been very difficult and you may not want to retell your story, but by sharing your story you will be helping us drive national and local debates as well as discussions with policymakers.

You have the ability to potentially make a difference so that other consumers don't have to endure what you've gone through.

Submit Your Story (<https://www.consumeradvocates.org/for-consumers/share-your-story/>)



## Become a *Member*

Are you a lawyer committed to advancing the cause of just treatment for and ethical representation of consumers? Consider membership in NACA.

Start Here (</membership/become-a-member/>)

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Washington, DC 20006

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## Start, Stop or Move Service

# Frequently Asked Questions

Filter

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## Start, Stop & Move Service

+ [What do I need to start service?](#)

+ [Does it cost me anything to start service?](#)

+ [How can I start service for my business?](#)

+ [What do I need to stop service?](#)

+ [What do I need to move service?](#)

+ [Once my service is on or off, how do I cancel or change the order's effective date?](#)

+ [Why are the lights still on when I stop service?](#)

+ [When I stop service, when will my electricity be shut off?](#)

+ [When I stop service, when will my natural gas be shut off?](#)

+ [Can I schedule a stop service date in the future?](#)

+ [How can I get my service turned back on once it's been disconnected?](#)

+ [Do I need to be at my property when I start or stop service?](#)

## Start, Stop or Move Service

### Billing

+ **Once my service is stopped, how do I know I won't receive another bill?**

+ **When I start service, when will I receive my first bill?**

+ **When I stop service, when will I get my final bill?**

+ **When would I have to pay a security deposit?**

+ **How is my security deposit calculated?**

+ **When will I receive my security deposit back?**

If my services are disconnected for non-payment, what does it cost to reconnect my electric and/or natural gas services?

If your meter is disconnected for non-payment, your reconnect fee is \$20 for an electric meter and \$50 for a natural gas meter.

If we are unable to access your electric meter to disconnect service, your service will be disconnected at the pole and your reconnect fee is \$25.

If we are unable to access your natural gas meter to disconnect service, your service will be disconnected at the service line. Your reconnect fee is \$500 and meter relocation fee is \$850.

---

### Service Issues

+ **Why are the lights still on when I stop service?**

+ **Can DTE turn my furnace on after the technician turns the gas on?**

## Start, Stop or Move Service

### Switch Account Owner

+ [Can I add my spouse or partner's name to my bill?](#)

+ [How can I put service in my name due to a death?](#)

### Types of Service

+ [What if I have propane and want to switch to natural gas?](#)

+ [What is Outdoor Protective Lighting?](#)

+ [What is CoolCurrents®, the Interruptible Air Conditioning \(IAC\) service program?](#)

+ [What is Interruptible Water Heating Service?](#)

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Start, Stop or Move Service

Michigan Public Service Commission  
 DTE Gas Company  
 Reconnection Fees

Case No: U-21973  
 Audit Request FLODG  
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 Question FLODG-5.13  
 Page 1 of 1

Note:

	2024	2025
Residential Gas Reconnection Fees	2,028	3,666

**13a All residential customers**

The chart below shows the breakdown of all residential DTE Gas customers by the number of Gas Reconnection Fees by year.

Number of Gas Reconnection Fees	2024	2025
1	1,792	2,831
2	118	350
3		45
4		
5 or more		
	1,910	3,226

**13b Low-income customers**

The chart below shows the breakdown of all residential Low-income DTE Gas customers by the number of Gas Reconnection Fees by year.

Note: Low-income flag appeared during the year in the chart.

Number of Gas Reconnection Fees	2024	2025
1	247	1,070
2	4	80
3		7
4		
5 or more		
	251	1,157

**13c Customers participating in payment management plans (organized by type of plan, program, or pilot);**

The chart below shows the breakdown of residential DTE Gas customers by payment plans by the number of Gas Reconnection Fees by year.

Note: Customers may be on multiple plans. Customers were on a plan before the reconnection fee was assessed.

BWB		
Number of Gas Reconnection Fees	2024	2025
1	31	32
2		
3		
4	-	
5 or more	-	
	31	32

Payment Agreements		
Number of Gas Reconnection Fees	2024	2025
1	125	508
2	3	30
3		1
4	-	
5 or more	-	
	128	539

**13d Customers participating in EWR programs (organized by type of plan, program, or pilot);**

The chart below shows the breakdown of residential DTE Gas customers participating in EWR programs by the number of Gas Reconnection Fees by year.

Note: Customers may be on multiple plans. Customers were on a plan before the reconnection fee was assessed.

EWR		
Number of Gas Reconnection Fees	2024	2025

1	45	74
2	4	10
3		
4		
5 or more		
	49	84

EWR Programs:	2024	2025
Appliance Recycling	14	21
Audit and Weatherization	-	-
Energy Efficiency Assistance	20	34
Home Energy Consultation	-	-
Home Energy Consultation Low Income	-	-
HVAC	8	17
HVAC Midstream	3	1
New Homes Construction	-	-
Residential Energy Star and Lighting	4	11
	49	84

**13e** Customers participating in arrearage management plans (organized by type of plan, program, or pilot);

The chart below shows the breakdown of DTE Gas customers by residential arrearage plans by the number of Gas Reconnection Fees by year. Note: Customers may be on multiple plans. Customers were on a plan before the reconnection fee was assessed.

SPP Number of Gas Reconnection Fees	2024	2025
1	284	745
2	16	51
3		6
4	-	
5 or more	-	
	300	802

WPP Number of Gas Reconnection Fees	2024	2025
1	1	4
2		
3	-	
4	-	
5 or more	-	
	1	4

LSP Number of Gas Reconnection Fees	2024	2025
1	25	56
2	2	3
3	-	
4	-	
5 or more	-	
	27	59

**13f** Customers with payment restrictions (organized by cause of the payment restriction).

The chart below shows the breakdown of DTE Gas customers with the cash only flag by number of Gas Reconnection Fees by year.

Cash Only Number of Gas Reconnection Fees	2024	2025
1	225	345
2	5	21
3		2
4	-	-
5 or more	-	-
	230	368

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.14

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** For 2024 and 2025, please state the total amount of money received by DTE Gas through reconnection fees.

**Answer:**

	2024	2025
Gas Reconnect Fee	\$107,630	\$149,380

**Attachment:** None

1st Quarter Report  
Complaints/Hearings  
January - March 2022



	January 22	February 22	March 22	Total	Comments
<b>Customer Service</b>					
A. Total customer contacts (Res and Non-Res)	3,598,328	3,085,195	3,142,299	9,825,822	
B. Total customer complaints	3,392	3,146	3,574	10,112	
a. Billing	1,217	1,287	1,235	3,739	
b. Service	700	433	654	1,787	
c. Credit and Collection	466	493	525	1,484	
d. Other	1,009	933	1,160	3,102	January - HPP 199, Administrative 625, Claims 124, Property Restoration 36, Energy Waste Reduction/Renewables 25, Totals 1,009 February - HPP 179, Administrative 570, Claims 89, Property Restoration 47, Energy Waste Reduction/Renewables 48, Totals 933 March - HPP 179, Administrative 624, Claims 170, Property Restoration 147, Energy Waste Reduction/Renewables 40, Totals 1,160
Freeform area, if complaint is not listed above, provide general description					
<b>Customer Payment Performance</b>					
C. Number of customers paid by the due date	2,526,406	2,514,990	2,515,720		Customers that are on an active payment arrangement that are current on their monthly payment amount are considered paid by the due date.
D. Number of customers delinquent 31-60 days or more	51,544	64,092	55,056		Data reported is for customers with oldest arrears in the 31-60 days past the due date bucket as of month end.
E. Number of customers delinquent 61-90 days or more	36,529	34,747	38,076		Data reported is for customers with oldest arrears in the 61-90 days past the due date bucket as of month end.
F. Number of customers delinquent 91 days or more	305,945	297,805	288,004		Data reported is for customers with oldest arrears in the >90 days past the due date bucket which includes customers with final arrears as of month end. Final arrears are written off 150 days after the final bill due date.
<b>Payment Plans and Settlements</b>					
G. Number of written settlement agreements	2	2	0	4	
H. Number of payment plan arrangements issued	4,205	3,585	5,077	12,867	
<b>Winter Protection Plan (WPP)</b>					
I. Total enrolled in program at the end of the month	242	293	301		The month end count is higher than the combined senior and low-income customers because DTE has additional customers enrolled in the program.
a. Number of low-income customers enrolled at end of month	159	198	170		
b. Number of seniors enrolled at end of month	70	80	114		
J. Number of defaults at end of month	61	74	84	219	
<b>Alternative Shutoff Protection Plan</b>					
K. Total enrolled in program at end of month	71,247	67,808	63,305		Non low-income and non-seniors are included in the month end count for Total enrolled in the program
a. Number of low-income customers enrolled at end of month	23,651	23,192	20,996		
b. Number of seniors enrolled at end of month	27,598	26,161	25,099		
L. Number of defaults at end of month	9,730	8,338	8,140	26,208	
<b>Informal Hearings</b>					
M. Number of hearings requested	2	3	2	7	
N. Number of hearings scheduled	2	3	2	7	
O. Total number of hearing determinations issued	0	1	0	1	
a. Hearings resolved in favor of customer	0	0	0	0	
b. Hearings resolved in favor of company	0	1	0	1	
c. Hearings resolved in compromise	0	0	0	0	
P. Reasons for the hearings	High bill Bill Responsibility	High Bill	High bill Bill Responsibility	0	
<b>Shutoff Information</b>					
Q. Total discontinuation notices issued at end of month	200,654	213,148	200,997	614,799	
a. Electric	200,654	213,148	200,997	614,799	All customer types, and all products, electric, gas or combination
b. Natural Gas				0	
R. Total of customers physically discontinued due to non-payment	18,177	20,400	24,791	63,368	
a. Electric	17,365	19,243	22,132	58,740	
b. Natural Gas	812	1,157	2,659	4,628	
S. Total of customers physically discontinued due to unauthorized use	930	890	1,252	3,072	
a. Electric	689	658	933	2,280	
b. Natural Gas	241	232	319	792	
T. Total of customers physically discontinued due to safety	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
U. Total of customers physically discontinued due to access	85	26	44	155	
a. Electric				0	
b. Natural Gas	85	26	44	155	
V. Total of customers physically discontinued due to "other" (*ADD new line for each reason)	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
W. Discontinuations prevented or restored due to "medical emergency"	56	67	44	167	
X. Discontinuations prevented or restored due to "critical care"	12	15	23	50	
Y. Total number of seniors identified	816,395	818,413	820,564		
<b>Restoration Information</b>					
Z. Total number of customers restored	15,082	17,473	20,586	53,141	
a. Electric	14,779	16,780	18,894	50,453	
b. Natural Gas	303	693	1,692	2,688	
AA. Total restored due to receiving assistance	451	396	463	1,310	
a. Electric	425	344	376	1,145	
b. Natural Gas	26	52	87	165	

2nd Quarter Report  
Complaints/Hearings  
April - June 2022



	April-22	May-22	June-22	Total	Comments
<b>Customer Service</b>					
A. Total customer contacts (Res and Non-Res)	3,754,996	2,920,660	3,068,588	9,744,244	
B. Total customer complaints	2,922	3,090	3,449	9,461	
a. Billing	1,094	1,055	920	3,069	
b. Service	568	647	1,082	2,297	
c. Credit and Collection	395	372	338	1,105	
d. Other	865	1,016	1,109	2,990	April - HPP 125, Administrative 351, Claims 109, Property Restoration 250, Energy Waste Reduction/Renewables 30, Totals 865  May - HPP 88, Administrative 370, Claims 145, Property Restoration 384, Energy Waste Reduction/Renewables 29, Totals 1,016  June - HPP 187, Administrative 395, Claims 181, Property Restoration 283, Energy Waste Reduction/Renewables 63, Totals 1,109  The increase in June under Energy Waste Reduction/Renewables was a result of proactive communication sent to customers on Demand Response programs. The communication DTE sent prompted customers to call in, seeking an understanding and/or removal from the program.
Freeform area, if complaint is not listed above, provide general description					
<b>Customer Payment Performance</b>					
C. Number of customers paid by the due date	2,497,449	2,511,557	2,505,817		Customers that are on an active payment arrangement that are current on their monthly payment amount are considered paid by the due date.
D. Number of customers delinquent 31-60 days or more	59,362	61,227	58,992		Data reported is for customers with oldest arrears in the 31-60 days past the due date bucket as of month end.
E. Number of customers delinquent 61-90 days or more	33,919	38,743	38,022		Data reported is for customers with oldest arrears in the 61-90 days past the due date bucket as of month end.
F. Number of customers delinquent 91 days or more	288,323	286,894	293,754		Data reported is for customers with oldest arrears in the >90 days past the due date bucket which includes customers with final arrears as of month end. Final arrears are written off 150 days after the final bill due date.
<b>Payment Plans and Settlements</b>					
G. Number of written settlement agreements	1	0	0	1	
H. Number of payment plan arrangements issued	4,527	4,498	3,968	12,993	
<b>Winter Protection Plan (WPP)</b>					
I. Total enrolled in program at the end of the month	282	234	195		The month end count is higher than the combined senior and low-income customers because DTE has additional customers enrolled in the program.
a. Number of low-income customers enrolled at end of month	141	108	83		
b. Number of seniors enrolled at end of month	128	114	105		
J. Number of defaults at end of month	60	45	47	152	
<b>Alternative Shutoff Protection Plan</b>					
K. Total enrolled in program at end of month	60,315	59,005	56,391		Non low-income and non-seniors are included in the month end count for Total enrolled in the program
a. Number of low-income customers enrolled at end of month	19,694	18,863	17,381		
b. Number of seniors enrolled at end of month	24,627	25,128	24,947		
L. Number of defaults at end of month	5,928	6,443	7,251	19,622	
<b>Informal Hearings</b>					
M. Number of hearings requested	0	0	1	1	
N. Number of hearings scheduled	0	0	1	1	
O. Total number of hearing determinations issued	0	0	0	0	
a. Hearings resolved in favor of customer	0	0	0	0	
b. Hearings resolved in favor of company	0	0	0	0	
c. Hearings resolved in compromise	0	0	0	0	
P. Reasons for the hearings			High Bill	0	
<b>Shutoff Information</b>					
Q. Total discontinuation notices issued at end of month	235,706	197,466	183,139	616,311	
a. Electric	235,706	197,466	183,139	616,311	All customer types, and all products, electric, gas or combination
b. Natural Gas				0	
R. Total of customers physically discontinued due to non-payment	20,881	22,552	22,005	65,438	
a. Electric	19,431	20,641	19,887	59,959	
b. Natural Gas	1,450	1,911	2,118	5,479	
S. Total of customers physically discontinued due to unauthorized use	1,122	1,012	903	3,037	
a. Electric	871	867	636	2,374	
b. Natural Gas	251	145	267	663	
T. Total of customers physically discontinued due to safety	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
U. Total of customers physically discontinued due to access	54	47	39	140	
a. Electric				0	
b. Natural Gas	54	47	39	140	
V. Total of customers physically discontinued due to "other" (*ADD new line for each reason)	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
W. Discontinuations prevented or restored due to "medical emergency"	38	64	44	146	
X. Discontinuations prevented or restored due to "critical care"	17	22	22	61	
Y. Total number of seniors identified	821,641	822,145	823,304		
<b>Restoration Information</b>					
Z. Total number of customers restored	17,408	17,503	17,044	51,955	
a. Electric	16,622	16,734	16,436	49,792	
b. Natural Gas	786	769	608	2,163	
AA. Total restored due to receiving assistance	474	549	521	1,544	
a. Electric	410	471	475	1,356	
b. Natural Gas	64	78	46	188	

3rd Quarter Report  
Complaints/Hearings  
July - September 2022



	July-22	August-22	September-22	Total	Comments
<b>Customer Service</b>					
A. Total customer contacts (Res and Non-Res)	3,751,579	3,448,430	3,540,922	10,740,931	July thru September, 3 Storms
B. Total customer complaints	3,303	5,184	17,461	25,948	
a. Billing	1,171	1,309	1,145	3,625	
b. Service	821	2,345	14,852	18,018	Increase because of Reliability Credits and Frequent outages
c. Credit and Collection	339	421	408	1,168	
d. Other	972	1,109	1,056	3,137	July - HPP 187, Administrative 378, Claims 138, Property Restoration 240, Energy Waste Reduction/Renewables 28, Totals 972 August - HPP 224, Administrative 453, Claims 158, Property Restoration 250, Energy Waste Reduction/Renewables 24, Totals 1,109 September - HPP 201, Administrative 414, Claims 158, Property Restoration 186, Energy Waste Reduction/Renewables 28, Totals 1,056
Freeform area, If complaint is not listed above, provide general description					
<b>Customer Payment Performance</b>					
C. Number of customers paid by the due date	2,503,067	2,495,489	2,497,648		Customers that are on an active payment arrangement that are current on their monthly payment amount are considered paid by the due date.
D. Number of customers delinquent 31-60 days or more	58,245	58,301	66,391		Data reported is for customers with oldest arrears in the 31-60 days past the due date bucket as of month end.
E. Number of customers delinquent 61-90 days or more	43,066	38,531	37,087		Data reported is for customers with oldest arrears in the 61-90 days past the due date bucket as of month end.
F. Number of customers delinquent 91 days or more	294,982	306,665	301,530		Data reported is for customers with oldest arrears in the >90 days past the due date bucket which includes customers with final arrears as of month end. Final arrears are written off 150 days after the final bill due date.
<b>Payment Plans and Settlements</b>					
G. Number of written settlement agreements	2	1	0	3	
H. Number of payment plan arrangements issued	3,855	4,116	4,122	12,093	
<b>Winter Protection Plan (WPP)</b>					
I. Total enrolled in program at the end of the month	153	121	101		The month end count is higher than the combined senior and low-income customers because DTE has additional customers enrolled in the program.
a. Number of low-income customers enrolled at end of month	59	42	34		
b. Number of seniors enrolled at end of month	88	74	60		
J. Number of defaults at end of month	31	20	18	69	
<b>Alternative Shutoff Protection Plan</b>					
K. Total enrolled in program at end of month	53,995	51,081	48,801		Non low-income and non-seniors are included in the month end count for Total enrolled in the program
a. Number of low-income customers enrolled at end of month	16,917	16,435	16,329		
b. Number of seniors enrolled at end of month	24,520	23,229	22,178		
L. Number of defaults at end of month	6,823	7,539	6,829	21,191	
<b>Informal Hearings</b>					
M. Number of hearings requested	1	0	1	2	
N. Number of hearings scheduled	0	0	0	0	
O. Total number of hearing determinations issued	0	0	0	0	
a. Hearings resolved in favor of customer	0	0	0	0	
b. Hearings resolved in favor of company	0	0	0	0	
c. Hearings resolved in compromise	0	0	0	0	
P. Reasons for the hearings	0	0	0	0	
<b>Shutoff Information</b>					
Q. Total discontinuation notices issued at end of month	198,264	225,646	225,964	649,874	
a. Electric	198,264	225,646	225,964	649,874	All customer types, and all products, electric, gas or combination
b. Natural Gas				0	
R. Total of customers physically discontinued due to non-payment	20,179	22,551	21,240	63,970	
a. Electric	18,108	20,476	19,640	58,224	
b. Natural Gas	2,071	2,075	1,600	5,746	
S. Total of customers physically discontinued due to unauthorized use	535	991	899	2,425	
a. Electric	385	891	803	2,079	
b. Natural Gas	150	100	96	346	
T. Total of customers physically discontinued due to safety	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
U. Total of customers physically discontinued due to access	55	56	103	214	
a. Electric				0	
b. Natural Gas	55	56	103	214	
V. Total of customers physically discontinued due to "other" (*ADD new line for each reason)	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
W. Discontinuations prevented or restored due to "medical emergency"	91	85	57	233	
X. Discontinuations prevented or restored due to "critical care"	23	27	32	82	
Y. Total number of seniors identified	824,388	825,513	827,253		
<b>Restoration Information</b>					
Z. Total number of customers restored	15,430	18,068	16,602	50,100	
a. Electric	14,772	17,251	15,995	48,018	
b. Natural Gas	658	817	607	2,082	
AA. Total restored due to receiving assistance	568	666	496	1,730	
a. Electric	507	593	459	1,559	
b. Natural Gas	61	73	37	171	

4th Quarter Report  
Complaints/Hearings  
October - December 2022



	October	November	December	Total	Comments
<b>Customer Service</b>					
A. Total customer contacts (Res and Non-Res)	3,734,165	2,920,950	2,965,798	9,620,913	Five weeks in October
B. Total customer complaints	3,871	1,720	1,466	7,057	Reduction due to new method of calculation. Cases coded with a Corrective Action required.
a. Billing	754	681	633	2,068	
b. Service	2,499	420	269	3,188	
c. Credit and Collection	164	168	170	502	
d. Other	454	451	394	1,299	October - HPP 62, Administrative 176, Claims 69, Property Restoration 140, Energy Waste Reduction/Renewables 7, Totals 454 November- HPP 119, Administrative 157, Claims 62 Property Restoration 109, Energy Waste Reduction/Renewables 4, Totals 451 December - HPP 120, Administrative 148, Claims 58, Property Restoration 57, Energy Waste Reduction/Renewables 11, Totals 394
Freeform area, If complaint is not listed above, provide general description					
<b>Customer Payment Performance</b>					
C. Number of customers paid by the due date	2,522,045	2,486,224	2,492,891		Customers that are on an active payment arrangement that are current on their monthly payment amount are considered paid by the due date.
D. Number of customers delinquent 31-60 days or more	61,444	56,117	67,829		Data reported is for customers with oldest arrears in the 31-60 days past the due date bucket as of month end.
E. Number of customers delinquent 61-90 days or more	42,816	38,984	37,887		Data reported is for customers with oldest arrears in the 61-90 days past the due date bucket as of month end.
F. Number of customers delinquent 91 days or more	299,918	301,673	302,254		Data reported is for customers with oldest arrears in the >90 days past the due date bucket which includes customers with final arrears as of month end. Final arrears are written off 150 days after the final bill due date.
<b>Payment Plans and Settlements</b>					
G. Number of written settlement agreements	0	1	0	1	
H. Number of payment plan arrangements issued	3,851	3,180	2,375	9,406	
<b>Winter Protection Plan (WPP)</b>					
I. Total enrolled in program at the end of the month	82	337	952		The month end count is higher than the combined senior and low-income customers because DTE has additional customers enrolled in the program.
a. Number of low-income customers enrolled at end of month	26	232	766		
b. Number of seniors enrolled at end of month	48	104	181		
J. Number of defaults at end of month	14	17	48	79	
<b>Alternative Shutoff Protection Plan</b>					
K. Total enrolled in program at end of month	46,510	42,970	39,156		Non low-income and non-seniors are included in the month end count for Total enrolled in the program.
a. Number of low-income customers enrolled at end of month	15,265	13,886	12,534		
b. Number of seniors enrolled at end of month	21,109	19,710	17,977		
L. Number of defaults at end of month	5,811	5,608	6,826	18,245	
<b>Informal Hearings</b>					
M. Number of hearings requested	0	0	0	0	
N. Number of hearings scheduled	0	0	0	0	
O. Total number of hearing determinations issued	0	0	0	0	
a. Hearings resolved in favor of customer	0	0	0	0	
b. Hearings resolved in favor of company	0	0	0	0	
c. Hearings resolved in compromise	0	0	0	0	
P. Reasons for the hearings				0	
<b>Shutoff Information</b>					
Q. Total discontinuation notices issued at end of month	195,506	162,406	186,971	544,883	
a. Electric	195,506	162,406	186,971	544,883	All customer types, and all products, electric, gas or combination
b. Natural Gas					
R. Total of customers physically discontinued due to non-payment	15,932	13,780	9,708	39,420	
a. Electric	14,515	13,359	9,183	37,057	
b. Natural Gas	1,417	421	525	2,363	
S. Total of customers physically discontinued due to unauthorized use	973	944	827	2,744	
a. Electric	862	686	752	2,300	
b. Natural Gas	111	258	75	444	
T. Total of customers physically discontinued due to safety	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
U. Total of customers physically discontinued due to access	53	53	48	154	
a. Electric				0	
b. Natural Gas	53	53	48	154	
V. Total of customers physically discontinued due to "other" (*ADD new line for each reason)	0	0	0	0	
a. Electric				0	
b. Natural Gas				0	
W. Discontinuations prevented or restored due to "medical emergency"	42	46	35	123	
X. Discontinuations prevented or restored due to "critical care"	21	9	19	49	
Y. Total number of seniors identified	828,632	832,448	834,927		
<b>Restoration Information</b>					
Z. Total number of customers restored	12,772	11,301	8,245	32,318	
a. Electric	12,136	11,176	8,116	31,428	
b. Natural Gas	636	125	129	890	
AA. Total restored due to receiving assistance	408	407	358	1,173	
a. Electric	380	403	350	1,133	
b. Natural Gas	28	4	8	40	































