



Lifting the High Energy Burden in America's Largest Cities:

How Energy Efficiency Can Improve Low
Income and Underserved Communities

Low-Income Forum on Energy, Plenary Session
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American Council for an Energy-Efficient Economy

- Nonprofit organization focusing on end-use efficiency in Industry, Buildings and Equipment, Utilities, Transportation, Economic Analysis, Behavior, & Finance



Why Energy Efficiency?

Energy efficiency...

- Is the cheapest, lowest risk energy resource
- Creates jobs and avoids price volatility
- Provides benefits beyond energy savings (e.g. health)
- Acts as a community resiliency strategy
- Helps make energy more affordable for low-income households



What is energy burden?

- The proportion of total household income that goes towards home energy bills, which includes electricity, natural gas, and other heating fuels
- All households have energy burdens
- For metropolitan households in the US, the median burden is 3.5%
- Researchers identify 6-11% as high energy burdens



How does energy burden impact families?



Drivers of household energy burden

Type of driver	Examples
Physical	Inefficient and/or poorly maintained HVAC systems
	Heating system and fuel type
	Poor insulation, leaky roofs, and inadequate air sealing
	Inefficient large-scale appliances (e.g., refrigerators, dishwashers) and lighting sources
Economic	Weather extremes that raise the need for heating and cooling
	Chronic economic hardship due to persistent low income
	Sudden economic hardship (e.g., severe health event or unemployment)
Policy	Inability or difficulty affording the up-front costs of energy efficiency investments
	Insufficient or inaccessible policies and programs for bill assistance, weatherization, and energy efficiency for low-income households
Behavioral	Certain utility rate design practices, such as high customer fixed charges, that limit the ability of customers to respond to high bills through energy efficiency or conservation
	Lack of access to information about bill assistance or energy efficiency programs
	Lack of knowledge about energy conservation measures
	Increased energy use due to age or disability

How we measured energy burden



Households included in study if they:

- Pay for their electricity
- Pay for their main heating fuel
- Report a positive household income

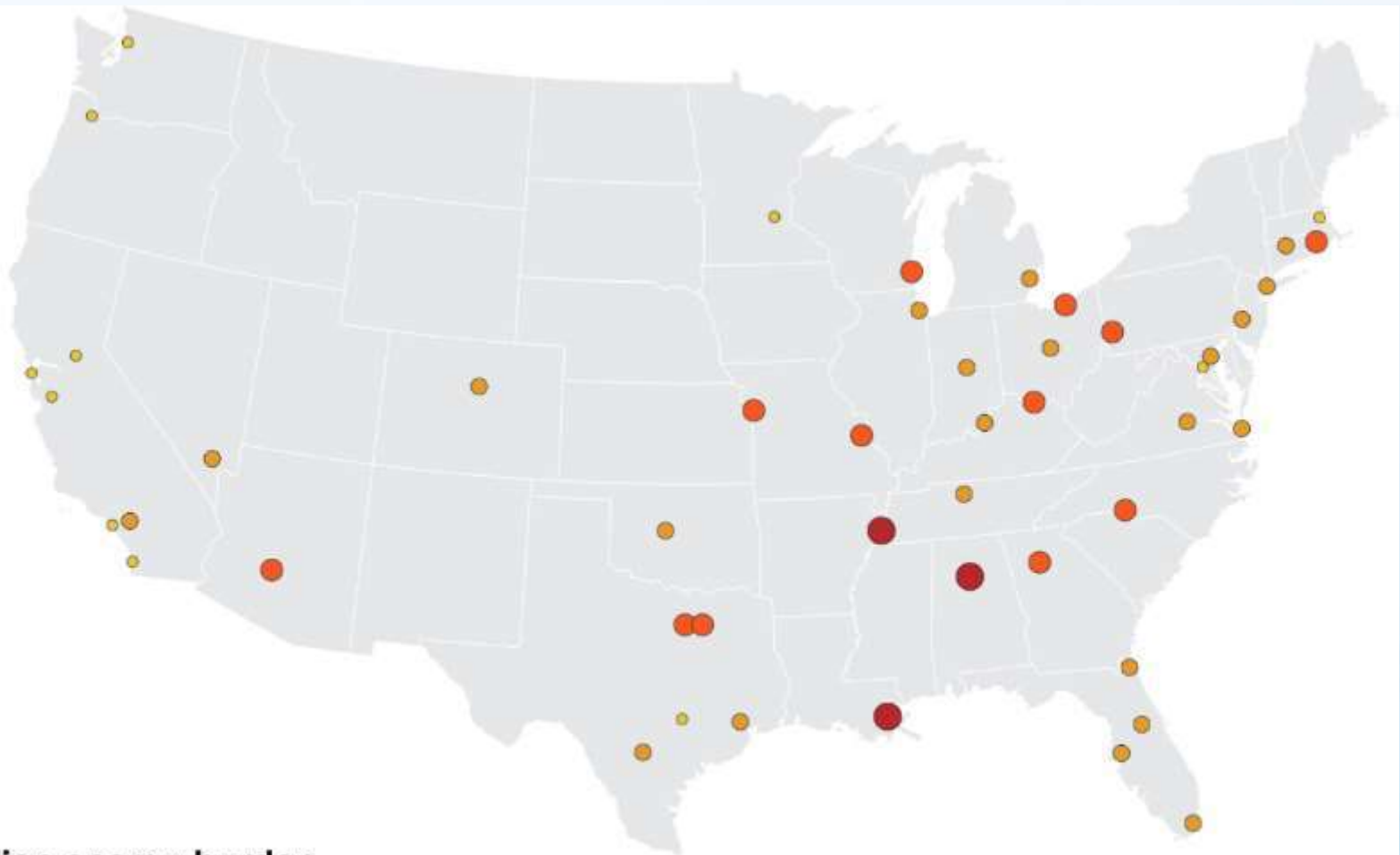
For main subgroups:

