

Municipal Behavior Wedge Profile Report

Residential Energy Savings Opportunities in the City of Baltimore, Maryland

OCTOBER
2014



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Baltimore has the opportunity to reduce residential energy consumption by 7.7% through behaviorally-focused programs.

Nationally and internationally, a **growing body of research provides compelling evidence of the significant energy savings that can be achieved through shifts in the choices and behaviors of residents.** In the United States, research findings suggests that the readily available savings from U.S. households could reduce energy consumption by roughly **9 percent** (or 9 quadrillion BTUs) and carbon emissions by 7.4% in less than a decade – more than the total annual energy consumption of the United Kingdom (8.5 qBtu).

What are the implications of national level findings for the residents of Baltimore?

While Baltimore and other cities continue to lead the charge in addressing energy and climate challenges, national level research findings have proven inadequate for informing municipal-level strategies due to differences in climate conditions, building stock characteristics, technology saturation, and social and cultural norms among other factors. The finding presented in this report are meant to help fill the information void. This report represents an innovative effort to use existing data sources to develop city-specific indicators of the achievable energy savings that could be attained through behaviorally-focused programs in Baltimore. As such, the savings estimates presented here provide a first look at the behavioral *opportunity landscape* with the expectation that the reader will use additional data sources – including their own primary research – to supplement, triangulate, and evaluate the information presented in this report and to develop specific program goals, strategies, and tactics.

By identifying and quantifying the most promising behavior-related opportunities at the city level, the Municipal Behavior Wedge Project provides cities and organizations with an opportunity to develop more targeted and strategic programs and achieve greater savings.

WHAT IS BEHAVIOR CHANGE?

We define it as changing how PEOPLE use resources through:



CONSERVATION ACTIONS:

Turning off electronics, appliances and devices when not in use, consolidating equipment, and minimizing demand through planning and design..



TECHNOLOGY USE PATTERNS:

Maximizing the efficiency of existing technologies (HVAC systems, appliances, electronics and other devices) through proper maintenance, technology settings, use patterns and choices between existing technologies.



TECHNOLOGY PURCHASING DECISIONS:

Accelerating the adoption of energy-efficient appliances, electronics, and equipment.



Learn more about the [Behavior Wedge Profile Project](#)

OUR METHODOLOGY

Estimates of **achievable savings** are developed using data from the 2009 Residential Energy Consumption Survey (RECS) and the Census Bureau as well as special insights gleaned from both a set of expert advisors as well as a wide variety of research reports on buildings, energy, and behavioral programs.

1 CENSUS DATA

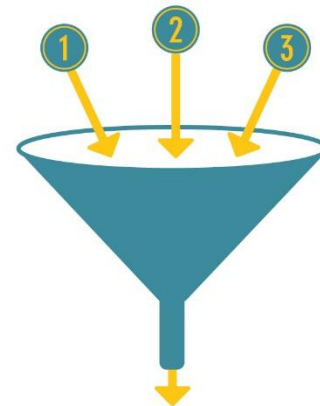
- Population & demographic information
- Housing stock characteristics
- Economic & poverty measures

2 RECS DATA (Residential Energy Consumption Survey)

- Technology saturation & housing characteristics
- Technology use patterns
- Energy consumption data

3 EXPERT INSIGHTS & LITERATURE REVIEW

- Household participation rates
- Energy savings estimates
- Compliance rates



ESTIMATES OF ACHIEVABLE SAVINGS
for Behavioral Programs

Measures of achievable savings represent a conservative estimate of the energy savings that could be achieved through the actions reviewed in this report. For each behavior, *achievable savings* are calculated by multiplying: energy consumption x the proportion of households who are eligible to participate in the behavior x the estimated participation rate x estimated rate of energy savings. Estimates of btus presented in this report are rough estimates and are meant to serve as indicators of the general magnitude of the savings opportunity rather than precise estimates.

INSIDE THIS REPORT, YOU WILL FIND:

- Estimates of achievable short and mid-term savings opportunities for both single and multi-family housing sectors
- A ranking of the behaviors that offer the largest savings opportunities given Baltimore's particular climate, building characteristics, and technology use patterns
- Contextual information concerning Baltimore's demographic characteristics and building stock
- A detailed review of energy savings opportunities for each energy end use from heating and cooling to appliances, electronics and lighting

WHY PEOPLE-CENTERED INITIATIVES ARE EFFECTIVE

Focusing on PEOPLE first offers a variety of benefits, including:



SIGNIFICANT SAVINGS

The medium-term estimates of achievable energy savings for most cities are between 7 and 12 % of residential consumption.



FASTER RESULTS

Shifting away from wasteful energy practices toward greater efficiency is something everyone can do at any time



LOWER PROGRAM COST

People-centered initiatives require fewer financial resources to implement when compared to technology-focused programs.



Learn more about

Our Methodology by requesting the methodology report:

The Municipal Behavior Wedge Project: Modeling Methodology



EXECUTIVE SUMMARY

Baltimore's opportunity to reduce residential energy consumption by 7.7% using behavior change programs is predominantly in the single-family market.

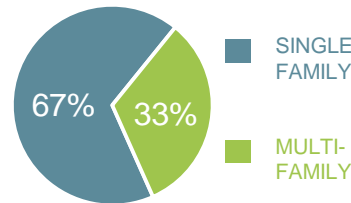
6.3% REDUCTION

in Baltimore's city-wide residential energy use can be achieved through single-family behavior initiatives over an 8-year timeframe.

1,775 bBtus IN SAVINGS

would be realized from the 6.3% reduction in energy use. Add equivalency.

BUILDING STOCK RATIO



1.4% REDUCTION

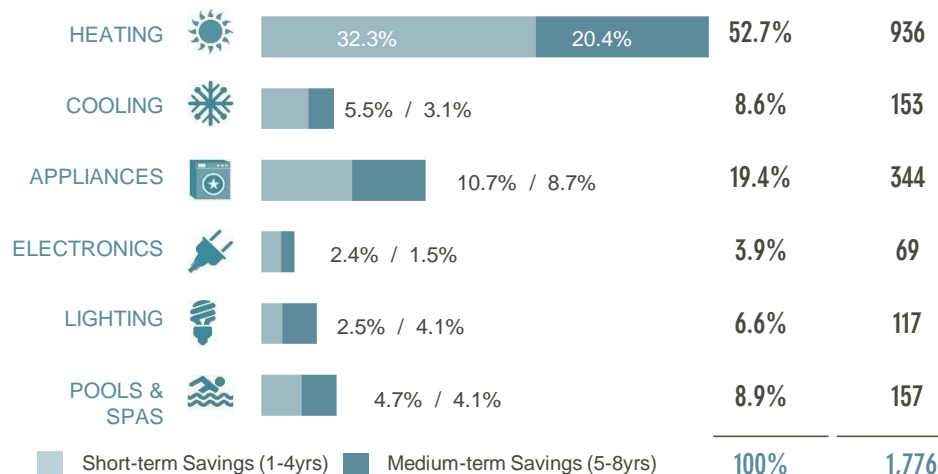
in Baltimore's residential energy use can be achieved through multi-family behavior initiatives over an 8-year timeframe.

390 bBtus IN SAVINGS

would be realized from the 1.4% reduction in energy use. Add equivalency.

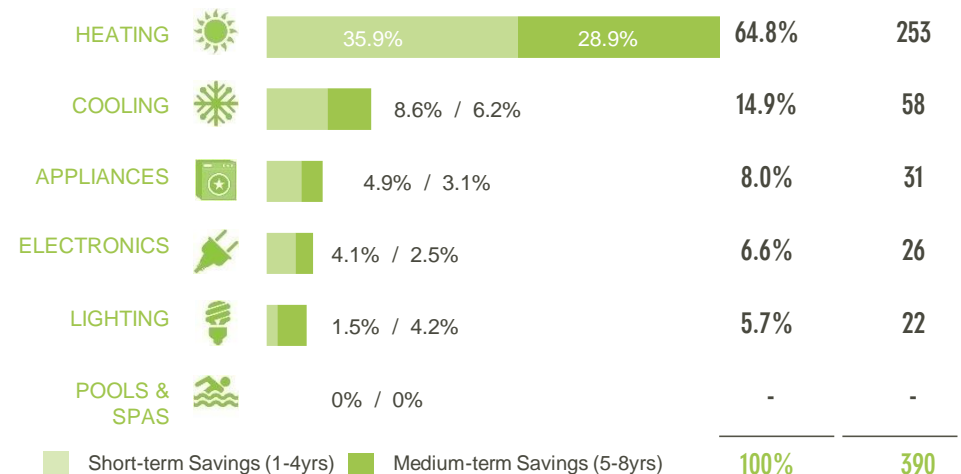
SINGLE-FAMILY SAVING OPPORTUNITIES

% OF (SF)
OPPORTUNITY bBtu
SAVINGS



MULTI-FAMILY SAVING OPPORTUNITIES

% OF (MF)
OPPORTUNITY bBtu
SAVINGS



Summary of Opportunities:

- By engaging with residents of single-family households, Baltimore has the opportunity to **reduce total residential energy consumption by 6.3%**. These savings represent a **7.9% reduction in the current energy used by single-family homes**.
- A focus on the 10 most impactful behaviors, could result in medium-term savings of 5.9% compared to current, single-family energy demand.



