Michigan Energy Waste Reduction and Demand Response 2021 to 2040 Potential Study – Residential Survey

Prepared for:

LARA
MPSC

State of Michigan Public Service Commission

Submitted by:

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Residential Survey Overview

The primary objective of this survey is to collect information on customer awareness and willingness to pay for EWR and DR measures from MI residential utility customers. Guidehouse will use the survey results to inform the development of market acceptance and adoption forecasts. Additional secondary research objectives, included in the following table, have been incorporated into the survey to provide datapoints the research team will use to guide calibration of the EWR and DR potential models.

Topic	Survey Questions
Introduction	INTRO1
Lighting Baseline	LIGHTING1 – LIGHTING8
EWR Awareness	AWARE_EWR_LOW – AWARE_EWR_HIGH
EWR Willingness to Pay	EWR_WILLINGNESS_LOW – EWR_WILLINGNESS_HIGH
DR Awareness	AWARE_DR_TSTAT – AWARE_DR_EVBTM
DR Willingness to Participate	DR_WILLINGNESS_TSTAT1 – DR_WILLINGNESS_RES1
COVID-19 Impacts	COVID_EWR – COVID_DR
Recent Energy Use Actions	ACTIONS
Decision Factors	DECISIONS
Barriers	BARRIERS
Demographics	DEM1 – DEM9
Close	CLOSE1 – CLOSE2

Sample Variables

This table presents the sample file variables required for fielding.

Survey Variables	Description	Source
UTILITY	The customer's utility company	Utility tracking data

Sample

This table outlines Guidehouse's sampling techniques.

Topic	Description	Population
Sample size	What is the target number of completes?	500 completes
Stratification	Is the sample stratified?	The sample will be designed to achieve a proportionate mix of customers from each utility and will be stratified by Upper and Lower Peninsula.

Topic	Description	Population
Incentives	Any incentives or persuasion techniques?	$15; customers will be offered an incentive through Tango[1] which allows customers to select an e-gift card from a participating retailer or restaurant (including Amazon.com, CVS or Dunkin' Donuts and more) or an online debit card (Visa® or MasterCard®). Customer's may also choose to donate $15 to a charitable organization instead of receiving the gift card.

[1] https://www.tangocard.com/

Invitation Emails

Initial Invitation Email

Dear _____,

Guidehouse, on behalf of the Michigan Public Service Commission, is conducting a study to help understand energy decision-making in Michigan and invites you to complete a brief survey. Your responses will help improve energy-related programs offered by your utility provider that assist residential customers in saving energy and money. Respondents who complete the survey will be offered a **$15 e-gift or online debit card,** or can choose to donate $15 to a charitable organization.

Please take the survey using the link below; we recommend completing the survey on a laptop or computer if possible.

[Insert survey link]

Your participation in this survey is anonymous and voluntary. Your individual answers will remain confidential and reported only in the aggregate. The survey will take about 15 minutes.

If you have any questions about this survey or how your responses to this survey will be used, please contact us at Michigan.EnergyStudy@guidehouse.com.

Sincerely,

Guidehouse

First Reminder Email

Dear _____,

Guidehouse, on behalf of the Michigan Public Service Commission, recently invited you to complete a 15-minute survey to help us improve energy-related programs offered by your utility provider that assist residential customers in saving energy and money, and ultimately benefit the environment.

As a token of appreciation for completing this survey, respondents who complete the survey will be offered a **$15 e-gift or online debit card,** or choose to donate $15 to a charitable organization.

Please take the survey using the link below; we recommend completing the survey on a laptop or computer.

[Insert survey link]

Your participation in this survey is anonymous and voluntary. Your individual answers will remain confidential and reported only in the aggregate.

If you have any questions about this survey or how your responses to this survey will be used, please contact us at Michigan.EnergyStudy@guidehouse.com.

Sincerely,

Guidehouse

Second Reminder Email

Dear _____,

Guidehouse, on behalf of the Michigan Public Service Commission, recently invited you to complete a 15-minute survey to help us improve energy-related programs offered by your utility provider that assist residential customers in saving energy and money, and ultimately benefit the environment. This survey will be closing on **[Date]**; don't miss out on this opportunity to contribute!