<b>MPSC - Reporting Requirement (Quarterly Reports)</b>		
<b>Timing:</b>		
Customer Service		Data Representation
R 460.151 Reporting requirements.		
A.	The number of contacts the company receives from customers about their utility service. Contacts can come in any form. Contacts would include all complaints and inquiries.	Total for month
B.	A complaint means a customer driven contact where corrective action occurs to resolve the matter. -The Commission does not deem requests for information, service, routine information or explanation as a complaint. -The Commission is aware that a customer may not be satisfied but accepts the utility information, explanation or verification. -A complaint can be resolved on the first call.	Total for month
	a. Corrective action that relates directly to a customer billing dispute.	Total for month
	b. Corrective action that relates directly to a customer "service" dispute.	Total for month
	c. Corrective action that relates directly to a customer credit or collections of the account.	Total for month
	d. Corrective action that relates to other areas of concern not listed above.	Total for month
	e. Provide a description of "other" areas of concern.	Total for month
Customer Payment Performance		Data Representation
R 460.151 Reporting requirements.		
C.	The total number of customers who paid the amount owed by their scheduled due date.	Total for month
D.	An account with charges for utility service that remains unpaid 31 -60 days after the due date. (R 460.102 (m))	As of the last day of the month
E.	An account with charges for utility service that remains unpaid 61 - 90 days after the due date. (R 460.102 (m))	As of the last day of the month
F.	An account with charges for utility service that remains unpaid 91 days or more after the due date. (R 460.102 (m))	As of the last day of the month
Payment Plans and Settlements		Data Representation
G.	The number of customers who have entered into a <u>written</u> agreement to settle a dispute and may include to pay back on an unpaid balance over a duration of time. (R 460.158)	Total for month
H.	The number of customers who have entered into an agreement to pay back an unpaid balance over a duration of time. Arrangements can be verbal. (R 460.146)	Total for month
Winter Protection Plan (WPP)		Data Representation
I.	The number of customers who are classified under Winter Protection Plan. (R 460.131)	Total for month
J.	The number of customers who defaulted on the program. (R 460.131)	Total for month
Alternative Shutoff Protection Plan		Data Representation
K.	The total number of customers who are classified under Shutoff Protection Plan (R 460.131(10))	Total for month
L.	The number of customers who defaulted on the program. (R 460.131(10))	Total for month
Informal Hearings		Data Representation
R 460.151 Reporting requirements.		
M.	The number of customer hearings requested on a hearing on a disputed matter before a hearing officer that a utility offers to a customer under the provisions of R 460.155. (R 460.102(k))	Total for month
N.	The number of customer hearings scheduled on a hearing on a disputed matter before a hearing officer that a utility offers to a customer under the provisions of R 460.155. (R 460.102(k))	Total for month
O.	The number of written decisions of a hearing officer after a customer hearing. (R 460.102(h))	Total for month
	a. The number of final determinations in favor of the customer.	Total for month
	b. The number of final determinations in favor of the company.	Total for month
	c. Hearings resolved in compromise	Total for month
P.	Briefly list reasons for any customer hearing (i.e. billing error, high bill, shutoff, deposit, etc.)	Total for month
Shutoff Information		Data Representation
R 460.151 Reporting requirements.		
Q.	The total number of notices sent to customers. (R 460.136 and R 460.139 and R460.143(1))	Total for month
R.	The total number disconnected due to non-payment for electric or natural gas. (R 460.137(1)(a), (b), (f), 2)(b)(i)(ii), 3)(a)(b))	Total for month
S.	The total number disconnect due to unauthorized use for electric or natural gas. (R 460.102b(l), R 460.136 R 460.137(1)(c), (e), R 460.137(2)(a))	Total for month
T.	The total number disconnected due to safety for electric or natural gas. (R 460.136)	Total for month
U.	The total number disconnected due to access for electric or natural gas. (R 460.137(1)(d))	Total for month
V.	The total number disconnected that does not fall into the above categories for electric or natural gas. (i.e. prepaid, pilots, etc.) (R 460.137 or program terms and conditions)	Total for month
W.	The number of customers (prevention and restoration) or member of the customer's household who have an existing medical condition as defined and certified by a physician or public health official on a commission-approved medical certification form, that will be aggravated by the lack of utility service. (R 460.102a(i) and R460.130)	Total for month
X.	The number of customers (prevention and restoration) or member of the customer's household who require, home medical equipment or a life support system, and who, on an annual basis, provides a commission-approved medical certification form from a physician or medical facility to the utility identifying the medical equipment or life support system and certifying that an interruption of service would be immediately life-threatening. (R 460.102(i) and R 460.130a)	Total for month
Y.	The total number of seniors coded (prevention and restoration) at the end of the report month. (R 460.102(p) and R 460.132)	Total for month
Restoration Information		Data Representation
R 460.151 Reporting requirements.		
Z.	The number of customers restored due to the customer request when the cause has been cured or credit arrangements satisfactory to the utility (R 460.144) or participating in a winter protection plan (R 460.131 or R 460.132(2)).	Total for month
AA.	Total restored due to receiving assistance	Total for month
Definitions		
	Low-income customer – A utility customer whose household income does not exceed 150% of the federal poverty guidelines	
	Senior customers – A utility customer who meets both of the following criteria: (1) Is 65 years of age or older. (ii) Advises the	

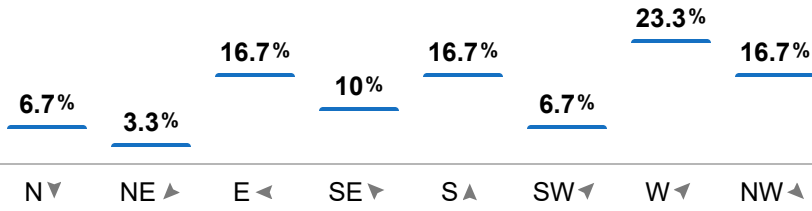


## Weather in Grand Rapids in April 2025




### April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1  <b>+39°</b> Night +27°	2  <b>+39°</b> Night +34°	3  <b>+48°</b> Night +59°	4  <b>+50°</b> Night +37°	5  <b>+50°</b> Night +43°
6  <b>+45°</b> Night +37°	7  <b>+39°</b> Night +32°	8  <b>+34°</b> Night +25°	9  <b>+43°</b> Night +27°	10  <b>+41°</b> Night +34°	11  <b>+48°</b> Night +32°	12  <b>+54°</b> Night +36°
13  <b>+57°</b> Night +41°	14  <b>+61°</b> Night +52°	15  <b>+43°</b> Night +45°	16  <b>+48°</b> Night +37°	17  <b>+61°</b> Night +36°	18  <b>+68°</b> Night +54°	19  <b>+54°</b> Night +64°
20  <b>+55°</b> Night +43°	21  <b>+50°</b> Night +50°	22  <b>+59°</b> Night +45°	23  <b>+63°</b> Night +54°	24  <b>+75°</b> Night +55°	25  <b>+68°</b> Night +57°	26  <b>+55°</b> Night +50°
27  <b>+63°</b> Night +43°	28  <b>+72°</b> Night +50°	29  <b>+63°</b> Night +70°	30  <b>+59°</b> Night +43°			



Wind direction chart for Grand Rapids (daytime), based on April 2025 wind statistics.

### Average values in April

Wind speed  
 **11.9** mph

Pressure  
 **29** inHg

Humidity  
 **51** %

Average daytime values for April 2025.

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.30g

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** Please answer the following questions about the Winter Protection Plan.  
g. Please explain the different reasons that people are denied enrollment in the Winter Protection Plan.

**Answer:** Verified low income or senior customers are eligible for the Winter Protection Plan. The following additional criteria must be met:

- WPP enrollment is only allowed from November 1 through March 31.
- Account class must be Residential
- Cannot be on another active payment plan
- Must pay any outstanding security deposits/fees
- Low-Income customers with arrears must pay 1/12 of the arrears balance.
- If a customer defaults on WPP, they:
  - Cannot re-enroll until the next heating season

Other account reasons for denial:

- Primary metered accounts are not eligible
- Accounts enrolled in a flexible due date are not eligible
- Landlord Accounts are not eligible

**Attachment:** None

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-5.30k

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**Respondent:** J. E. Sparks

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**Page:** 1 of 1

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**Question:** Please answer the following questions about the Winter Protection Plan.

k. Does DTE Gas have any internal explanations for why so few customers enroll in the Winter Protection Plan?

**Answer:** The Company does not maintain a definitive internal explanation for participation levels in the Winter Protection Plan (WPP). Enrollment in WPP is voluntary, subject to eligibility, verification, and payment requirements, and limited to a defined heating season enrollment period. For low-income customers with arrears, the requirement to make an initial down payment may limit some customers' ability to enroll. Additionally, customers may choose to enroll in other payment plans, shutoff protections, or energy assistance programs that they determine are more appropriate for their individual circumstances.-season enrollment period.

**Attachment:** None

**Question:**

**Owner:**

**Reference/Source:**

**Status:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
a. All residential customers delinquent 6 – 30 days;	33,438	38,177	39,033	47,429	38,319	35,230	36,208	32,919	30,086
b. Senior customers delinquent 6 – 30 days;	8,900	12,131	12,649	16,489	12,889	10,506	11,487	9,560	8,343
c. Low-income customers delinquent 6 – 30 days;	2,816	2,797	2,624	3,139	2,510	2,419	2,225	2,210	2,047
d. All residential customers delinquent 31 – 60 days;	9,906	11,801	9,928	10,090	10,901	11,189	10,999	10,007	10,324
e. Senior customers delinquent 31 – 60 days;	1,810	2,186	2,185	1,850	2,120	2,748	2,296	2,273	2,331
f. Low-income customers delinquent 31 – 60 days;	1,264	1,507	1,239	1,199	1,353	1,278	1,213	1,017	1,032
g. All residential customers delinquent 61–90 days;	5,721	6,022	6,810	6,097	6,490	6,532	7,149	6,347	5,812
h. Senior customers delinquent 61 – 90 days;	1,192	1,055	1,121	1,142	934	1,168	1,726	1,234	1,240
i. Low-income customers delinquent 61 – 90 days;	765	890	999	887	904	994	1,045	849	688
j. All residential customers delinquent 91 days or more;	36,846	36,619	35,108	35,330	36,172	37,777	37,985	38,273	36,407
k. Senior customers delinquent 91 days or more; and	10,038	10,373	9,349	8,278	7,610	7,641	7,579	7,852	7,490
l. Low-income customers delinquent 91 days or more.	4,215	4,090	4,180	4,506	4,726	4,978	4,990	5,207	4,884
a. All residential customers delinquent 6 – 30 days;	\$ 2,737,381	\$ 4,375,998	\$ 5,233,846	\$ 6,873,715	\$ 4,642,840	\$ 3,162,186	\$ 2,624,943	\$ 1,856,638	\$ 1,230,318
b. Senior customers delinquent 6 – 30 days;	\$ 778,092	\$ 1,481,626	\$ 1,875,024	\$ 2,682,221	\$ 1,804,285	\$ 1,202,183	\$ 1,056,959	\$ 669,294	\$ 391,229
c. Low-income customers delinquent 6 – 30 days;	\$ 235,505	\$ 301,399	\$ 317,018	\$ 412,660	\$ 258,777	\$ 195,834	\$ 133,983	\$ 115,402	\$ 80,006
d. All residential customers delinquent 31 – 60 days;	\$ 1,340,416	\$ 1,838,759	\$ 1,752,959	\$ 1,718,926	\$ 1,552,803	\$ 1,209,766	\$ 948,371	\$ 700,675	\$ 690,289
e. Senior customers delinquent 31 – 60 days;	\$ 291,957	\$ 448,276	\$ 493,022	\$ 391,121	\$ 329,131	\$ 288,422	\$ 227,232	\$ 181,414	\$ 182,292
f. Low-income customers delinquent 31 – 60 days;	\$ 181,148	\$ 258,144	\$ 228,286	\$ 204,061	\$ 214,613	\$ 143,605	\$ 118,917	\$ 71,105	\$ 70,553
g. All residential customers delinquent 61–90 days;	\$ 814,587	\$ 1,209,140	\$ 1,365,643	\$ 1,369,229	\$ 1,255,589	\$ 1,067,655	\$ 823,322	\$ 637,628	\$ 483,692
h. Senior customers delinquent 61 – 90 days;	\$ 202,859	\$ 285,472	\$ 327,867	\$ 350,201	\$ 243,319	\$ 217,256	\$ 191,929	\$ 144,691	\$ 121,373
i. Low-income customers delinquent 61 – 90 days;	\$ 111,870	\$ 190,952	\$ 212,355	\$ 209,569	\$ 184,120	\$ 184,378	\$ 121,296	\$ 96,104	\$ 53,122
j. All residential customers delinquent 91 days or more;	\$ 9,417,293	\$ 9,951,105	\$ 10,582,206	\$ 11,476,187	\$ 11,540,931	\$ 11,635,046	\$ 10,795,154	\$ 10,103,086	\$ 8,432,665
k. Senior customers delinquent 91 days or more; and	\$ 2,786,565	\$ 2,981,141	\$ 3,225,191	\$ 3,279,327	\$ 3,056,053	\$ 2,986,993	\$ 2,803,979	\$ 2,619,003	\$ 2,073,605
l. Low-income customers delinquent 91 days or more.	\$ 1,264,072	\$ 1,295,270	\$ 1,413,270	\$ 1,661,556	\$ 1,655,985	\$ 1,687,671	\$ 1,513,195	\$ 1,430,184	\$ 1,154,955

2. Please provide **customer count and dollar amount** data for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers delinquent 6 – 30 days;	51,135	58,171	58,867	67,048	51,545	47,809	55,155	56,477	54,021
b. Senior customers delinquent 6 – 30 days;	13,147	17,189	17,322	21,122	15,725	12,440	15,460	15,105	14,467
c. Low-income customers delinquent 6 – 30 days;	8,287	8,392	8,322	9,209	7,718	7,071	8,023	8,418	7,978
d. All residential customers delinquent 31 – 60 days;	17,016	22,137	19,355	20,533	19,131	18,114	16,961	17,224	20,009
e. Senior customers delinquent 31 – 60 days;	3,300	4,447	4,457	3,829	4,114	4,484	3,377	3,492	4,129
f. Low-income customers delinquent 31 – 60 days;	3,928	4,918	4,231	4,327	4,356	3,981	3,706	3,747	4,285
g. All residential customers delinquent 61–90 days;	12,866	13,365	15,446	13,898	15,222	13,991	14,938	12,770	11,960
h. Senior customers delinquent 61 – 90 days;	2,714	2,446	2,745	2,715	2,405	2,880	3,522	2,375	2,197
i. Low-income customers delinquent 61 – 90 days;	3,014	3,414	3,881	3,444	3,618	3,604	3,630	3,134	2,863
j. All residential customers delinquent 91 days or more;	122,794	120,597	118,926	121,126	121,113	123,060	121,942	124,560	120,324
k. Senior customers delinquent 91 days or more; and	30,240	29,775	28,775	28,216	27,184	26,598	26,148	26,506	25,021
l. Low-income customers delinquent 91 days or more.	27,281	26,772	26,968	27,847	28,112	28,752	28,553	29,305	28,739
a. All residential customers delinquent 6 – 30 days;	\$ 8,403,203	\$ 11,667,935	\$ 13,155,640	\$ 14,135,112	\$ 9,626,146	\$ 7,434,116	\$ 8,612,987	\$ 9,161,025	\$ 8,078,763
b. Senior customers delinquent 6 – 30 days;	\$ 2,152,541	\$ 3,376,034	\$ 4,004,225	\$ 4,827,968	\$ 3,181,852	\$ 2,134,053	\$ 2,554,205	\$ 2,451,303	\$ 2,095,325
c. Low-income customers delinquent 6 – 30 days;	\$ 1,436,570	\$ 1,779,841	\$ 1,904,165	\$ 1,987,548	\$ 1,465,204	\$ 1,102,464	\$ 1,252,263	\$ 1,357,405	\$ 1,228,018
d. All residential customers delinquent 31 – 60 days;	\$ 5,058,414	\$ 6,959,670	\$ 6,995,606	\$ 6,760,442	\$ 5,138,328	\$ 4,197,235	\$ 4,044,544	\$ 4,145,585	\$ 4,652,700
e. Senior customers delinquent 31 – 60 days;	\$ 1,110,877	\$ 1,733,591	\$ 1,929,757	\$ 1,544,827	\$ 1,160,842	\$ 964,805	\$ 876,480	\$ 847,755	\$ 1,009,105
f. Low-income customers delinquent 31 – 60 days;	\$ 1,285,281	\$ 1,688,179	\$ 1,667,715	\$ 1,587,438	\$ 1,344,750	\$ 1,065,190	\$ 948,543	\$ 998,910	\$ 1,069,719
g. All residential customers delinquent 61–90 days;	\$ 4,332,337	\$ 5,735,085	\$ 6,805,141	\$ 6,489,831	\$ 5,690,469	\$ 4,800,318	\$ 4,337,266	\$ 3,860,768	\$ 3,577,478
h. Senior customers delinquent 61 – 90 days;	\$ 1,066,424	\$ 1,269,875	\$ 1,576,470	\$ 1,574,159	\$ 1,149,974	\$ 1,058,764	\$ 936,595	\$ 801,939	\$ 678,227
i. Low-income customers delinquent 61 – 90 days;	\$ 1,106,101	\$ 1,579,287	\$ 1,854,404	\$ 1,768,126	\$ 1,525,657	\$ 1,393,930	\$ 1,185,667	\$ 1,008,978	\$ 893,153
j. All residential customers delinquent 91 days or more;	\$ 100,805,829	\$ 103,835,029	\$ 108,278,433	\$ 114,438,757	\$ 110,287,029	\$ 108,983,064	\$ 105,063,631	\$ 103,551,078	\$ 92,252,720
k. Senior customers delinquent 91 days or more; and	\$ 27,203,171	\$ 28,467,124	\$ 30,043,015	\$ 31,255,128	\$ 29,104,329	\$ 28,218,573	\$ 27,101,456	\$ 26,068,070	\$ 22,245,389
l. Low-income customers delinquent 91 days or more.	\$ 22,763,163	\$ 22,903,963	\$ 24,039,998	\$ 26,119,698	\$ 24,881,383	\$ 24,621,776	\$ 23,276,513	\$ 23,001,805	\$ 19,873,487

3. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	22	27	23	27	22	21	16	12	11
b. Low-income customers; and	16	19	16	14	11	10	8	7	6
c. Senior customers.	6	8	7	13	11	11	8	5	5

4. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
a. All residential customers delinquent 6 – 30 days;	26,722	34,636	36,355	34,423	39,916	38,428	37,730	44,551	33,022
b. Senior customers delinquent 6 – 30 days;	6,651	8,562	9,349	9,887	13,261	12,550	12,337	14,047	9,603
c. Low-income customers delinquent 6 – 30 days;	2,042	2,654	2,970	3,006	2,716	2,615	2,696	2,992	2,177
d. All residential customers delinquent 31 – 60 days;	9,619	9,705	12,128	10,562	10,402	10,559	9,611	9,187	12,949
e. Senior customers delinquent 31 – 60 days;	2,132	1,973	2,549	1,873	2,164	2,342	1,873	1,836	3,279
f. Low-income customers delinquent 31 – 60 days;	965	1,070	1,435	1,526	1,487	1,315	1,191	1,201	1,515
g. All residential customers delinquent 61– 90 days;	5,986	5,356	5,790	6,517	6,700	6,335	6,492	5,942	5,375
h. Senior customers delinquent 61 – 90 days;	1,344	1,191	1,223	1,408	1,134	1,191	1,052	918	1,038
i. Low-income customers delinquent 61 – 90 days;	734	683	764	982	1,079	1,048	932	903	866
j. All residential customers delinquent 91 days or more;	35,473	35,465	35,346	35,520	35,702	36,570	36,935	38,395	39,070
k. Senior customers delinquent 91 days or more; and	7,263	7,361	7,439	7,526	7,698	7,635	7,115	6,777	6,691
l. Low-income customers delinquent 91 days or more.	4,919	5,050	5,241	5,498	5,473	5,681	5,713	5,980	6,153
a. All residential customers delinquent 6 – 30 days;	\$ 996,382	\$ 2,003,025	\$ 2,878,914	\$ 3,667,711	\$ 4,690,132	\$ 4,807,553	\$ 4,338,590	\$ 4,261,097	\$ 2,257,265
b. Senior customers delinquent 6 – 30 days;	\$ 258,850	\$ 502,318	\$ 778,961	\$ 1,119,634	\$ 1,602,156	\$ 1,712,278	\$ 1,548,041	\$ 1,526,764	\$ 772,485
c. Low-income customers delinquent 6 – 30 days;	\$ 75,411	\$ 149,507	\$ 232,069	\$ 317,747	\$ 302,383	\$ 310,649	\$ 274,164	\$ 260,410	\$ 141,809
d. All residential customers delinquent 31 – 60 days;	\$ 609,285	\$ 838,168	\$ 1,395,269	\$ 1,662,737	\$ 1,853,208	\$ 1,878,284	\$ 1,513,970	\$ 1,239,492	\$ 1,350,451
e. Senior customers delinquent 31 – 60 days;	\$ 145,546	\$ 186,555	\$ 327,187	\$ 390,013	\$ 535,363	\$ 596,227	\$ 386,692	\$ 279,936	\$ 346,843
f. Low-income customers delinquent 31 – 60 days;	\$ 60,432	\$ 96,894	\$ 168,527	\$ 265,527	\$ 281,621	\$ 241,838	\$ 195,235	\$ 175,855	\$ 165,299
g. All residential customers delinquent 61– 90 days;	\$ 519,985	\$ 562,034	\$ 780,767	\$ 1,174,448	\$ 1,433,294	\$ 1,472,637	\$ 1,284,582	\$ 1,115,700	\$ 836,888
h. Senior customers delinquent 61 – 90 days;	\$ 127,717	\$ 142,366	\$ 188,021	\$ 323,018	\$ 370,589	\$ 440,102	\$ 332,067	\$ 251,691	\$ 198,776
i. Low-income customers delinquent 61 – 90 days;	\$ 64,391	\$ 72,352	\$ 109,084	\$ 192,397	\$ 251,812	\$ 267,414	\$ 183,355	\$ 184,698	\$ 148,177
j. All residential customers delinquent 91 days or more;	\$ 7,533,999	\$ 7,639,944	\$ 8,178,346	\$ 9,587,470	\$ 10,733,541	\$ 12,039,717	\$ 11,754,931	\$ 12,014,578	\$ 11,966,937
k. Senior customers delinquent 91 days or more; and	\$ 1,857,927	\$ 1,858,686	\$ 2,017,576	\$ 2,411,000	\$ 2,873,135	\$ 3,308,846	\$ 3,025,081	\$ 2,778,499	\$ 2,704,840
l. Low-income customers delinquent 91 days or more.	\$ 1,080,961	\$ 1,162,268	\$ 1,308,166	\$ 1,652,916	\$ 1,866,229	\$ 2,126,641	\$ 1,967,965	\$ 2,066,885	\$ 2,074,831