- Low-income (80% Area Median Income [AMI])
- Communities of color (African American and Latino)
- Low-income multifamily (80% AMI & 5+ units)
- Renters

Trends by region:

- Northeast, Southeast, South Central, Southwest, Midwest, Northwest, California

Energy burdens in US cities



Median energy burden

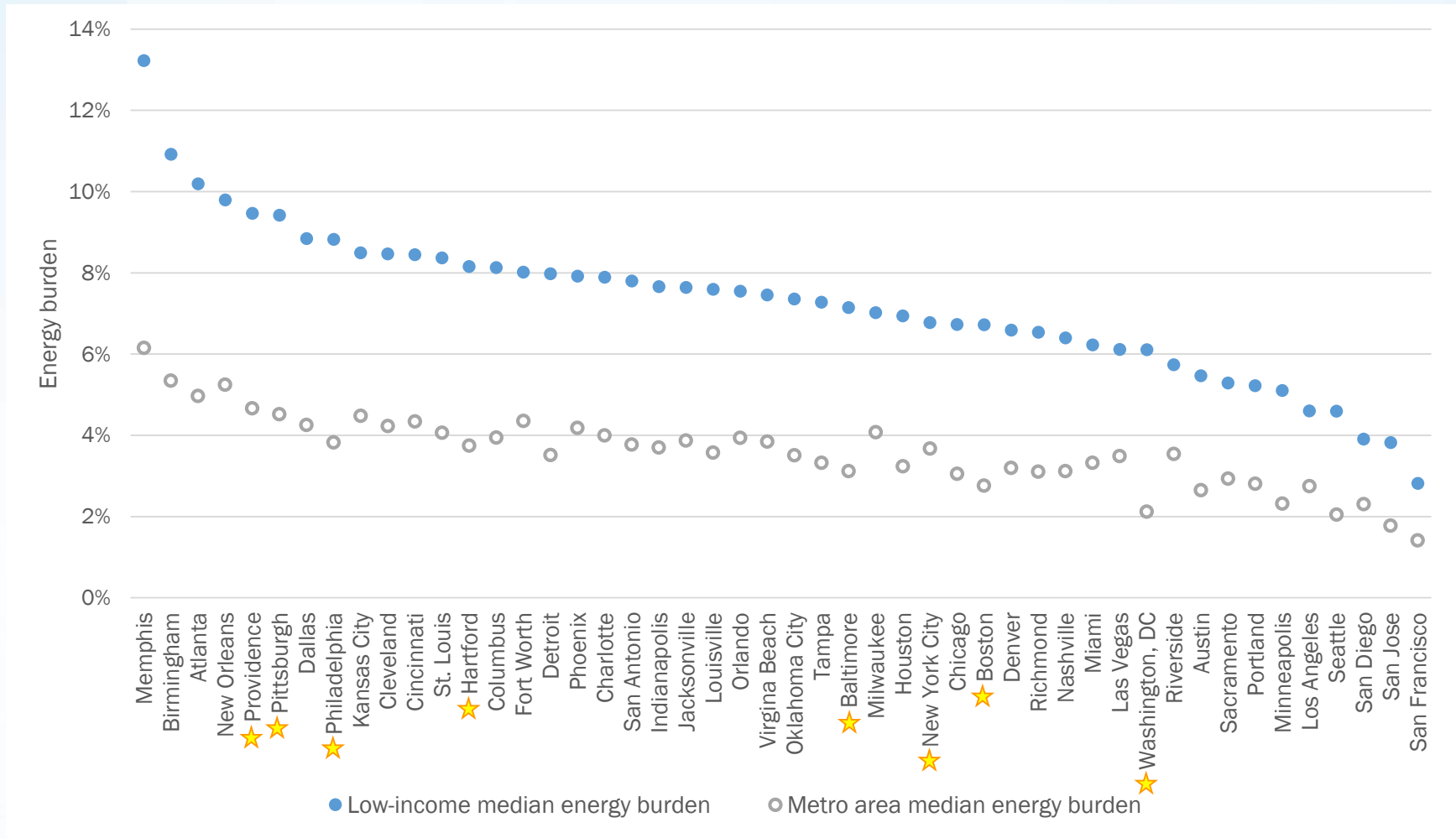
● 5+% ● 4-5% ● 3-4% ● 1-3%

National energy burden trends (in black) and Northeast energy burden trends (in green)

	Household type	Median annual income	Median size of unit (square feet)	Median annual utility spending	Median annual utility costs per square foot	Median energy burden
Income type	Low-income (≤80% AMI)	\$24,998 \$25,999	1,200 1,248	\$1,692 \$2,010	\$1.41 \$1.61	7.2% 8.2%
	Non-low-income	\$90,000 \$103,999	1,800 1,904	\$2,112 \$2,556	\$1.17 \$1.34	2.3% 2.3%
	Low-income multifamily (≤80% AMI)	\$21,996 \$24,000	800 800	\$1,032 \$1,188	\$1.29 \$1.49	5.0% 5.4%