As a token of appreciation for completing this survey, respondents who complete the survey will be offered a **$15 e-gift or online debit card,** or choose to donate $15 to a charitable organization.

Please take the survey using the link below; we recommend completing the survey on a laptop or computer.

[Insert survey link]

Your participation in this survey is anonymous and voluntary. Your individual answers will remain confidential and reported only in the aggregate.

If you have any questions about this survey or how your responses to this survey will be used, please contact us at Michigan.EnergyStudy@guidehouse.com.

Sincerely,

Guidehouse

Survey Body

Introduction

INTRO1 In this survey we will ask you about your awareness of different energy-related technologies and utility programs, and decision-making around energy use in your home. If you are not the best person to answer these questions, please ask another member of your household who makes decisions about your energy bills to complete this survey. Note that you will need to complete the entire survey to receive your **$15 e-gift or online debit card**, or to donate the $15 to a charitable organization.

Lighting Baseline

The first part of the survey will ask for additional information about the lighting in your home. If you need to finish the survey at a later time or switch to a different mobile device, you can return to this point in the survey by clicking the link in the email you received. All of your survey progress will have been saved.

LIGHTING1 How many **indoor light *bulbs*** of the following types do you have within each of the below fixture types in your home (***excluding*** any bulbs found in unconditioned exteriors structures such as a garage), if any? If possible, please walk through your home to count the light bulbs. Keep in mind that some light fixtures and lamps have more than one bulb, and we are looking for the total bulb count, *not* the total fixture count.

	None	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	>40
a. In a table or floor lamp										
b. In a wall-mounted light fixture (e.g., sconces, bathroom vanity)										
c. In a pin-based light fixture										
d. In a ceiling-mounted light fixture (non-linear)										
e. In a linear light fixture (long white tube)										

[If LIGHTING1_a DOES NOT = None]

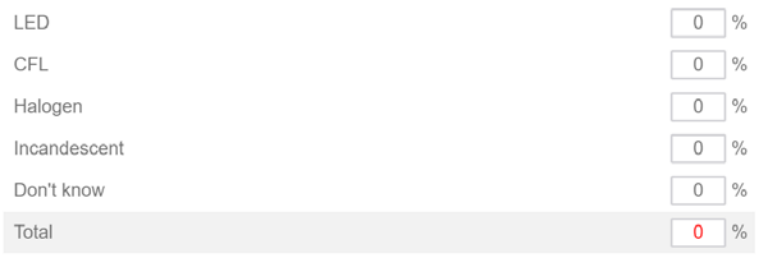
LIGHTING2 Approximately what percentages of the light bulbs in **table or floor lamps** in your home fall into the following bulb type categories? **[CONSTANT SUM TABLE (see example), MUST SUM TO 100%]**

1. LED
2. CFL
3. Halogen
4. Incandescent

[If LIGHTING1_b DOES NOT = None]

LIGHTING3 Approximately what percentages of the light bulbs in **wall-mounted light fixtures (e.g., sconces, bathroom vanity)** in your home fall into the following bulb type categories? **[CONSTANT SUM TABLE (see example), MUST SUM TO 100%]**

1. LED



2. CFL
3. Halogen
4. Incandescent

[If LIGHTING1_c DOES NOT = None]

LIGHTING4 Approximately what percentages of the light bulbs in **pin-based light fixtures** in your home fall into the following bulb type categories? **[CONSTANT SUM TABLE (see example), MUST SUM TO 100%]**

1. LED
2. CFL
3. Halogen
4. Incandescent

[If LIGHTING1_d DOES NOT = None]

LIGHTING5 Approximately what percentages of the light bulbs in **ceiling-mounted light fixtures (non-linear)** in your home fall into the following bulb type categories? **[CONSTANT SUM TABLE (see example), MUST SUM TO 100%]**

1. LED
2. CFL
3. Halogen
4. Incandescent

[If LIGHTING1_e DOES NOT = None]

LIGHTING6 Approximately what percentages of the light bulbs in **linear light fixtures** in your home fall into the following bulb type categories? **[CONSTANT SUM TABLE (see example), MUST SUM TO 100%]**

1. Linear fluorescent
2. LED

LIGHTING7 Approximately how many **exterior light bulbs** are there at your home? Please think about any porch lights, flood lights, garage lighting, outhouse lights, etc.

