

# Making Sense of Non-Energy Benefits: Results from the Weatherization Assistance Program

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# OUTLINE

- Overview of Weatherization Assistance Program (WAP)
- Some Preliminary Ratepayer Cost Savings Results
- Some Preliminary Ratepayer Energy Savings Results
- Some possible benefits associated with climate change



# What Is WAP?

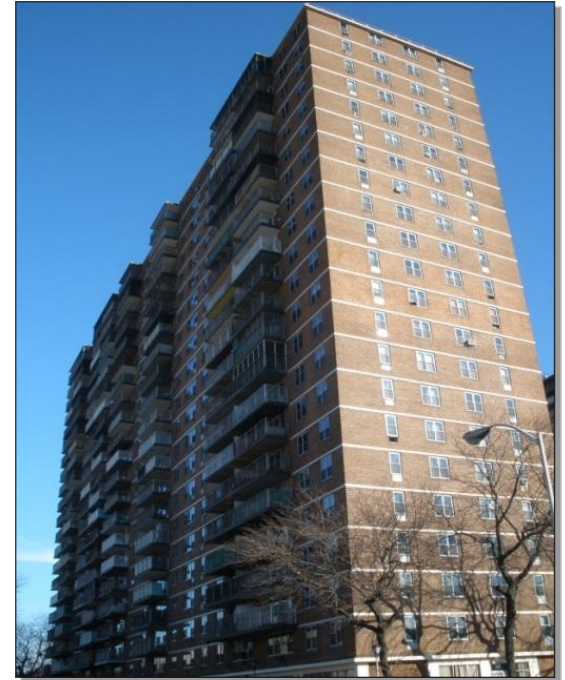
- U.S. Department of Energy (DOE) provides grants to states and territories based on funding formulas
- States provide grants to local weatherization agencies
- Local weatherization agencies deliver services
- States/agencies leverage DOE funds
- WAP was established in the 1970s and is the U.S.'s largest residential energy efficiency program





# WAP Production in 2008

- 54,121 single-family units
- 5,920 small multifamily (2-4) units
- 11,058 large multifamily (5+) units
- 14,998 mobile homes
- Funding: DOE - \$233M; LIHEAP - \$319M; Other \$115M
- Most frequently installed measures: air sealing & insulation



# Evaluation Goals

- **Impact**

- **Energy Savings:** Measure gas, electric, fuel oil, and LPG savings
- **Cost Savings:** Measure first year and measure life savings
- **Non-energy Benefits: client, economic, environmental, and ratepayer**
- **Cost-Effectiveness:** Energy and non-energy benefits



- **Process**

- **Administrative:** Document how grantees and subgrantees implement the program
- **Field Process Study:** Observe audits, installation, and inspections
- **Case Studies:** Identify innovative approaches to weatherization



# Ratepayer Benefits

- **Weatherization can have multi-faceted impacts on household budgets**
- **The result is that households often find it is easier to pay utility bills post-weatherization**
- **Utilities & ratepayers then benefit from reduced costs associated with arrearages and disconnections**
- **There are other impacts related to rate subsidies, and interest costs.**

# Occupant Survey Findings Treatment (pre) to Comparison

Survey Item	PreAudit Incidence	PostWX Incidence	Change
<b>Trade Offs</b>			
It is hard or very hard to pay energy bills	74.6%	58.5%	-16.1%
Did not buy food to pay energy bills	33.2%	23.1%	-10.1%
Did not fill prescriptions to pay energy bills	27.5%	18.5%	-9.0%
Got disconnect notice	39.0%	32.6%	-6.4%
Had natural gas or electric disconnected	7.2%	3.4%	-3.8%
Wanted to use heat but was disconnected	2.7%	1.7%	-1.0%
Ran out of bulk fuel because could not pay	10.1%	6.2%	-3.9%
Paid less than the amount owed	46.0%	36.0%	-10.0%
All differences are statistically significant at the 95% confidence level			



# Ratepayer Benefits: Rate Subsidies

- **Two thirds of WAP clients live in states with rate subsidy programs**
- **~ 20% of WAP clients participate in electric or gas PIPP programs: in these cases most or all electricity and gas savings accrue to ratepayers**
- **~ 10% of WAP clients participate in electric or gas rate discount programs: the discount of 25% accrues to ratepayers**
- **In PY2008, for single family homes, of the \$184M (US) NPV of electric and gas savings, ~ \$41M accrue to ratepayers (~22%)**

# Ratepayer Benefits: Other Estimates

- **Shutoffs only marginally reduced post-wx: 1%**
  - ~ \$15 benefit per job accrues to the client, \$15 to the ratepayers
- **Interest Savings on Arrearages**
  - Can be charged to clients or subsidized by utility
  - ~ \$15 benefit per job accrues to the client, \$5 to the ratepayers