	Non-low-income multifamily	\$71,982 \$84,000	950 920	\$1,104 \$1,242	\$1.16 \$1.35	1.5% 1.5%
Building ownership	Renters	\$34,972 \$39,396	1,000 960	\$1,404 \$1,596	\$1.40 \$1.66	4.0% 4.2%
	Owners	\$68,000 \$80,100	1,850 1,933	\$2,172 \$2,604	\$1.17 \$1.35	3.3% 3.3%
Head-of-household race	White	\$58,000 \$71,998	1,600 1,800	\$1,956 \$2,400	\$1.22 \$1.33	3.3% 3.4%
	African-American	\$34,494 \$43,499	1,290 1,250	\$1,920 \$2,052	\$1.49 \$1.64	5.4% 4.6%
	Latino	\$39,994 \$43,993	1,200 1,200	\$1,704 \$2,010	\$1.42 \$1.68	4.1% 4.5%
All households All NE households	N/A	\$53,988 \$67,009	1,573 1,700	\$1,932 \$2,340	\$1.23 \$1.38	3.5% 3.5%

Note: Northeast numbers in green are not found in the original report. Please contact ACEEE for the numbers and proper citations if interested.

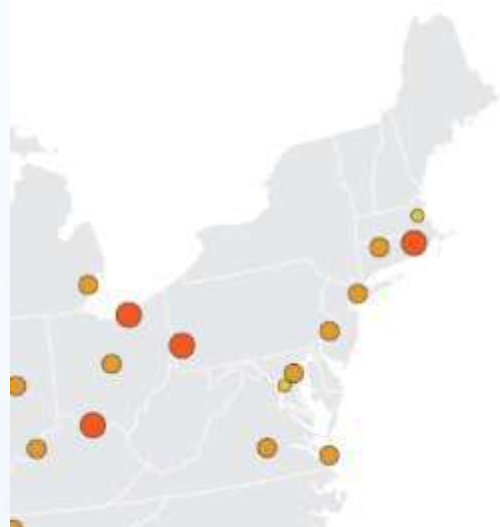
Median energy of low-income households compared to the overall median for each city