Summary of Opportunities:

- By engaging with residents of multi-family households, Baltimore has the opportunity to **reduce total residential energy consumption by 1.4%**. These savings represent a **7.0% reduction in the current energy used by multi-family homes**.
- A focus on the 10 most impactful behaviors, could result in medium-term savings of 5.3% compared to current, multi-family energy demand.



TOP 10 ENERGY SAVING BEHAVIORS

Opportunities represent combined single and multi-family savings in the medium-term.

1,630 bBtus OF SAVINGS

Can be achieved through these 10 behaviors

5.8% REDUCTION

in Baltimore's residential energy use can be achieved through these 10 behaviors

1

HEATING & COOLING Home Weatherization

The large number of old and drafty homes in Baltimore mean that caulking, weather stripping and duct sealing can save a lot of heat.

15.9%
OF TOTAL OPPORTUNITY

345 bBtus
OF ENERGY SAVINGS

2

HEATING Conservation Actions

By closing doors and ducts and reducing heat in unused rooms, households can reduce energy waste.

10.8%
OF TOTAL OPPORTUNITY

235 bBtus
OF ENERGY SAVINGS

3

HEATING Thermostat Settings & Setbacks

Thermostats should be set at or near EPA recommended temperatures and set back further at night and when no one is home.

10.2%
OF TOTAL OPPORTUNITY

221 bBtus
OF ENERGY SAVINGS

4

HEATING Accelerated Heating Equip. Replacement

Programs that encourage people to replace inefficient heating equipment before it breaks down can save a lot of energy.

9.7%
OF TOTAL OPPORTUNITY

210 bBtus
OF ENERGY SAVINGS

5

APPLIANCES Unplug 2nd Refrigerator

An estimated 37% of single-family households in Baltimore have a second (generally inefficient) refrigerator. Recycled it could save a lot of energy..

8.3%
OF TOTAL OPPORTUNITY

181 bBtus
OF ENERGY SAVINGS

6

HEATING Equipment Maintenance

Annual maintenance of heating equipment and replacement of filters ensures greater efficiency.

4.8%
OF TOTAL OPPORTUNITY

103 bBtus
OF ENERGY SAVINGS

7

HEATING Window Insulation

An estimated 40% of Baltimore's homes have single pane windows. Using storm windows, window film and thermal window coverings could reduce heat loss.

4.3%
OF TOTAL OPPORTUNITY

94 bBtus
OF ENERGY SAVINGS

8

LIGHTING Install Energy Efficient Bulbs

CFL saturation in Baltimore is estimated at 15%. Installing more CFLS (and other efficient bulbs) can still have a big impact.

4.2%
OF TOTAL OPPORTUNITY

91 bBtus
OF ENERGY SAVINGS

9

POOLS Increase Use of Pool Pump Timers

Most households with pools, either don't have a pump timer or fail to set it properly. Timers can reduce the hours of pump running time.

3.6%
OF TOTAL OPPORTUNITY

77 bBtus
OF ENERGY SAVINGS

10

APPLIANCES Clothes Washer Conservation

An estimated 50% of Baltimore's households wash primarily in cold water. Cold water wash and load consolidation can reduce hot water use.

3.4%
OF TOTAL OPPORTUNITY

73 bBtus
OF ENERGY SAVINGS



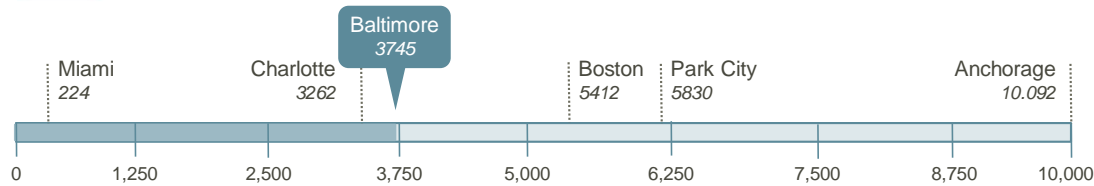
CITY PROFILE

Every city is different. Multiple factors were considered when developing the achievable energy savings estimates for Baltimore.

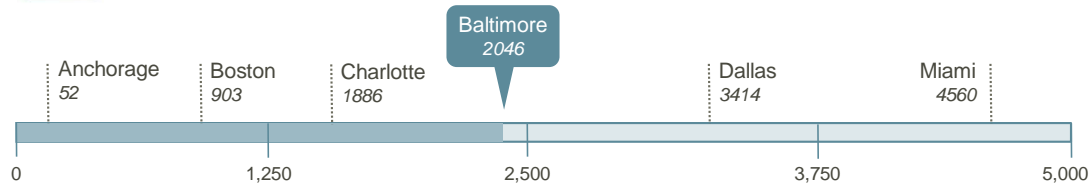
CLIMATE



HEATING DEGREE DAYS | per year on average



COOLING DEGREE DAYS | per year on average



TECHNOLOGY SATURATION

Percentages represent the proportion of Baltimore's households (both single and multi-family) with the following characteristics.

32% Heating systems over 15 years old

44% Fail to perform regular heating system maintenance

22% Programmable Thermostat

40% Single pane windows

50% Two or more ceiling fans

25% Second fridge

27% Top Load Washer

51% Wash in Cold Water

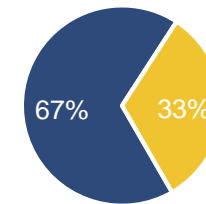
5% Swimming Pools

BUILDING STOCK

Average home size in the US has been increasing over the past 60 years. Most of Baltimore's housing stock was built before 1970 and is smaller than overall national averages or even state averages.

BUILDING STOCK RATIO

of the **296,056** housing units in Baltimore

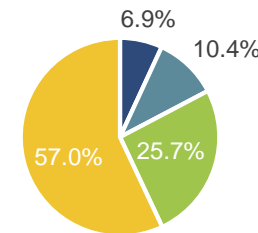


SINGLE-FAMILY
31.7% Rent | **68.2% Own**

MULTI-FAMILY
90.4% Rent | **9.6% Own**

BUILDING STOCK AGE

Combined single & multi-family data



<1950
1950-1969
1970-1989
1990-2009



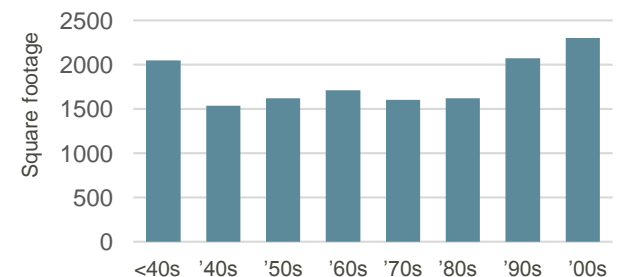
2,233sf

Average single-family home size



924sf

Average multi-family housing unit size



AVERAGE SQUARE FOOTAGE PER HOUSING UNIT (SOUTHERN REGION)

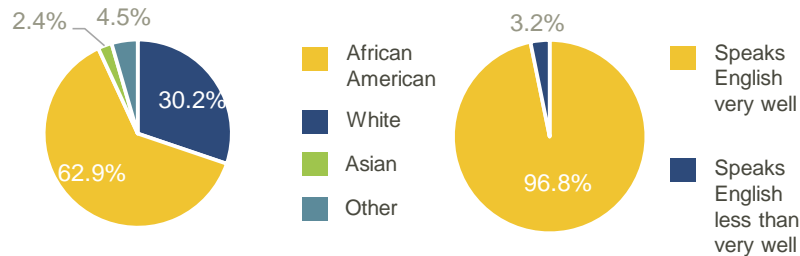
DEMOGRAPHICS



622,104

PEOPLE

are living in Baltimore



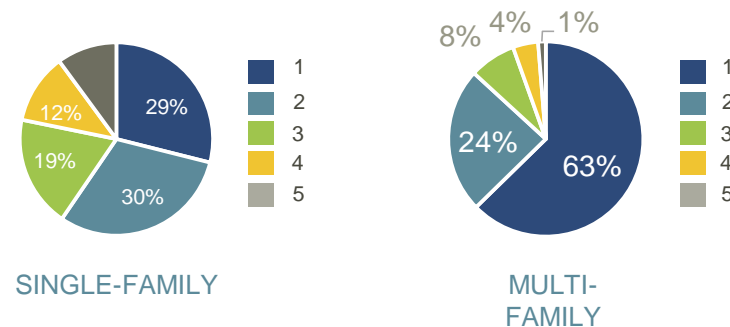
PEOPLE PER HOUSEHOLD



2.48

PEOPLE

living per home on average in Baltimore

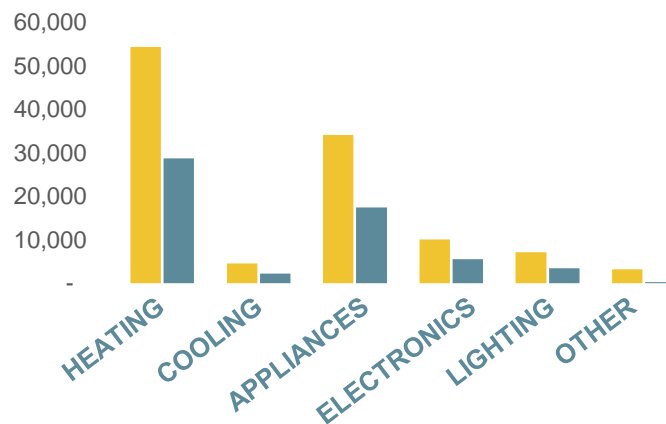


CURRENT USAGE PATTERN

Single-family homes use roughly twice as much energy a year compared to multi-family units