2. Please provide **customer count and dollar amount** data for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers delinquent 6 – 30 days;	41,447	56,363	52,588	56,304	62,764	55,752	49,513	63,437	47,374
b. Senior customers delinquent 6 – 30 days;	10,391	13,849	12,903	15,066	18,153	16,634	14,583	18,979	12,559
c. Low-income customers delinquent 6 – 30 days;	6,575	8,717	8,623	9,624	9,320	8,198	7,858	9,322	7,168
d. All residential customers delinquent 31 – 60 days;	19,055	16,798	20,839	18,497	21,866	22,039	19,379	16,121	22,237
e. Senior customers delinquent 31 – 60 days;	4,128	3,854	4,985	3,722	4,882	5,134	4,261	3,170	5,841
f. Low-income customers delinquent 31 – 60 days;	4,203	3,688	4,652	4,561	5,175	5,142	4,425	3,878	5,099
g. All residential customers delinquent 61– 90 days;	13,868	13,271	12,931	14,300	14,388	15,405	15,903	14,901	11,554
h. Senior customers delinquent 61 – 90 days;	2,636	2,788	2,936	3,319	2,689	3,086	3,114	2,804	2,185
i. Low-income customers delinquent 61 – 90 days;	3,357	3,281	3,145	3,589	3,791	4,123	4,207	3,891	3,205
j. All residential customers delinquent 91 days or more;	118,095	118,156	119,468	122,246	122,607	121,976	122,272	124,222	124,550
k. Senior customers delinquent 91 days or more; and	23,753	23,307	23,913	24,698	25,306	24,852	24,001	22,908	22,473
l. Low-income customers delinquent 91 days or more.	28,832	29,324	30,066	31,171	31,148	31,299	31,643	32,820	33,441
a. All residential customers delinquent 6 – 30 days;	\$ 5,340,948	\$ 7,813,851	\$ 8,926,720	\$ 10,582,708	\$ 12,455,648	\$ 11,451,278	\$ 9,312,918	\$ 10,630,964	\$ 6,449,041
b. Senior customers delinquent 6 – 30 days;	\$ 1,330,669	\$ 1,971,160	\$ 2,081,148	\$ 2,845,613	\$ 3,707,438	\$ 3,538,740	\$ 2,919,798	\$ 3,435,214	\$ 1,866,201
c. Low-income customers delinquent 6 – 30 days;	\$ 886,109	\$ 1,270,973	\$ 1,553,040	\$ 1,977,197	\$ 1,977,150	\$ 1,748,900	\$ 1,558,458	\$ 1,658,473	\$ 1,001,701
d. All residential customers delinquent 31 – 60 days;	\$ 3,680,952	\$ 3,524,360	\$ 4,918,599	\$ 5,972,515	\$ 7,239,218	\$ 7,452,081	\$ 5,571,274	\$ 4,438,083	\$ 4,598,684
e. Senior customers delinquent 31 – 60 days;	\$ 825,757	\$ 940,727	\$ 1,344,555	\$ 1,425,169	\$ 2,050,786	\$ 2,223,207	\$ 1,502,733	\$ 981,262	\$ 1,247,421
f. Low-income customers delinquent 31 – 60 days;	\$ 912,545	\$ 877,443	\$ 1,219,125	\$ 1,640,616	\$ 1,969,081	\$ 1,945,940	\$ 1,425,723	\$ 1,180,061	\$ 1,197,203
g. All residential customers delinquent 61– 90 days;	\$ 3,687,396	\$ 3,535,721	\$ 3,968,863	\$ 5,238,177	\$ 6,302,060	\$ 6,693,992	\$ 6,136,119	\$ 5,539,329	\$ 3,755,462
h. Senior customers delinquent 61 – 90 days;	\$ 768,209	\$ 851,793	\$ 1,092,672	\$ 1,475,868	\$ 1,572,616	\$ 1,908,907	\$ 1,632,586	\$ 1,353,344	\$ 818,548
i. Low-income customers delinquent 61 – 90 days;	\$ 984,112	\$ 968,394	\$ 1,044,162	\$ 1,503,095	\$ 1,797,350	\$ 2,060,077	\$ 1,768,878	\$ 1,630,171	\$ 1,168,756
j. All residential customers delinquent 91 days or more;	\$ 86,277,348	\$ 86,352,101	\$ 86,960,570	\$ 94,077,327	\$ 101,200,788	\$ 104,102,632	\$ 101,185,684	\$ 103,568,959	\$ 100,760,719
k. Senior customers delinquent 91 days or more; and	\$ 20,372,878	\$ 19,937,166	\$ 20,345,154	\$ 22,161,466	\$ 24,768,128	\$ 26,499,840	\$ 24,933,411	\$ 24,300,861	\$ 23,309,978
l. Low-income customers delinquent 91 days or more.	\$ 18,917,013	\$ 19,275,326	\$ 19,850,415	\$ 22,613,802	\$ 24,670,358	\$ 25,656,298	\$ 24,435,789	\$ 25,715,049	\$ 25,454,632

3. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	8	25	61	118	143	106	88	58	50
b. Low-income customers; and	4	19	48	96	117	86	70	47	40
c. Senior customers.	4	6	13	22	26	20	18	11	10

4. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
a. All residential customers delinquent 6 – 30 days;	27,452	30,152	28,414	33,537	29,720	32,948	32,308	33,921	33,374
b. Senior customers delinquent 6 – 30 days;	7,664	7,455	7,304	7,858	6,933	7,718	7,884	9,115	9,602
c. Low-income customers delinquent 6 – 30 days;	2,003	2,204	2,137	2,314	2,481	2,745	2,935	2,797	2,347
d. All residential customers delinquent 31 – 60 days;	11,254	10,265	10,513	10,361	11,491	10,711	9,485	9,913	11,140
e. Senior customers delinquent 31 – 60 days;	2,394	2,167	2,137	2,273	2,480	2,117	1,612	1,966	2,411
f. Low-income customers delinquent 31 – 60 days;	1,174	1,078	1,043	1,062	1,148	1,300	1,385	1,446	1,341
g. All residential customers delinquent 61– 90 days;	7,427	6,027	6,060	6,386	5,757	6,315	5,928	5,500	6,109
h. Senior customers delinquent 61 – 90 days;	1,925	1,224	1,197	1,254	1,249	1,432	1,246	948	1,051
i. Low-income customers delinquent 61 – 90 days;	1,081	822	761	777	757	821	943	896	979
j. All residential customers delinquent 91 days or more;	38,943	39,991	38,811	38,162	37,554	36,843	36,634	36,237	35,913
k. Senior customers delinquent 91 days or more; and	6,644	7,136	6,921	6,737	6,673	6,850	7,165	7,431	7,288
l. Low-income customers delinquent 91 days or more.	6,177	6,442	6,265	6,273	6,267	6,174	6,272	6,081	5,957
a. All residential customers delinquent 6 – 30 days;	\$ 1,281,733	\$ 1,096,066	\$ 881,499	\$ 1,027,886	\$ 1,467,293	\$ 2,485,632	\$ 2,741,820	\$ 3,383,838	\$ 3,270,309
b. Senior customers delinquent 6 – 30 days;	\$ 425,203	\$ 293,680	\$ 237,568	\$ 248,612	\$ 354,048	\$ 598,522	\$ 694,956	\$ 971,956	\$ 1,011,608
c. Low-income customers delinquent 6 – 30 days;	\$ 95,112	\$ 81,916	\$ 69,830	\$ 66,566	\$ 112,540	\$ 189,128	\$ 247,776	\$ 256,708	\$ 212,139
d. All residential customers delinquent 31 – 60 days;	\$ 870,256	\$ 667,897	\$ 620,431	\$ 601,957	\$ 811,041	\$ 1,093,154	\$ 1,278,490	\$ 1,500,380	\$ 1,575,711
e. Senior customers delinquent 31 – 60 days;	\$ 202,566	\$ 156,275	\$ 141,661	\$ 143,861	\$ 189,267	\$ 240,535	\$ 288,032	\$ 443,476	\$ 504,948
f. Low-income customers delinquent 31 – 60 days;	\$ 100,466	\$ 79,311	\$ 65,319	\$ 65,136	\$ 79,191	\$ 138,184	\$ 197,749	\$ 232,823	\$ 192,164
g. All residential customers delinquent 61– 90 days;	\$ 836,737	\$ 567,657	\$ 505,532	\$ 514,469	\$ 523,047	\$ 751,478	\$ 863,920	\$ 1,007,114	\$ 1,126,396
h. Senior customers delinquent 61 – 90 days;	\$ 220,267	\$ 128,025	\$ 113,157	\$ 115,606	\$ 130,493	\$ 197,226	\$ 239,831	\$ 268,193	\$ 335,962
i. Low-income customers delinquent 61 – 90 days;	\$ 128,822	\$ 79,893	\$ 67,457	\$ 63,095	\$ 68,352	\$ 96,870	\$ 151,462	\$ 177,418	\$ 193,597
j. All residential customers delinquent 91 days or more;	\$ 11,387,185	\$ 10,958,841	\$ 10,196,042	\$ 9,466,095	\$ 9,224,304	\$ 9,745,808	\$ 10,771,841	\$ 11,847,347	\$ 12,441,014
k. Senior customers delinquent 91 days or more; and	\$ 2,571,582	\$ 2,451,127	\$ 2,250,132	\$ 2,090,163	\$ 2,042,857	\$ 2,241,253	\$ 2,596,819	\$ 3,086,823	\$ 3,406,103
l. Low-income customers delinquent 91 days or more.	\$ 1,921,400	\$ 1,862,033	\$ 1,718,258	\$ 1,603,921	\$ 1,573,558	\$ 1,699,995	\$ 1,935,667	\$ 2,044,010	\$ 2,107,034

2. Please provide **customer count and dollar amount** data for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers delinquent 6 – 30 days;	43,584	55,868	46,555	53,674	47,875	51,473	49,963	59,283	51,692
b. Senior customers delinquent 6 – 30 days;	10,933	13,191	11,424	13,456	10,698	11,794	12,019	15,580	14,711
c. Low-income customers delinquent 6 – 30 days;	7,068	9,027	7,482	8,505	7,939	8,990	9,100	9,964	7,916
d. All residential customers delinquent 31 – 60 days;	18,254	17,683	21,002	17,271	21,182	18,826	18,471	18,881	23,051
e. Senior customers delinquent 31 – 60 days;	3,879	3,501	4,117	3,874	5,180	4,248	3,756	3,850	5,347
f. Low-income customers delinquent 31 – 60 days;	4,031	4,032	4,858	3,918	4,583	4,279	4,739	4,737	5,251
g. All residential customers delinquent 61– 90 days;	15,276	11,973	12,016	15,031	11,729	14,879	13,035	13,477	14,730
h. Senior customers delinquent 61 – 90 days;	3,902	2,394	2,187	2,927	2,514	3,586	2,874	2,484	2,682
i. Low-income customers delinquent 61 – 90 days;	4,051	3,134	3,205	3,980	3,066	3,744	3,457	3,793	3,988
j. All residential customers delinquent 91 days or more;	123,300	126,542	122,548	120,068	119,487	117,541	121,296	120,891	118,933
k. Senior customers delinquent 91 days or more; and	21,862	22,749	21,636	20,603	20,388	20,478	21,928	22,558	22,349
l. Low-income customers delinquent 91 days or more.	33,540	34,527	33,947	33,883	34,260	33,739	34,829	34,349	33,762
a. All residential customers delinquent 6 – 30 days;	\$ 6,113,293	\$ 8,534,292	\$ 6,076,724	\$ 6,555,648	\$ 6,022,982	\$ 8,534,113	\$ 8,572,131	\$ 11,749,163	\$ 9,747,073
b. Senior customers delinquent 6 – 30 days;	\$ 1,541,680	\$ 1,921,518	\$ 1,458,799	\$ 1,742,309	\$ 1,413,713	\$ 1,980,699	\$ 2,109,603	\$ 3,221,151	\$ 2,724,284
c. Low-income customers delinquent 6 – 30 days;	\$ 1,005,030	\$ 1,441,433	\$ 972,656	\$ 1,083,769	\$ 999,637	\$ 1,528,353	\$ 1,617,862	\$ 2,213,596	\$ 1,622,921
d. All residential customers delinquent 31 – 60 days;	\$ 3,406,604	\$ 3,879,946	\$ 4,322,868	\$ 3,296,234	\$ 4,092,185	\$ 4,149,172	\$ 4,851,273	\$ 5,540,941	\$ 6,750,546
e. Senior customers delinquent 31 – 60 days;	\$ 783,069	\$ 792,777	\$ 866,755	\$ 816,363	\$ 1,218,026	\$ 1,062,607	\$ 1,230,128	\$ 1,542,405	\$ 2,046,831
f. Low-income customers delinquent 31 – 60 days;	\$ 885,260	\$ 1,006,000	\$ 1,152,224	\$ 819,401	\$ 1,009,443	\$ 1,051,224	\$ 1,448,123	\$ 1,582,908	\$ 1,757,492
g. All residential customers delinquent 61– 90 days;	\$ 3,992,539	\$ 3,303,352	\$ 3,174,158	\$ 3,823,742	\$ 2,849,764	\$ 4,160,285	\$ 4,062,897	\$ 5,223,933	\$ 5,460,708
h. Senior customers delinquent 61 – 90 days;	\$ 1,015,085	\$ 705,680	\$ 617,685	\$ 821,258	\$ 758,869	\$ 1,289,245	\$ 1,143,944	\$ 1,362,545	\$ 1,526,031
i. Low-income customers delinquent 61 – 90 days;	\$ 1,203,069	\$ 1,011,848	\$ 1,011,006	\$ 1,201,618	\$ 814,570	\$ 1,184,442	\$ 1,202,796	\$ 1,688,328	\$ 1,731,413
j. All residential customers delinquent 91 days or more;	\$ 97,641,725	\$ 98,913,682	\$ 94,550,752	\$ 89,850,767	\$ 86,766,857	\$ 88,661,765	\$ 93,377,357	\$ 100,698,331	\$ 102,989,310
k. Senior customers delinquent 91 days or more; and	\$ 22,213,703	\$ 21,706,877	\$ 20,202,445	\$ 19,153,718	\$ 18,287,402	\$ 19,044,305	\$ 20,833,368	\$ 23,719,647	\$ 25,315,270
l. Low-income customers delinquent 91 days or more.	\$ 24,907,455	\$ 25,830,268	\$ 25,133,059	\$ 24,475,457	\$ 24,125,040	\$ 24,804,309	\$ 26,920,913	\$ 29,006,232	\$ 29,708,098

3. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	35	31	29	27	26	30	31	32	27
b. Low-income customers; and	27	24	23	22	20	25	27	28	22
c. Senior customers.	8	7	6	5	6	5	4	4	5

4. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
a. All residential customers delinquent 6 – 30 days;	34,688	40,025	31,239	30,166	30,045	24,007	28,040	24,895	32,068
b. Senior customers delinquent 6 – 30 days;	9,416	11,615	8,675	7,143	7,060	5,237	6,143	5,459	7,058
c. Low-income customers delinquent 6 – 30 days;	2,590	2,779	2,173	2,098	2,129	1,892	2,203	2,128	3,188
d. All residential customers delinquent 31 – 60 days;	8,783	10,559	12,358	10,025	10,967	11,078	9,559	10,467	9,364
e. Senior customers delinquent 31 – 60 days;	1,493	1,889	2,962	1,978	2,161	2,135	1,776	2,032	1,823
f. Low-income customers delinquent 31 – 60 days;	1,111	1,322	1,445	1,120	1,088	1,142	1,001	1,158	1,209
g. All residential customers delinquent 61– 90 days;	6,399	4,900	5,871	7,115	6,283	6,483	6,159	5,497	5,967
h. Senior customers delinquent 61 – 90 days;	1,017	640	948	1,619	1,177	1,162	1,104	1,024	1,210
i. Low-income customers delinquent 61 – 90 days;	983	756	876	1,129	937	838	820	798	893
j. All residential customers delinquent 91 days or more;	36,586	37,605	37,458	37,341	38,159	37,462	35,948	35,562	34,950
k. Senior customers delinquent 91 days or more; and	6,655	6,383	6,208	6,182	6,539	6,419	6,234	6,218	6,281
l. Low-income customers delinquent 91 days or more.	6,232	6,140	5,995	6,103	6,419	6,459	6,345	6,609	7,037
a. All residential customers delinquent 6 – 30 days;	\$ 3,095,760	\$ 3,009,591	\$ 1,574,833	\$ 1,138,966	\$ 999,151	\$ 749,429	\$ 855,032	\$ 1,035,547	\$ 2,071,733
b. Senior customers delinquent 6 – 30 days;	\$ 862,961	\$ 869,830	\$ 470,058	\$ 278,238	\$ 245,103	\$ 157,222	\$ 190,680	\$ 231,873	\$ 470,199
c. Low-income customers delinquent 6 – 30 days;	\$ 214,702	\$ 191,733	\$ 101,685	\$ 68,644	\$ 63,157	\$ 51,588	\$ 56,919	\$ 83,549	\$ 194,552
d. All residential customers delinquent 31 – 60 days;	\$ 1,238,300	\$ 1,304,005	\$ 1,131,862	\$ 728,464	\$ 699,250	\$ 622,012	\$ 545,580	\$ 638,067	\$ 890,284
e. Senior customers delinquent 31 – 60 days;	\$ 272,417	\$ 245,540	\$ 252,987	\$ 150,912	\$ 137,335	\$ 125,393	\$ 106,041	\$ 134,467	\$ 182,457
f. Low-income customers delinquent 31 – 60 days;	\$ 168,407	\$ 176,669	\$ 134,494	\$ 80,249	\$ 63,908	\$ 60,961	\$ 52,581	\$ 71,015	\$ 119,228
g. All residential customers delinquent 61– 90 days;	\$ 1,091,868	\$ 843,029	\$ 783,406	\$ 720,714	\$ 556,727	\$ 532,973	\$ 466,475	\$ 463,338	\$ 634,015
h. Senior customers delinquent 61 – 90 days;	\$ 291,424	\$ 159,621	\$ 141,313	\$ 152,022	\$ 110,449	\$ 96,780	\$ 90,250	\$ 97,815	\$ 149,392
i. Low-income customers delinquent 61 – 90 days;	\$ 177,233	\$ 145,633	\$ 126,723	\$ 120,240	\$ 80,135	\$ 65,756	\$ 60,687	\$ 65,048	\$ 99,667
j. All residential customers delinquent 91 days or more;	\$ 12,819,493	\$ 12,884,033	\$ 12,455,368	\$ 12,006,401	\$ 11,612,491	\$ 10,779,232	\$ 9,930,636	\$ 9,376,700	\$ 9,579,486
k. Senior customers delinquent 91 days or more; and	\$ 3,177,437	\$ 2,926,999	\$ 2,787,314	\$ 2,625,558	\$ 2,498,554	\$ 2,326,994	\$ 2,187,176	\$ 2,105,945	\$ 2,171,146
l. Low-income customers delinquent 91 days or more.	\$ 2,255,351	\$ 2,216,843	\$ 2,076,988	\$ 2,048,471	\$ 2,012,003	\$ 1,916,208	\$ 1,790,859	\$ 1,758,675	\$ 1,974,329

2. Please provide **customer count and dollar amount** data for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers delinquent 6 – 30 days;	48,782	52,183	45,170	48,952	60,141	45,237	51,122	43,821	49,041
b. Senior customers delinquent 6 – 30 days;	12,544	13,820	10,809	10,741	14,442	10,112	11,245	9,995	10,753
c. Low-income customers delinquent 6 – 30 days;	8,262	8,951	7,611	8,765	10,306	8,291	9,275	8,493	10,115
d. All residential customers delinquent 31 – 60 days;	18,736	18,641	19,287	15,566	19,615	23,387	18,964	20,289	16,548
e. Senior customers delinquent 31 – 60 days;	4,048	3,719	4,500	2,820	3,508	4,253	3,500	3,881	3,494
f. Low-income customers delinquent 31 – 60 days;	4,387	4,658	4,802	4,063	4,981	6,024	4,988	5,224	4,693
g. All residential customers delinquent 61– 90 days;	15,798	12,672	13,498	14,114	12,321	14,366	15,441	13,484	14,143
h. Senior customers delinquent 61 – 90 days;	2,991	2,435	2,637	3,076	2,070	2,393	2,548	2,413	2,698
i. Low-income customers delinquent 61 – 90 days;	4,317	3,351	3,790	4,142	3,749	4,378	4,726	4,090	4,283
j. All residential customers delinquent 91 days or more;	118,520	118,556	116,524	117,264	117,499	116,468	114,895	115,174	115,578
k. Senior customers delinquent 91 days or more; and	21,235	20,163	19,618	19,544	19,998	19,503	19,053	18,905	19,175
l. Low-income customers delinquent 91 days or more.	34,168	34,214	33,637	34,603	35,348	35,948	36,605	37,500	38,650
a. All residential customers delinquent 6 – 30 days;	\$ 9,326,150	\$ 7,658,558	\$ 5,829,569	\$ 6,891,447	\$ 9,195,338	\$ 6,254,062	\$ 6,465,903	\$ 4,823,536	\$ 7,089,172
b. Senior customers delinquent 6 – 30 days;	\$ 2,433,563	\$ 1,969,064	\$ 1,341,897	\$ 1,382,440	\$ 2,040,202	\$ 1,251,869	\$ 1,399,802	\$ 1,149,673	\$ 1,600,007
c. Low-income customers delinquent 6 – 30 days;	\$ 1,659,427	\$ 1,399,172	\$ 1,018,325	\$ 1,256,380	\$ 1,556,547	\$ 1,173,320	\$ 1,167,870	\$ 941,029	\$ 1,512,376
d. All residential customers delinquent 31 – 60 days;	\$ 5,534,126	\$ 5,624,266	\$ 4,030,123	\$ 3,403,869	\$ 4,520,375	\$ 4,600,069	\$ 3,594,449	\$ 3,430,430	\$ 3,589,251
e. Senior customers delinquent 31 – 60 days;	\$ 1,325,433	\$ 1,223,186	\$ 853,647	\$ 604,104	\$ 765,501	\$ 772,865	\$ 661,146	\$ 737,343	\$ 810,837
f. Low-income customers delinquent 31 – 60 days;	\$ 1,522,304	\$ 1,568,426	\$ 1,129,739	\$ 1,027,791	\$ 1,363,968	\$ 1,419,456	\$ 1,121,486	\$ 1,052,890	\$ 1,153,739
g. All residential customers delinquent 61– 90 days;	\$ 5,846,217	\$ 4,565,075	\$ 4,844,879	\$ 3,898,560	\$ 3,606,940	\$ 4,035,829	\$ 4,015,565	\$ 3,169,207	\$ 3,556,071
h. Senior customers delinquent 61 – 90 days;	\$ 1,601,861	\$ 1,043,239	\$ 1,109,604	\$ 746,918	\$ 591,567	\$ 639,463	\$ 678,024	\$ 600,011	\$ 778,569
i. Low-income customers delinquent 61 – 90 days;	\$ 1,882,711	\$ 1,395,030	\$ 1,496,440	\$ 1,343,234	\$ 1,323,150	\$ 1,531,073	\$ 1,487,883	\$ 1,195,208	\$ 1,321,114
j. All residential customers delinquent 91 days or more;	\$ 103,259,135	\$ 102,900,479	\$ 99,498,871	\$ 99,154,082	\$ 100,728,987	\$ 97,980,941	\$ 93,112,655	\$ 93,112,655	\$ 94,337,168
k. Senior customers delinquent 91 days or more; and	\$ 24,622,507	\$ 23,345,774	\$ 22,260,592	\$ 21,535,943	\$ 21,049,138	\$ 19,983,655	\$ 19,205,416	\$ 18,350,682	\$ 18,673,935
l. Low-income customers delinquent 91 days or more.	\$ 30,565,480	\$ 30,423,227	\$ 28,856,251	\$ 29,363,828	\$ 30,713,828	\$ 31,031,527	\$ 32,194,320	\$ 32,104,558	\$ 33,833,865

3. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	21	17	11	10	9	9	7	16	20
b. Low-income customers; and	17	14	9	9	8	8	7	10	13
c. Senior customers.	4	3	2	1	1	1	-	6	7

4. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
a. All residential customers delinquent 6 – 30 days;	34,739	35,744	35,368	41,407	41,591	35,272	30,116	31,728	27,388
b. Senior customers delinquent 6 – 30 days;	8,588	9,521	10,089	12,047	12,643	9,767	7,228	7,608	5,895
c. Low-income customers delinquent 6 – 30 days;	3,669	3,429	3,088	3,455	3,190	2,495	2,089	2,066	1,899
d. All residential customers delinquent 31 – 60 days;	10,428	10,552	12,094	10,866	12,051	12,546	10,789	10,662	10,676
e. Senior customers delinquent 31 – 60 days;	1,707	1,990	2,224	1,831	2,075	2,865	1,991	1,930	1,927
f. Low-income customers delinquent 31 – 60 days;	1,756	1,932	2,068	1,728	1,935	1,774	1,246	1,068	953
g. All residential customers delinquent 61– 90 days;	4,633	5,858	6,501	7,635	6,976	6,999	7,010	6,495	6,167
h. Senior customers delinquent 61 – 90 days;	968	890	1,019	1,098	949	1,072	1,519	1,149	998
i. Low-income customers delinquent 61 – 90 days;	799	1,141	1,404	1,606	1,463	1,487	1,355	1,018	781
j. All residential customers delinquent 91 days or more;	35,087	34,229	34,529	35,402	37,628	38,792	38,697	38,977	37,956
k. Senior customers delinquent 91 days or more; and	6,584	6,723	6,617	6,286	6,135	6,196	6,118	6,559	6,425
l. Low-income customers delinquent 91 days or more.	7,499	7,282	7,326	7,685	8,232	8,701	8,933	8,910	8,695
a. All residential customers delinquent 6 – 30 days;	\$ 3,385,048	\$ 4,267,910	\$ 4,649,464	\$ 4,920,763	\$ 4,436,145	\$ 2,889,736	\$ 1,572,431	\$ 1,169,404	\$ 889,113
b. Senior customers delinquent 6 – 30 days;	\$ 877,332	\$ 1,259,999	\$ 1,440,652	\$ 1,608,981	\$ 1,507,804	\$ 998,708	\$ 479,698	\$ 346,985	\$ 203,388
c. Low-income customers delinquent 6 – 30 days;	\$ 350,779	\$ 385,437	\$ 371,293	\$ 363,909	\$ 274,011	\$ 164,399	\$ 94,203	\$ 63,445	\$ 50,369
d. All residential customers delinquent 31 – 60 days;	\$ 1,494,881	\$ 1,792,066	\$ 2,153,531	\$ 1,822,619	\$ 1,627,315	\$ 1,302,828	\$ 861,491	\$ 677,182	\$ 593,709
e. Senior customers delinquent 31 – 60 days;	\$ 319,721	\$ 471,207	\$ 596,516	\$ 412,927	\$ 299,022	\$ 276,641	\$ 167,473	\$ 139,851	\$ 116,042
f. Low-income customers delinquent 31 – 60 days;	\$ 283,150	\$ 371,781	\$ 413,846	\$ 333,140	\$ 290,324	\$ 178,832	\$ 105,449	\$ 67,895	\$ 50,329
g. All residential customers delinquent 61– 90 days;	\$ 764,811	\$ 1,170,866	\$ 1,503,962	\$ 1,694,449	\$ 1,474,008	\$ 1,094,268	\$ 844,265	\$ 599,756	\$ 510,874
h. Senior customers delinquent 61 – 90 days;	\$ 187,254	\$ 278,261	\$ 368,028	\$ 400,924	\$ 289,578	\$ 186,408	\$ 169,353	\$ 123,298	\$ 97,968
i. Low-income customers delinquent 61 – 90 days;	\$ 152,858	\$ 269,713	\$ 392,358	\$ 447,150	\$ 378,539	\$ 276,706	\$ 161,726	\$ 94,481	\$ 67,769
j. All residential customers delinquent 91 days or more;	\$ 10,593,236	\$ 11,753,251	\$ 12,918,386	\$ 13,698,020	\$ 14,135,932	\$ 14,189,393	\$ 13,648,862	\$ 12,780,194	\$ 11,821,033
k. Senior customers delinquent 91 days or more; and	\$ 2,501,460	\$ 2,967,162	\$ 3,363,924	\$ 3,326,965	\$ 3,163,366	\$ 3,089,026	\$ 2,904,998	\$ 2,732,488	\$ 2,538,314
l. Low-income customers delinquent 91 days or more.	\$ 2,459,559	\$ 2,814,677	\$ 3,239,829	\$ 3,608,263	\$ 3,864,536	\$ 3,978,935	\$ 3,907,500	\$ 3,619,604	\$ 3,364,872

2. Please provide **customer count and dollar amount** data for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers delinquent 6 – 30 days;	57,208	61,345	55,369	58,775	55,722	44,237	47,606	57,090	48,016
b. Senior customers delinquent 6 – 30 days;	13,831	15,777	15,272	15,736	15,362	10,746	10,445	12,787	10,146
c. Low-income customers delinquent 6 – 30 days;	12,295	11,926	10,203	10,408	9,434	7,949	8,436	9,997	8,302
d. All residential customers delinquent 31 – 60 days;	18,884	22,482	25,995	22,203	21,008	19,572	16,468	18,030	21,503
e. Senior customers delinquent 31 – 60 days;	3,402	4,541	5,376	4,421	4,193	4,541	2,873	3,140	3,756
f. Low-income customers delinquent 31 – 60 days;	6,032	7,296	7,830	6,494	6,306	5,475	4,609	4,770	5,655
g. All residential customers delinquent 61– 90 days;	10,972	12,841	16,726	19,382	17,455	15,729	13,341	12,453	12,624
h. Senior customers delinquent 61 – 90 days;	2,177	2,061	2,950	3,424	3,166	2,988	2,940	2,092	2,080
i. Low-income customers delinquent 61 – 90 days;	3,678	4,671	6,190	7,093	6,263	5,754	4,536	4,027	3,912
j. All residential customers delinquent 91 days or more;	117,839	116,130	116,257	118,561	120,745	122,528	123,044	123,244	119,515
k. Senior customers delinquent 91 days or more; and	20,122	20,586	20,507	20,114	19,709	19,926	20,016	20,284	19,500
l. Low-income customers delinquent 91 days or more.	40,047	39,600	40,010	41,208	43,102	44,882	46,305	46,440	45,700
a. All residential customers delinquent 6 – 30 days;	\$ 10,776,495	\$ 12,933,936	\$ 12,402,646	\$ 11,160,408	\$ 8,966,762	\$ 5,974,625	\$ 7,192,084	\$ 9,080,281	\$ 6,935,331
b. Senior customers delinquent 6 – 30 days;	\$ 2,634,441	\$ 3,413,410	\$ 3,461,205	\$ 3,050,918	\$ 2,540,345	\$ 1,573,522	\$ 1,518,685	\$ 1,845,416	\$ 1,359,955
c. Low-income customers delinquent 6 – 30 days;	\$ 2,467,267	\$ 2,730,709	\$ 2,446,269	\$ 2,198,825	\$ 1,692,015	\$ 1,154,772	\$ 1,443,883	\$ 1,759,784	\$ 1,327,856
d. All residential customers delinquent 31 – 60 days;	\$ 5,463,010	\$ 7,523,811	\$ 8,706,250	\$ 7,266,675	\$ 5,482,459	\$ 3,961,366	\$ 3,276,855	\$ 4,341,900	\$ 4,592,368
e. Senior customers delinquent 31 – 60 days;	\$ 1,197,702	\$ 1,945,458	\$ 2,393,970	\$ 1,818,610	\$ 1,125,619	\$ 810,831	\$ 579,698	\$ 734,445	\$ 771,990
f. Low-income customers delinquent 31 – 60 days;	\$ 2,115,717	\$ 2,948,584	\$ 3,186,930	\$ 2,551,441	\$ 2,078,673	\$ 1,488,235	\$ 1,183,522	\$ 1,542,490	\$ 1,591,286
g. All residential customers delinquent 61– 90 days;	\$ 3,868,160	\$ 5,499,913	\$ 7,791,682	\$ 8,579,071	\$ 6,952,016	\$ 4,937,024	\$ 3,660,562	\$ 3,546,839	\$ 3,717,985
h. Senior customers delinquent 61 – 90 days;	\$ 880,360	\$ 1,227,890	\$ 1,923,940	\$ 2,122,549	\$ 1,635,762	\$ 965,546	\$ 704,111	\$ 604,732	\$ 611,314
i. Low-income customers delinquent 61 – 90 days;	\$ 1,593,284	\$ 2,381,866	\$ 3,621,504	\$ 3,970,973	\$ 3,189,596	\$ 2,369,722	\$ 1,692,312	\$ 1,507,607	\$ 1,644,071
j. All residential customers delinquent 91 days or more;	\$ 101,110,102	\$ 107,733,060	\$ 113,514,284	\$ 117,205,743	\$ 114,411,768	\$ 111,720,740	\$ 109,159,491	\$ 108,250,817	\$ 103,052,950
k. Senior customers delinquent 91 days or more; and	\$ 20,112,232	\$ 23,173,921	\$ 25,686,402	\$ 26,504,175	\$ 25,334,872	\$ 24,680,513	\$ 23,637,267	\$ 22,950,851	\$ 21,549,911
l. Low-income customers delinquent 91 days or more.	\$ 38,531,138	\$ 41,956,236	\$ 45,289,995	\$ 48,380,066	\$ 49,266,697	\$ 49,918,775	\$ 50,385,804	\$ 50,725,766	\$ 49,856,302

3. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	23	19	15	13	11	5	4	2	2
b. Low-income customers; and	19	17	13	11	9	5	4	2	2
c. Senior customers.	4	2	2	2	2	-	-	-	-

4. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Oct-25	Nov-25	Dec-25
a. All residential customers delinquent 6 – 30 days;	28,247	24,764	33,629
b. Senior customers delinquent 6 – 30 days;	5,952	5,407	7,064
c. Low-income customers delinquent 6 – 30 days;	2,053	1,936	2,923
d. All residential customers delinquent 31 – 60 days;	9,930	10,625	9,011
e. Senior customers delinquent 31 – 60 days;	1,739	2,041	1,685
f. Low-income customers delinquent 31 – 60 days;	996	1,082	1,056
g. All residential customers delinquent 61– 90 days;	5,654	5,778	5,818
h. Senior customers delinquent 61 – 90 days;	1,011	998	1,137
i. Low-income customers delinquent 61 – 90 days;	647	749	785
j. All residential customers delinquent 91 days or more;	36,312	35,669	35,284
k. Senior customers delinquent 91 days or more; and	6,181	6,057	6,150
l. Low-income customers delinquent 91 days or more.	8,265	8,157	8,259
a. All residential customers delinquent 6 – 30 days;	\$ 934,115	\$ 1,038,846	\$ 2,620,561
b. Senior customers delinquent 6 – 30 days;	\$ 202,200	\$ 230,773	\$ 570,896
c. Low-income customers delinquent 6 – 30 days;	\$ 58,810	\$ 72,074	\$ 210,550
d. All residential customers delinquent 31 – 60 days;	\$ 593,586	\$ 674,491	\$ 952,835
e. Senior customers delinquent 31 – 60 days;	\$ 111,135	\$ 140,187	\$ 191,448
f. Low-income customers delinquent 31 – 60 days;	\$ 53,162	\$ 69,157	\$ 112,908
g. All residential customers delinquent 61– 90 days;	\$ 435,826	\$ 489,609	\$ 703,168
h. Senior customers delinquent 61 – 90 days;	\$ 86,250	\$ 100,425	\$ 163,348
i. Low-income customers delinquent 61 – 90 days;	\$ 49,202	\$ 59,953	\$ 95,831
j. All residential customers delinquent 91 days or more;	\$ 10,752,603	\$ 10,174,360	\$ 10,662,713
k. Senior customers delinquent 91 days or more; and	\$ 2,303,288	\$ 2,182,480	\$ 2,319,204
l. Low-income customers delinquent 91 days or more.	\$ 3,032,659	\$ 2,813,598	\$ 2,919,019

2. Please provide **customer count and dollar amount** data for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers delinquent 6 – 30 days;	48,490	39,187	54,620
b. Senior customers delinquent 6 – 30 days;	10,176	8,343	11,525
c. Low-income customers delinquent 6 – 30 days;	7,766	6,808	9,818
d. All residential customers delinquent 31 – 60 days;	19,708	19,340	15,079
e. Senior customers delinquent 31 – 60 days;	3,388	3,591	3,043
f. Low-income customers delinquent 31 – 60 days;	4,984	4,577	3,747
g. All residential customers delinquent 61– 90 days;	13,846	14,257	13,324
h. Senior customers delinquent 61 – 90 days;	2,273	2,467	2,400
i. Low-income customers delinquent 61 – 90 days;	4,339	4,294	3,881
j. All residential customers delinquent 91 days or more;	115,663	114,897	116,894
k. Senior customers delinquent 91 days or more; and	18,375	17,939	18,605
l. Low-income customers delinquent 91 days or more.	44,468	44,495	45,397
a. All residential customers delinquent 6 – 30 days;	\$ 5,868,027	\$ 4,583,228	\$ 9,299,068
b. Senior customers delinquent 6 – 30 days;	\$ 1,196,635	\$ 1,005,441	\$ 2,021,871
c. Low-income customers delinquent 6 – 30 days;	\$ 1,077,729	\$ 924,499	\$ 1,810,964
d. All residential customers delinquent 31 – 60 days;	\$ 3,663,177	\$ 3,260,069	\$ 3,676,269
e. Senior customers delinquent 31 – 60 days;	\$ 657,844	\$ 666,024	\$ 829,285
f. Low-income customers delinquent 31 – 60 days;	\$ 1,232,058	\$ 1,094,883	\$ 1,166,131
g. All residential customers delinquent 61– 90 days;	\$ 3,599,773	\$ 3,204,031	\$ 3,735,917
h. Senior customers delinquent 61 – 90 days;	\$ 648,889	\$ 627,077	\$ 782,520
i. Low-income customers delinquent 61 – 90 days;	\$ 1,633,856	\$ 1,345,102	\$ 1,475,488
j. All residential customers delinquent 91 days or more;	\$ 97,512,854	\$ 93,607,102	\$ 96,826,296
k. Senior customers delinquent 91 days or more; and	\$ 20,088,056	\$ 18,822,136	\$ 19,481,678
l. Low-income customers delinquent 91 days or more.	\$ 48,672,909	\$ 47,153,583	\$ 48,575,281

3. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	1	19	37
b. Low-income customers; and	1	11	24
c. Senior customers.	-	8	13

4. Please provide **end-of-month Winter Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

**Question:**

**Owner: Reference/Source: Status:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
a. All residential customers;	122	151	169	150	123	97	79	66	56
b. Low-income customers; and	84	109	105	80	61	41	29	20	18
c. Senior customers.	38	42	64	70	62	56	50	46	38

5. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	5410	5276	5098	4945	4949	4749	4474	4127	3760
b. Low-income customers; and	1161	1153	1118	1070	1079	1008	936	858	765
c. Senior customers.	2522	2407	2335	2317	2385	2384	2307	2172	2016

6. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	35,953	34,207	31,873	30,350	29,613	28,328	27,156	25,604	24,418
b. Low-income customers; and	9,467	9,047	8,361	7,910	7,615	7,205	6,831	6,412	6,151
c. Senior customers.	13,830	13,096	12,504	12,142	12,344	12,284	12,093	11,396	10,868

7. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	355	402	560	605	572	492	389	270	223
b. Low-income customers; and	81	51	67	91	98	104	77	66	36
c. Senior customers.	29	33	99	147	143	86	69	55	42
a. All residential customers;	\$ 62,524	\$ 102,996	\$ 175,228	\$ 155,431	\$ 165,951	\$ 119,016	\$ 84,917	\$ 186,983	\$ 62,429
b. Low-income customers; and	\$ 17,204	\$ 11,249	\$ 13,990	\$ 21,179	\$ 34,960	\$ 21,991	\$ 14,020	\$ 16,480	\$ 8,440
c. Senior customers.	\$ 5,882	\$ 6,186	\$ 30,930	\$ 47,345	\$ 48,703	\$ 29,040	\$ 16,716	\$ 18,623	\$ 10,967

8. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	1,749	1,520	2,111	1,930	1,895	1,678	1,497	1,522	1,460
b. Low-income customers; and	373	323	425	381	411	389	371	333	342
c. Senior customers.	135	143	320	411	513	315	292	258	229
a. All residential customers;	\$ 744,225	\$ 688,253	\$ 1,095,786	\$ 1,081,996	\$ 1,036,752	\$ 902,133	\$ 846,976	\$ 836,650	\$ 793,971
b. Low-income customers; and	\$ 172,565	\$ 151,306	\$ 218,106	\$ 200,418	\$ 225,788	\$ 191,354	\$ 188,740	\$ 170,259	\$ 142,126
c. Senior customers.	\$ 51,666	\$ 68,634	\$ 194,127	\$ 268,197	\$ 335,855	\$ 261,159	\$ 229,259	\$ 137,176	\$ 165,758

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
a. All residential customers;	44	137	401	541	556	410	298	235	200
b. Low-income customers; and	15	100	343	463	482	347	252	194	160
c. Senior customers.	29	37	58	78	74	63	46	41	40

5. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	3473	3150	2845	2636	2564	2,481	2,696	2,801	2,822
b. Low-income customers; and	686	593	523	486	520	546	617	635	698
c. Senior customers.	1906	1756	1602	1464	1327	1,237	1,405	1,595	1,596

6. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	22,947	21,368	19,464	17,583	16,535	15,711	16,392	17,284	17,834
b. Low-income customers; and	5,771	5,347	4,876	4,411	4,243	4,128	4,487	4,819	5,298
c. Senior customers.	10,308	9,681	8,841	7,948	7,231	6,730	7,040	7,904	8,003

7. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	200	170	195	396	467	630	572	670	392
b. Low-income customers; and	42	39	43	78	95	90	85	117	99
c. Senior customers.	28	14	11	31	45	102	121	156	77
a. All residential customers;	\$ 51,755	\$ 39,947	\$ 46,040	\$ 71,018	\$ 103,092	\$ 151,713	\$ 179,929	\$ 213,819	\$ 146,334
b. Low-income customers; and	\$ 9,301	\$ 8,908	\$ 9,688	\$ 14,575	\$ 21,460	\$ 21,608	\$ 23,622	\$ 35,036	\$ 31,228
c. Senior customers.	\$ 5,212	\$ 1,606	\$ 3,561	\$ 4,902	\$ 6,267	\$ 28,740	\$ 41,657	\$ 57,751	\$ 37,356

8. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	1,351	1,191	903	1,656	1,736	2,708	2,100	2,467	2,230
b. Low-income customers; and	318	275	205	351	372	561	462	595	661
c. Senior customers.	182	78	97	160	164	458	487	550	368
a. All residential customers;	\$ 656,633	\$ 580,668	\$ 446,646	\$ 651,976	\$ 773,346	\$ 1,340,328	\$ 1,004,959	\$ 1,327,228	\$ 1,088,197
b. Low-income customers; and	\$ 139,626	\$ 125,805	\$ 94,106	\$ 142,866	\$ 167,228	\$ 288,934	\$ 225,409	\$ 300,324	\$ 292,611
c. Senior customers.	\$ 99,002	\$ 28,101	\$ 33,304	\$ 43,923	\$ 44,672	\$ 219,835	\$ 253,017	\$ 339,995	\$ 213,542

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
a. All residential customers;	161	135	127	115	120	124	156	163	134
b. Low-income customers; and	129	105	98	90	95	105	139	144	122
c. Senior customers.	32	30	29	25	25	19	17	19	12

5. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	2,535	2,388	2,220	1,833	1,603	1,363	1,203	1,241	1,364
b. Low-income customers; and	665	645	620	497	439	387	358	406	468
c. Senior customers.	1,399	1,303	1,185	1,008	874	728	599	556	566

6. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	17,727	18,302	18,817	16,179	14,666	11,896	10,028	9,851	10,524
b. Low-income customers; and	5,623	6,270	6,894	6,017	5,542	4,386	3,631	3,694	4,104
c. Senior customers.	7,753	7,580	7,455	6,430	5,663	4,537	3,757	3,438	3,477

7. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	394	354	295	274	232	259	478	553	618
b. Low-income customers; and	101	89	73	79	50	72	115	115	134
c. Senior customers.	77	72	47	13	17	14	23	35	56
a. All residential customers;	\$ 101,827	\$ 101,565	\$ 88,971	\$ 77,069	\$ 50,228	\$ 61,253	\$ 102,689	\$ 144,672	\$ 172,189
b. Low-income customers; and	\$ 21,776	\$ 25,331	\$ 26,928	\$ 18,793	\$ 10,788	\$ 16,976	\$ 27,746	\$ 34,180	\$ 44,364
c. Senior customers.	\$ 23,467	\$ 24,655	\$ 19,923	\$ 6,208	\$ 2,292	\$ 5,269	\$ 1,390	\$ 3,054	\$ 8,729

8. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	2,148	2,388	2,334	1,783	1,847	1,916	2,602	3,141	3,681
b. Low-income customers; and	638	710	650	482	483	495	618	744	818
c. Senior customers.	381	449	366	160	171	184	264	385	487
a. All residential customers;	\$ 995,771	\$ 1,227,980	\$ 1,081,311	\$ 780,214	\$ 707,377	\$ 698,699	\$ 877,266	\$ 1,124,226	\$ 1,504,797
b. Low-income customers; and	\$ 305,908	\$ 391,240	\$ 325,103	\$ 209,635	\$ 221,187	\$ 211,867	\$ 255,897	\$ 314,561	\$ 404,263
c. Senior customers.	\$ 196,910	\$ 251,016	\$ 207,431	\$ 78,006	\$ 40,369	\$ 40,419	\$ 40,094	\$ 108,532	\$ 167,869

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
a. All residential customers;	90	63	56	39	35	32	30	44	78
b. Low-income customers; and	80	58	51	34	30	28	26	32	58
c. Senior customers.	10	5	5	5	5	4	4	12	20

5. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	1,646	1,989	2,043	2,067	2,223	2,212	1,842	1,614	1,321
b. Low-income customers; and	542	569	607	677	822	889	758	672	536
c. Senior customers.	793	1,172	1,214	1,149	1,125	1,070	887	749	589

6. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	11,990	14,130	14,843	16,998	20,388	22,826	20,090	17,206	13,947
b. Low-income customers; and	4,584	5,148	5,627	7,298	10,020	12,124	10,831	9,123	7,215
c. Senior customers.	4,495	6,445	6,670	6,941	7,183	7,286	6,335	5,434	4,300

7. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	726	616	480	1,012	982	808	689	565	717
b. Low-income customers; and	151	129	122	297	283	248	172	167	207
c. Senior customers.	154	116	63	91	92	75	55	25	24
a. All residential customers;	\$ 222,599	\$ 187,666	\$ 158,603	\$ 261,534	\$ 259,842	\$ 190,277	\$ 174,539	\$ 123,546	\$ 127,654
b. Low-income customers; and	\$ 47,597	\$ 38,876	\$ 33,352	\$ 76,034	\$ 69,236	\$ 64,791	\$ 39,424	\$ 36,944	\$ 37,482
c. Senior customers.	\$ 54,490	\$ 39,964	\$ 18,575	\$ 36,847	\$ 37,828	\$ 30,683	\$ 14,479	\$ 6,196	\$ 3,487

8. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	3,744	3,007	2,391	4,375	5,081	4,876	4,042	3,058	2,853
b. Low-income customers; and	827	705	703	1,501	1,801	1,659	1,180	1,059	1,072
c. Senior customers.	777	618	317	470	473	454	404	201	194
a. All residential customers;	\$ 1,946,954	\$ 1,591,391	\$ 1,430,441	\$ 2,349,394	\$ 2,752,003	\$ 2,276,226	\$ 1,849,767	\$ 1,409,033	\$ 1,412,021
b. Low-income customers; and	\$ 439,383	\$ 385,263	\$ 371,139	\$ 874,578	\$ 1,159,054	\$ 903,023	\$ 573,944	\$ 510,306	\$ 576,660
c. Senior customers.	\$ 492,309	\$ 393,784	\$ 419,174	\$ 290,413	\$ 285,731	\$ 225,360	\$ 202,598	\$ 93,112	\$ 197,326

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
a. All residential customers;	95	105	98	85	62	48	36	30	26
b. Low-income customers; and	77	83	72	59	42	30	21	18	14
c. Senior customers.	18	22	26	26	20	18	15	12	12

5. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	1,196	1,478	1,880	2,550	3,314	3,549	3,456	3,110	2,900
b. Low-income customers; and	528	769	1,056	1,427	1,797	2,012	2,024	1,836	1,654
c. Senior customers.	447	427	516	844	1,342	1,425	1,367	1,237	1,198

6. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	11,687	12,550	14,806	18,079	22,421	24,191	24,546	22,883	23,207
b. Low-income customers; and	6,037	6,775	8,311	10,294	12,775	14,363	15,077	14,124	14,496
c. Senior customers.	3,230	2,945	3,342	4,742	7,321	8,005	8,162	7,817	7,948

7. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **gas-only customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	1,752	1,924	2,127	2,106	1,708	1,314	929	620	582
b. Low-income customers; and	472	458	447	518	431	365	311	180	174
c. Senior customers.	93	120	250	284	213	135	92	70	50
a. All residential customers;	\$ 295,409	\$ 353,508	\$ 448,180	\$ 521,601	\$ 493,282	\$ 308,535	\$ 209,307	\$ 171,671	\$ 148,812
b. Low-income customers; and	\$ 82,099	\$ 98,565	\$ 111,417	\$ 142,711	\$ 127,518	\$ 111,137	\$ 90,994	\$ 65,980	\$ 54,224
c. Senior customers.	\$ 14,022	\$ 18,247	\$ 64,383	\$ 97,605	\$ 71,672	\$ 44,451	\$ 23,833	\$ 20,647	\$ 11,878

8. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **combination gas and electric customers** for each month between January 2022 and December 2025, inclusive:

a. All residential customers;	4,350	4,646	5,345	5,594	4,955	4,120	3,434	4,018	4,964
b. Low-income customers; and	1,502	1,434	1,642	1,839	1,884	1,803	1,500	1,454	1,625
c. Senior customers.	357	411	608	959	841	469	456	520	556
a. All residential customers;	\$ 1,822,912	\$ 2,130,259	\$ 2,777,077	\$ 3,458,169	\$ 3,145,537	\$ 2,740,407	\$ 2,397,995	\$ 2,450,046	\$ 2,764,600
b. Low-income customers; and	\$ 785,297	\$ 878,035	\$ 1,105,931	\$ 1,433,946	\$ 1,421,985	\$ 1,518,903	\$ 1,387,057	\$ 1,237,323	\$ 1,379,772
c. Senior customers.	\$ 109,877	\$ 161,474	\$ 338,616	\$ 683,266	\$ 647,428	\$ 453,456	\$ 363,125	\$ 357,889	\$ 363,565

**Question:**

1. Please provide **customer count and dollar amount** data for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

	Oct-25	Nov-25	Dec-25
a. All residential customers;	24	126	272
b. Low-income customers; and	14	76	204
c. Senior customers.	10	50	68

5. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	2,372	2,116	1,801
b. Low-income customers; and	1,300	1,170	1,044
c. Senior customers.	1,010	881	695

6. Please provide end-of-month **Alternative Shutoff Protection Plan enrollment counts** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	20,359	18,285	15,684
b. Low-income customers; and	12,642	11,424	9,952
c. Senior customers.	7,029	6,166	5,001


7. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **gas-only customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	551	427	792
b. Low-income customers; and	152	108	173
c. Senior customers.	42	22	36
a. All residential customers;	\$ 127,906	\$ 87,829	\$ 139,703
b. Low-income customers; and	\$ 52,623	\$ 26,883	\$ 50,736
c. Senior customers.	\$ 17,869	\$ 7,740	\$ 9,231

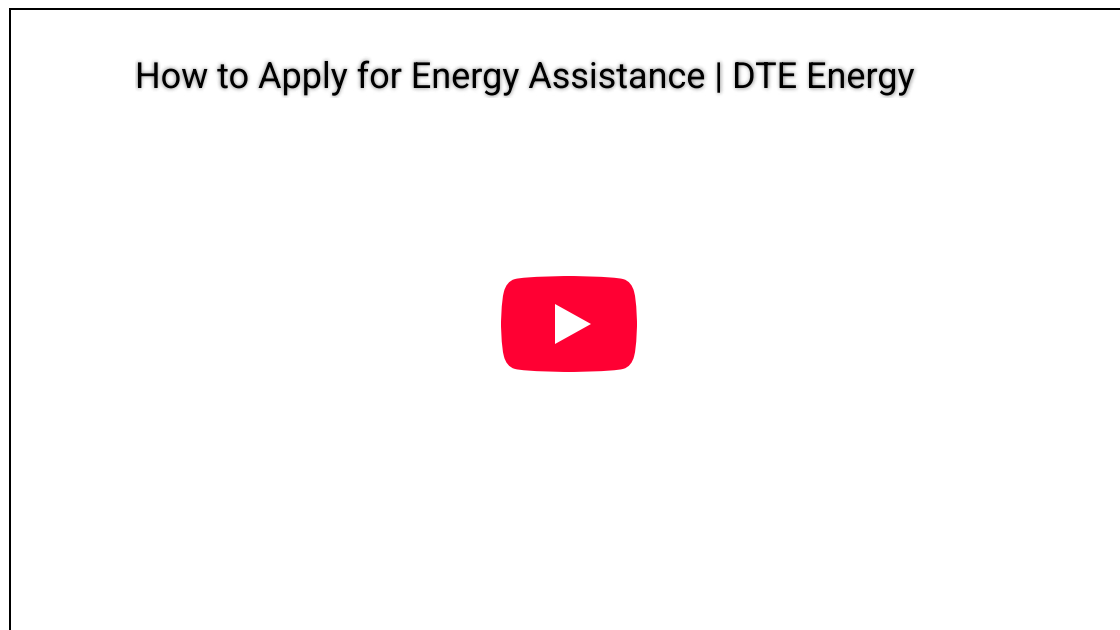
8. Please provide the number of **Residential Payment Plan arrangements issued and total dollar amount enrolled in a plan** for each category of **combination gas and electric customers** for each month between **January 2022 and December 2025, inclusive:**

a. All residential customers;	3,841	2,576	3,361
b. Low-income customers; and	1,245	819	1,071
c. Senior customers.	337	182	235
a. All residential customers;	\$ 1,810,409	\$ 1,101,870	\$ 1,417,914
b. Low-income customers; and	\$ 850,851	\$ 525,831	\$ 651,005
c. Senior customers.	\$ 201,367	\$ 101,488	\$ 95,749



# General Assistance

If you are behind on your energy bill, please contact us at [\(800\) 477-4747](tel:8004774747) to avoid service disconnection. We offer several  **payment assistance programs** to help customers pay their energy bills. We will work with you to find a payment plan to best suit your budget and energy needs.

To qualify for any DTE assistance program, we must verify the income of everyone in your household. View the video below to find out which documents and information you will need to provide when applying for energy assistance programs.



For other human services, please call [211](tel:211) or reach out to several **community partners** for specific assistance in your area. If you receive State Emergency Relief, you may be eligible for additional assistance. Apply for all types financial aid **online**.

-  **Winter Protection Plan**
-  **Medical Emergency and Critical Care**

## Medical Emergency

If you or a member of your household has a medical emergency confirmed by a physician or public health official, you can apply for interruption of service protection for up to 21 days. You must provide a signed and completed  Medical Certification Form confirming service disconnection will aggravate an existing medical condition.

## Critical Care

If you or a member of your household requires home medical equipment or a life-support system, you must provide a signed and completed  Medical Certification Form from a physician or medical facility identifying the medical equipment or life-support system certifying an interruption of service is immediately life-threatening. Critical Care re-certification is required on an annual basis.

## Submitting the Form


The Medical Certification form is available in multiple languages. The fields in the form should be completed in English to avoid delays in processing your application.

[Active Military Protection](#)

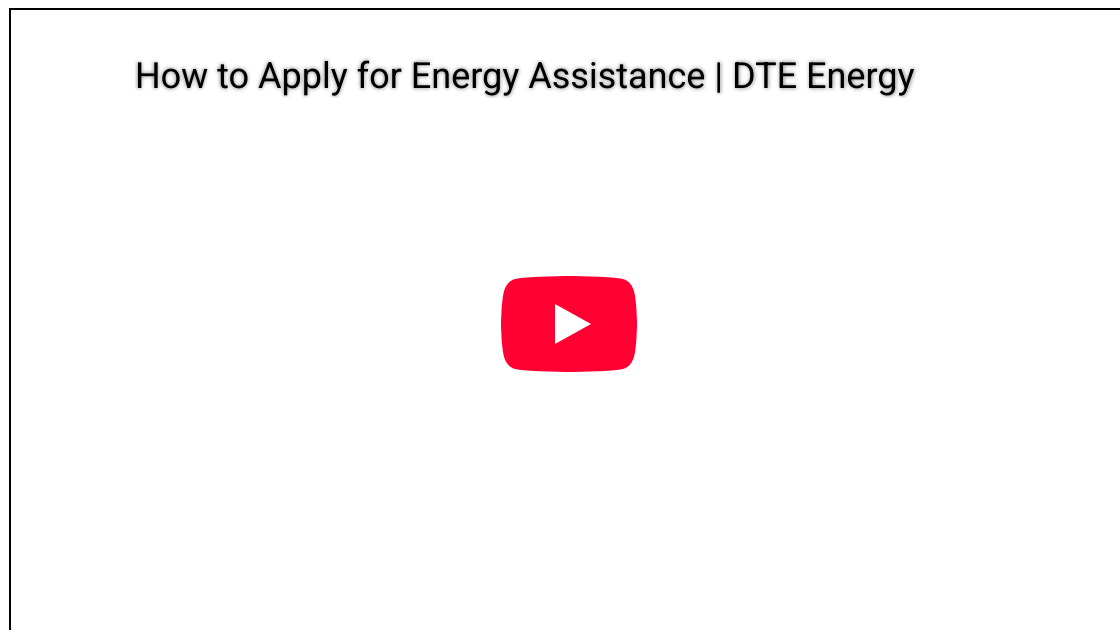
[Affordable Housing](#)

[GreenPath Financial Wellness](#)




# General Assistance

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-  **Winter Protection Plan**
-  **Medical Emergency and Critical Care**
-  **Active Military Protection**

If you or your spouse is the utility company customer of record and either of you are called to full-time active military service during a national or state emergency or war, you may apply for shutoff protection for up to 90 days. You may also reapply for extensions of this protection.

You will still be required to pay for services used while in this program. You can set up a

 **Affordable Housing**

 **GreenPath Financial Wellness**

Michigan Public Service Commission  
 DTE Gas Company  
 Shutoff Exemptions

Case: U-21973  
 Requestor: FLODG-5  
 Witness: J. E. Sparks  
 Question FLODG-5.26  
 Page: 1 of 1

### FLODG-5.26 - Shutoff Protections - DTE Gas

Data Period: January 2023 - December 2025

Medical exemption numbering reflects full customer history back to system go-live (April 2017)

Month	(a) Medical Emergency 1st Exemption	(b) Medical Emergency 2nd Exemption	(c) Medical Emergency 3rd Exemption	(d) Critical Care	(e) Military Duty
2023-01	25	4	9	21	0
2023-02	21	9	5	8	0
2023-03	33	12	3	27	0
2023-04	36	10	6	19	0
2023-05	50	15	6	26	1
2023-06	56	23	6	26	0
2023-07	58	24	10	35	0
2023-08	55	27	13	24	0
2023-09	33	22	10	22	0
2023-10	27	9	6	19	0
2023-11	13	4	2	8	0
2023-12	10	2	2	20	0
2024-01	35	11	6	12	0
2024-02	26	11	2	17	0
2024-03	18	9	4	13	0
2024-04	33	12	13	24	0
2024-05	46	21	9	22	0
2024-06	33	14	8	29	0
2024-07	69	21	16	50	0
2024-08	96	23	8	49	0
2024-09	99	45	17	36	1
2024-10	51	30	5	19	0
2024-11	22	15	10	25	0
2024-12	26	10	7	21	1
2025-01	28	9	11	18	0
2025-02	34	8	6	16	1
2025-03	29	9	8	15	1
2025-04	56	9	8	21	0
2025-05	76	22	9	23	0
2025-06	82	25	9	29	0
2025-07	94	40	13	36	0
2025-08	102	31	13	44	0
2025-09	73	48	13	37	2
2025-10	49	17	16	31	0
2025-11	25	16	10	16	1
2025-12	21	14	8	15	0
<b>Total</b>	<b>1,640</b>	<b>631</b>	<b>307</b>	<b>873</b>	<b>8</b>

- [General Assistance](#)
- [Low-Income Programs](#)
- [Low-Income Self-Sufficiency Plan](#)
- [Payment Agreement](#)
- [Customer Resource Fairs](#)
- [Energy Assistance Agencies](#)
- [Help Others](#)
- [Shutoff Protection Plan](#)

## Shutoff Protection Plan

It can be difficult managing your monthly energy bills. We want to help get you back on track by enrolling you in our Shutoff Protection Plan.

This plan gives you the option to pay your past-due balance in smaller increments all while avoiding the cost and inconvenience of service interruption.

### How it Works

This plan is designed to combine your past-due balance and future energy charges in one monthly payment while protecting you from service disconnection.

At the time of enrollment, your past-due balance and average energy usage calculation are spread equally over the 12-month duration of the plan.

We will re-calculate your energy usage every three months and adjust for fluctuations. If your average energy usage is 5% higher or lower than our original calculation, we will adjust your monthly plan amount. This recalculation is purposeful to prevent you from having another past-due balance at the end of the program.

### Eligibility

Our Shutoff Protection Plan is available for income-qualified customers and senior citizens throughout the year. Enrollment requires income verification and an initial down payment. The amount of the down payment will affect the monthly payment amount. Making a larger down payment will result in a lower monthly payment amount.

#### Requirements

Customers seeking to enroll in our Shutoff Protection Plan must fall at or below 200% of the **Federal Poverty Level** and will need to provide proof of income by submitting personal identification and income verifying documentation.

**Documents are required for the DTE account holder and all household members.**

##### 1. Photo identification

Please provide one of these documents for each adult member of the household (18 years or older). Household members' identification **MUST** match the DTE account address. A valid, color copy must be submitted.

- Michigan driver's license
- Michigan state ID
- City-issued ID
- Passport (applies to account holder only)

##### 2. Proof of Dependents

- For Dependents 17 years old or younger, please provide a birth certificate.
- If a dependent does not have a birth certificate, please provide us with the DTE Account Holder's most recent Tax Form 1040 (page 1 and 2) with all household members listed.

##### 3. Proof of income

Please provide the applicable documents for each adult household member.

- Two most recent paystubs dated within the past 60 days
- Social Security and/or Supplemental Security Income (SSI) statement for the current year
- Unemployment compensation benefit statement
- If self-employed, accounting and business records showing income (a 1099 tax statement is acceptable)
- Most recently filed Tax Form W-2 (1040), pages 1 and 2, with dependents and income listed. Only valid for submission until June 1 of the year it was filed.
- Pension statement for current year
- For unreported wages or if employment just started, a letter from the employer on company letterhead dated within the last 30 days. Please include the hourly rate or monthly gross amount and the number of hours worked per week, including the employer's signature.

## Shutoff Protection Plan | DTE Energy

- Michigan Department of Health and Human Services Benefit Letter that includes cash benefits. All pages required for Cash Assistance, Food Assistance and/or Medicaid Award Letters.
- State of Michigan Energy Draft or Letter for the current year from any energy provider. Applies to Account Holder only.
- Veterans Award Benefit Letter

**The following documents will NOT be accepted:**

- Bank statements
- Bridge Cards
- Concealed Pistol License (CPL)
- Explanation of Benefit Letter
- Housing and Urban Development (HUD) documents
- Lease documents
- Medicare/Medicaid cards
- Pandemic Electronic Benefit Transfer (P-EBT) for students
- Woman, Infant, Child (WIC) documents
- W-2 form or 1040 form for prior tax years
- Black and white copies of identification documents (only color copies are accepted)
- Passports (for household members only)
- Any documents that appear to be altered
- Freedom to Work Benefit Letter

**How to Enroll**

Please submit your proof of income and personal identification to us via our [Document Submission Portal](#). Please allow 48 hours after submitting documentation for a Customer Service team member to respond.

## State Emergency Relief (SER)

Income-qualified customers may be eligible for energy assistance. Prior to enrolling you in our Shutoff Protection Plan, we recommend you seek State Emergency Relief (SER) to help reduce your arrears so your monthly plan amount will be more affordable.

Customers already enrolled in our Shutoff Protection Plan may be eligible for State Emergency Relief. Please contact [MI Bridges](#) to find out if you are eligible.

[Shutoff Protection Plan FAQ](#)

Michigan Public Service Commission  
 DTE Gas Company  
 SPP Payment Amounts

Case: U-21973  
 Requestor: FLODG  
 Witness: J. E. Sparks  
 Question FLODG-5.32a  
 Page: 1 of 1

		Residential Gas Contract Accounts	Average Monthly Payment Amount	Average Monthly Installment Plan Amount (Goes towards Past Due Balance)	Proportion of IP Amount	Average Budget Bill Amount
All Gas	2024 SPP	44318	\$ 300	\$ 82	27%	\$ 219
	2025 SPP	53412	\$ 311	\$ 86	28%	\$ 225
Gas Only	2024 SPP	4691	\$ 140	\$ 44	32%	\$ 95
	2025 SPP	6379	\$ 145	\$ 47	32%	\$ 98
Combo	2024 SPP	39627	\$ 319	\$ 86	27%	\$ 233
	2025 SPP	47033	\$ 334	\$ 92	27%	\$ 242

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.3

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** Have DTE Gas and DTE Electric conducted any shared planning processes to optimize the cost-effectiveness of investments in distribution infrastructure between DTE Gas and DTE Electric? If yes, please describe those shared planning processes.

**Answer:** No, DTE Gas does not have a shared planning process for overall investment planning.

**Attachment:** None

**Co-Respondent(s):** K. M. Fedele

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.4

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** Have DTE Gas and Consumers Energy conducted any shared planning processes to optimize the cost-effectiveness of investments in distribution infrastructure between DTE Gas and Consumers Energy? If yes, please describe those shared planning processes.

**Answer:** No, DTE Gas has not completed described planning processes.

**Attachment:** None

**Co-Respondent(s):** K. M. Fedele

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.7

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** Other than information disclosed above, have DTE Gas and DTE Electric had any communication regarding their individual distribution investment planning processes? If the answer is yes, please describe the format of those communications.

**Answer:** To the best of my knowledge, DTE Gas has not had communication with DTE Electric on individual distribution investment planning processes.

**Attachment:** None

**Co-Respondent(s):** K. M. Fedele

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.8

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** Other than information disclosed above, have DTE Gas and Consumers Energy had any communication regarding their individual distribution investment planning processes? If the answer is yes, please describe the format of those communications.

**Answer:** To the best of my knowledge, DTE Gas has not had discussions with Consumers Energy on individual distribution investment planning processes.

**Attachment:** None

**Co-Respondent(s):** K. M. Fedele

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.5

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** Have DTE Gas and DTE Electric conducted any shared planning processes to analyze the combined customer impact of investments in distribution infrastructure between DTE Gas and DTE Electric? If yes, please describe those shared planning processes.

**Answer:** No, DTE Gas has not completed described planning processes.

**Attachment:** None

**Co-Respondent(s):** K. M. Fedele

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.6

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** Have DTE Gas and Consumers Energy conducted any shared planning processes to analyze the combined customer impact of investments in distribution infrastructure between DTE Gas and Consumers Energy? If yes, please describe those shared planning processes.

**Answer:** No, DTE Gas has not completed described planning processes.

**Attachment:** None

**Co-Respondent(s):** K. M. Fedele

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.9

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** To what extent is DTE Gas communicating with DTE Electric about models and/or forecasts for future energy demand?

**Answer:** To the best of my knowledge, DTE Gas has not communicated with DTE Electric on models or forecasts for future energy demand.

**Attachment:** None

**MPSC Case No:** U-21973

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**Requester:** FLO

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**Question No.:** FLODG-1.10

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**Respondent:** H. J. Decker

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**Page:** 1 of 1

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**Question:** To what extent is DTE Gas communicating with Consumers Energy about models and/or forecasts for future energy demand?

**Answer:** To the best of my knowledge, DTE Gas has not communicated with Consumers Energy on models or forecasts for future energy demand.

**Attachment:** None



## ABOUT AGA

The American Gas Association (AGA) represents more than 200 energy companies that provide natural gas service to 189 million Americans.

## Who We Are

The American Gas Association, founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States.

There are more than 79 million residential, commercial and industrial natural gas customers in the U.S., of which 94 percent — more than 74 million customers — receive their gas from AGA members. Today, natural gas meets more than one-third of the United States' energy needs.

[Review AGA's Corporate Governance here.](#)

**READ THE 2025 YEAR END REPORT**

## Careers at AGA

We want your energy!

It's an exciting time to have a career in the natural gas industry, and AGA plays a crucial role in advocating for and supporting our natural gas utility members. Explore our current openings and join AGA in contributing to our nation's energy and



## More Than **200** Members Nationwide

AGA members support the safe, reliable, affordable and sustainable delivery of natural gas to millions of Americans.

**Become an AGA Member** →

**AGA Member Awards** →

## **Our Leadership**

# **Advocating for Safety & Growth For The Industry**

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#### **Officers**

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# Mission & Vision



## Our Mission

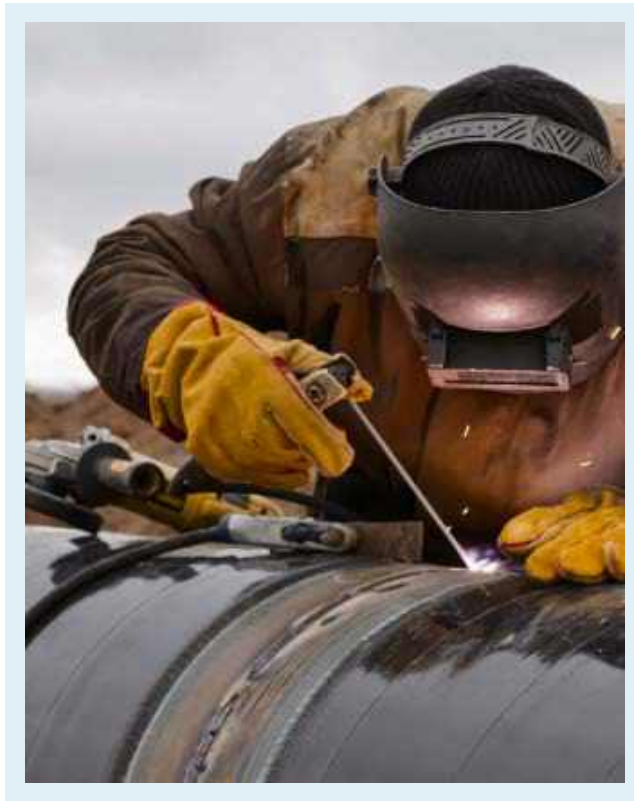
The American Gas Association (AGA) develops and advocates for informed, innovative, and durable policy that fulfills our nation's energy needs, environmental aspirations and economic potential. Additionally, the AGA provides state-of-the-art solutions for AGA members to safely and securely deliver reliable and affordable natural gas and advanced fuels to homes and businesses across the nation.



## Our Vision

Provide America with essential life-sustaining energy.