High energy burden trends in Northeast

Overall regional trends

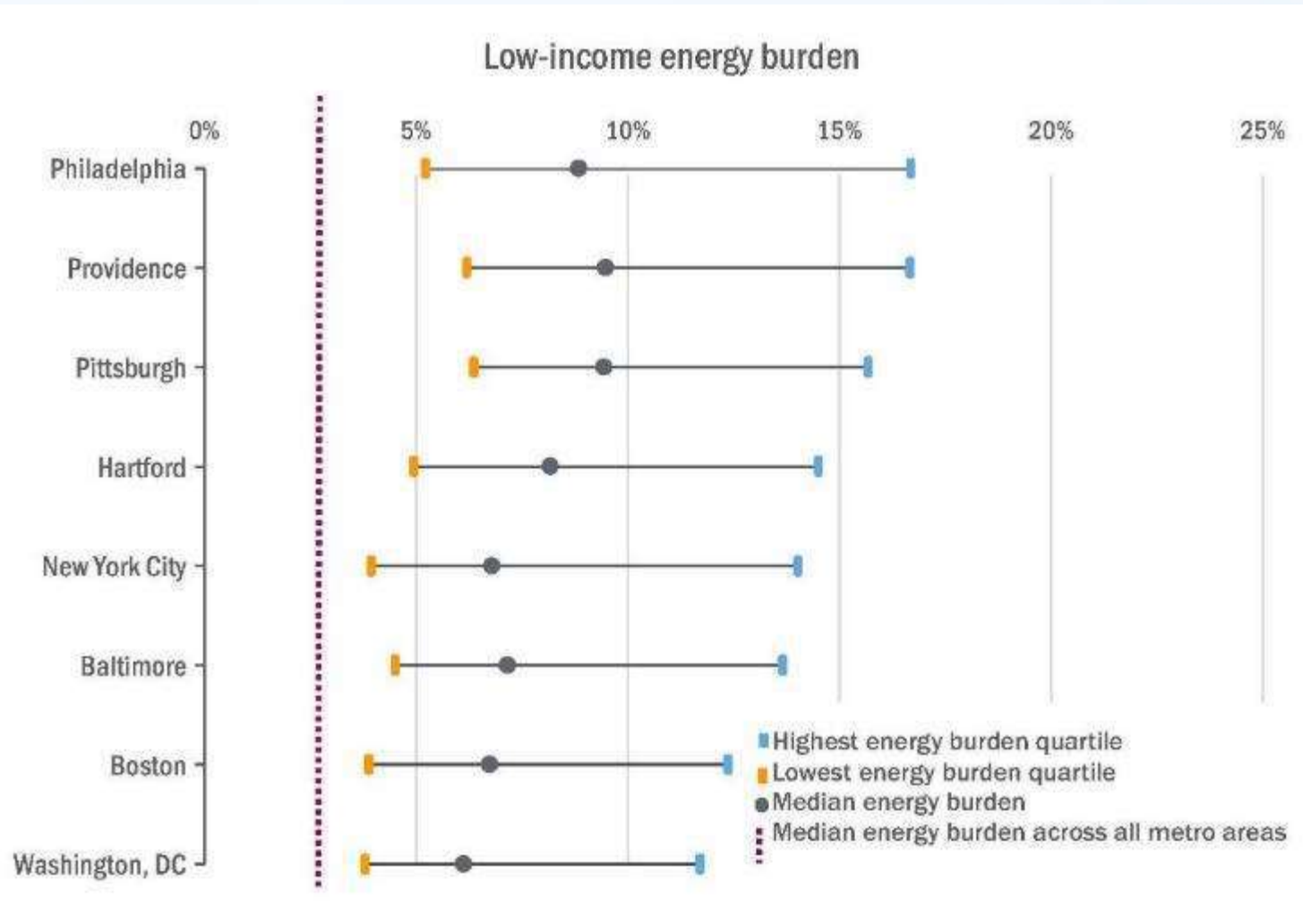
- All groups experienced higher energy burdens than the average and paid higher costs per square foot than their counterparts
 - Low-income households had the highest burdens (8.2% average)