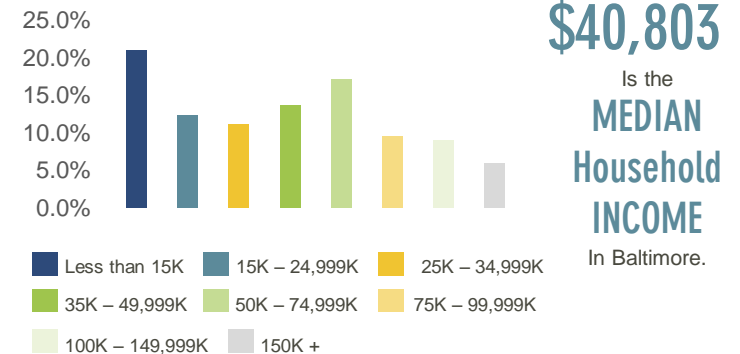
SINGLE-FAMILY
113,165 tBtus
Average annual energy use

MULTI-FAMILY
57,548 tBtus
Average annual energy use



HOUSEHOLD INCOME

Median household income in Baltimore is \$40,803, however median income among renters (\$26,861) is less than half the median income of owners (\$59,923). Nearly a quarter of Baltimore's adult residents (23.4%) live below the poverty line.



HOUSEHOLD COMPOSITION

Single-family homes are more likely to have youth, teens and older adults living in them. Young adults and elderly residents are equally likely to be found in single-family or multi-family homes.

FAMILY HOUSEHOLDS

52.4%

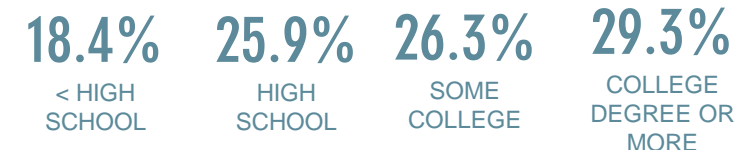
• HHs w/children under 18 years old	22.2%
• Married couples	24.0%
• Married couples w/children	8.1%
• Female headed household	23.4%
• Female headed household w/children	12.0%
• Male headed household	5.0%
• Male headed household w/children	2.0%

NON-FAMILY HOUSEHOLDS

47.6%

• Living alone	39.2%
• 65+ years	11.2%

EDUCATION LEVEL





HEATING

offers the greatest savings opportunities of all end-uses in Baltimore

Heating offers 54.9% of Baltimore's total achievable saving opportunity (7.7%). Potential savings vary across range of heating-related behaviors and decisions including weatherization, conservation, and thermostat settings and setbacks. Compared with other energy end uses, heating-related practices are particularly important in Baltimore due to the large number of heating degree days combined with the disproportionately high age of the housing stock.

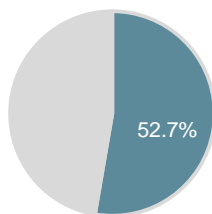
13,605 bBtus
OF ENERGY

is used for heating single and multi-family homes annually.

8.7%
REDUCTION

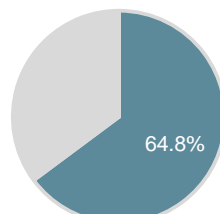
of current energy use for heating is possible through the behavior related activities identified in the following pages.

ESTIMATES OF ACHIEVABLE SAVINGS FROM HEATING



SINGLE-FAMILY

Heating-related actions account for 52.7% of energy savings opportunities in single-family homes – with potential savings of 936 billion btus of energy per year by year 8.



MULTI-FAMILY

Heating-related actions account for 64.8% of energy savings opportunities in multi-family homes – with potential savings of 253 billion btus of energy per year by year 8.

KEY FINDINGS

Weatherization Represents the Largest Savings Opportunity.

Given the age of the housing stock, households could reduce their heating-related energy consumption by 326 billion btus per year through a variety of weatherization activities. The use of window insulation could boost those estimated savings by an additional 94 billion btus.

Conservation and Waste Reduction Practices also offer high levels of achievable savings.

Both single-family and multi-family homes could significantly reduce their heat-related energy consumption through waste reduction strategies that include closing heating vents in unused rooms, closing doors to unused rooms and using draft protection strategies such as draft stoppers. Such strategies are likely to reduce energy consumption by 235 billion btus.

Thermostat Settings and Setbacks represent the second most effective heating-related strategy in single-family homes and would reduce Baltimore's heating demand by 193 billion btus. Programs designed to install and set programmable thermostats will be essential to unlocking the achievable savings estimates.

The Accelerated Replacement of Heating Equipment could reduce current heating demand by 210 billion btus with 76% of the estimated savings coming from single-family homes. (The estimates presented here do not include potential savings that require actions by a landlord or facilities manager).



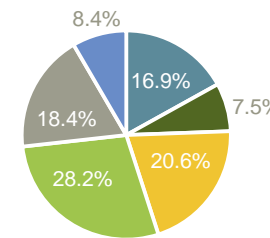
HEATING

Single-family energy saving opportunities

8.6%
SAVINGS

in current heating demand is achievable through the identified behaviors. Single-family households in Baltimore are currently an estimated 10,842 bBtus annually.

% OF SAVINGS OPPORTUNITY



936 bBtus

could be saved through these behaviors alone.

A B C D E F

Left hand Bar= Estimated Annual Savings by end of Year 4.

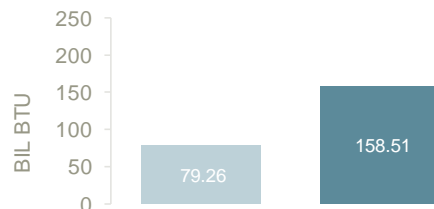
Right hand Bar= Estimated Annual Savings by end of Year 8.



A Weatherization

Target: Home Owner & Renter
Minimize heat loss through caulking, weather stripping and duct sealing.

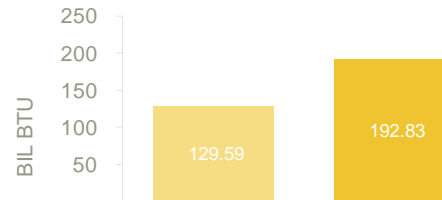
28.2% % OF HEATING OPPORTUNITY
31% HOUSEHOLDS ELIGIBLE*
Up to 25% ANNUAL HOUSEHOLD SAVINGS**



D Accelerated Equipment Replacement

Target: Home Owner
Increase efficiency through accelerated replacement of inefficient heating equipment (15+ years old) before it breaks down.

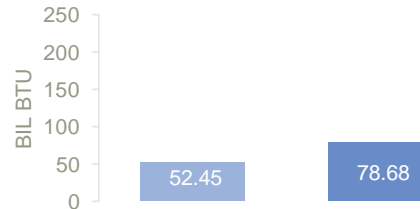
16.9% % OF HEATING OPPORTUNITY
29% HOUSEHOLDS ELIGIBLE*
Up to 25% ANNUAL HOUSEHOLD SAVINGS**



B Thermostat Settings & Setbacks

Target: Home Owner & Renters
Set thermostats at EPA recommended settings (58 at night and away, 68 during the day when someone is home).

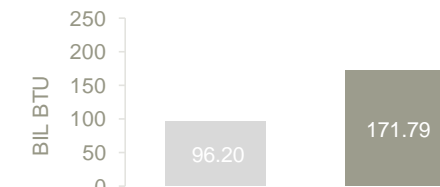
20.6% % OF HEATING OPPORTUNITY
91% HOUSEHOLDS ELIGIBLE*
4.6% ANNUAL HOUSEHOLD SAVINGS**



E Window Insulation

Target: Home Owner & Renters
Minimize heat loss by using storm windows, window film and thermal window coverings.

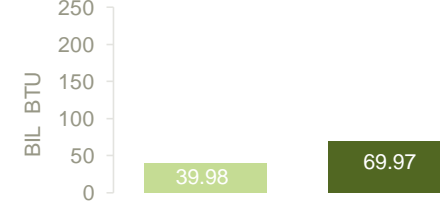
8.4% % OF HEATING OPPORTUNITY
42% HOUSEHOLDS ELIGIBLE*
5.7% ANNUAL HOUSEHOLD SAVINGS**



C Conservation

Target: Home Owner & Renters
Reduce energy waste by closing doors and ducts and reducing heat in unused rooms.

18.4% % OF HEATING OPPORTUNITY
71% HOUSEHOLDS ELIGIBLE*
5.6% ANNUAL HOUSEHOLD SAVINGS**



F Heating Equipment Maintenance

Target: Home Owner & Renters
Increase performance of heating equipment with regular cleaning/service and changing of furnace filters.

7.5% % OF HEATING OPPORTUNITY
40% HOUSEHOLDS ELIGIBLE*
5% ANNUAL HOUSEHOLD SAVINGS**



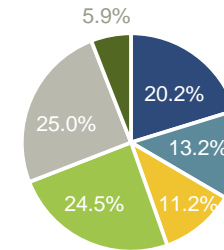
HEATING

Multi-family energy saving opportunities

9.2% SAVINGS

in current heating demand is achievable through the identified behaviors. Multi-family households in Baltimore are currently using an estimated 2,763 bBtus annually.

