Closing the Energy and Transportation Affordability Gap for Connecticut’s Low- and Moderate-Income Households

December 17, 2020
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State Energy Strategies

• Funded by the U.S. Department of Energy through the Solar Energy Technologies Office.

• The Clean Energy States Alliance is working with CT, DC, MN, NM, OR and RI to make solar more accessible to low- and moderate-income residents.

• Research support provided by Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory.
Webinar Speakers

Emily Basham
Manager - Partnership Development, Connecticut Green Bank

Gannon Long
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Justine Sears
Consultant, VEIC

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Director of Transportation Efficiency, VEIC

Abbe Ramanan
Clean Energy States Alliance (moderator)
Closing the Energy and Transportation Affordability Gap for Connecticut’s Low- and Moderate-Income Households
VEIC is on a mission to generate the energy solutions the world needs.

Jennifer Wallace-Brodeur
Leslie Badger
Justine Sears
Methods

**Burden and Affordability Gap**

*Burden* = spending expressed as a percentage of income

*Affordability gap* = the difference between an affordable level of spending and actual spending
Background

- $450 million building energy affordability gap (2017)
  - Low-and moderate-income households are the hardest hit
- We included transportation costs
  - 2nd highest household expense
  - #1 contributor to GHG emissions
- Existing state programs assist with energy costs; few for transportation

Preserving energy affordability is critical to ability of low income households to not only meet basic needs but build wealth.
Study Scope

Explore patterns in energy and transportation burden and affordability

3 Spending Categories

Building Energy
Transportation
Housing

2 Metrics

Burden
Affordability Gap
## Methods

### Data & Geography

<table>
<thead>
<tr>
<th>Spending Category</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Energy</td>
<td>LEAD Tool (DOE)</td>
</tr>
<tr>
<td>Transportation</td>
<td>Housing and Transportation Affordability Index (H&amp;T)</td>
</tr>
<tr>
<td>Housing</td>
<td>H&amp;T</td>
</tr>
<tr>
<td>Household income</td>
<td>American Community Survey (Census)</td>
</tr>
</tbody>
</table>
## Affordability Thresholds

<table>
<thead>
<tr>
<th>Spending Category</th>
<th>What does it include?</th>
<th>Affordability Threshold (% HH income)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Energy</td>
<td>Household heating fuel and electricity</td>
<td>6%</td>
</tr>
<tr>
<td>Transportation</td>
<td>Vehicle fuel, transit costs, and vehicle ownership costs (including vehicle purchase or lease, insurance, and maintenance)</td>
<td>15%</td>
</tr>
<tr>
<td>Housing</td>
<td>Total shelter costs, <strong>inclusive of building energy</strong>, insurance, taxes, and association fees.</td>
<td>30%</td>
</tr>
<tr>
<td>Energy, Transportation, &amp; Housing</td>
<td>Total shelter costs (inclusive of building energy, insurance, taxes, and association fees) and transportation costs (vehicle fuel, transit, and vehicle ownership costs)</td>
<td>45%</td>
</tr>
</tbody>
</table>
Building Energy

- Statewide: $3k per year on building energy
- Greater variability in spending on electricity than on heating
- Greater variability among low income households
Results

Building Energy

Low-income households face an energy burden that is 6 to 7 times higher than the statewide average.
Results

Building Energy

Burden

Affordability Gap

veic
Building Energy

Results

33,000 highly burdened households in Hartford County

Burden

Affordability Gap

- Less than 3%
- 3-6%
- Up to 10%
- Over 10%
- County boundaries

- no gap
- up to $500
- $501 - $1,000
- $1,000 +
- County boundaries
# Building Energy Affordability Gap

<table>
<thead>
<tr>
<th>Income Band (% State Median Income)</th>
<th># Households</th>
<th>Energy Spending</th>
<th>Household Income Affordability Gap per Household</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 30</td>
<td>201,146</td>
<td>$2,119</td>
<td>$444 million</td>
</tr>
<tr>
<td>&gt;30 - 60</td>
<td>238,018</td>
<td>$2,550</td>
<td>$1,010 per HH</td>
</tr>
<tr>
<td>&gt;60 - 80</td>
<td>93,792</td>
<td>$2,753</td>
<td></td>
</tr>
<tr>
<td>&gt;80 - 100</td>
<td>149,272</td>
<td>$2,933</td>
<td></td>
</tr>
</tbody>
</table>

Results
## Transportation

<table>
<thead>
<tr>
<th>Spending Category</th>
<th>Mean Annual Spending</th>
<th>Mean Burden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle Ownership</td>
<td>$10,343</td>
<td>15%</td>
</tr>
<tr>
<td>Vehicle Fuel</td>
<td>$2,524</td>
<td>4%</td>
</tr>
<tr>
<td>Public Transit</td>
<td>$111</td>
<td>&lt;1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$12,978</strong></td>
<td><strong>20%</strong></td>
</tr>
</tbody>
</table>
Results

Transportation

[Maps showing transportation results with color-coded data for different categories: Less than 10%, 10% - 15%, 16% - 25%, >25%, no gap, up to $2,500, $2,501 - $5,000, $5,000+ with county boundaries indicated.]
## Transportation

<table>
<thead>
<tr>
<th>Census Tract AMI Band</th>
<th>Mean Household Transportation Affordability Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;60% AMI</td>
<td>$5,097</td>
</tr>
<tr>
<td>60-80% AMI</td>
<td>$3,464</td>
</tr>
<tr>
<td>80-100% AMI</td>
<td>$2,050</td>
</tr>
<tr>
<td>100-120% AMI</td>
<td>$1,067</td>
</tr>
<tr>
<td>&gt;120% AMI</td>
<td>No gap</td>
</tr>
</tbody>
</table>
“Even households above traditional low income thresholds struggle with the combined affordability of building energy, transportation, and housing.”
Results

Energy, Transportation, Housing

$35,000 total

- Transportation: $19,239
- Shelter: $2,899
- Housing: $10,343
- Vehicle Fuel: $2,524
- Public Transit: $111
- Vehicle Ownership: $0

Total: $35,000
Energy, Transportation, Housing

Results
Green Bank Low- and Moderate-Income Solar Program Review: Solution for Homeowners

Closes the affordability gap!
Conclusions

• Energy burden is highest among low-income households: 6-7 times higher
  • High energy burdens are clustered in urban areas
  • Combined efficiency and solar can close the building energy affordability gap for many low- and moderate-income households
• Transportation costs are high across the state
  • Reducing transportation costs is crucial to preserving affordability
  • A personal vehicle is needed almost everywhere for an acceptable level of mobility
Policy & Program Recommendations

How can we close building energy affordability gaps?

Expansion of Existing Programs

• LIHEAP, WAP, Home Energy Solutions,
• Solar for All has the potential to close the gap for many households: can more household be served?
• Expand to renters via Shared Clean Energy Facilities (community solar)

Target highly burdened tracts

• ‘Hotspots’ are primarily in urban areas
Policy & Program Recommendations

How can we close the transportation affordability gap?

• This gap is broad: spans rural and urban areas, many income bands

Programmatic Considerations

• Income-eligible EV programs (there are other states to watch)
• Income-eligible electric bike
• Expansion of transit services (microtransit and transportation network companies)
Transportation burden in CT

• Impact on Low & Moderate-Income Families
• Key takeaways
• The big picture

OUR MISSION
Operation Fuel ensures equitable access to energy for all by providing year-round energy and utility assistance, promoting energy independence, and advocating for affordable energy.

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Thank you to our partners:
Thank you

Reports can be found: https://www.ctgreenbank.com/lmi-market-data-research/

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Thank you for attending our webinar

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