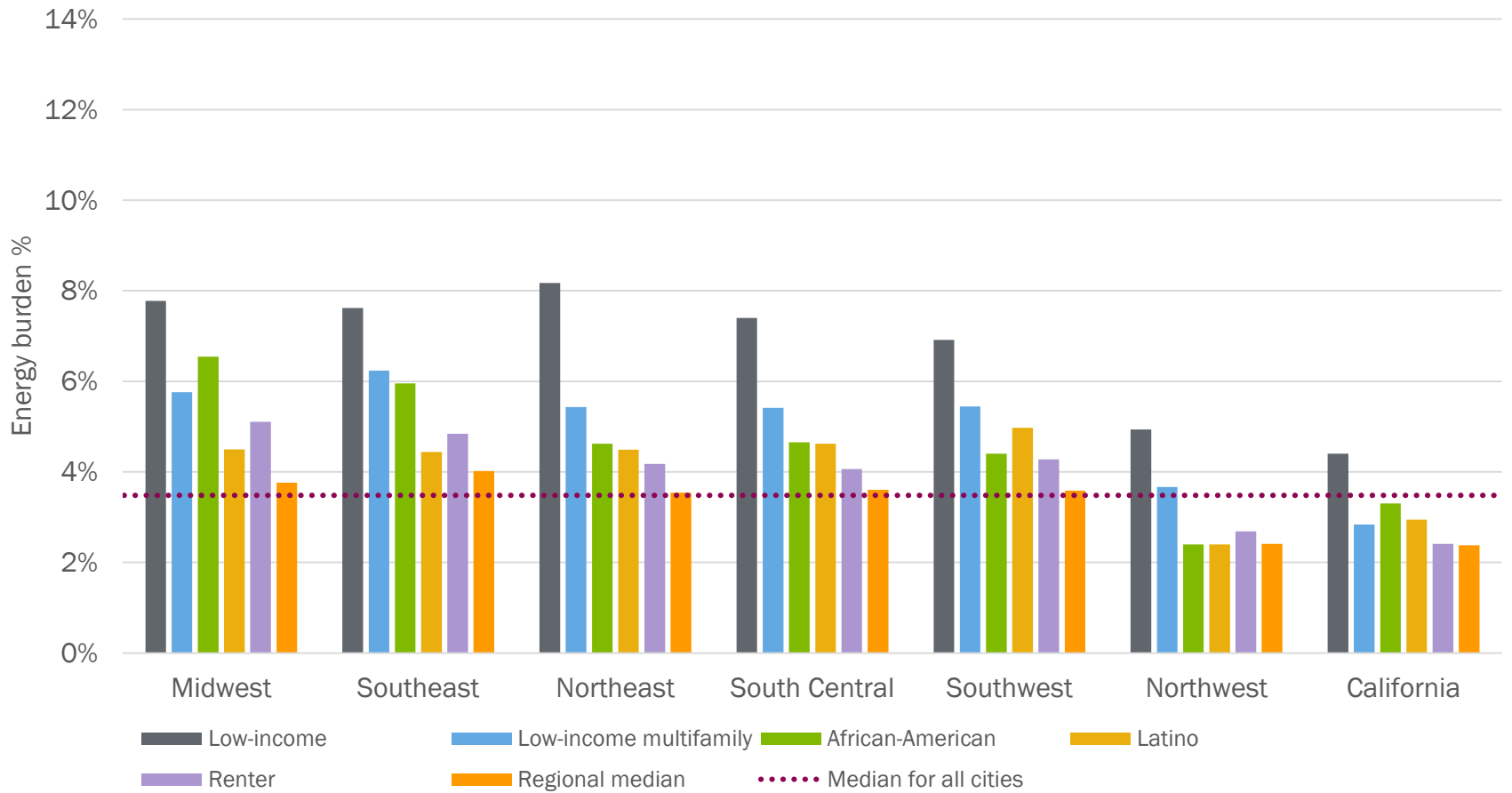
Trends in Northeastern cities

- Low-income households pay 9.5% of income to utilities in Providence (4.7% average)
- African American households have 8.3% burden in Philadelphia (3.8% average)
- Latino households had the highest burdens in Providence and Philadelphia at 7.3% (4.7% and 3.8% averages)
- Low-income multifamily households have 7.1% burden in Providence and Pittsburgh (4.7% and 4.5% averages)
- New York City: low-income is worst-off, paying on average 6.8% (3.7% city median), with the worst-off 25% of low-income households greater than 14%