1. None
2. 1
3. 2
4. 3
5. 4
6. 5
7. 6
8. 7
9. 8
10. 9
11. 10
12. More than 10 (please enter the number) **[Numeric entry]**

[Ask if LIGHTING7 DOES NOT = None]

LIGHTING8 What percentage of the exterior lighting falls into the following bulb type categories? **[CONSTANT SUM TABLE (see example), MUST SUM TO 100%]**

1. Linear fluorescent
2. LED
3. CFL
4. Incandescent
5. Halogen
6. Metal halide
7. High pressure sodium
8. Mercury vapor
9. Solar-powered lights

EWR Awareness

AWARE_EWR_LOW **[Low Cost Measure Reference Table. ROTATE, 1 MEASURE PER RESPONDENT]**

[low cost measure description_1]. Before today, were you familiar with **[low cost measure_2]?**

1. Yes
2. No

Low Cost Measure Table			
Measure	**Low Cost Measure Description_1**	**Low Cost Measure_2**	**Photo**
LED Screw-in General Service Lamp	LED screw-in general service lamps are intended to serve general lighting applications by providing an interior or exterior area with overall illumination. These bulbs have a standard (Edison) base.	LED screw-in general service lamps	
Advanced Smart (Tier 2) Power Strip	Advanced smart (Tier 2) power strips have a master and switched plug. When the master plug (a TV or PC) is on, the switched outlets are powered on. When the master plug (a TV or PC) is switched off, the switched outlets and peripherals are powered off. In addition, this power strip has a motion sensor, like those for lights, that turns the master switch off if someone leaves the room for an extended period.	advanced smart (Tier 2) power strips	

Low Cost Measure Table			
Measure	**Low Cost Measure Description_1**	**Low Cost Measure_2**	**Photo**
System with smart thermostat	A smart thermostat lets users remotely modify heating and cooling settings such as setpoints and schedule, or turn the unit on or off, from a mobile device or website. The system is defined as being the home heating and cooling system, comprising heating, ventilation and air conditioning.	smart thermostats	
Occupancy Sensor	An occupancy sensor is a motion detecting device used to detect the presence of a person (or animal) in a home to automatically control lights.	occupancy sensors	
Low-flow Showerhead	A low-flow showerhead uses two gallons or less of water per minute, saving both water and water heating costs with little to no impact on the user.	low-flow showerheads	
Low-flow Faucet Aerator	A low-flow faucet aerator can be added to an existing faucet, saving both water and water heating costs with little to no impact on the user.	low-flow faucet aerators	
Hot Water Pipe Insulation	Insulating hot water pipes reduces pipe heat loss by 2 to 4 degrees. Because the water is warmer, you'll use less of it, saving water and energy.	hot water pipe insulation	

AWARE_EWR_HIGH **[High Cost Measure Reference Table. ROTATE, 1 MEASURE PER RESPONDENT] [high cost measure description_1]**. Before today, were you familiar with **[high cost measure_2]**?

1. Yes

2. No

High Cost Measure Table			
Measure	**High Cost Measure Description_1**	**High Cost Measure_2**	**Photo**
Heat Pump Water Heater	Heat pump water heaters use electricity to move heat from one place to another instead of generating heat directly. Heat pump water heaters pull heat from the surrounding air and transfer it -- at a higher temperature -- into a tank to heat water.	heat pump water heaters	
ENERGY STAR Mini-split Heat Pump	ENERGY STAR mini-split heat pumps provide both heating and cooling through a single device – a heat pump. Ductless mini-split heat pumps use an indoor unit connected to an outdoor unit via refrigerant lines. Up to 8 indoor units can be attached to one outdoor unit.	ENERGY STAR mini-split heat pumps	
Heat Pump Clothes Dryer	A heat pump clothes dryer is a self-contained system that heats recirculating air to extract moisture. The liquid water is then pumped to the same drain as used by the clothes washer. Heat Pump clothes dryers don't require ventilation, can reduce energy use by at least 28% compared to standard dryers, and dry laundry at low temperatures and therefore gentler on clothes.[2]	heat pump clothes dryers	
Air Sealing	A home that has air sealing performed has been sealed with caulking or spray foam to prevent the passage of air or water vapor into or out of the home.	home air sealing	

[2] Energy Star, https://www.energystar.gov/products/heat_pump_dryer#:~:text=WHAT%20IS%20A%20HEAT%20PUMP,once%20the%20moisture%20is%20removed.&text=Making%20use%20of%20a%20refrigerant,is%20used%20to%20generate%20heat.