% OF SAVINGS OPPORTUNITY



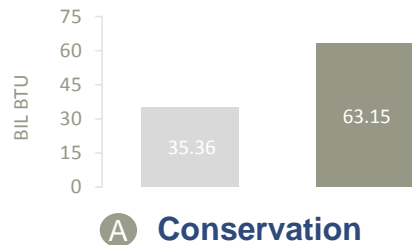
253 bBtus

could be saved through these behaviors alone.

A B C D E F

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



Target: Home Owner & Renters
Reduce energy waste by closing doors and ducts and reducing heat in unused rooms.

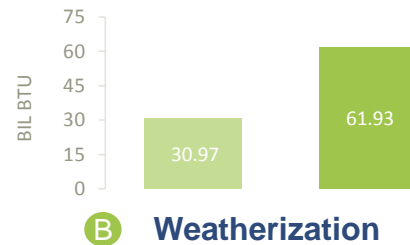
25.0% % OF HEATING OPPORTUNITY
40% HOUSEHOLDS ELIGIBLE*
5.6% ANNUAL HOUSEHOLD SAVINGS**



D Heating Equipment Maintenance

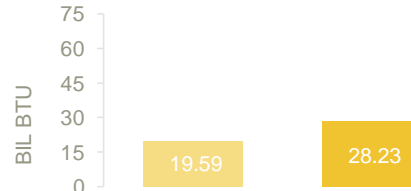
Target: Home Owner & Renters
Increase performance of heating equipment with regular cleaning/service and changing of furnace filters.

13.2% % OF HEATING OPPORTUNITY
51% HOUSEHOLDS ELIGIBLE*
5% ANNUAL HOUSEHOLD SAVINGS**



Target: Home Owner
Minimize heat loss through caulking, weather stripping and duct sealing.

24.5% % OF HEATING OPPORTUNITY
17% HOUSEHOLDS ELIGIBLE*
Up to 25% ANNUAL HOUSEHOLD SAVINGS**



E Thermostat Settings & Setbacks

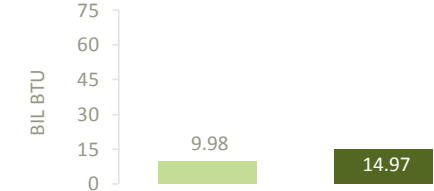
Target: Home Owner & Renters
Set thermostats at EPA recommended settings (58 at night and away, 68 during the day when someone is home).

11.2% % OF HEATING OPPORTUNITY
60% HOUSEHOLDS ELIGIBLE*
4.6% ANNUAL HOUSEHOLD SAVINGS**



Target: Home Owner
Increase efficiency through accelerated replacement of inefficient heating equipment (15+ years old) before it breaks down.

20.2% % OF HEATING OPPORTUNITY
24% HOUSEHOLDS ELIGIBLE*
Up to 25% ANNUAL HOUSEHOLD SAVINGS**



F Window Insulation

Target: Home Owner & Renters
Minimize heat loss by using storm windows, window film and thermal window coverings.

5.9% % OF HEATING OPPORTUNITY
37% HOUSEHOLDS ELIGIBLE*
5.7% ANNUAL HOUSEHOLD SAVINGS**



COOLING

Accounts for a large proportion of electricity demand during summer months

Cooling-related behaviors can provide nearly 10% of Baltimore's total achievable saving opportunity (7.7%). Cooling-related energy demand is an important contributor to peak electricity loads during Baltimore's hot and humid summer months. Current estimates indicate that 54% of households have central AC and 29% have central AC units that are at least 10 years old. Higher temperatures associated with global climate change are likely to extend the number of days per year that households rely on air conditioning.

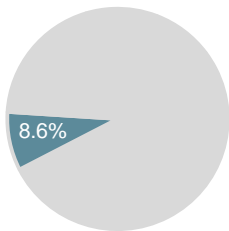
1,107 bBtus
OF ENERGY

is used for cooling in both single and multi-family homes annually.

19%
REDUCTION

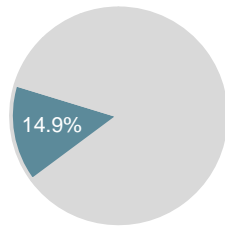
of current energy use for cooling is possible through the behavior related activities identified in the following pages.

ESTIMATES OF ACHIEVABLE SAVINGS FROM COOLING



SINGLE-FAMILY

Cooling-related actions represent 8.6% of the energy-savings opportunities for single-family homes or 153 billion btus of energy per year by year 8.



MULTI-FAMILY

Cooling-related actions represent 14.9% of the energy-savings opportunities for multi-family homes or 58 billion btus of energy per year by year 8.

KEY FINDINGS

Increasing the prevalence and use of ceiling fans represents the largest opportunity to reduce cooling-related energy consumption. Currently, only half of all households have 2 or more ceiling fans (only 17% of multi-family households). Of those, 55% report using their fans infrequently. The use of ceiling fans can reduce reliance on air conditioning during moderately warm spells and can help people to increase their thermostat settings while maintaining comfortable conditions. Ceiling fans could help Baltimore residents save 66 billion btus per year.

Reducing solar heat gain through the use of window film, blinds and shades could reduce cooling-related energy consumption by nearly 32 billion btus. Both single-family and multi-family homes could benefit by covering south and west-facing windows during the hottest hours of the day.

Thermostat settings and setbacks represent 13% of cooling-related savings opportunities. If 40% of eligible households set their thermostats to the EPA-recommended settings, Baltimore could save 27 billion btus per year. Additional savings could be achieved through the use of more aggressive setbacks during vacations.

The Accelerated Replacement of Cooling Equipment could reduce current cooling demand by 30 billion btus with 75% of the estimated savings coming from single-family homes. (The estimates presented here do not include potential savings that require actions by a landlord or facilities manager. Old AC units in multi-family buildings are likely to represent significant opportunities for additional savings).



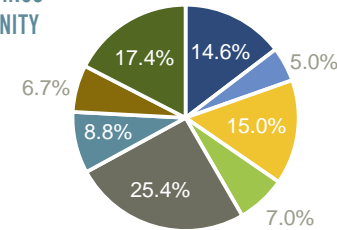
COOLING

Single-family energy saving opportunities

17% SAVINGS

in current cooling demand is achievable through the identified behaviors. Single-family homes in Baltimore are currently using an estimated 899 bBtus annually.

% OF SAVINGS OPPORTUNITY



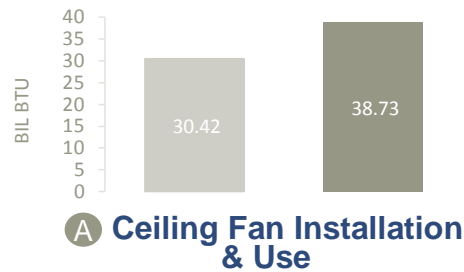
153 bBtus

could be saved through these behaviors alone.

A B C D E F G H

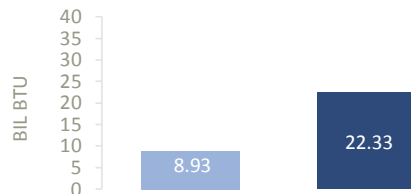
Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



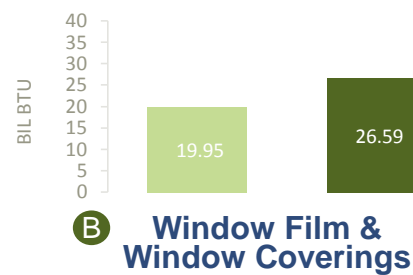
Target: Home Owners & Renters
Increase the prevalence and frequency of use of fans and reduce AC use.

25.4% % OF COOLING OPPORTUNITY
47% HOUSEHOLDS ELIGIBLE*
Up to 25% ANNUAL HOUSEHOLD SAVINGS**



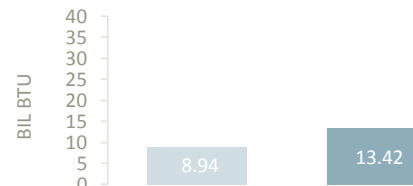
Target: Home Owners
Increase efficiency through accelerated replacement of inefficient AC equipment (10+ years old) before it breaks down.

14.6% % OF COOLING OPPORTUNITY
28% HOUSEHOLDS ELIGIBLE*
Up to 33% ANNUAL HOUSEHOLD SAVINGS**



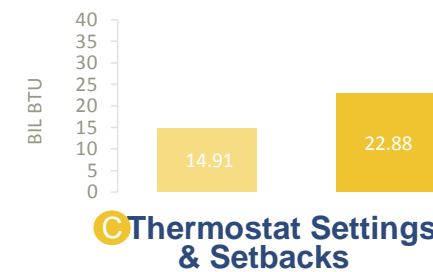
Target: Home Owners and Renters
Reduce solar heat gain and energy loss through the use of reflective film and window coverings.