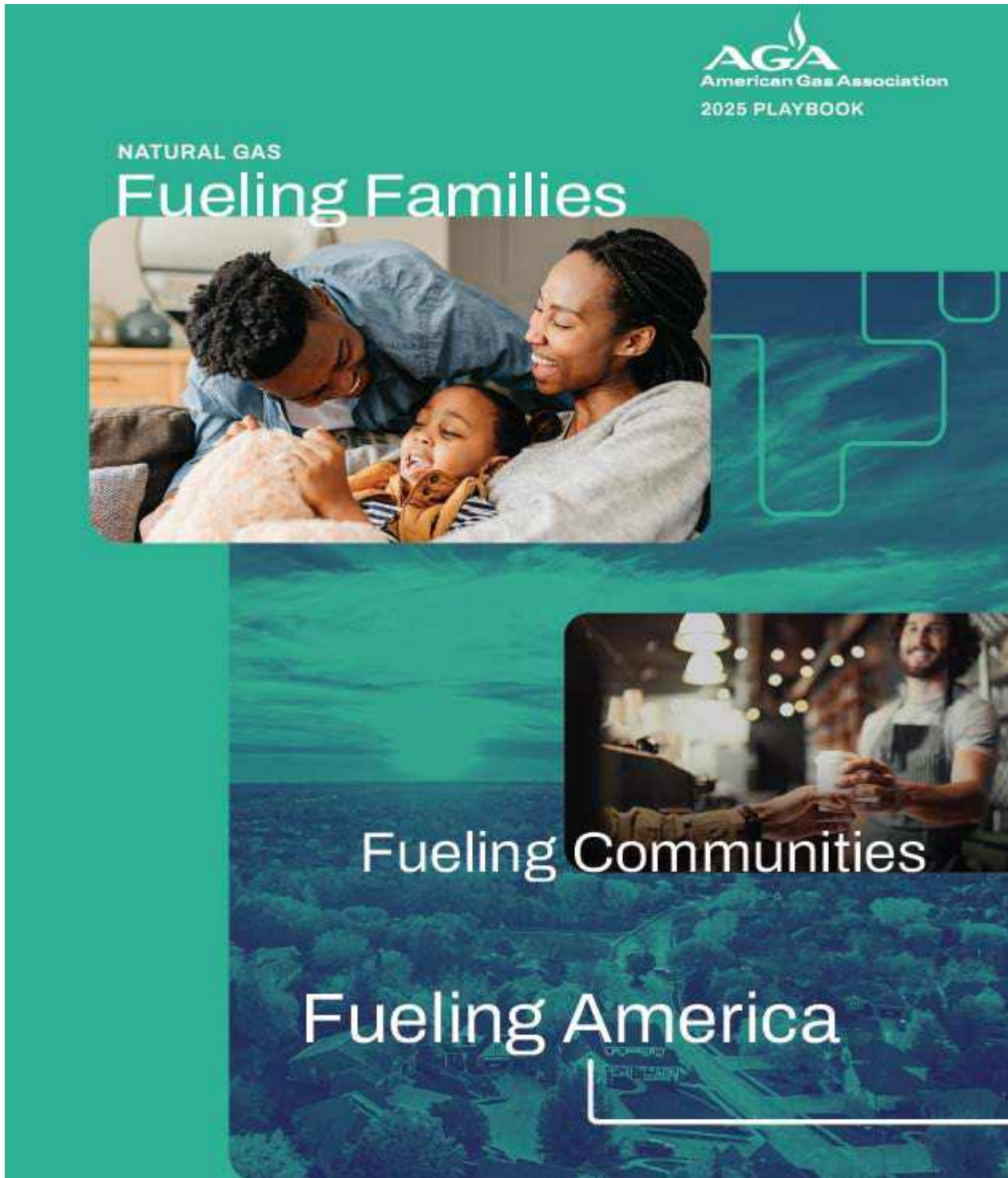




**Natural gas companies reliably deliver for their customers even in the most challenging circumstances due to thorough preparation and a dependable and resilient delivery system. I am proud to be a part of this industry which helps ensure Americans have the energy when they need it most.**

— KAREN HARBERT, AGA President and CEO

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**REPORTS**

# AGA uses millions of dollars from utility customers to promote a fossil fuel agenda



By Energy and Policy Institute  
February 17, 2022



## AGA's narrow definition of lobbying

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## AGA's expense categories

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### Expense Category Descriptions

The [American Gas Association](#) (AGA) is the trade association for more than 200 companies that deliver fossil gas throughout the United States. AGA's [mission](#) is to ensure the continuation of gas delivery to homes and businesses for the members it represents. According to the latest publicly available tax documents, AGA's revenue in 2019 and 2020 was \$36 million and \$30.2 million. An overwhelming majority of this revenue comes from dues paid by individual member companies, including gas utilities that are in turn recovering these fees from their millions of residential, commercial and industrial customers.



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The trade association exerts influence by [advocating](#) for the gas industry with federal government officials, state utility regulators, investors, building code officials, and environmental regulators. Often the priorities of AGA and the companies it represents run contrary to the interest of its members' captive ratepayers who are unknowingly footing the bill for AGA's membership fees via their own utility bills.

For instance, AGA is helping its member utilities undermine environmental opposition to fossil fuel infrastructure development, which is now more costly than competing technologies in many areas of the country. The trade association has created "branding and advertising campaigns" with the goal of "reaching key influencers and decision-makers in the federal arena, and in local areas as needed..." AGA also actively works with "reporters and media outlets to position the association and industry positively in the media." Furthermore, AGA recently ran ad campaigns that hired YouTube and Instagram "influencers" to promote gas to a general audience of potentially 1.3 million viewers likely to improve public perceptions of cooking with gas after years of research has shown that pollutants released by gas stoves, furnaces, and water heaters have negative health effects.

These examples and many other AGA activities are not in the interest of ratepayers.

### **AGA's narrow definition of lobbying**

AGA annually informs its member companies the portion of the dues that are allocable to lobbying, which is not typically included in revenue requests utilities file in rate case applications.

Year	Disclosed Lobbying Allocation
2017	6.4%
2018	3.1%
2019	3.5%
2020	6.2%
2021	3.8%
2022	5.1%
Average	4.70%

Between 2017 and 2022, AGA disclosed an average of 4.7% of their membership dues as allocable to lobbying. AGA relies on the narrowest possible definition of lobbying from the Internal Revenue Service (IRS). Assuming that AGA correctly identified all lobbying activities for the purposes, it does not cover the full scope of political work that the trade association engages in. In fact, in a filing in a Federal Energy Regulatory Commission

(FERC) docket specifically about trade association dues, AGA itself [explained](#), "While lobbying is a form of advocacy, not all advocacy is lobbying..." It is because of the narrow legal definition of lobbying that more two dozen environmental, climate, clean energy, and consumer advocates [filed comments](#) to FERC in support of accounting changes for the utility industry that would make it more difficult for utilities to force their customers to pay for their memberships in trade associations that exist to advocate for the utilities' political agenda.

Consumer advocates and other rate case intervenors, including [staff](#) at the Public Utilities Commission of Nevada, have explained that a more appropriate and comprehensive definition of lobbying is found in the Uniform System of Accounts' ("USofA") definition for Account 426.4, which specifically applies to regulated utilities. By choosing the less comprehensive IRS lobbying definition, AGA and its member utilities are effectively undercounting the percentage of lobbying and political spending that would otherwise be prohibited from ratepayer recovery under USofA's definition.

### AGA's expense categories

Many of AGA's activities are not in the interest of ratepayers. Internal AGA budget documents detail categories of activities undertaken by AGA that are not in the public interest and should not be recovered from ratepayers.

Expense Category (click for AGA descriptions)	2020*	2019	2018**	2017	Average: 2017-20
<a href="#">Operations and Engineering</a>	15.95%	22.32%	18.38%	18.24%	18.72%
<a href="#">Governmental Affairs and Public Policy</a>	14.36%	11.86%	10.78%	10.28%	11.82%
<a href="#">Energy Markets, Analysis, and Standards</a>	13.06%	10.75%	12.86%	12.78%	12.36%
<a href="#">Communications</a>	8.98%	9.11%	13.06%	18.51%	12.41%
<a href="#">Corporate Affairs and International</a>	11.12%	13.85%	12.95%	11.76%	12.42%

General Counsel and Federal Regulatory Affairs	8.18%	7.50%	7.59%	7.77%	7.76%
Industry Finance and Administrative Programs	3.16%	3.50%	3.30%	3.22%	3.30%
Political Action Committee		0.51%	0.49%	0.55%	0.52%
General Administration	25.18%	20.61%	20.58%	16.91%	20.82%
	*Forecast expenses from 11/23/20		**World Gas Conference expenses removed from calculation		

Internal AGA budgetary records from 2017 through 2020, including several official audits, reveal spending levels far exceeding the allocable lobbying percentages disclosed annually by AGA. **For example, between 2017 and 2020 AGA spent an average of 11.8% of its budget on an expense category described as “Government Affairs and Public Policy” compared to 4.8% on IRS defined lobbying over the same period.** AGA describes the work of the Government Affairs and Public Policy as “formulating and implementing AGA’s legislative strategies to accomplish the advocacy priorities biennially identified by the membership and approved by the AGA Board of Directors.”

Eight other expense categories created by AGA also highlight expenses that likely lack few, if any, ratepayer benefit. Despite generic category names like “Communications” and “Corporate Affairs,” internal AGA descriptions reveal millions in annual spending that falls outside the IRS definition of lobbying, but would fall under the USofA’s definition and therefore be prohibited from ratepayer recovery.

### Expense Category Descriptions

[Documents from AGA’s October 2019 Finance Committee Meeting](#) provide expense category descriptions and examples of each category’s work product. Below we provide highlights and excerpts from each expense category.

**Operations and Engineering:** “[T]his section works to successfully advocate the positions of natural gas utilities in response to proposed legislation and regulations by DOT, EPA, DHS, and DOE as well as directives from the Administration.”

**Specific Efforts:** “We anticipate continued significant advocacy and membership education efforts, which will entail travel to National Association of Pipeline Safety Representative meetings, National Association of Regulatory Utility Commissioners conferences, regional gas association events, government workshops, the Pipeline Safety Trust conference, etc. Technical analysis will be performed and publications will be developed to support our advocacy and education efforts.”

**Governmental Affairs and Public Policy:** “The Governmental Affairs and Public Policy (GAPP) Group performs the functions of formulating and implementing AGA’s legislative strategies to accomplish the advocacy priorities biennially identified by the membership and approved by the AGA Board of Directors.”

#### **Specific Efforts:**

- “[E]ducate the Executive branch of government, Members of Congress, Congressional staff, legislators and regulators and their staff, opinion leaders, and the media regarding the environmental and economic benefits of the increased direct use of natural gas.”
- “[P]romote each of AGA’s advocacy priorities among state policymakers including, but not limited to, governors, attorneys general, state legislators, state energy officials, and public utility commissioners.”
- “State Affairs continues to work with state legislative organizations such as the National Conference of State Legislatures (NCSL), Council of State Governments (CSG), American Legislative Exchange Council (ALEC), Legislative Energy Horizon Institute (LEHI), and GOPAC on education and outreach opportunities.”
- “GAPP staff has had an increasing role in engaging with municipal bans on natural gas in new buildings and we see this role continuing and expanding in 2020.”

#### **Energy Markets, Analysis, and Standards:**

- “**Energy Markets** provides insight and analysis on emerging government policies and actions that have the potential of impacting natural gas distribution companies and their customers. Staff in this department are tasked with building relationships with key stakeholder groups, federal agencies and policy influencers to enable AGA

and its members to be part of energy policy discussions which contributes to AGA's policy development process.

- **"Energy Analysis** provides analytical and management support to key areas of focus, including natural gas market fundamentals, local gas utility operations, and financial performance, general industry data, regulatory influences, critical gas supply/demand developments, winter heating season planning, energy efficiency, greenhouse gas emissions, and other environmental issues. This budget includes funding for the analysis and dissemination of industry information and data, with a focus on studies that provide member companies with information to benchmark their commercial and operational performance, as well as their regulatory obligations.
- **"Codes & Standards** is the association's resource that often flags issues and rule-makings that could impact natural gas LDC's, then helps to draft comments and replies to government and regulatory entities as notices of proposed rulemakings are published. The primary goal of Codes & Standards is to retain the option of placing a natural gas appliance in homes and businesses.

### **Specific Efforts:**

- "The 2020 budget for Energy Markets includes funding for external resources utilized to help evaluate trends that shape the expectations of energy consumers, engaging key stakeholders and policymakers and the development of studies and joint initiatives that support advancing the industry's advocacy priorities relating to the role of natural gas in a sustainable energy future."
- "The budget [for Energy Markets] also includes funding for planning and executing meetings of the Natural Gas Direct-Use Technology Development Workshop and the Sustainable Growth Committee."
- "AGA's Codes & Standards group is actively engaged in domestic and international codes development and retains a place in the international community on questions of gas quality and the progress of liquefied natural gas issues."

**Communications:** "The AGA Communications department supports the advocacy goals of the Association and its members through communicating key messages and data with key audiences, emphasizing the role of natural gas as the clean and reliable foundation fuel for America's economy, energy and national security, and as a clean, reliable choice for consumers. We work to educate and influence targeted media outlets and key influencers about natural gas as a vital and sustainable energy source."

### **Specific Efforts:**

- "The department works across the organization to track federal and state issues, and we work with reporters and media outlets to position the association and industry positively in the media."
- "[T]he Communications department leads the branding and advertising campaigns targeted at key audiences in Washington, DC, with the goal of reaching key influencers and decision-makers in the federal arena, and in local areas as needed, to build industry awareness that will help when AGA member companies are working with these policymakers on local issues."

**Corporate Affairs and International:** "Corporate Affairs budget includes funding to provide opportunities for interaction between AGA member companies and all segments of the financial community. The focus of this initiative is to promote interest in the investment opportunities in the industry."

**Specific efforts:**

- "This section includes funding for member outreach, NARUC financial outreach, and activities of the meeting services department."
- "Funding for support of the Chair, the Board of Directors, and the Leadership Council is also included in the Corporate Affairs budget."

**Description:** "International Activities budget includes continued funding for AGA's engagement with international members and the International Gas Union (IGU) now that we are in the official role of past president and still serve as the U.S. representative for the IGU."

**General Counsel and Federal Regulatory Affairs:** The Office of General Counsel's (OGC) budget includes: "funding for activities helping to increase safety and protect the natural gas industry from adverse federal regulations; costs associated with amicus curiae and other briefs filed by AGA related to LDC industry-wide issues in the U.S. Supreme Court and federal appellate courts; legal compliance programs; and other legal matters and activities at the direction of the AGA Board, AGA Legal Committee, the General Counsel and the CEO."

**Specific Efforts:**

- “[F]unding for the FERC Regulatory Committee supporting member advocacy priorities before FERC and the CFTC, advocacy efforts before DOE and FTC regarding minimum efficiency standards and labels associated with natural gas appliances, advocacy efforts before the North American Energy Standards Board in developing business practice standards, and collaborative efforts with the Natural Gas Council and other associations.”
- “[F]unding covers continued negotiations and monitoring of pending challenges to regulations under the Clean Air Act, and regulations mandating greenhouse gas reporting for natural gas transmission, storage, LNG facilities and distribution. This budget would also include possible representation from outside counsel through a multi-industry coalition to support streamlined nationwide wetlands permitting for natural gas infrastructure projects.”
- “The program also includes funding for technical environmental engineering consultants to assist with advocacy on natural gas emissions issues, the EPA greenhouse gas reporting rules, EPA’s Greenhouse Gas Emissions Inventory, and EPA’s plans to revise the PCB rules. In addition, the program includes funding for projects to collect methane emissions data for natural gas distribution equipment.”
- “The 2020 budget increase of \$110,000 is primarily due to an anticipated increase of \$152,000 in using outside legal services. Use of outside counsel may increase as AGA and members determine how and when to best respond to increasing federal, state and municipal challenges to infrastructure development and the use of natural gas.”

**Industry Finance and Administrative Programs:** “This grouping includes funding for a wide range of member services in such areas as industry accounting, taxation, internal audit, risk management, human resources, compensation, labor relations, customer activities, and information technology programs. A number of these programs, including several committees, are performed jointly with EEI. Through the Accounting Advisory Council, this section also supports advocacy efforts on behalf of the membership with the FASB, IASB, IRS, NARUC, SEC, PCAOB and the Treasury Department.”

**General Administration:** “The General & Administration budget includes funding for the activities of the President’s Office, Finance and Administration (F&A), and Human Resources (HR).”

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**PUBLISHED FEBRUARY 17, 2022**

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# Cities tried to cut natural gas from new homes. The GOP and gas lobby preemptively quashed their effort

By Ella Nilsen, CNN  
7 min read · Published 11:29 AM EST, Thu February 17, 2022



Climate activists from the #GasFreeNYC coalition and elected officials rallied before the city council passed an ordinance that ended the use of natural gas in new buildings, Brittainy Newman/AP

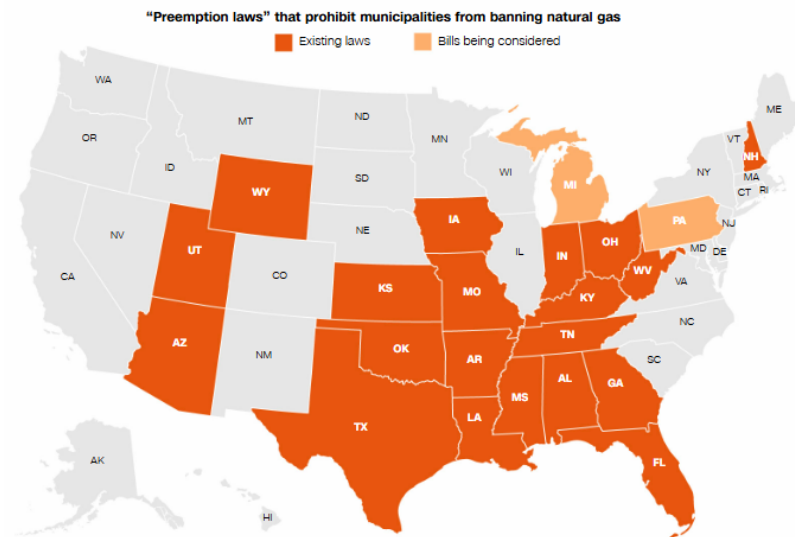
(CNN) — In 2019, the city council in Berkeley, California, held a stunning vote: it would ban natural gas hookups in all new building construction to reduce greenhouse gas emissions and the city's impact on the climate crisis.

No gas furnaces in new homes, the council said. No gas stoves or ovens.

Other progressive cities followed suit with similar bans. San Francisco passed its own ban in 2020. New York City became the largest US city to pass a version in 2021, with New York Gov. Kathy Hochul vowing to pass a statewide law that would ban natural gas by 2027.

But other municipalities looking to take similar action are running into a brick wall. Twenty states with GOP-controlled legislatures have passed so-called "preemption laws" that prohibit cities from banning natural gas.

It's bad news for municipal climate action: Taking natural gas out of the equation and switching to electric appliances is one of the most effective ways cities can tackle the climate crisis and lower their emissions, multiple experts told CNN.



Source: CNN analysis of data from the National Resources Defense Council  
Graphic: John Keefe, CNN

"Natural gas bans are kind of low-hanging fruit," said Georgetown Law professor Sheila Foster, an environmental law expert. Foster said cities can make a significant impact by moving away from natural gas and toward electricity, especially considering what little federal action there's been on climate, and the mixed record of states.

The climate stakes are high. Residential and commercial emissions made up 13% of total US emissions in 2019, according to the Environmental Protection Agency. About 80% of those emissions came from the combustion of natural gas, the fuel that heats homes or powers a restaurant's cooking stoves, and emits planet-warming gases like methane and carbon dioxide in the process.

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But clean alternatives exist: Electric heat pumps can heat homes more sustainably than gas furnaces; induction ranges can replace gas stoves. And experts stress that to fully transition to renewable energy sources like solar and wind, homes and businesses need to operate on electricity – not gas.

President Joe Biden’s Build Back Better bill, which fizzled in the Senate after objections from Sen. Joe Manchin of West Virginia, contained billions in tax incentives to help consumers switch to cleaner ways of heating their homes. But people who own and rent homes in big, multi-unit buildings depend on developers and city planners to make the switch.

Advocates worry these preemptive bills could stall impactful climate action at a critical time.

“We’re afraid that’s going to have a chilling effect on cities that want to take action,” said Alejandra Mejia Cunningham, a building decarbonization advocate at the Natural Resources Defense Council. “Many cities and towns have small staffs, they don’t want to be taken to court, being seen as going outside state law.”

## A ‘new trend’

In November, a GOP bill to block natural gas bans in new buildings was passed in North Carolina but ultimately failed to make it into law when Democratic Gov. Roy Cooper vetoed it. Two more similar bills are being considered in Pennsylvania and Michigan this year.

“To me that’s what’s interesting about this new trend, it seems like states are trying to eliminate the possibility before cities try to catch onto this,” Sarah Fox, an associate law professor at Northern Illinois University School of Law, told CNN. “The natural gas industry realized this was in the water a while ago and has been very aggressive in getting this passed.”

The American Gas Association, the natural gas industry’s powerful trade group, told CNN it lobbies at the federal level but isn’t directly lobbying in any state.

But many of the association’s members, including gas utilities, have gotten involved at the state level, according to an analysis by independent climate think tank InfluenceMap for CNN.

InfluenceMap “found high levels of engagement on preemption bills within the power sector, including its key trade associations.” The American Gas Association and its members “appears to have played an early role encouraging these bills,” according to the analysis.

There’s also evidence that suggests the AGA is running the playbook for its members to lobby state lawmakers for the preemptive laws.



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In audio of a private AGA call obtained by watchdog group Energy and Policy Institute and shared with CNN, the AGA’s Vice President of Advocacy and Outreach Sue Forrester discussed the group’s strategy modeling “preemptive legislation” in certain states.

“We launched in partnership with Southwest [Gas]. Well, they launched it, but we were helping on the back end: Energy choice language in Arizona that was passed and signed by the governor at the beginning of the year,” Forrester said in the recording.

When asked about Forrester’s comments, an American Gas Association spokesperson reiterated the trade association doesn’t get involved in state-level legislation.

“Sue’s comments make it sound that way, and that’s unfortunate, but the American Gas Association is not set up with lobbyists on the ground in the states,” the spokesperson said, adding the “we” Forrester was referring to is “we as the industry and all who have an interest in gas.”

CEO of the American Gas Association Karen Harbert told CNN in a statement that “AGA is educating policymakers at every level about the supportive policy frameworks necessary for natural gas and our infrastructure to help achieve our nation’s ambitious environmental goals.”

While the AGA and other industry groups are messaging that they are advocating for more fuel choices for consumers, climate advocates say the preemption laws are having the opposite effect.

“I’d say the industry has put decades of effort and resources into fine tuning their messaging to the American public – and they do it well,” NRDC’s Mejia Cunningham told CNN.



Some cities in the US want to ban natural gas hookups in new homes and buildings, to reduce their fossil fuel emissions and meet their climate targets. Natural gas is primarily made of methane, an extremely potent planet-warming gas. Rosmarie Wirz/Moment RF/Getty Images

Most cities and towns in the US that are pursuing natural gas reforms are not shooting for stringent bans like what Berkeley passed – many are trying to find a middle ground that incorporate and encourage electrification and heat pumps as an alternative to gas.

Broadly written state laws can discourage that transition, Mejia Cunningham said.

"We don't expect Berkeley to be the right model for most of America," she said. "That doesn't mean we should completely slash out a whole bucket of policies that could work for communities across America."

### An attempt to electrify gets quashed

In 2019, officials in Flagstaff, Arizona, were working on their city's plan to get to net-zero emissions by 2030. Building emissions were an obvious target; the built environment is the largest contributor to Flagstaff's greenhouse gas emissions, Nicole Antonopoulos, Flagstaff's sustainability director, told CNN.

Flagstaff's plan didn't include an explicit ban on natural gas; instead, it said the city would promote "aggressive building electrification," thereby decreasing reliance on fossil fuels.

That was still enough to get the attention of members of the Republican-controlled Arizona state legislature, which in 2020 passed a bill preventing cities and towns from passing their own natural gas bans.



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"It was a huge setback, in a nutshell," Antonopoulos told CNN. "The state preemption threw a huge kink in our efforts towards carbon neutrality. This isn't the first time the state has preempted things that have made us go back to the proverbial drawing table and figure out how we get creative and innovative in a space where we don't have funding."

Arizona's 2020 law – the first natural gas preemption law of its kind – was a harbinger of what was to come. Since then, 19 other states have adopted them. These laws have largely been concentrated in red states in the Rust Belt and Southwest, a cluster of southwestern states including Utah and Wyoming, and New Hampshire.

And currently, there's not much favoring cities' ability to sue states. The 1907 US Supreme Court case *Hunter v. Pittsburgh* favored states' authority to craft laws for their cities, and gave cities little legal recourse to sue.

"It's not a very coherent line of case law, but that's the official stance," said Fox, who added she'd be very surprised if the current conservative Supreme Court majority allowed a challenge to the current law from progressive cities.

"There's a lot of legal uncertainty," Foster said, adding that there's not much current litigation to speak of around natural gas bans and preemption laws.

In Flagstaff, Antonopoulos said her office is trying to find ways around Arizona's law. It's meant a lot of active outreach to local developers building in Flagstaff, encouraging them to build all-electric housing developments. It's also reaching out to residents whose gas appliances are at the end of their lifecycles to consider buying electric.

"Our challenge here is we have a 2030 deadline" to get to net-zero, Antonopoulos told CNN. "The urgency is so great so sometimes we don't have that luxury in time."

*CORRECTION: This story has been updated to correct that Mejia Cunningham was speaking on behalf of the Natural Resources Defense Council.*

CNN's Rene Marsh contributed to this report.

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## Berkeley plans to repeal first US gas ban

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03/26/2024 07:01 AM EDT

The California city's decision could have a ripple effect for similar restrictions on fossil fuels.