High Cost Measure Table			
Measure	**High Cost Measure Description_1**	**High Cost Measure_2**	**Photo**
ENERGY STAR Front-Loading Clothes Washer	ENERGY STAR front-loading clothes washers use a horizontal or tumble-axis basket to lift and drop clothing into the water, instead of rubbing clothes around a central agitator. These also use faster spin speeds to extract more water from clothes, reducing dryer time and energy use.	ENERGY STAR front-loading clothes washers	
Insulation	Insulation in your home provides resistance to heat flow and lowers your heating and cooling costs. Properly insulating your home reduces heating and cooling costs, and also improves comfort.	insulation	
High Efficiency Storage Tank Water Heaters	High efficiency storage tank water heaters keep water hot and ready for use at all times in insulated storage tanks with capacities ranging from 20 to 80 gallons[3].	high efficiency storage hot water heaters	
High Efficiency Tankless Water Heater	High efficiency tankless water heaters, also known as demand water heaters or instantaneous hot water heaters, circulate water through a large coil that is heated only on demand; there is no storage tank continuously maintaining hot water[4].	high efficiency tankless hot water heaters	

[3] https://www.energystar.gov/ia/new_homes/features/waterhtrs_062906.pdf

[4] https://www.energystar.gov/ia/new_homes/features/waterhtrs_062906.pdf

EWR Willingness to Pay

EWR_WILLINGNESS_LOW Suppose an energy efficiency project does not have any adverse impacts on the QUALITY of lighting, heating, and cooling in your home, but reduces the amount of energy consumed. An example might be a smart thermostat.

Would you generally pursue an energy efficiency project where the cost to you after utility rebates is $75 if the project provided an annual energy bill savings of **[Annual Energy Bill Savings]**, and a **[Suggested payback period]** payback (that is, in about **[Suggested payback period]** the money you would save in energy costs would be greater than the extra cost for the energy efficiency technology?

Annual Energy Bill Savings [Randomized option choice, hide lettering from respondent:]	**Suggested payback period**	Yes (1) **[Radio button, only one response per row]**	No (2) **[Radio button, only one response per row]**	Don't Know / Not Sure (3) **[Radio button, only one response per row]**
a) $100 per year	9 months			
b) $75 per year	1 year			
c) $40 per year	18 months			
d) $25 per year	3 years			
f) $15 per year	5 years			
g) $10 per year	7 ½ years			

[The respondent is randomly shown an Annual Energy Bill Savings option. Depending on the response (Yes or No) the respondent is asked the next possible option. This process is continued until the respondent gets to the highest or lowest possible value or they provide an opposite response to their initial Yes or No response. Example: The respondent answers No to answer option f) $15 per year. Ask the next possible option starting with e) and proceeding through a) until the respondent answers yes or they reach the highest value.]

EWR_WILLINGNESS_HIGH Suppose an energy efficiency project does not have any adverse impacts on the QUALITY of lighting, heating, and cooling in your home, but reduces the amount of energy consumed and MAY result in some inconvenience (for example: obtaining project estimates, selecting and overseeing a contractor for the installation). An example might be a high efficiency storage tank water heater.

Would you generally pursue an energy efficiency project where the cost to you after utility rebates is $1,000 if the project provided and annual energy bill savings of **[Annual Energy Bill Savings]**, and a **[Suggested payback period]** payback (that is, in about **[Suggested payback period]** the money you would save in energy costs would be greater than the extra cost for the energy efficiency technology?