17.4% % OF COOLING OPPORTUNITY
57% HOUSEHOLDS ELIGIBLE*
Up to 13.2% ANNUAL HOUSEHOLD SAVINGS**



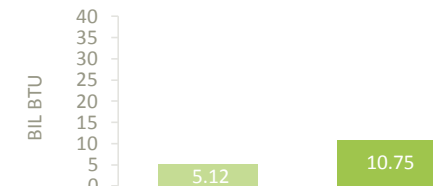
Target: Primarily Home Owners
Minimize the loss of cool air through caulking, weather stripping and duct sealing.

8.8% % OF COOLING OPPORTUNITY
11% HOUSEHOLDS ELIGIBLE*
Up to 30% ANNUAL HOUSEHOLD SAVINGS**



Target: Home Owners and Renters
Set thermostats at EPA recommended temps (82 at night, 88 away, 78 during the day when someone is home).

15.0% % OF COOLING OPPORTUNITY
39% HOUSEHOLDS ELIGIBLE*
Up to 15.6% ANNUAL HOUSEHOLD SAVINGS**



Target: Primarily Renters
Set thermostats at EPA recommended temperatures and turn off when no one is at home.

7.0% % OF COOLING OPPORTUNITY
36% HOUSEHOLDS ELIGIBLE*
Up to 11.4% ANNUAL HOUSEHOLD SAVINGS**

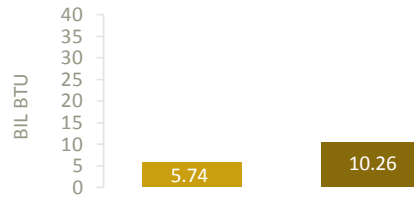


COOLING

Single-family energy saving opportunities

...Continued

Left hand Bar= Estimated Annual Savings by end of Year 4.



G Conservation

Target: Home Owners and Renters

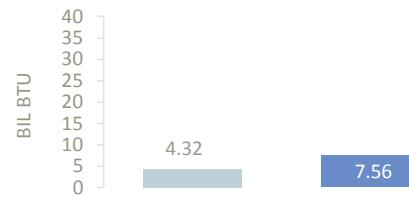
Reducing energy waste by closing doors and ducts and reducing heat in unused rooms.

6.7%
% OF COOLING
OPPORTUNITY

46%
HOUSEHOLDS
ELIGIBLE*

6.1%
ANNUAL
HOUSEHOLD
SAVINGS**

Right hand Bar= Estimated Annual Savings by end of Year 8.



H Cooling Equipment Maintenance

Target: Home Owners and Renters

Increase performance of cooling equipment with regular cleaning/service and changing of filters.

5.0%
% OF COOLING
OPPORTUNITY

32%
HOUSEHOLDS
ELIGIBLE*

Up to 8%
ANNUAL
HOUSEHOLD
SAVINGS**



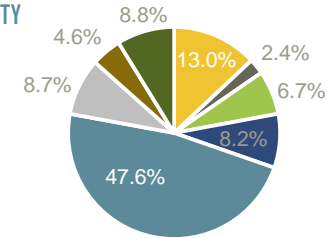
COOLING

Multi-family energy saving opportunities

27.9%
SAVINGS

in current cooling demand is achievable through the identified behaviors. Multi-family homes in Baltimore are currently using an estimated 208 bBtus annually.

% OF SAVINGS OPPORTUNITY



58 bBtus

could be saved through these behaviors alone.

A B C D E F G H

Left hand Bar= Estimated Annual Savings by end of Year 4.



A Ceiling Fan Installation & Use

Target: Home Owners and Renters
Increase the prevalence and frequency of use of fans and reduce AC use.

47.6% % OF COOLING OPPORTUNITY
71% HOUSEHOLDS ELIGIBLE*
Up to 25% ANNUAL HOUSEHOLD SAVINGS**

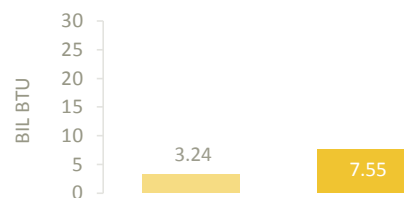


D Weatherization

Target: Primarily Home Owners
Minimize the loss of cool air through caulking, weather stripping and duct sealing.

8.7% % OF COOLING OPPORTUNITY
9% HOUSEHOLDS ELIGIBLE*
Up to 30% ANNUAL HOUSEHOLD SAVINGS**

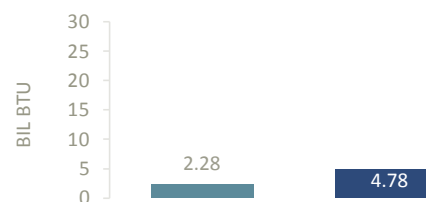
Right hand Bar= Estimated Annual Savings by end of Year 8.



B Accelerated Cooling Equipment Replacement

Target: Home Owners
Increase efficiency through accelerated replacement of inefficient AC equipment (10+ years old) before it breaks down.

13.0% % OF COOLING OPPORTUNITY
18% HOUSEHOLDS ELIGIBLE*
Up to 33% ANNUAL HOUSEHOLD SAVINGS**



E Wall Unit AC Settings

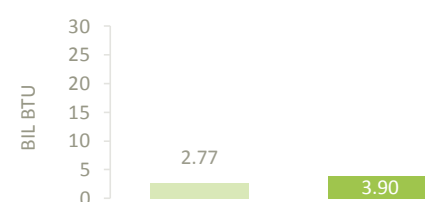
Target: Primarily Renters
Set thermostats at EPA recommended temperatures and turn off when no one is at home.

8.2% % OF COOLING OPPORTUNITY
34% HOUSEHOLDS ELIGIBLE*
Up to 11.4% ANNUAL HOUSEHOLD SAVINGS**

C Window Film

Target: Home Owners and Renters
Reduce solar heat gain and energy loss through the use of reflective film and window coverings.

8.8% % OF COOLING OPPORTUNITY
48% HOUSEHOLDS ELIGIBLE*
Up to 13.2% ANNUAL HOUSEHOLD SAVINGS**



F Thermostat Settings & Setbacks

Target: Home Owners and Renters
Set thermostats at EPA recommended temps (82 at night, 88 away, 78 during the day when someone is home).

6.7% % OF COOLING OPPORTUNITY
30% HOUSEHOLDS ELIGIBLE*
Up to 15.6% ANNUAL HOUSEHOLD SAVINGS**



COOLING

Multi-family energy saving opportunities

...Continued

Left hand Bar= Estimated Annual Savings by end of Year 4.



G Conservation

Target: Home Owners and Renters

Reducing energy waste by closing doors and ducts and reducing heat in unused rooms.

4.6%

% OF COOLING
OPPORTUNITY

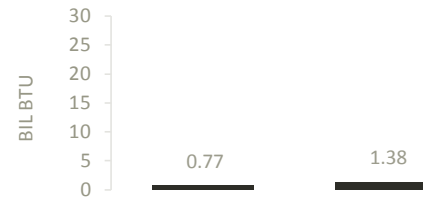
22%

HOUSEHOLDS
ELIGIBLE*

6.1%

ANNUAL
HOUSEHOLD
SAVINGS**

Right hand Bar= Estimated Annual Savings by end of Year 8.



H Cooling Equipment Maintenance

Target: Home Owners and Renters

Increase performance of cooling equipment with regular cleaning/service and changing of furnace filters.

2.4%

% OF COOLING
OPPORTUNITY

35%

HOUSEHOLDS
ELIGIBLE*

Up to 8%

ANNUAL
HOUSEHOLD
SAVINGS**



APPLIANCES

Represent the second largest source of achievable energy savings in single family homes

Changing appliance-related behaviors can provide nearly 17% of Baltimore's total achievable saving opportunity (7.7%). The refrigeration of food and beverages, wasteful hot water practices, and laundry routines comprise some of the biggest opportunities for savings. Such opportunities are particularly important in single-family homes because they typically contain a disproportionately larger number of appliances and residents are more likely to have direct control over water heater settings and maintenance decisions.

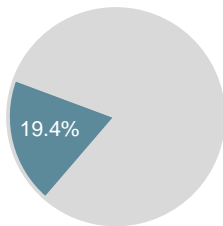
8,475 bBtus
OF ENERGY

is used for appliances in both single and multi-family homes annually.

4.4%
REDUCTION

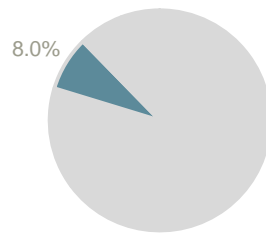
of current energy use for appliances is possible through the behavior related activities identified in the following pages.

ESTIMATES OF ACHIEVABLE SAVINGS FROM APPLIANCES



SINGLE-FAMILY

Appliance-related actions account for 19.4% of energy savings opportunities in single-family homes – with potential savings of 344 billion btus of energy per year by year 8.



MULTI-FAMILY

Appliance-related actions account for 8.0% of energy savings opportunities in multi-family homes – with potential savings of 31 billion btus of energy per year by year 8.

KEY FINDINGS

Reducing the plug load from second refrigerators and stand alone freezers provides the largest appliance-related savings opportunity in Baltimore. Approximately 37% of single-family households have a second – usually very inefficient – refrigerator while 1/3 of households have a stand alone freezer. Unplugging or recycling these devices could help Baltimore residents save 180 billion btus per year.

Laundry routines offer another important source of energy savings in Baltimore. By encouraging more households to wash clothes in cold water, reduce the number of laundry loads per week, and air dry a larger proportion of their clothes, Baltimore could reduce household energy consumption by 120 billion btus per year. (These estimates do not include the additional savings that could come from a shift in laundry practices in Laundromats and other locations outside of the home.)