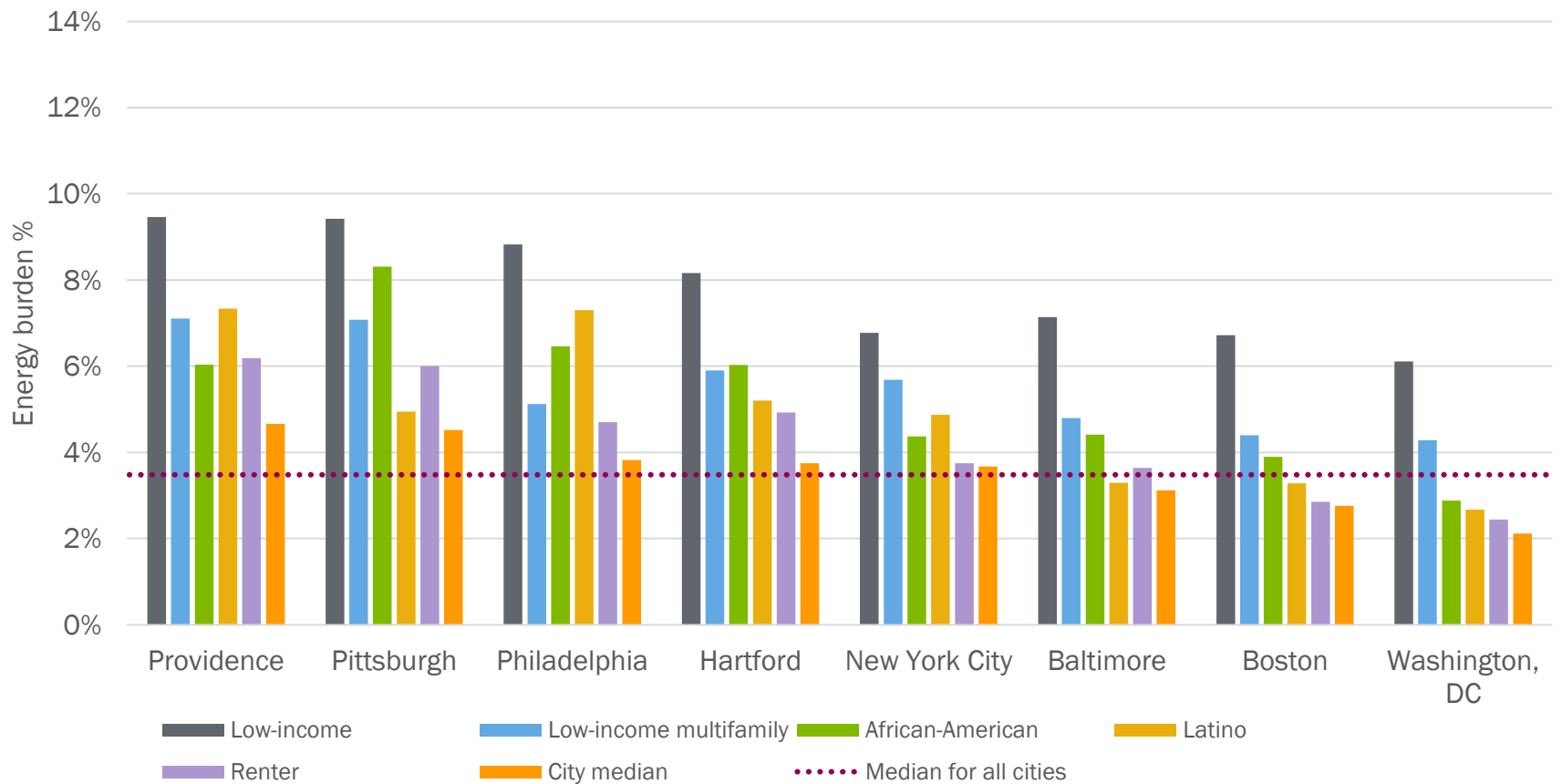
Range of NE low-income energy burdens



Regional energy burden trends



Deeper dive into the Northeast



Misconceptions about high energy burdens

- Higher energy burdens are not simply determined by high energy prices and lower incomes
- Other important factors:
 - Income equality
 - Inefficient housing stock
 - Utility energy efficiency programs/investments



Policies and programs to address high energy burdens

Program type	Program	Funding source
Bill assistance	Low Income Home Energy Assistance Program (LIHEAP)	Federal and state taxpayers
	Other low-income bill assistance programs	Utility ratepayers; private contributions
	Modified rate design, rate discounts or waivers, and modified billing methods	Utility ratepayers
Weatherization	Weatherization Assistance Program (WAP)	Federal and state taxpayers
Energy efficiency	Low-income energy efficiency programs	Utility ratepayers

Multiple benefits of energy efficiency for low-income households

- **Lower monthly bills (residents)**
 - Examples: more disposable income, reduced stress, more money spent in local economy
- **Improved housing (residents)**
 - Examples: better health and safety, increased property value, lower maintenance costs, greater housing satisfaction
- **Local economic development (community)**
 - Examples: more local jobs, improved quality of life, increased property values
- **Less power used (utilities and community)**
 - Examples: reduced environmental pollutants, improved public health, avoided excess costs of increased generation, capacity, and transmission investments