The city of Berkeley, California, has agreed to repeal its gas ban. David McNew/Getty Images

The city of Berkeley, California, has agreed to repeal the nation's first-ever gas ban, raising questions about the fate of similar restrictions on fossil fuels across the West.

Berkeley unveiled the decision about its 2019 restrictions on gas hookups for new buildings as part of a legal agreement Friday ending a lawsuit brought by the California Restaurant Association. Berkeley said it will stop enforcing the policy while it goes through the legal process of repealing the ban.

The California Restaurant Association touted the settlement, saying it should set a precedent for dozens of cities and counties in California to rescind their own gas bans modeled after Berkeley's.

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“Climate change must be addressed, but piecemeal policies at the local level like bans on natural gas piping in new buildings or all-electric ordinances, which are preempted by federal energy laws, are not the answer,” said Jot Condie, president and CEO of the CRA, in a statement. “Cities must comply with the law. Rather, the ban was passed with a disregard for available cooking technologies and ultimately for small businesses in the community that rely on gas-burning equipment for their cuisines.”

But advocates for decarbonizing buildings say the court decision and Berkeley's repeal only marks the end of a chapter — and may even open the door for more durable strategies to phase out fossil fuels.

“It's a huge bummer, but ultimately, it's not going to stall the transition,” said Sage Welch, principal and founder of the climate and energy communications firm Sunstone Strategy. “We're in a really different place this spring than we were last spring, from a policy level across the board on a lot of fronts. There's a lot of momentum to continue the transition of buildings.”

In the years after Berkeley announced its policy — which required new residential and commercial buildings to rely only on electrical lines and infrastructure with a few exceptions — dozens of other California cities adopted their own versions of the so-called gas bans, including Los Angeles, San Francisco and Sacramento.

A decision last April in the U.S. Court of Appeals for the 9th Circuit, however, thrust those policies into uncertainty. A three-judge panel on the circuit ruled that Berkeley's ban violated the federal Energy Policy and Conservation Act (EPCA), which gives the U.S. Department of Energy the ability to set energy efficiency standards and bars states or localities from setting their own rules.

The 9th Circuit in January also [declined to rehear the case](https://subscriber.politicopro.com/article/eenews/2024/01/03/9th-circuit-keeps-strike-down-of-landmark-gas-ban-in-place-ee-00133457) (<https://subscriber.politicopro.com/article/eenews/2024/01/03/9th-circuit-keeps-strike-down-of-landmark-gas-ban-in-place-ee-00133457>), striking down Berkeley's ordinance.

In the aftermath of the April decision, California cities including Santa Cruz and Encinitas rescinded their bans, while others like Sacramento elected not to enforce them.

But the court ruling also prompted a renewed look at how local areas could strengthen their building codes to encourage electrification without falling into the same legal challenge as Berkeley. Under California law, municipalities can set their own building codes that are stricter than state regulations.

San Jose, San Luis Obispo and Santa Cruz, for example, adopted “fuel-neutral” ordinances in recent years that require higher energy performance regardless of power source. The ordinances do not ban natural gas for heating or cooking, but facilitate adoption of all-electric appliances because those technologies make it easier for buildings to meet the performance requirements.

The policy is similar to a standard [adopted in Seattle](https://subscriber.politicopro.com/article/eenews/2023/12/19/seattle-sets-first-of-a-kind-policy-to-slash-building-emissions-00132011) (<https://subscriber.politicopro.com/article/eenews/2023/12/19/seattle-sets-first-of-a-kind-policy-to-slash-building-emissions-00132011>) last year, which requires large buildings to achieve net-zero emissions by 2050 but does not ban any fuel source.

California's own building codes also favor electrification, including by eliminating natural gas line extension subsidies for all new mixed-fuel buildings. The drop in prices of electric appliances and rooftop solar — helped by federal tax credits — has also helped encourage electrification of buildings.

Matt Vespa, an attorney with Earthjustice, said the updated codes show how cities have used the year since the Berkeley gas ban was first struck down to evaluate their options.

“The Berkeley approach was sort of elegant and simple. They said they found gas to be harmful and hazardous both for human health and for the climate, so we are prohibiting new connections,” said Vespa. “But there are other approaches that can get to the same outcome.”

## A tangled legal history

After the April decision, the 9th U.S. Circuit Court of Appeals issued an amended opinion this January rejecting the Berkeley ordinance for violating federal law.

“By completely prohibiting the installation of natural gas piping within newly constructed buildings, the City of Berkeley has waded into a domain preempted by Congress,” said Judge Patrick Butamay writing the opinion for the court, initially filed in April 2023.

EPCA “expressly preempts State and local regulations concerning the energy use of many natural gas appliances, including those used in household and restaurant kitchens,” added Butamay, a Trump pick.

Judge Diarmuid O'Scannlain and Judge M. Miller Baker both wrote concurring opinions in the case. Baker, who was appointed to the U.S. Court of International Trade by then-President Donald Trump, was sitting by designation on the 9th Circuit.

The decision reversed a 2021 ruling by a lower bench where the judge said she did not see how EPCA “expressly preempts” the Berkeley ordinance, as the city's plan did not directly regulate either energy use or efficiency.

In a dissenting opinion in the January ruling, Judge Michelle Friedland said the court should have reconsidered siding with the California Restaurant Association.

“The panel opinion needlessly blocks Berkeley's effort to combat climate change, along with the equivalent laws passed by other local governments,” said Friedland, an Obama pick.

“Climate change is one of the most pressing problems facing society today, and we should not stifle local government attempts at solutions based on a clear misinterpretation of an inapplicable statute,” she added.

The 9th Circuit sent the case back to the U.S. District Court for the Northern District of California, a move that led to Friday’s agreement.

The agreement has yet to be approved by Judge Yvonne Gonzales Rogers, an Obama pick.

## A gas precedent?

It remains to be seen how much of a ripple effect the court decisions will have, although advocates on both sides say policies are tilting in their favor.

Karen Harbert, president and CEO of the American Gas Association, said the settlement “has implications far beyond the City of Berkeley” and marked a step toward “helping our nation continue on a path to achieving our energy and environmental goals.”

“Natural gas has been one of the primary drivers for achieving environmental progress, and any ban on this foundation fuel will saddle consumers with significant costs for little environmental gain,” said Harbert in a statement Monday. AGA filed an amicus brief in the case in support of the California Restaurant Association.

The April decision appeared to strike down gas bans across the 9th Circuit, which covers nine Western states. Republican lawmakers in more than 20 states have also passed laws that would preempt local jurisdictions from enacting gas bans, a response to Berkeley’s initial ordinance.

Daniel Carpenter-Gold, a staff attorney with the Public Health Law Center at the Mitchell Hamline School of Law in St. Paul, Minnesota, said a case in New York City challenging that city’s ban on certain gas fuel appliances could be a key legal test after the Berkeley settlement.

In that case, construction trade groups led by the Association of Contracting Plumbers sued the city over its 2021 law that sets emission limits on appliances. The group said that amounted to a ban on gas and oil appliances and cited the 9th Circuit decision to argue there was a violation of EPCA.

New York state has a similar law that is also the subject of a lawsuit filed by building and gas groups.

A motion to intervene in the New York City case from two local environmental groups cites Friedland’s dissent in favor of Berkeley, saying the EPCA does not justify tossing the fuel ban.

“We don’t know how the judge will handle that,” Carpenter-Gold said. “It’s an indication that the dissent may be a limitation on how influential that 9th Circuit decision can be.”

As the legal cases continue through the courts, left-leaning cities are still likely to keep pushing on ways to phase out fossil fuels to meet climate goals, said Sunstone Strategy’s Welch.

“This case was intended to scare local governments off, but what we’ve seen across the board is that folks won’t be deterred,” said Welch. “This is one of the highest emission areas that local governments can control. Maybe they’ll have to do it differently, but they’ll still do it.”

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# Coloradans for Energy Access



## Member Company Engagement Options

- **Create an interdepartmental team to build a strategic plan**
- **Build internal analytics including service territory facts**
- **Ensure government and community affairs teams are monitoring local municipalities actions**
- **Educate and engage your staff, retirees, customers, and supply chain on the benefits of natural gas**
- **Build a local and/or state consumer coalition to serve as the spokesperson for the natural gas industry**
- **Engage local stakeholders and influencers on the benefits of natural gas**

Coloradans for Energy Access

## Coloradans for Energy Access

"Coloradans for Energy Access" is a gas industry front group that launched in 2022 to oppose electrification efforts in Colorado.

### Membership includes gas utilities and trade associations

The "Coloradans for Energy Access" website [lists](#) the group's members, which include Xcel Energy and Black Hills Energy, investor-owned utilities that sell electricity and gas in Colorado, along with Atmos Energy and Summit Utilities, which sell gas in Colorado and other states. Members also include the American Public Gas Association, the national trade association for publicly-owned gas utilities like Colorado Springs Utilities, and the Colorado Propane Gas Association, as well as labor unions, the Colorado Farm Bureau, and the Colorado Association of Realtors.

### Board of directors is entirely composed of gas utility representatives

The "Coloradans for Energy Access" [tax form](#) for 2021 [shows](#) that the group's board of directors is entirely composed of representatives of gas utilities. The four listed board members are: Joni Zich, [senior director](#) of gas strategy at Xcel Energy; Christina Rosendahl, [lobbyist](#) at Black Hills Energy; Mitch Pebley, [director of operations](#) at Colorado Summit Utilities; and Jennifer Altieri, then [vice president of public affairs](#) at Atmos Energy, who was listed as the board president.

A spokesperson for Xcel Energy [would not confirm](#) to Colorado Public Radio whether the company funded Coloradans for Energy Access, but a political contributions [report](#) published by Xcel Energy in February 2023 stated: "In 2022, Xcel contributed \$80,000 to Coloradans for Energy Access."

The Coloradans for Access tax form also [shows](#) that the group received all of its funding from five contributors, who were not named.

The [American Gas Association](#) has contributed a total of \$100,000 to Coloradans for Energy Access, according to the trade association's [2021](#) and [2022](#) IRS Form 990s.

### Group launched with false claims

"Coloradans for Energy Access" launched in January 2022 with a [website](#) and [op-ed](#) in the Colorado Sun, both of which included [false claims](#) that heat pumps cost more to operate than gas furnaces. The Colorado Sun removed the false claim from the op-ed and added an editor's note to correct the record; the false claim was also [removed](#) from the "Coloradans for Energy Access" website, without acknowledgement.

## Led by FTI Consulting and Atmos Energy

[Huffington Post](#) and [Colorado Public Radio](#) reported on an audio [recording](#) of an internal meeting of "Coloradans for Energy Access" which shows that the group is led by the largest gas-only utility in the country, Texas-based Atmos Energy, and [FTI Consulting](#), which has a long history of [running front groups for the oil and gas industry](#).

In the recording, an Atmos Energy executive and a director at FTI Consulting discuss how they launched the group with a website and op-ed, offer to ghostwrite similar op-eds in the future, and explain how the group will focus on opposing a Colorado Public Utilities Commission proposal to end ratepayer subsidies for the expansion of the gas system and electrification efforts in Denver.

Xcel Energy and Atmos Energy have repeatedly declined to explain their role in the gas industry group to journalists, though Colorado Public Radio [reported](#) that each utility said they are not spending ratepayer money on the group:

*Colorado state Sen. Chris Hansen, a Denver Democrat, said Colorado's current utility rules make it tough to verify how the trade association could be using ratepayer money. The concern has pushed him to explore ways to assist the Federal Energy Regulatory Commission, which has an inquiry into whether to clarify federal rules around trade association dues. Colorado's Public Utilities Commission uses accounting rules set by the FERC.*

*"It is absolutely crucial zero ratepayer dollars are being used for political advocacy," Hansen said. "We need to make sure this is the case in Colorado and at the federal level."*

*All of the utility members of Coloradans for Energy Access — Atmos Energy, Xcel Energy, Black Hills and Summit Energy — said no customer dollars are going toward the group's efforts.*

## American Gas Association playbook

“Coloradans for Energy Access” is consistent with the guidance to investor-owned gas utilities from their trade association, the American Gas Association, to use other voices to push the gas utility industry’s message.

An American Gas Association presentation advised gas utilities to “Build a local and/or state consumer coalition to serve as the spokesperson for the natural gas industry”



The slide features a dark blue vertical bar on the left with the text "With AGA Support" and the AGA logo. The main content area is white with a title and a bulleted list of six engagement options.

### Member Company Engagement Options


- **Create an interdepartmental team to build a strategic plan**
- **Build internal analytics including service territory facts**
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- **Educate and engage your staff, retirees, customers, and supply chain on the benefits of natural gas**
- **Build a local and/or state consumer coalition to serve as the spokesperson for the natural gas industry**
- **Engage local stakeholders and influencers on the benefits of natural gas**


In a [recording](#) of that meeting, an American Gas Association executive explained the need for that strategy:

“Speaking of Coalitions, we have convened the national group of end users and consumers to help carry our message. Again, we keep hearing from our message testing the industry talking about industry isn’t effective. We really need our end users like AARP, the restaurants, home builders, laborers, and agricultural – farmers specifically,


are the more effective voices for us out there. So we talked twice monthly. With our coalition partners, we have used them to testify in cases in front of the legislators as well as at city councils. We are also increasing our outreach to include local mayors, legislators, African American groups, and all kinds of different folks so that we have more friends on our side willing to talk about how great natural gas is."

CNN reported on the American Gas Association's presentation:



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GOP-controlled legislatures across the country are enacting laws that would block local natural gas bans to reduce methane and carbon dioxide emissions


[@Rene\\_MarshCNN](#) reports


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## Natural Gas Industry Brings A Fake Grassroots Group To Eastern Pipeline Fights

The industry-funded Your Energy is trying to mobilize a movement to counter pipeline protesters.



By Alexander C. Kaufman

Jun 12, 2017, 05:45 AM EDT | Updated Jun 19, 2017



*Nancy Beall protests the proposed Atlantic Coast Pipeline in the Shenandoah Valley town of Waynesboro, Virginia, in November 2014.*

Sean Cockerham/MCT via Getty Images

Amid intensifying fights over new natural gas pipelines in Virginia, New Jersey and New England, the gas industry is ramping up its defense with a new front group meant to appeal to East Coasters, who have mostly avoided the fights over oil and gas development that have rocked Western states.

Your Energy launched quietly in Virginia last month, ahead of a November gubernatorial election that is shaping up to be a [“referendum on pipelines,”](#) as one local newspaper put it.

The group, which is funded by the American Gas Association, debuted as a [co-sponsor of a conference](#) at the Virginia Chamber of Commerce on May 24. Jim Cheng, who served as secretary of commerce under then-Virginia Gov. Bob McDonnell (R) and is not on the group’s payroll, spoke on its behalf.

“I am here today assisting a new organization, called Your Energy Virginia, that was created to raise the energy IQ of Virginians about the many benefits of natural gas,” said Cheng, according to audio obtained by HuffPost. “And to try to follow on these radical and uninformed elements within your communities that try to intimidate or shut down pro-energy supporters.”

As the name implies, Your Energy paints itself as a grassroots organization, something akin to the Sierra Club or the American Civil Liberties Union, but for folks who support natural gas. Its Virginia chapter’s website features promotional materials about the economic and environmental benefits of

natural gas and prompts visitors to join by submitting their names, email addresses and ZIP codes. The only indication that Your Energy is a public relations campaign paid for by a major industry association appears on the [privacy policy](#) page.



Now you know – the path to a stronger Virginia starts with natural gas. Don't you think your friends and family should know too?

Natural gas keeps our homes warm, powers local businesses and makes our air cleaner without the economic, environmental and reliability issues that oil brings. Virginia's economy will struggle to get back on track without it. Despite putting on a good face, it's your community and your future that opponents are trying to hold back. Don't let them. Push back on their extreme campaign by telling your friends the truth today.

### Join Us

*Your Energy Virginia calls on visitors to push back against its opponents' "extreme campaign by telling your friends the truth."*

Your Energy Virginia

The website is much clearer about Your Energy's adversaries: The group vows to stand up to "anti-energy opponents, often out-of-state extremists," that are "spreading misinformation and fear to stop natural gas and energy infrastructure."

This is just the Virginia arm of a national-level Your Energy America campaign that the American Gas Association is rolling out this year. There's an active website in Connecticut as well, and domain names have been registered in Ohio and New Jersey. Dave McCurdy, the American Gas Association president and chief executive, said his group plans to expand to more states, including on the West Coast, by the end of the year.

"The whole principle behind Your Energy is that we reject the false choice of an opposition movement that believes keeping natural resources in the ground is the only solution to climate change," McCurdy told HuffPost. "That's not just a false choice; it's a dangerous choice."

Gas companies have faced fierce opposition to new pipelines in places like Colorado, Utah and Oklahoma over the past decade. In 2014, the Western Energy Alliance [hosted a lobbyist](#) nicknamed "Dr. Evil" who encouraged the industry to wage "endless war" against environmentalists, smearing them as "radical," "extremist" and conspiracy-minded clods. In the last few years, those fights have moved eastward as companies move to build up pipeline infrastructure in such states as [Connecticut](#), [Maryland](#) and [New Jersey](#), with mixed results. Virginia, the nation's 12th-most populous state, has become a hotbed for pipeline disputes as companies seek to build two new conduits across the state.

The politics surrounding natural gas can get dicey. It is a fossil fuel, and the biggest industry players are the same corporations that produce oil, a fuel with a much higher emissions footprint. The drilling technique that made natural gas cheap and abundant in the U.S. — hydraulic fracturing, or fracking — involves blasting water laced with chemicals and sand deep underground to split bedrock and release gas. Traces of those chemicals have been found in groundwater, and fracking operations have been

linked to earthquakes in Oklahoma, Pennsylvania and Canada. Drilling sites regularly leak methane, a major component in natural gas and a powerful greenhouse gas that traps roughly **30 times more heat** in the atmosphere than carbon dioxide.



*Fred and Bonnie Powell's farmland lies along the proposed route of the Atlantic Coast Pipeline through Augusta County, Virginia. "We're not against pipelines, but the location for this is terrible," Fred said in 2014.*

Sean Cockerham/MCT via Getty Images

But burning natural gas releases much lower amounts of greenhouse gases than burning other fossil fuels. As utilities have replaced coal with natural gas, U.S. emissions have dropped by double digits. The natural gas industry is also a growing source of jobs, employing nearly 115,000 people in the U.S. last year at an average salary of **\$78,890**, according to the Bureau of Labor Statistics.

Activists in both parties pick and choose which benefits and drawbacks they highlight. Climate-hawk **Democrats** condemn the emission of planet-warming gases, while **Republicans** highlight its role in creating jobs and making the U.S. less dependent on foreign energy. President **Donald Trump's** aggressive push for fossil fuels may further stoke partisan divides in energy politics, pitting fossil fuels, particularly coal, against renewables like wind and solar. McCurdy, a former Democratic congressman from Oklahoma, said he wants to position the American Gas Association, a 99-year-old group that includes many of the country's biggest utilities, in the middle.

"We're the mainstream guys," he said. "That's the problem these days. These extreme kind of candidates and positions they take just inflame a small base to get publicity."

The rhetoric coming from Your Energy echoes a playbook that's already been used in the West. "What seems to be happening on the East Coast, and what happened in Colorado, is they said these people

that are complaining about air quality and pollution issues caused by the oil and gas companies are outsiders, they're radicals, and they're not like you," said Jesse Coleman, a researcher on fracking politics for Greenpeace USA.

"It's crucial for the companies behind these front groups to portray normal community activism as somehow abhorrent or portray it as something other than what it is," Coleman added. "You can't really win when your opposition just wants to keep their kids healthy, so you have to make them into some sort of bogeyman."

With Virginia heading into a gubernatorial primary on Tuesday, the battle there over two proposed natural gas pipelines has taken center stage. The Atlantic Coast Pipeline, owned by the powerful utility Dominion Energy, would stretch 600 miles from West Virginia, through Virginia, to North Carolina. The Mountain Valley Pipeline would carry gas 303 miles from northwest West Virginia to southern Virginia. Unlike the famously controversial Keystone XL and the Dakota Access pipelines, which convey tar sands and shale oil, the proposed pipelines across Virginia would carry compressed natural gas, which is less dense than air and usually dissipates into the atmosphere if the pipe springs a leak.

Nearly all of the state's Republican gubernatorial candidates support the conduits — except Corey Stewart, chairman of the Prince William County Board of Supervisors, who has [raised concerns](#) that pipeline builders could use eminent domain to "trample on people's property rights."

The debate has split the Democratic candidates. Lt. Gov. Ralph Northam has remained [steadfastly neutral](#) on the pipelines, insisting only that they be subject to environmental review. His progressive opponent, former Rep. Tom Perriello, is fiercely opposed to both pipelines and boasts of being the only candidate in the race to refuse donations from Dominion, by far the largest energy interest in the state. Gov. Terry McAuliffe (D), who is barred by state law from seeking re-election this year, [supports the pipelines](#).

*"You can't really win when your opposition just wants to keep their kids healthy, so you have to make them into some sort of bogeyman."*

*- Jesse Coleman, researcher at Greenpeace USA*

Dominion's grip on Virginia politics is its own issue. In February, state lawmakers [voted down](#) a bill that would have prohibited the utility giant, long considered a kingmaker in the state, from donating to public officials. [Roughly 60 candidates](#) in Virginia, most of them Democrats, have pledged to refuse money from Dominion anyway, signaling a seismic shift in political fundraising there.

The company has been a member of the American Gas Association since at least 2009, according to corporate disclosure forms. McCurdy declined to describe how big a role Dominion may be playing in Your Energy; a Dominion spokesman did not return a call requesting comment.

To Ernie Reed, a 66-year-old anti-pipeline activist in Nelson County, Virginia, the launch of Your Energy marks another front in a battle he's been fighting for years. In May 2014, Dominion sent him a letter asking to survey his property to make way for the Atlantic Coast Pipeline. If Your Energy wants to paint him as an extremist outsider, he wishes them luck.

"I've been paying taxes in Virginia since 1979," said Reed, the president of the conservation group Wild Virginia. "Any claim that the people opposing these pipelines are uninformed is as far off the mark as it could possibly be."

The former schoolteacher said the "unprecedented" amount of time and money that energy companies are spending to promote the benefits of pipelines to local residents serves only to show that they have the weaker case.

Stephanie Weber, the Virginia director for the Chesapeake Climate Action Network, said she's seen a shift in public opinion about pipelines in recent years amid the high-profile protests over the Keystone and Dakota Access pipelines.

"There will always be the faction of people who say, 'We need the energy, this creates jobs,' and there's no amount of research that will sway them," Weber told HuffPost. "But increasingly we have more and more — and I would say even a majority at this point — who really understand that the energy infrastructure is being basically thrust down our throats for the benefit of corporations."

As a Virginia resident for 16 years, she said she's no stranger to energy companies' bullying tactics against what she called "true Virginians" — people fighting to protect land that has been in their family for more than 100 years.

"They're seeing corporations say, 'This is mine, and mine for a profit,' and having land values along the pipeline plummet so folks who may even want to sell can't get their money's worth," Weber said. "This is a scare tactic that pits the corporation against the people, and it just is sad."

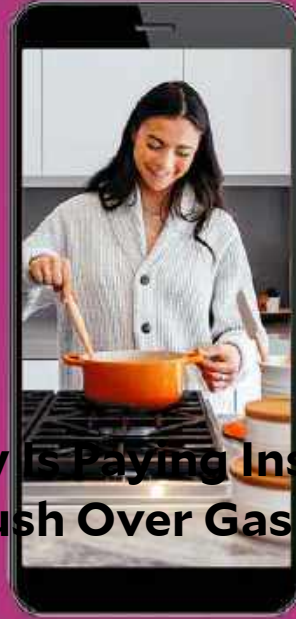
***CORRECTION:*** An earlier version of this story misstated the type of fuel carried by the Dakota Access and proposed Keystone XL pipelines as "tar sands oil." The Keystone XL would carry tar sands oil, but the Dakota Access pipeline carries shale oil from North Dakota's Bakken Formation.