Annual Energy Bill Savings [Randomized option choice, hide lettering from respondent:]	**Suggested payback period**	Yes (1) **[Radio button, only one response per row]**	No (2) **[Radio button, only one response per row]**	Don't Know / Not Sure (3) **[Radio button, only one response per row]**
a) $1,250 per year	10 months			
b) $1,000 per year	1 year			
c) $500 per year	2 years			
d) $330 per year	3 years			
e) $250 per year	4 years			
f) $200 per year	5 years			
g) $125 per year	8 years			
h) $100 per year	10 years			

[The respondent is randomly shown an Annual Energy Bill Savings option. Depending on the response (Yes or No) the respondent is asked the next possible option. This process is continued until the respondent gets to the highest or lowest possible value or they provide an opposite response to their initial Yes or No response. Example: The respondent answers No to answer option f) $200 per year. Ask the next possible option starting with e) and proceeding through a) until the respondent answers yes or they reach the highest value.]

Demand Response Program Awareness

Next, we have a few questions about your awareness of Demand Response programs that electric utilities offer or could potentially offer to residential customers.

Demand Response programs reward electricity customers for voluntarily agreeing to reduce energy usage during periods of high electricity demand, which helps keep electricity costs down and allows your electric utility to supply reliable power at a more affordable rate to all customers.

If you sign up for a Demand Response program offered by your utility, the utility would control your air conditioning and/or heating system energy use during high (peak) demand periods (referred to as "demand response events") for a limited time (usually less than 4 hours), by automatically adjusting your thermostat during those periods. Your usage would be controlled only for a certain maximum number of days in a season (for example, 10 days maximum in the summer). However, you can always opt-out if you are unable to reduce your energy use during these periods.

An electric utility rewards Demand Response program participants by paying an incentive each summer. Additionally, the utility may offer a one-time incentive for enrolling in the program.

Alternatively, you could also be placed on an electricity rate that gives you a discount on your current rate during off-peak times (typically nights and weekends), but is more expensive during on-peak times (weekday

afternoons). You may be eligible to get a free smart thermostat from your utility, which will be controlled by the utility to reduce your electricity demand during certain critical peak events periods when electricity is much more expensive.

AWARE_DR_TSTAT Utilities typically control space cooling/heating system energy use during Demand Response events using a smart thermostat. A smart thermostat learns your patterns and offers the ability to control it from anywhere. Does your household use a smart thermostat?

1. Yes
2. No
3. Don't Know/Not Sure

[If UTILITY = DTE]

AWARE_DR_DTE1 Before today, have you heard of the following demand response programs offered by your utility?

[Radio buttons, only one response per row]	Yes, my household participates in the program (1)	Yes, but my household does not participate (2)	No (3)	Don't Know / Not Sure (4)
a) **Smart Savers Program** that offers customers who own a smart thermostat a **$20 incentive per thermostat at the end of each summer** in exchange for allowing DTE to make minor, short-term adjustments to a participant's thermostat to reduce energy use during periods of peak (high) demand for electricity. Participants can anticipate at least one adjustment, and a maximum of up to 10 adjustments, per summer. Peak demand periods for adjustments typically occur on especially hot days. Adjustments will occur on non-holiday weekdays.				
b) **Dynamic Peak Pricing Rate** is an electricity rate which provides a discount on standard rates (typically 30%-50% discount on standard rates) during night and on weekends (called off-peak periods), with more expensive rates on weekday afternoons (called peak periods). Participants save money by shifting use to off-peak periods. Participants are notified to reduce electricity use during critical peak events, when electricity is much more expensive. The events only occur on weekdays from 3 p.m. to 7 p.m. and are limited to a maximum of 14 occurrences (56 hours) per calendar year. Here is summary of the rates: **Rate** / **Time** / **Cost**				

[Radio buttons, only one response per row]			Yes, my household participates in the program (1)	Yes, but my household does not participate (2)	No (3)	Don't Know / Not Sure (4)
Off-Peak	Monday to Friday 11 p.m. to 7 a.m. and All Day Weekends and Holidays	4.8 cents per kWh (kilowatt-hour)				
Mid-Peak	Monday to Friday 7 a.m. to 3 p.m. and 7 p.m. to 11 p.m.	9.2 cents per kWh				
On-Peak	Monday to Friday 3 p.m. to 7 p.m.	16.6 cents per kWh				
Critical Peak Events	Not more than 14 times per year on certain weekdays 3 p.m. to 7 p.m.	95.0 cents per kWh				

c) **SmartCurrents Program** that offers customers a free smart thermostat for enrolling in the Dynamic Peak Pricing Rate and for agreeing to allow DTE to control your thermostat (for example, increase thermostat setpoint by 4 degrees) during critical peak event periods. You have an option to override the utility adjustment and make your own thermostat adjustments if you are uncomfortable.