Strategies for improving energy efficiency in low-income communities

1. Improve and expand low-income utility programs
2. Collect, track, and report demographic data on program participation
3. Strengthen policy levers and more effectively leverage existing programs
4. Utilize the Clean Power Plan to prioritize investment in low-income energy efficiency



Improve and expand low-income utility programs

- Incorporate best practices in single and multifamily energy efficiency programs
- Include multiple benefits of low-income energy efficiency programs in cost-benefit testing (e.g. CT, CA, NH)
- Provide financing options to households and multifamily building owners with strong consumer protections



Collect, track, and report demographic data on program participation



Collect and use data on household demographics to ensure that programs are reaching the target households

Examples of important demographics:

- Income level
- Renter versus owner
- Multifamily versus single family
- Race/ethnicity
- Language-spoken



Strengthen policy levers and leverage existing programs

- Set policy directives to support utility energy efficiency programs, with separate goals for delivery of low-income programs
- Advocate to the Public Utility Commission for strong low-income savings targets and programs
- Set policies to require energy usage reporting and benchmarking for multifamily buildings
- Prioritize investment in low-income energy efficiency through the Clean Power Plan



Final thoughts and next steps

- The overwhelming majority of low-income and households of color in major US cities experience higher energy burdens
- We encourage cities and other stakeholders to use the data from this report and the recommendations as they work to address high energy burdens in their communities



ACEEE Resources

Building Better Energy Efficiency Programs for Low-Income Households:
aceee.org/research-report/a1601

Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low Income and Underserved Communities:
aceee.org/research-report/u1602

Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings: <http://aceee.org/research-report/e13n>

Low-Income Energy Efficiency Programs: Best Practices and Clean Power Plan Compliance: <http://aceee.org/white-paper/cpp-low-income>

Clean Power Plan Opportunities for Energy Efficiency in Affordable Housing: A Primer for the Affordable Housing Community:
energyefficiencyforall.org/sites/default/files/CPPBrief.pdf

Clean Power Plan Resources Page: aceee.org/topics/clean-power-plan

Thank you for your attention!

Questions and comments:

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Energy Efficiency and Energy Affordability in New York

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Association for Energy Affordability

The Association for Energy Affordability is a non-profit dedicated to achieving energy efficiency in new and existing buildings in order to foster and maintain affordable and healthy housing and communities. We provide both technical services and training programs, with a special emphasis on multifamily buildings and a special commitment to affordable housing.



Energy Efficiency for All New York

Ensure housing and energy policies provide sufficient resources to advance investments in energy efficiency in affordable multi-family housing, which will combat climate change, improve public health, increase energy affordability and support environmental justice.



Energy Efficiency is Key

- The study illustrates the need for energy efficiency investments as a longer term, more comprehensive and more equitable solution
- The problem of affordability is larger than the data show
 - NYC data is hindered by sample size and exclusion of non-heating customers
 - Since shelter costs vary widely across the country (NYC vs Memphis) and state (NYC versus Binghamton), energy costs alone are necessary but insufficient to gauge household economic stress
 - Energy efficiency can address overall shelter expenses because energy costs are a significant operating and maintenance expense
- Housing affordability and energy affordability are inextricably linked



Another View of Energy Burden in New York

(from Fisher, Sheehan & Colton, *Home Energy Affordability Gap*, 2016)

Percent of FPL	Households	Average Energy Burden	Range Among Counties
Below 50%	510,385	26%	23.5% - 41.7%
50% - 100%	632,465	14%	11.8% - 27.8%
100% - 125%	318,633	9%	7.9% - 18.6%
125% - 150%	320,617	8%	6.8% - 15.2%
150% - 185%	427,044	6%	5.6% - 10.5%
185% - 200%	169,320	6%	4.6% - 10.8%



Housing Affordability

- Housing Affordability (inclusive of energy costs) is a serious challenge for renters and homeowners
- >3 million households at or above the affordability threshold of 30 percent of household income; >1.5 million households paid half or more of their income in housing costs*
- Some counties with lower (relative) energy burden have higher (relative) percentages of households with unaffordable housing
- Issue isn't rural or urban, renter or homeowner, upstate or downstate but statewide; **but majority of population is downstate and urban**
- Controlling energy costs can help, especially in multifamily buildings where majority of downstate and urban low income families reside