Making hot water available 24/7 uses a lot of energy, but a few simple strategies can reduce residential demand without large investments. By reducing water heater settings to 120 degrees and ensuring that hot water heaters are well insulated, Baltimore residents could save an estimated 65 billion btus of energy per year. Approximately 25% of both single-family and multi-family households have water heaters that are at least 10 years old and that don't have any added insulation.



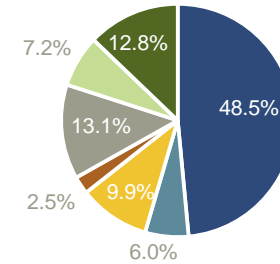
APPLIANCES

Single-family energy saving opportunities

Left hand Bar= Estimated Annual Savings by end of Year 4.

5.1% SAVINGS
in current appliance demand is achievable through the identified behaviors. Single-family households in Baltimore are currently using an estimated 6,796 bBtus annually.

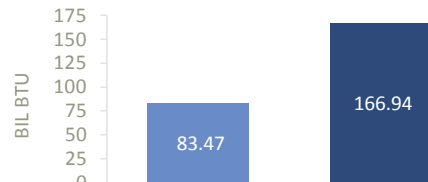
% OF SAVINGS OPPORTUNITY



344 bBtus

could be saved through these behaviors alone.

A B C D E F G



A Unplug Second Refrigerator/Freezer

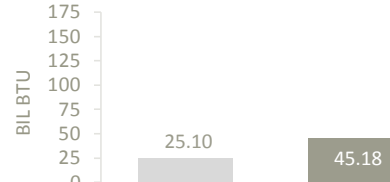
Target: Primarily Home Owners

Unplug and/or recycle old, inefficient or sparsely used second refrigerators and stand alone freezers.

48.5%
% OF APPLIANCE OPPORTUNITY

82%
HOUSEHOLDS ELIGIBLE*

8.8%
ANNUAL HOUSEHOLD SAVINGS**



B Cold Water Wash

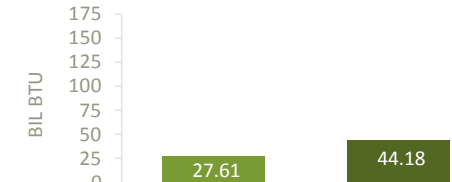
Target: Home Owners and Renters

Switch from warm to cold water for clothes washing.

13.1%
% OF APPLIANCE OPPORTUNITY

46%
HOUSEHOLDS ELIGIBLE*

2.6%
ANNUAL HOUSEHOLD SAVINGS**



C Air Dry Laundry

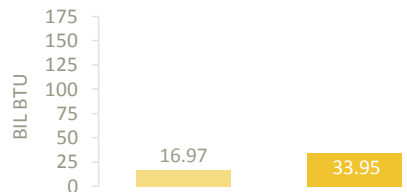
Target: Home Owners and Renters

Hang dry a portion of laundry using hangers, drying racks and clothes lines.

12.8%
% OF APPLIANCE OPPORTUNITY

96%
HOUSEHOLDS ELIGIBLE*

1.9%
ANNUAL HOUSEHOLD SAVINGS**



D Water Heater Insulation

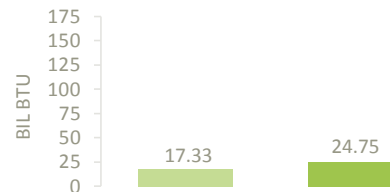
Target: Home Owners and Renters

Add an insulation jacket to old/inefficient storage water heaters.

9.9%
% OF APPLIANCE OPPORTUNITY

25%
HOUSEHOLDS ELIGIBLE*

4.6%
ANNUAL HOUSEHOLD SAVINGS**



E Load Reductions

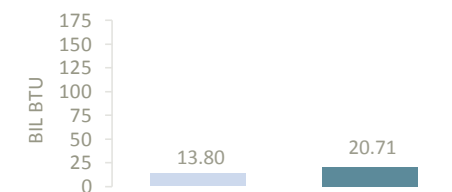
Target: Home Owners and Renters

Reduce the number of laundry loads each week by 20%.

7.2%
% OF APPLIANCE OPPORTUNITY

99%
HOUSEHOLDS ELIGIBLE*

0.8%
ANNUAL HOUSEHOLD SAVINGS**



F Water Heater Settings

Target: Home Owners and Renters

Reduce water heater settings to 120 degrees.

6.0%
% OF APPLIANCE OPPORTUNITY

30%
HOUSEHOLDS ELIGIBLE*

2.2%
ANNUAL HOUSEHOLD SAVINGS**



APPLIANCES

Single-family energy saving opportunities

...Continued

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



G EE Clothes Washer

Target: Home Owners and Renters
Accelerate the replacement of old clothes washers with high efficiency models.

2.5%	24%	2%
% OF APPLIANCE OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**

*Household eligibility is determined independently for each behavior. More information is available in the methodology report.

**Estimates of annual households savings are for participating households.



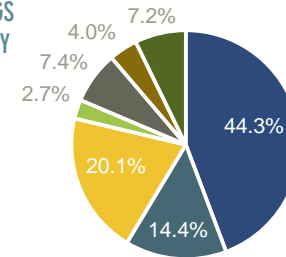
APPLIANCES

Multi-family energy saving opportunities

1.9% SAVINGS

in current appliance demand is achievable through the identified behaviors. Multi-family households in Baltimore are currently using an estimated 1,680 bBtus annually.

% OF SAVINGS OPPORTUNITY



31 bBtus

could be saved through these behaviors alone.

A B C D E F G

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



A Unplug Second Refrigerator/Freezer

Target: Primarily Home Owners

Unplug and/or recycle old, inefficient or sparsely used second refrigerators and stand alone freezers.

44.3%
% OF APPLIANCE OPPORTUNITY

17%
HOUSEHOLDS ELIGIBLE*

8.8%
ANNUAL HOUSEHOLD SAVINGS**



D Cold Water Wash

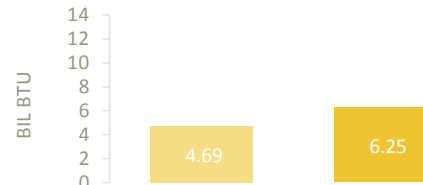
Target: Home Owners and Renters

Switch from warm to cold water for clothes washing.

7.4%
% OF APPLIANCE OPPORTUNITY

50%
HOUSEHOLDS ELIGIBLE*

2.6%
ANNUAL HOUSEHOLD SAVINGS**



B Water Heater Insulation

Target: Home Owners and Renters

Add an insulation jacket to old/inefficient storage water heaters.

20.1%
% OF APPLIANCE OPPORTUNITY

28%
HOUSEHOLDS ELIGIBLE*

4.6%
ANNUAL HOUSEHOLD SAVINGS**



E Air Dry Laundry

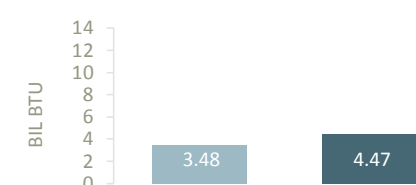
Target: Home Owners and Renters

Hang dry a portion of laundry using hangers, drying racks and clothes lines.

7.2%
% OF APPLIANCE OPPORTUNITY

22%
HOUSEHOLDS ELIGIBLE*

1.9%
ANNUAL HOUSEHOLD SAVINGS**



C Water Heater Settings

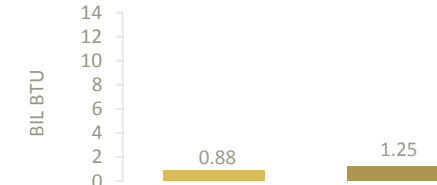
Target: Home Owners and Renters

Reduce water heater settings to 120 degrees.

14.4%
% OF APPLIANCE OPPORTUNITY

30%
HOUSEHOLDS ELIGIBLE*

2.2%
ANNUAL HOUSEHOLD SAVINGS**



F Load Reductions

Target: Home Owners and Renters

Reduce the number of laundry loads by 20% each week.

4.0%
% OF APPLIANCE OPPORTUNITY

22%
HOUSEHOLDS ELIGIBLE*

0.8%
ANNUAL HOUSEHOLD SAVINGS**



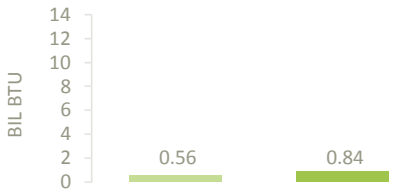
APPLIANCES

Multi-family energy saving opportunities

...Continued

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



GE Clothes Washer

Target: Home Owners and Renters
Accelerate the replacement of old clothes washers with high efficiency models.

2.7%	5%	2%
% OF APPLIANCE OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**

*Household eligibility is determined independently for each behavior. More information is available in the methodology report. | **Estimates of annual households savings are for participating households.



ELECTRONICS

Represent a rapidly growing source of energy demand and energy savings

Electronics represent a rapidly growing source of household energy demand and a readily available source of savings. Electronics-related actions can provide at least 4.4% of Baltimore's total achievable saving opportunity (7.7%). By focusing on concentrated electronics plug loads associated with entertainment systems and home office systems, the effort to reduce consumption is greatly simplified. Additional savings can be achieved by creating and managing centralized charging stations for the growing number of small electronics devices.