The Dynamic Peak Pricing rate is as follows:

Rate	Time	Cost
Off-Peak	Monday to Friday 11 p.m. to 7 a.m. and All Day Weekends and Holidays	4.8 cents per kWh (kilowatt-hour)
Mid-Peak	Monday to Friday 7 a.m. to 3 p.m. and 7 p.m. to 11 p.m.	9.2 cents per kWh
On-Peak	Monday to Friday 3 p.m. to 7 p.m.	16.6 cents per kWh

[Radio buttons, only one response per row]	Yes, my household participates in the program (1)	Yes, but my household does not participate (2)	No (3)	Don't Know / Not Sure (4)
Critical Peak Events — Not more than 14 times per year on certain weekdays; 3 p.m. to 7 p.m. — 95.0 cents per kWh The off-peak rate at 4.8 cents per kWh is a 45% discount from the standard residential electric rate of 8.7 cents per kWh.				
d) **Residential Smart Charger Support** is a part of the Charging Forward program on electric vehicles, where DTE would provide a rebate of up to $500 to electric vehicle (EV) owners who install a qualified "smart" Level 2 charger. To qualify for the rebate, a customer must enroll in a time of use (TOU) rate (for example, the whole-home TOU rate, dynamic peak pricing rate, or EV-only TOU rate), and agree to enroll in future demand response programs offered by DTE that allows DTE to control vehicle charging during peak periods. The customer will always have the option to override the signals if required/desired to do so.				

[IF UTILITY = CONSUMERS]

AWARE_DR_CONSUMERS1 Before today, have you heard of the following demand response programs offered by your utility?

[Radio buttons, only one response per row]	Yes, my household participates in the program (1)	Yes, but my household does not participate (2)	No (3)	Don't Know / Not Sure (4)
a) **Peak Power Savers Smart Thermostat Program** that offers customers an enrollment incentive ($75 for current smart thermostat owners and $175 for customers who purchase a new smart thermostat), plus a $25 incentive at the end of each season for each enrolled thermostat. Consumers syncs with a participant's smart thermostat to learn comfort preferences. On select summer and winter days when				

[Radio buttons, only one response per row]	Yes, my household participates in the program (1)	Yes, but my household does not participate (2)	No (3)	Don't Know / Not Sure (4)
electricity demand is high, the thermostat will be adjusted to reduce energy usage. These events are limited to 14 times in summer and 10 times in winter, and rarely last more than four hours.				
b) **Peak Power Savers – Critical Peak Pricing Program** that gives a discount on standard electricity rates during nights and on weekends (called off-peak periods), with more expensive rates on weekday afternoons (called peak periods). Participants save money by shifting electricity use to off-peak periods. Participants are notified to reduce electricity use during critical peak events, when electricity is much more expensive. Participants receive a 33% discount on the off-peak rate over standard rates with a critical peak rate of 95 cents per kWh. These events can occur up to 14 times per year on weekdays from June to September from 2 p.m. to 6 p.m.				
c) **Peak Power Savers – Peak Time Rewards Program** that offers customers the opportunity to earn bill credits by shifting energy use to off-peak times when costs are lower. These Energy Savings Days can occur up to 14 times per year on weekdays from June to September from 2 p.m. to 6 p.m. If you enroll in this program, you can earn 95 cents per kWh for the amount of energy reduced during Energy Savings Days.				

AWARE_DR_GENERAL Before today, have you heard of any of the following demand response program type(s) that utilities may offer to customers?