* Housing Affordability in NY State, Office of the Comptroller, March 2014

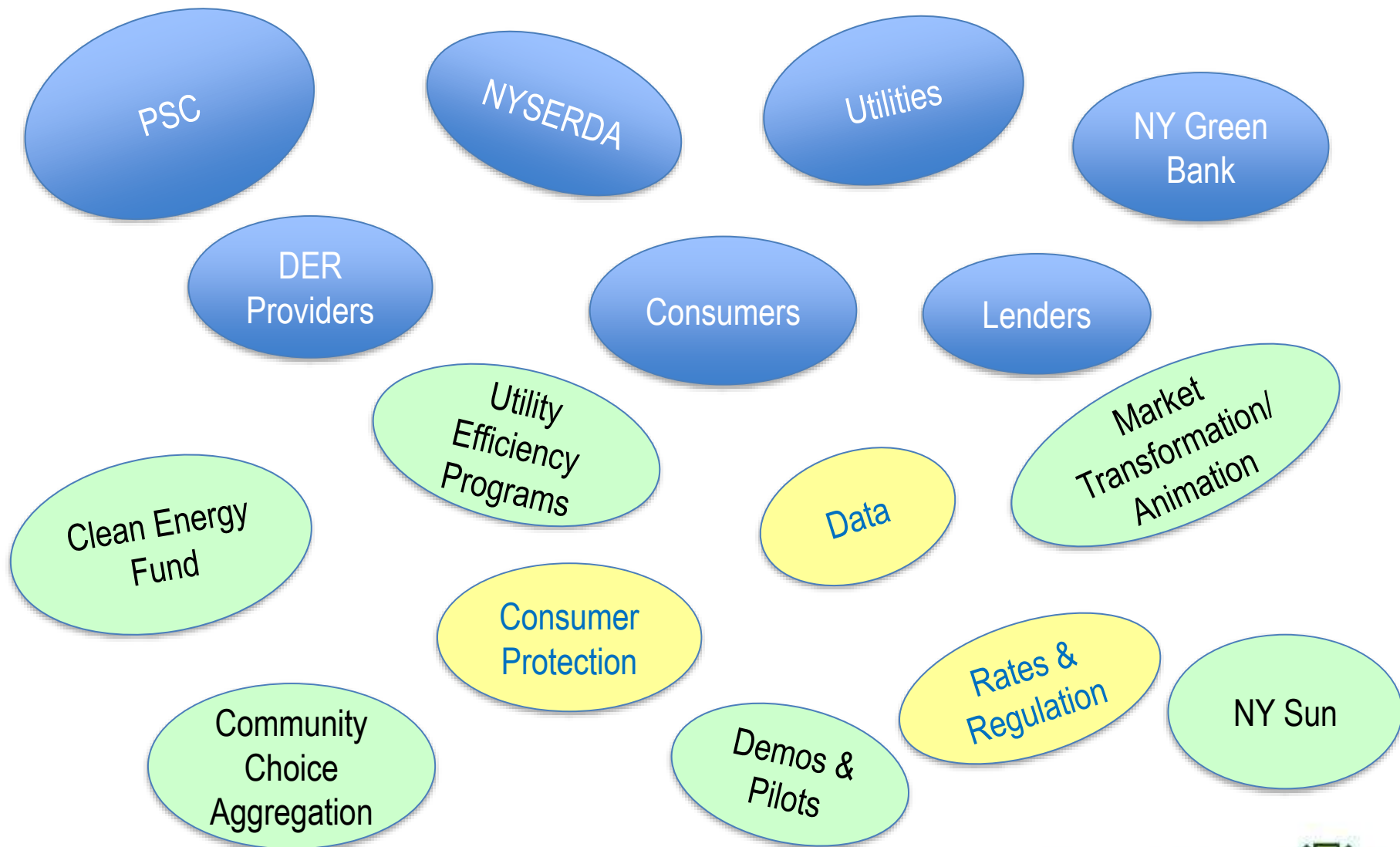


Utility Assistance Programs

- Recently adopted changes to low income utility assistance programs in NY are necessary but insufficient
- Fisher, Sheehan & Colton estimate the average affordability gap at \$807 (but varies considerably) – even more generous assistance will not ensure affordability for all
- Assistance programs do not address root causes including poor housing stock, inefficient appliances and lack of demand/bill management tools
- Efficiency investments provide a longer term solution with ancillary benefits



“Reforming the Energy Vision”



Next Steps

In case you missed it, we need:

- Policies & programs (both incentive driven and market-based) that explicitly address energy efficiency for lower income households
- An emphasis on improving efficiency of housing, especially multifamily buildings
- A variety of approaches and tracking of outcomes to respond to what works and what doesn't

We need REV to get it right!



Thank you

Questions & Comments:
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