Whitney Snyder Editor-in-Chief HuffPost

# Mother Jones

## ENVIRONMENT



## The Gas Industry Is Paying Instagram Influencers to Gush Over Gas Stoves

*Not pictured: toxic fumes.*

REBECCA LEBER    JUNE 17, 2020

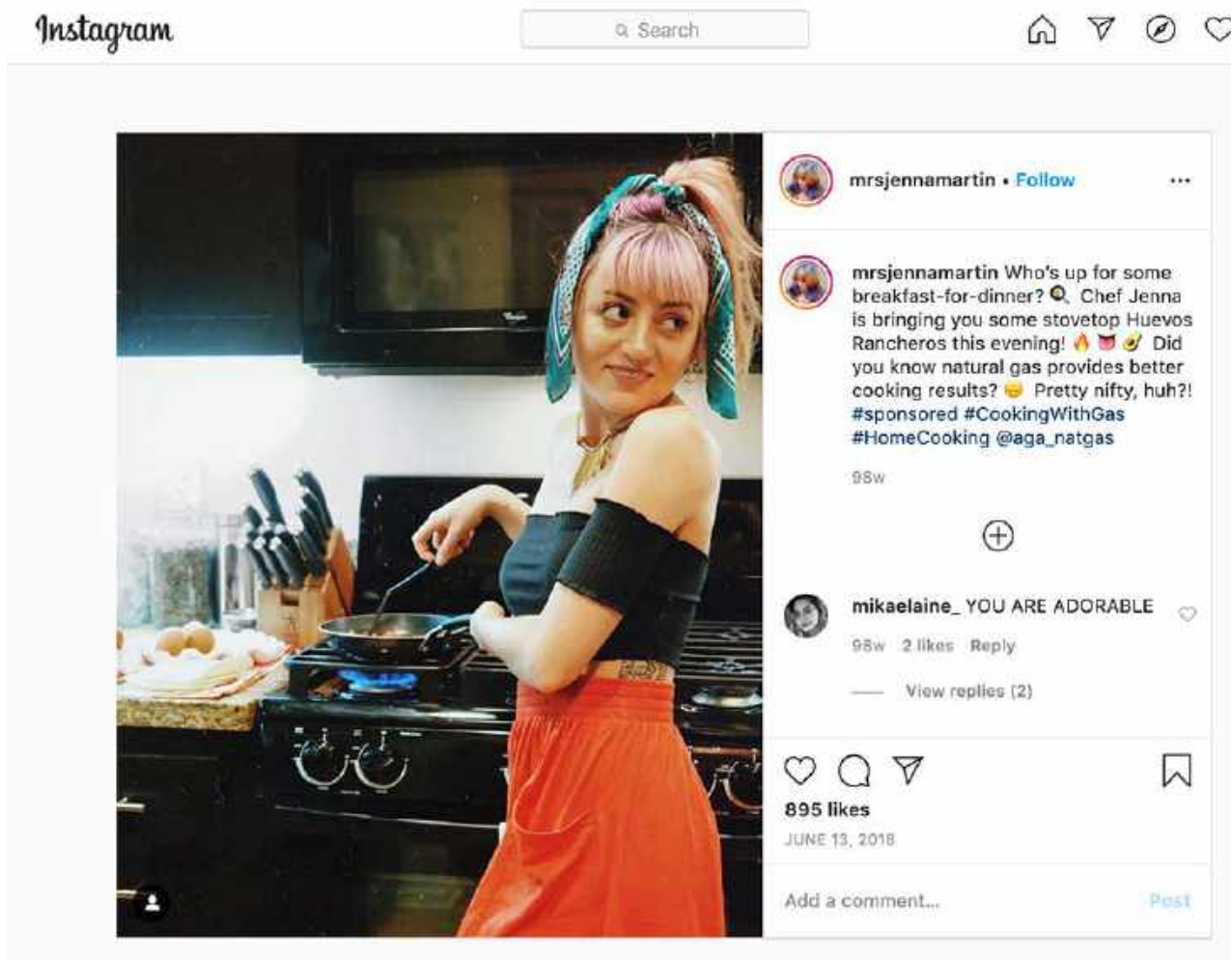
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Amber Kelley has a “super-cool way” to make fish tacos. “You’re going to start with the natural gas flame,” the teenage one-time Food Network Star Kids winner explained in a professionally produced video to her 6,700 Instagram followers, adding, “because the flames actually come up, you can heat and cook your tortilla.”

Kelley’s not the only Instagram influencer praising the flames of her stove. Jenna Martin, a 20-something with cool-girl rainbow hair and 15,800 followers, posted, “Who’s up for some breakfast-for-dinner? Chef Jenna is bringing you some stovetop Huevos Rancheros this evening! Did you know natural gas provides better cooking results? Pretty nifty, huh?!” The Instagram account @kokoshanne, an “adventurous mama” with 131,000 followers, wrote in a post about easy weeknight dinners that natural gas “helps cook food faster.”

“#cookingwithgas makes food taste better,” says Camille, an LA-based foodie who poses artfully with her spatula, to her 16,700 followers.



The original post from @MrsJennaMartin appears to have been deleted shortly after the story published. This is a screenshot.

The gas cooking Insta-trend is no accident. It's the result of a carefully orchestrated campaign dreamed up by marketers for representatives with the American Gas Association and American Public Gas Association, two trade groups that draw their funding from a mix of investor- and publicly owned utilities. Since at least 2018, social media and wellness personalities have been hired to post more than 100 posts extolling the virtues of their stoves in sponsored posts. Documents from the fossil fuel watchdog Climate Investigations Center show that another trade group, the American Public Gas Association, intends to spend another \$300,000 on its millennial-centric "Natural Gas Genius" campaign in 2020.



**foodiemeetsworld**  
Westlake Village, California

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Cooking up my family's favorite holiday breakfast, starting with all the veggies! 🔍

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What the polished posts don't mention is that those perfectly charred tacos and fast weeknight meals come at a steep price: Gas stoves expose tens of millions of people in the United States to levels of pollution so high that they would be considered illegal outdoors. Counting on the allure of Instagram stars to help fend off alternatives backed by environmentalists, the gas industry doesn't want you to realize how much its paid marketing has influenced public thinking that gas stoves are stylish, innocuous, and necessary home appliances. To the contrary, lifestyle bloggers are building their healthy, clean-living brands on one of the most dangerous home appliances on the market.

**Americans have a** lot of feelings about their stovetops, and the prevailing opinion is that electric can't hold a candle to gas ranges. Gas stoves, we're told, fire up faster, work smoothly with cast iron cookware, and allows better control.

As it turns out, the industry has been working on convincing us of these supposed benefits of gas stoves for a long time —Instagram campaigns are just the latest twist in a 90-year-old advertising campaign. In the 1930s, groups like the American Gas Association needed to stave off competition from wood and electric stoves. An enterprising executive at AGA came up with the slogan to promote the superior experience of its product that has lasted over a century later: "Now you're cooking with gas."

And the industry has long used pop culture to spread its message. In the 1940s, comedian Bob Hope incorporated the slogan into his routines. In 1956, it was actresses playing housewives selling gas-fired appliances in a 13-minute infomercial. In 1988, the phrase took an unfortunate turn in a rap by the National Fuel Gas Distributors, which featured lyrics like:

I cook with gas cause broiling's so clean  
The flame consumes the smoke and grease  
You know what I mean.

# RAPPIN' WITH GAS

"Rappin' with Gas" is an educational program developed to teach the efficient use of gas in the home, the proper and safe operation of the gas range, and the overall convenience and benefits of natural gas appliances.

Cookin' with gas,  
Cookin' with gas,  
We all cook better  
When we're cookin' with gas.

Gas is so hot,  
It's not on when it's off,  
It's the only way to cook  
That's what I was taught.

Now here's a fact  
You should have to know to pass,  
Nine out of ten chefs  
Only cook with gas.

Why is that you see?  
Can't I cook my way?  
The benefits we have to tell  
Will really make your day.

So listen class  
Cause we're gonna go fast,  
Here are all the reasons  
You should cook with gas.

I cook with gas cause I'm in control,  
The flame can be adjusted for the  
perfect shrimp creole.

The burner's not on when I think it's not  
I can simmer, brown or boil in the same  
metal pot.

Refrain

I cook with gas cause the cost is so much  
less  
Than 'lectricity, do you want to take a guess?  
It's three times less, in the east or west,  
So remember those figures when it's time to  
take a test.

I cook with gas cause broiling's so clean  
The flame consumes the smoke and grease,  
You know what I mean,  
And when I bake a pie to put on the sill  
My self cleaning oven takes care of any spill.

I cook with gas cause the stove top's cool  
When you use 'lectric ignition and  
natural gas fuel.  
In the summertime, it's especially fittin'  
So if you can't stand the heat, Come into  
my kitchen!

Refrain

Now that  
you've found out why  
Most chefs cook with gas,  
Here are some safety rules  
To remember after class.

Cause natural gas is fun  
And natural gas is clean,  
So cooking safe makes sense  
We're not just trying to be mean.

Safe cookin' begins with range location:  
Avoid main traffic paths and also isolation  
With no counter space nearby,  
And don't let the curtains fly  
Watch for open oven doors if you have a  
small fry.

Refrain

Another safe practice when using your range  
Is to judge very carefully the height  
of the flame.

The bottom of the pan is all it should cover  
Pan size should be right to prevent  
bollovers.

And no long flowing sleeves or long,  
loose hair  
Don't get too close. You'd better beware.  
The same goes for storing food or items  
made of plastic  
If they're too near the stove, they could  
melt like magic.

Refrain

Now if a fire should start and there's  
burning grease  
Never, never move the pan or throw water,  
Oh please!  
Simply turn off the burner and cover  
the pan  
Use a dry extinguisher or soda if you can.

Refrain

Now here's one final rule  
You should remember from school  
When you want to cook or bake  
Natural gas is the fuel!

Cookin' with gas...  
We're cookin' with gas...  
Cookin' with gas...  
We're cookin' with gas...

Cookin'...  
We're cookin'...  
Cookin'...  
We're cookin'...



**Influencers Reaching Target Audience**

**HISPANIC MILLENNIALS**  
Season: Winter

**DESIGN ENTHUSIASTS**  
Season: Spring

**PROMISING FAMILIES**  
Season: Summer

**YOUNG CITY SOLOS**  
Season: Fall

**Benefits to Leveraging an Influencer to Engage the Super Providers**

- Extend the reach of the Natural Gas Genius campaign to the influencer audiences
- Target audience sub-segments during key moments in time
- Generate tailored subject matter expert content
- Reach a qualified new audience
- Increase website traffic and SEO presence

Presentations from the PR firms Bellomy and Porter Novelli highlight the thinking behind the ongoing influencer campaign. The intention was never to have ultra-famous influencers on board, the slides show, because these mid-level accounts with a few thousand followers apiece are cheaper and can still reach the desired niche audiences. So with its \$300,000 budget from the American Public Gas Association, the PR firm Porter Novelli promises “snackable” content geared towards desirable millennial target audiences, “hispanic millennials”, “design enthusiasts”, “promising families”, and “young city solos.”

“You can’t help but cringe,” Rocky Mountain Institute’s report author Brady Seals says when she looks at the #cookingwithgas hashtag of gorgeous kitchens and massive gas stoves, because they clearly lack a ventilation system.



**Every time you** ignite a gas stove, you're filling your home with many of the same pollutants in exhaust from cars—carbon monoxide, nitrogen oxides, particulate matter, and formaldehyde, which are all associated with a range of chronic health problems like respiratory problems and cardiovascular disease.

The problem is worse the smaller the space; cramped apartments fill up more quickly with pollutants. And lower-income African American and Hispanic adults and children face the biggest toll as populations already facing higher rates of asthma exacerbated by more polluted outdoor air.

Two studies out in May added to that research with a closer look at one gas in particular: nitrogen oxide, a building block for smog, that is harmful even in short spurts and at lower levels. And in homes with gas stoves, the concentration of nitrogen dioxide is anywhere between 50 to 400 percent higher than homes with electric stoves. One report, a literature review from the policy think tank Rocky Mountain Institute, Mothers Out Front, Physicians for Social Responsibility, and the Sierra Club, found that children, with their growing lungs and smaller bodies, are especially vulnerable: A gas stove can put them at 42 percent greater risk of developing asthma symptoms, and 24 percent risk of lifelong asthma, in addition to impacting their brains and cardiovascular systems. A second study by UCLA and commissioned by Sierra Club found that if your gas stove and oven were both on for an hour, you'd have enough nitrogen dioxide build up inside your home that it would be considered illegal if you were outdoors.



The original post appears to have been deleted shortly after the story published. This is a screenshot.

Indoor air quality has long gotten short shrift because our homes are, of course, private property—there is no agency formally responsible for keeping our indoor environments clean. So while the United States has made progress on outdoor pollution, the indoors—where we spent about 90 percent of our days—can be up to 100 times more polluted than the outside due to emissions from gas stoves and ovens, according to the RMI study. Other gas-powered appliances like water heaters and gas furnaces face more federal regulation requiring ventilation, but stoves have mostly escaped oversight.

The influencer campaigns from the gas industry have ramped up as environmentalists succeeded in convincing 30 cities in California (Seattle and Bellingham in Washington state have considered it) to use electricity instead of gas in new building construction. Though the electrification fights are about bigger battles than cooking, the gas industry saw an opportunity to convince Americans that banning gas would make their food taste less delicious. It's working: For example, when Berkeley ordered new construction to go all-electric, the California Restaurant Association sued, noting the “uniquely negative impacts” on the culinary community.

As for the health effects of gas cooking, the industry assures consumers that it's easy to reduce pollution: To minimize the fumes, experts say, you should cook only on the back burners, use the fan, and open windows if you can. Yet the industry marketing campaigns do not mention these safety measures, nor do any of the sponsored Instagram posts.

The link to this photo or video may be broken, or the post may have been removed.

[Visit Instagram](#)

What's more, most stovetops aren't outfitted with the kind of range hoods that reach overhead to suck up the fumes to vent outside. Instead, most stoves come with a flimsy fan that does little more than recirculate the dirty air already in your home. While there's no national data on this, less than 35 percent of California residents use any kind of fan when they cook, and even less have the right kind of hood, according to the UCLA study. (APGA points out that the Consumer Product Safety Commission and Environmental Protection Agency have tested emissions from gas stoves and do not consider them hazardous enough to regulate. "Virtually all gas utilities have existing policies in place evaluating acceptable CO emissions levels from residential gas equipment," a spokesperson emailed.)

Environmentalists are calling for federal gas stove ventilation standards, but until that happens, there is an alternative that the gas industry doesn't want consumers to know about: As my colleague Tom Philpott has written, the electric induction range is a glass-top alternative that uses a magnetic field to heat up pans. Though relatively expensive, the

method is more precise, faster, and slightly more energy-efficient than gas rivals. Best of all, it doesn't fill your kitchen with fumes.

Despite the well-documented health risks, gas stoves are still the norm in American households, while just 1 percent have adopted induction—far below what Asian and European countries have adopted. Like the tobacco industry's misleading marketing campaigns, the gas companies have given the public false faith in these stovetops' safety in the face of a growing body of research that proves otherwise.

“There's just a black hole when it comes to indoor air,” Seals says. “It's a shift to think we have something unvented right in the space that we breathe.”

*This article has been updated to include a statement from APGA.*



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# Gas sector takes furnace efficiency fight to Supreme Court

Advocates say proven energy-saving technologies can meet the stricter efficiency rules. The gas industry says the rules ban non-condensing furnaces and other products.

Published Jan. 22, 2026



Robert Walton  
Senior Editor

*The U.S. Supreme Court building. Three gas trade groups on Jan. 20, 2026, asked the Supreme Court to review a decision upholding Biden-era energy efficiency rules they say ban non-condensing furnaces and other products. Getty Images*

Gas industry trade groups on Tuesday asked the U.S. Supreme Court to review an appeals court decision upholding Biden-era energy efficiency rules that they say ban the sale of non-condensing natural gas furnaces and other products.

The U.S. Department of Energy in 2023 and 2024 finalized stricter standards for consumer furnaces and commercial water heaters. But the tighter efficiency requirements would essentially block non-condensing versions of the products from the market, the gas groups say.

Traditional non-condensing water heaters and furnaces can reach efficiency rates of about 80%, while condensing appliances are typically 90% efficient or greater, according to DOE. Most of the

greater efficiency comes from their conversion of excess heat to vapor that's used for additional heating.

But non-condensing natural gas furnaces make up more than half of the U.S. market and cannot be replaced by other furnace types, the American Gas Association, American Public Gas Association and National Propane Gas Association said in a statement. "Their removal from the market would saddle families with costly renovations or eliminate gas as a home heating option all together," the groups said.

The groups previously challenged the new rules, arguing that they violated the Energy Policy and Conservation Act by resulting in the removal of a product type or a class of performance characteristics. The U.S. Court of Appeals for the D.C. Circuit sided with DOE, concluding that the way heat is vented does not qualify as a performance characteristic of an appliance.

In its Supreme Court petition, the gas groups said the appeals court decision "reflects not only legal error but also practical folly."

"These regulations eliminate non-condensing gas furnaces and commercial water heaters, which work with the chimneys and natural-draft venting already in millions of American homes and businesses," the groups said. "The only alternative is abandoning gas appliances and switching to electric ones."

This scenario "is why the law does not allow the government to use efficiency rulemakings to eliminate products that consumers need to be able to access," AGA President and CEO Karen Harbert said in a statement. The Supreme Court "must take up this case and protect the American people from this unlawful regulation that would increase costs ... and ban an entire product class of appliances."

Advocates for the stricter efficiency rules say furnace technology has advanced beyond existing standards, and the new rules can be met with proven energy-saving technologies.

The Supreme Court appeal is “a last-ditch push by gas utilities to keep the least efficient furnace types going into homes, locking families into higher bills,” said Andrew deLaski, executive director of the Appliance Standards Awareness Project.

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# Latest Study Misleading on Natural Gas Stoves

MAY 3, 2024

The American Gas Association released the following statement after publication of a new study in *Science Advances* which claims to estimate the number of childhood asthma cases and adult deaths due to natural gas use, but contained serious flaws in analysis:

“Despite the impressive names on this study, the data presented here clearly does not support any linkages between gas stoves and childhood asthma or adult mortality,” **said AGA President and CEO Karen Harbert.** “The two major cited studies used to underpin the Stanford analysis directly contradict the conclusions they have presented. In short, the interpretation of results by Kashtan *et al.* are misleading and unsupported.”

The new study by Kashtan *et al.* estimated the number of childhood asthma cases and adult deaths due to natural gas use based largely on two published meta-analyses. A meta-analysis is a statistical combination of results from multiple studies addressing a similar research question. The conclusions of this new Kashtan study rely on two major meta-analyses, neither of which support the study’s claims.

Kashtan *et al.* based their asthma analysis on a large 2024 meta-analysis by Puzzolo *et al.* published in *The Lancet* in February of this year, that focused on cooking or

heating with natural gas and several health conditions. Puzzolo et al. found no association between cooking and heating with natural gas (vs. electricity) and childhood asthma. See AGA's release on this study [here](#).

Additionally, Kashtan et al. based their mortality analysis on estimates of nitrogen dioxide (NO<sub>2</sub>) exposure from natural gas stove use and a 2018 meta-analysis by Atkinson et al. on long-term outdoor NO<sub>2</sub> concentrations and mortality. Atkinson et al. cautioned against concluding that outdoor NO<sub>2</sub> concentrations can increase the risk of dying because there were very small risk estimates, the study results were heterogeneous, and body mass index (a measure of body fat) and smoking – two key health confounders – were not always appropriately accounted for in underlying studies.

It is notable that the only meta-analysis that looked at indoor NO<sub>2</sub> and asthma did not find an association. Lin et al. And Puzzolo et al. found a lack of association with gas use and morbidity. Collectively, these studies do not support an association of gas use with mortality.

In contrast to these expressly stated results, Kashtan *et al.* asserted both studies confirmed “well-established epidemiological relationships.” Kashtan *et al.* used similar methods as a prior study by Gruenwald *et al.* to calculate what is known as a Population Attributable Fraction, or PAF, to estimate the percent of childhood asthma and adult deaths that could be attributed to cooking with natural gas. However, this extrapolation to the entire population is only meaningful if natural gas use can *cause* asthma or death, and the studies on which the calculation in Kashtan *et al.* are based do not support this assumption (and in fact contradict it), so it was inappropriate to even make such a calculation. Even setting that aside, the PAF for childhood asthma was not statistically significant, demonstrating that, contrary to the authors' interpretation, this study does not provide evidence that childhood asthma can be attributed to natural gas stoves.


**IN THE WORDS OF PUZZOLO ET AL (see AGA's recent release on this study here):**

“For asthma, no significant increase in risk for children and adults was found for use of gas compared with electricity... We confirmed that that risk of asthma from gas use was potentially exaggerated in studies with no or limited adjustment for confounders versus those with adjustment for at least one key confounder. In addition, our analysis found no significant increase in risk of wheeze (similar in manifestation to asthma) for gas compared with electricity.”

“This Article demonstrates a significantly lower risk for key health outcomes when switching from polluting solid fuels or kerosene to gaseous fuels for cooking or heating, suggesting cleaner fuels could contribute to reducing the global disease burden from exposure to household air pollution.”

**IN THE WORDS OF ATKINSON ET AL:** The substantial heterogeneity between studies serves as a red flag for suggesting causality: “Our study confirms the need for continued caution in respect of causality particularly since the revised meta-analyses suggest [risk estimates] close to one, with the possibility of further attenuation if meta-analyses are restricted to studies with individual measures of BMI and smoking. The substantial heterogeneity between study results also weakens the argument for causality. Unlike particles where unit mass concentrations might vary between locations in size, composition, and nature (primary/secondary), a unit mass concentration of NO<sub>2</sub> gas is the same everywhere. We therefore consider that as the evidence stands at present, the causal basis for estimating the burden of NO<sub>2</sub> on mortality and loss of life expectancy remains weak.”

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# Fueling Progress: Natural Gas Innovations Driving Race to Net-Zero

Earth Day brings together people from all walks of life, backgrounds and beliefs unified to help raise awareness on the important issues impacting our environment. One of the most pressing...



ENVIRONMENT

ENERGY EFFICIENCY

APR 22, 2024

Earth Day brings together people from all walks of life, backgrounds and beliefs unified to help raise awareness on the important issues impacting our environment. One of the most pressing of these issues is reducing emissions to fight climate change.

Natural gas plays an essential role in a net-zero emissions future. In fact, research indicates that incorporating natural gas, advanced gas technologies and infrastructure to achieve economy-wide net-zero emissions by 2050 is not just a choice but an essential part of getting there.

With more than 2.6 million miles of natural gas pipelines in the United States, the natural gas delivery system functions as the largest battery on the planet. This is important because energy demand isn't static throughout the year — the natural gas system delivers three times as much energy on the coldest day of the year as the electrical grid does on the hottest day. This means, an electrical grid with plenty of capacity for spring months might be totally inadequate for the depths of winter. The key attributes of the natural gas system are flexibility and energy storage, allowing the fuel to be stockpiled when not needed, and delivered on the days reliability matters most.

The natural gas industry has been pivotal in advancing a clean and sustainable energy future for our nation and helping customers and communities become more efficient. AGA members are investing billions in smart innovations that continue to drive emissions down, including \$4.3 million per day in energy efficiency programs, which has saved nearly 2 million metric tons of greenhouse gas each year.

These programs help customers install tighter-fitting windows and doors, upgrade insulation and purchase increasingly more efficient natural gas appliances. Thanks

to these advancements, natural gas utilities are serving a larger-than-ever customer base with less gas per household and 40-year lows in energy related carbon dioxide emissions. Customers can rest assured that they're both saving money and personally contributing to climate solutions – a win-win for the climate and your family's budget.

The dedication of the natural gas industry to investments in smart technologies and energy efficiency programs demonstrates the essential part natural gas plays in driving forward a clean and sustainable energy future. By empowering customers to make environmentally conscious choices while simultaneously reducing costs, natural gas utilities are not only contributing to global climate solutions but also fostering an efficient future for individuals and families – and helping to safeguard our planet for generations to come. As we celebrate Earth Day, it's evident that natural gas is indispensable in advancing decarbonization.

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**Adam Kay**

AUG 7, 2025

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STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **DTE GAS COMPANY** for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of natural gas, and for miscellaneous accounting authority.

Case No. U-21973

ALJ Christopher S. Saunders

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I, Mark N. Templeton, certify that an electronic copy of the **Accompanying Exhibits FLO-22 to FLO-70** (Part 2 of 3) for the **Direct Testimony of Sergio Cira-Reyes on Behalf of Frontline Organizations** was served on the following on March 13, 2026.

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The statements above are true to the best of my knowledge, information, and belief.

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