	Yes (1) [Radio button, only one response per row]	No (2) [Radio button, only one response per row]	Don't Know / Not Sure (3) [Radio button, only one response per row]
[If UTILITY IS NOT DTE OR CONSUMERS] a) **Bring Your Own Thermostat programs** (where customers already own the smart thermostat) offer a fixed payment per season (**typically $25 per thermostat**) for			

enrolling in the program and allowing the utility to remotely control the thermostat on hot summer and cold winter days, when demand for electricity is highest. The utility may also offer an upfront payment for enrolling in the program. The utility will typically control the thermostat for a limited number of hours per season (could be limited to 14 events in summer and 10 events in winter with a maximum 4-hour duration). The utility may automatically pre-cool or pre-heat the home before an event, and notify participant's in advance of events, with the option to opt-out of events at any time.			
[If UTILITY IS NOT DTE OR CONSUMERS] b) **Critical Peak Pricing** is an electricity rate which provides a discount on standard rates (typically 30% to 50% discount on standard rates) during nights and on weekends (called off-peak periods), with more expensive rates on weekday afternoons (called peak periods). Participants save money by shifting use to off-peak periods. Participants are notified to reduce electricity use during critical peak events, when electricity is much more expensive. The events only occur during peak periods on weekdays and are limited to a specified maximum number of occurrences and total duration per calendar year (e.g., could be 14 events in a year with maximum 56 hours of event calling). The utility may offer customers a free smart thermostat and control it to reduce energy use during critical peak events. **You could expect to save 10% on the electricity bill by enrolling in this rate in relation to your standard rate, which could translate to approximately $5 monthly bill savings per thermostat, or $25 total per thermostat for the summer season.**			
[If UTILITY IS NOT CONSUMERS] c) **Peak Time Rebates** offer customers the ability to receive a payment on reduced electricity usage during critical peak periods when electricity demand is high, and consequently electricity is more expensive. Participation is optional, and customers receive a rebate based on reduced electricity usage during the event. For example, you could **earn 95 cents per kWh for the energy reduced during the peak periods** when electricity demand is high.			

AWARE_DR_EVBTM Before today, have you heard of the below type of demand response program that other utilities may offer to customers?

Program type	Yes (1) [Radio button, only one response per row]	No (2) [Radio button, only one response per row]	Don't Know / Not Sure (3) [Radio button, only one response per row]
[If UTILITY IS NOT DTE] a) **Electric Vehicle Load Control programs** are offered to customers who own a plug-in electric vehicle and charge at home. Participants agree to let the utility control charging from periods of high demand to periods of lower demand (nights or weekends) in exchange for an upfront payment (which could be a rebate on the smart charger), plus an ongoing participation payment from the utility.			
b) **Battery Control programs** are offered to customers with on-site battery storage systems (for example, a battery charged by an on-site solar system). Participants agree to let the utility control the charging and discharging of the battery during events when electricity demand is the highest, in exchange for an upfront payment and/or an ongoing participation payment from the utility.			

Demand Response Willingness to Participate

[If respondent doesn't already participate in a smart thermostat program (AWARE_DR_DTE1_a IS NOT = 1 and AWARE_DR_CONSUMERS1_a IS NOT = 1)]

DR_WILLINGNESS_TSTAT1 Next, consider your utility has a(n) **[Thermostat DR Option]** program that **[Thermostat Option Description]**.

How likely would your household be to participate in this type of program if you received a **[Incentive Detail]**?

1. Not at all likely
2. Slightly likely
3. Somewhat likely
4. Very likely
5. Extremely likely
6. Not sure/don't know

Thermostat Demand Response Option	Thermostat Option Description	Incentive Detail
a) **[If customer already has a smart thermostat (AWARE_DR_TSTAT**	offers customers who already own a smart thermostat a fixed payment per season for allowing the utility to remotely control the thermostat on hot summer and cold winter days	one-time **$75** sign-up bonus plus **$25** per season you participate for each enrolled thermostat

Thermostat Demand Response Option	Thermostat Option Description	Incentive Detail
= 1)] Bring Your Own Smart Thermostat	when demand for electricity is highest. The utility may also provide an upfront incentive for signing up for the program. The utility will typically control the participant's thermostat for a limited number of hours per season (limited to 14 in summer and 10 in winter with a maximum 4-hour duration). The utility may automatically pre-cool or pre-heat the home before an event and notify participants in advance of events, with the option to opt-out of events at any time.	
b) **[If customer DOES NOT already have a smart thermostat (AWARE_DR_TSTAT = 2 or 3)]** Energy Efficiency and Bring Your Own Smart Thermostat	offers customers who do not already have a smart thermostat an incentive payment to purchase one through an energy efficiency program. The utility then offers a smart thermostat demand response program in which customers receive a fixed payment per season for allowing the utility to remotely control the thermostat on hot summer and cold winter days when demand for electricity is highest. The utility will control the thermostat for a limited number of hours per season (limited to 14 events in summer and 10 events in winter with maximum 4-hour duration). The utility may automatically pre-cool or pre-heat the home before an event and notify participants in advance of events, with the option to opt-out of events at any time	a rebate of up to **$175** for the purchase of a smart thermostat (typical retail costs range from $80 to $250), and **$25 for each enrolled thermostat** per season you participate (paid at the end of each season) in the smart thermostat demand response program