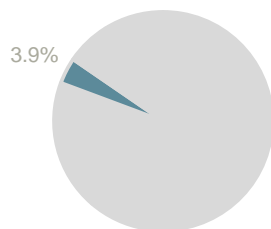
2,541 bBtus
OF ENERGY

is used for electronics in single and multi-family homes annually.

3.7%
REDUCTION

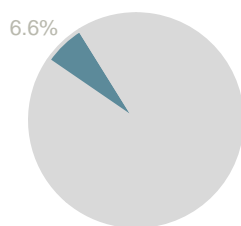
of current energy use for electronics is possible through the behavior related activities identified in the following pages.

ESTIMATES OF ACHIEVABLE SAVINGS FROM ELECTRONICS



SINGLE-FAMILY

Electronics-related actions account for 3.9% of energy savings opportunities in single-family homes – with potential savings of 69 billion btus of energy per year by year 8



MULTI-FAMILY

Electronics-related actions account for 6.6% of energy savings opportunities in multi-family homes – with potential savings of 25.7 billion btus of energy per year by year 8

KEY FINDINGS

Reducing the plug load and vampire load from home entertainment systems provides the largest electronics-related savings opportunity in Baltimore. Roughly 45% of US households have three or more televisions and many are connected to a range of peripheral devices such as digital video recorders, gaming systems and audio systems. Conservative estimates of achievable savings for Baltimore indicate that the use of smart strips (to ensure that all home entertainment devices are turned off when not in use) could help Baltimore residents save at least 42 billion btus per year.

Managing the plug load from home office equipment offers another important source of energy savings in Baltimore. More than three-quarters of US households have at least one computer while one-third of households have two or more. By encouraging more households to use smart strips with their home office systems, Baltimore could reduce household energy consumption by at least 18 billion btus per year.

Better management of miscellaneous plug loads can reduce residential demand even further by minimizing energy waste associated with leaving devices turned on when nobody is using them, using energy-inefficient settings, or leaving devices plugged in when fully charged. By reducing these sources of energy waste, households in Baltimore could reduce energy consumption by at least 25 billion btus.

Accelerating the shift from desktops to laptops could provide additional annual savings of more than 10 billion btus.



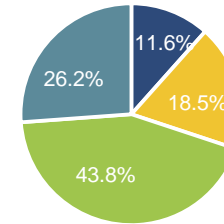
ELECTRONICS

Single-family energy saving opportunities

3.4% SAVINGS

in current electronics energy demand is achievable through the identified behaviors. Single-family households in Baltimore are currently using an estimated 2,015 bBtus annually.

% OF SAVINGS OPPORTUNITY



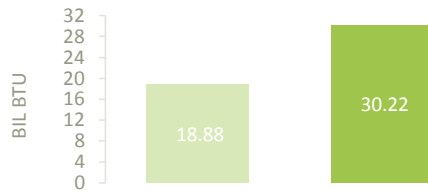
69 bBtus

could be saved through these behaviors alone.

A B C D

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



A Home Entertainment Vampire Load Management

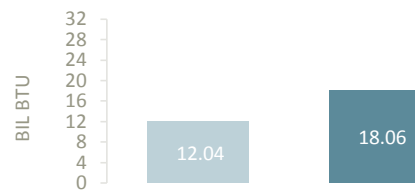
Target: Home Owners and Renters

Use smart strips to reduce vampire loads (standby power consumption) of home entertainment equip.

43.8%
% OF ELECTRONICS OPPORTUNITY

99%
HOUSEHOLDS ELIGIBLE*

4.1%
ANNUAL HOUSEHOLD SAVINGS**



B Misc. Plug Load Management

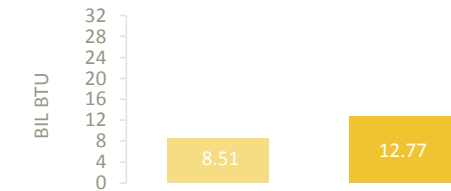
Target: Home Owners and Renters

Use energy efficient settings on computers, turn off TVs and video games, and use smart strip timers for charging devices.

26.2%
% OF ELECTRONICS OPPORTUNITY

100%
HOUSEHOLDS ELIGIBLE*

3.3%
ANNUAL HOUSEHOLD SAVINGS**



C Home Office Vampire Load Management

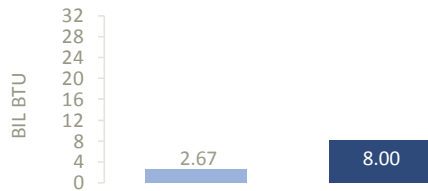
Target: Home Owners and Renters

Use smart strips to reduce vampire loads (standby power consumption) of office equipment.

18.5%
% OF ELECTRONICS OPPORTUNITY

59%
HOUSEHOLDS ELIGIBLE*

4.2%
ANNUAL HOUSEHOLD SAVINGS**



D Replace Desktops with Laptops

Target: Home Owners and Renters

Accelerate the replacement of desktops with laptops.

11.6%
% OF ELECTRONICS OPPORTUNITY

50%
HOUSEHOLDS ELIGIBLE*

2.8%
ANNUAL HOUSEHOLD SAVINGS**



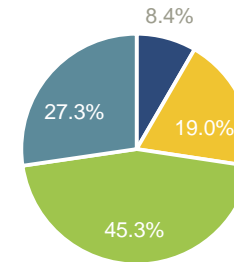
ELECTRONICS

Multi-family energy saving opportunities

4.9%
SAVINGS

in current electronics energy demand is achievable through the identified behaviors. Multi-family households in Baltimore are currently using an estimated 526 bBtus annually.

% OF SAVINGS OPPORTUNITY



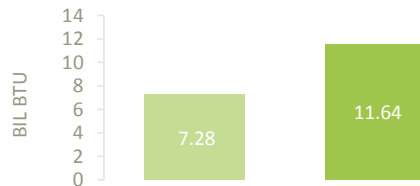
26 bBtus

could be saved through these behaviors alone.

A B C D

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.



A Home Entertainment Plug Load Management

Target: Home Owners and Renters

Use smart strips to reduce vampire loads (standby power consumption) of home entertainment equip.

45.3%
% OF ELECTRONICS OPPORTUNITY

100%
HOUSEHOLDS ELIGIBLE*

4.1%
ANNUAL HOUSEHOLD SAVINGS**



D Replace Desktops with Laptops

Target Home Owners and Renters

Accelerate the replacement of desktops with laptops.

8.4%
% OF ELECTRONICS OPPORTUNITY

42%
HOUSEHOLDS ELIGIBLE*

2.8%
ANNUAL HOUSEHOLD SAVINGS**



B Misc. Plug Load Management

Target: Home Owners and Renters

Use energy efficient settings on computers, turn off TVs and video games, and use smart strip timers for charging devices

27.3%
% OF ELECTRONICS OPPORTUNITY

100%
HOUSEHOLDS ELIGIBLE*

3.3%
ANNUAL HOUSEHOLD SAVINGS**



C Home Office Plug Load Management

Target: Home Owners and Renters

Use smart strips to reduce vampire loads (standby power consumption) of office equipment

19.0%
% OF ELECTRONICS OPPORTUNITY

45%
HOUSEHOLDS ELIGIBLE*

4.2%
ANNUAL HOUSEHOLD SAVINGS**



LIGHTING

Continues to provide opportunities for energy savings

Lighting offers 6.4% of Baltimore's total achievable saving opportunity (7.7%). These savings are rooted in the choice to use more energy-efficient light bulbs (CFLs and LEDs) as well as enhancing household energy conservation practices. Among single-family homes, reducing hours of outdoor lighting offers a notable savings opportunity.

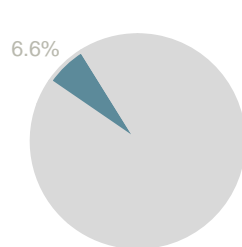
**1,758 bBtus
OF ENERGY**

is used for lighting in both single and multi-family homes annually.

**7.9%
REDUCTION**

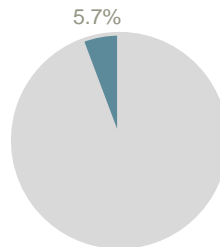
of current energy use for lighting is possible through the behavior related activities identified in the following pages.

ESTIMATES OF ACHIEVABLE SAVINGS FROM LIGHTING



SINGLE-FAMILY

Lighting-related actions account for 6.6% of energy savings opportunities in single-family homes – with potential savings of 117 billion btus of energy per year by year 8



MULTI-FAMILY

Lighting-related actions account for 5.7% of energy savings opportunities in multi-family homes – with potential savings of 22 billion btus of energy per year by year 8

KEY FINDINGS

The most sizeable energy savings from lighting can be achieved by increasing the saturation rate of energy efficient light bulbs throughout Baltimore's households. While CFL use is on the rise, overall socket saturation remains relatively low. **By increasing saturation levels of CFLs alone, Baltimore could help residents reduce energy demand by 91 billion btus.** Additional savings could be achieved through programs that focus on the adoption of LED bulbs.