# Energy Savings Benefits

- **WAP provides utilities a path for low-income energy savings**
- **DOE urges states and agencies to leverage DOE funds**
- **Leveraged utility funds buys established program services:**
  - **Trained weatherization workforce**
  - **Whole house audits**
  - **Financial accountability with Savings-to-Investment Ratio test for potential measures**
  - **Energy savings can be estimated by climate zone, house type, and fuel type**

# SOME PRELIMINARY ENERGY SAVINGS RESULTS:

## Natural Gas and Electricity Savings in Homes by House Type and Climate Region (PY 2008)

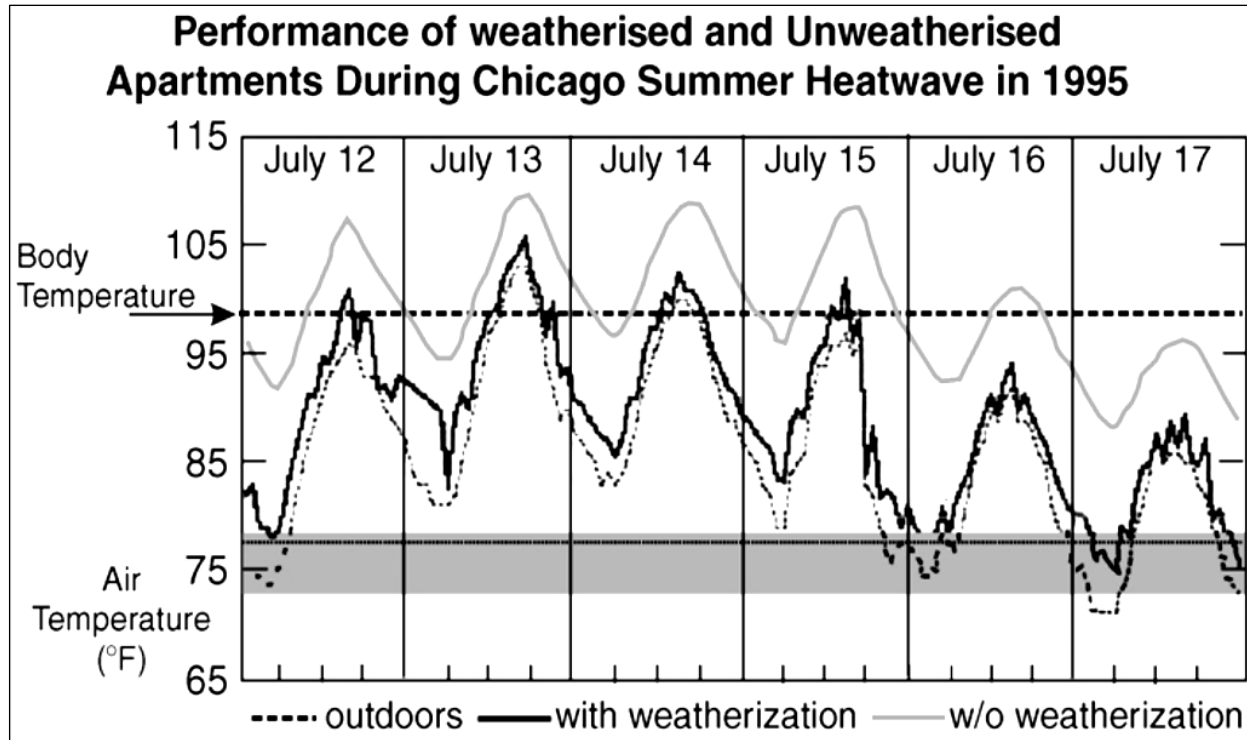
	Natural Gas Savings			Electricity Savings		
	SF	MH	SMF	SF	MH	SMF
National	17.8%	12.6%	17.4%	7.1%	5.6%	7.2%
Very Cold	17.8%	13.9%	28.5%	7.6%	4.8%	N/A
Cold	18.5%	13.2%	9.4%	7.5%	5.2%	N/A
Moderate	16.1%	7.5%	N/A	6.9%	6.6%	N/A
Hot-Humid	19.6%	7.5%	N/A	6.9%	6.6%	N/A



# Climate Change Benefits

- One can expect that utilities will be increasingly involved/included in climate change action plans
- Weatherization contributes both to mitigation and adaptation
- Mitigation is accomplished through energy savings
- Adaptation is accomplished by making homes less vulnerable to climate change events, such as heat waves
- Health-related adaptation benefits could be significant in reducing medical costs and mortality from hyper/hypothermia (~\$270, \$400, and \$717 per job first year benefit, respectively)

# Climate Change Benefits



Huang, Joe (1996). Urban Heat Catastrophes: The Summer 1995 Chicago Heat Wave. *Commercial Building System Newsletter*, pg. 5. Retrieved from [http://eetd.lbl.gov/newsletter/cbs\\_nl/nl12/cbs-nl12-heat.html](http://eetd.lbl.gov/newsletter/cbs_nl/nl12/cbs-nl12-heat.html)

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