Lighting conservation practices also offer high levels of achievable savings. An estimated 25% of single-family households in Baltimore leave at least one outdoor light turned on all night long. Baltimore residents can significantly reduce lighting demand by simply turning off unused lights – both indoors and outdoors. The combination of indoor and outdoor lighting conservation could achieve savings of 48 billion btus, with the largest proportion of these savings (about 60%) coming from a reduction in the hours of *outdoor* lighting.



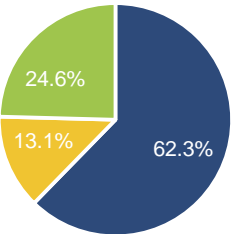
LIGHTING

Single-family energy saving opportunities

8.2%
SAVINGS

in current lighting demand is achievable through the identified behaviors. Single-family households in Baltimore are currently using an estimated 1,422 bBtus annually.

% OF SAVINGS OPPORTUNITY



117 bBtus

could be saved through these behaviors alone.

A B C

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.

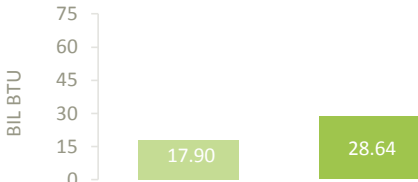


A Replace Incandescents with CFLs

Target: Home Owners and Renters

Replace a greater proportion of incandescent bulbs with CFLs. (LEDs offer additional savings.)

62.3%	85%	10.2%
% OF LIGHTING OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**

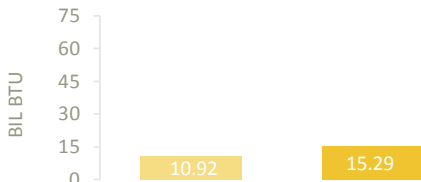


B Turn off Unused Outdoor Lighting

Target: Home Owners and Renters

Turn off outdoor lighting or use timers to reduce hours of use.

24.6%	24%	24.6%
% OF LIGHTING OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**



C Turn Off Unused Indoor Lighting

Target: Home Owners and Renters

Turn off indoor lighting in unoccupied rooms.

13.1%	100%	3.1%
% OF LIGHTING OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**

*Household eligibility is determined independently for each behavior. More information is available in the methodology report.

**Estimates of annual households savings are for participating households.



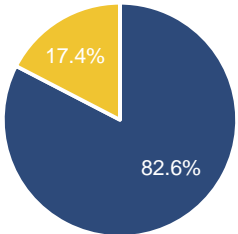
LIGHTING

Multi-family energy saving opportunities

6.6%
SAVINGS

in current lighting demand is achievable through the identified behaviors. Multi-family households in Baltimore are currently using an estimated 336 bBtus annually.

% OF SAVINGS OPPORTUNITY



22 bBtus

could be saved through these behaviors alone.

A B C
■ ■ ■

Left hand Bar= Estimated Annual Savings by end of Year 4.

Right hand Bar= Estimated Annual Savings by end of Year 8.

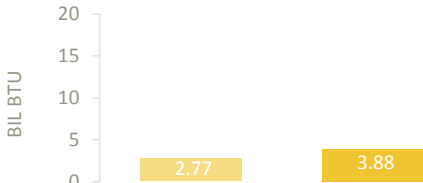


A Replace Incandescents with CFLs

Target: Home Owners and Renters

Replace a greater proportion of incandescent bulbs with CFLs. (LEDs offer additional savings.)

82.6%	85%	10.2%
% OF LIGHTING OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**



B Turn off Unused Indoor Lighting

Target: Home Owners and Renters

Turn off indoor lighting in unoccupied rooms

17.4%	100%	3.1%
% OF LIGHTING OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**

C Turn Off Unused Outdoor Lighting

Target: Home Owners and Renters

Turn off outdoor lighting or use timers to reduce hours of use.

-	-	-
% OF LIGHTING OPPORTUNITY	HOUSEHOLDS ELIGIBLE*	ANNUAL HOUSEHOLD SAVINGS**

*Household eligibility is determined independently for each behavior. More information is available in the methodology report.

**Estimates of annual households savings are for participating households.



POOLS & SPAS

Provide surprising opportunities for energy savings in Baltimore

Pools and Spas tend to be energy hogs. In fact, homes with pools consume nearly 50% more electricity per year than homes without pools. Despite the fact that only a small percentage of homes typically have swimming pools or spas, achievable energy savings from pools is often notable. Our estimates indicate that roughly 7.5% of single-family homes in Baltimore have a swimming pool and that pools and spas represent 7.3% of Baltimore's total achievable saving opportunity (7.7%).

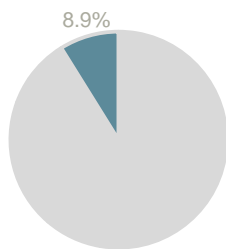
**665 bBtus
OF ENERGY**

is used for pools and spas in single-family homes annually.

**23.7%
REDUCTION**

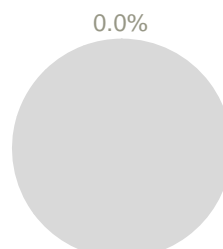
of current energy use for pools and spas is possible through the behavior-related activities identified in the following pages.

ESTIMATES OF ACHIEVABLE SAVINGS FROM POOLS & SPAS



SINGLE-FAMILY

Pool-related actions account for 8.9% of energy savings opportunities in single-family homes – with potential savings of 157 billion btus of energy per year by year 8



MULTI-FAMILY

Pool-related savings cannot be calculated for multi-family homes.

KEY FINDINGS

Increasing the prevalence and appropriate use of pool pump timers represents nearly 50% of the opportunity to reduce energy consumption from pools and spas. Studies suggest that pool owners in mid-atlantic states tend to run pool pumps for more hours than necessary. Reducing the run time of pool pumps could help Baltimore residents save 77 billion btus per year.

Accelerating the replacement of energy-inefficient pool pumps with more efficient models could help pool owners save 65 billion btus per year. Switching from a standard efficiency single speed pump to a multi-speed or variable-speed pump can achieve energy savings as high as 83 percent. Behavioral programs can help accelerate the adoption of such technologies.

Augmenting the appropriate use of hot tub timers represent nearly 6% of the savings opportunities for pools and spas. If just 40% of eligible households participate, they could help the city reduce energy consumption by roughly 15 billion btus per year. Additional savings could be achieved through the use of floating hot tub blankets.



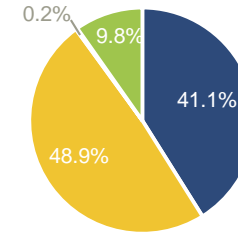
POOLS & SPAS

Single-family energy saving opportunities

**24.6%
SAVINGS**

in current pool/spa demand is achievable through the identified behaviors. Single-family households in Baltimore are currently using an estimated 640 bBtus annually for pools and spas.

% OF SAVINGS
OPPORTUNITY



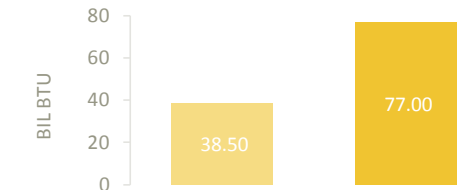
157 bBtus

could be saved through these behaviors alone.

A B C D

Left hand Bar= Estimated Annual Savings by end of Year 4.

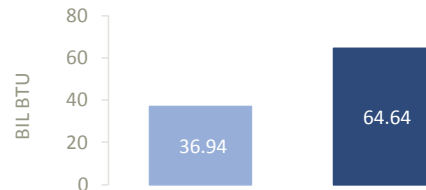
Right hand Bar= Estimated Annual Savings by end of Year 8.



A Change Pool Pump Settings

Target: Single-family Homes with Pools
Use pool pump timers to limit the hours of pump run time.

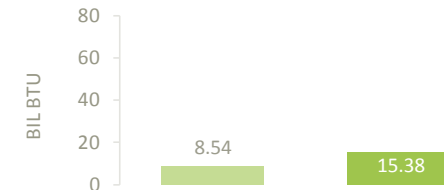
48.9% % OF POOL/SPA OPPORTUNITY
7% HOUSEHOLDS ELIGIBLE*
28.9% ANNUAL HOUSEHOLD SAVINGS**



B Accelerated Pump Replacement

Target: Home Owners with Pools
Move pool owners toward a decision to install an energy efficient pump.

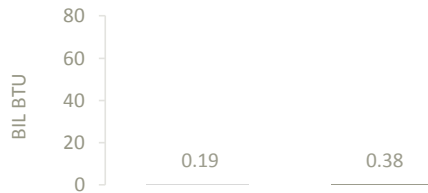
41.1% % OF POOL/SPA OPPORTUNITY
3% HOUSEHOLDS ELIGIBLE*
27.8% ANNUAL HOUSEHOLD SAVINGS**



C Install & Use Hot Tub Timers

Target: Owners and Renters with Hot Tubs
Use a hot tub timer to limit the temperature settings in hot tubs.

9.8% % OF POOL/SPA OPPORTUNITY
3% HOUSEHOLDS ELIGIBLE*
5.8% ANNUAL HOUSEHOLD SAVINGS**



D Use Pool Covers

Target: Homes with Heated Pools
Encourage the use of pool covers to reduce heat loss in heated pools.

0.2% % OF POOL/SPA OPPORTUNITY
7% HOUSEHOLDS ELIGIBLE*
0.4% ANNUAL HOUSEHOLD SAVINGS**