[If customer already has a smart thermostat (AWARE_DR_TSTAT = 1) and DR_WILLINGNESS_TSTAT1 IS NOT = 6)]

DR_WILLINGNESS_TSTAT2 How likely would your household be to participate in a smart thermostat demand response program if you received…

	Not at all likely (1)	Slightly likely (2)	Some-what likely (3)	Very likely (4)	Extremely likely (5)	Not sure/ don't know (6)
[Lower incentive amount if DR_WILLINGNESS_ TSTAT1 = 4 or 5] a) a one-time **$50** sign-up bonus, plus **$25** per season you participate, for each enrolled thermostat?						
[Higher incentive amount if DR_WILLINGNESS_ TSTAT1 <4] b) a one-time **$100** sign-up bonus, plus **$25** per season you participate, for each enrolled thermostat?						

[If customer DOES NOT already have a smart thermostat (AWARE_DR_TSTAT DOES NOT = 1) and DR_WILLINGNESS_TSTAT1 IS NOT = 6)]

DR_WILLINGNESS_TSTAT3 How likely would your household be to participate in a smart thermostat demand response program if …

	Not at all likely (1)	Slightly likely (2)	Some-what likely (3)	Very likely (4)	Extremely likely (5)	Not sure/ don't know (6)
[Lower incentive amount if DR_WILLINGNESS_ TSTAT1 = 4 or 5] a) the utility were to offer up to a **$150 rebate** on a smart thermostat (typical retail costs range from $80 to $250) for signing up in the demand response program, plus **$25** for each enrolled thermostat per season you participate?						
[Higher incentive amount if DR_WILLINGNESS_ TSTAT1 <4] b) the utility were to offer up to a **$200 rebate** on a smart thermostat (typical retail costs range from $80 to $250) for signing up in the demand response program, plus **$25** for each enrolled thermostat per season you participate?						

[If customer does not already participate in this program type (AWARE_DR_DTE1_b IS NOT = 1 and AWARE_DR_CONSUMERS1_b IS NOT = 1)]

DR_WILLINGNESS_CPP1 Next, consider if your utility offered a Critical Peak Pricing Program which provides a discount on standard rates (typically a 30%-50% discount on standard rates) during nights and on weekends (called off-peak periods), with more expensive rates on weekday afternoons (called peak periods). Participants save money by shifting use to off-peak periods. Participants are notified to reduce electricity use during critical peak events, when electricity is much more expensive. The events only occur during peak periods on weekdays and are limited to a specified maximum number of occurrences and total duration per calendar year (e.g., could be 14 events in a year with maximum 56 hours of event calling). You could save around 10% on your electricity bill by enrolling in this rate in relation to your standard rate.

A residential customer enrolled in this rate can expect to save 10% on the electricity bill by enrolling in this rate in relation to your standard rate, which could translate to **approximately $5 monthly bill savings per thermostat or $25 total per thermostat for the summer season**.

How likely would your household be to participate in this type of Critical Peak Pricing program?

1. Not at all likely
2. Slightly likely
3. Somewhat likely
4. Very likely
5. Extremely likely
6. Not sure/don't know

[Ask if DR_WILLINGNESS_CPP1<4]
DR_WILLINGNESS_CPP_TSTAT How likely would your household be to participate in a critical peak pricing program if you received…

	Not at all likely (1)	Slightly likely (2)	Some-what likely (3)	Very likely (4)	Extremely likely (5)	Not sure/ don't know (6)
A **free smart thermostat from your utility** for agreeing to enroll in the critical peak pricing rate and **allowing the utility to control your thermostat (e.g., increase setpoint by 4 degrees) during critical peak events**. You will always have an option to override the utility adjustment and make your own adjustment if you are uncomfortable. A residential customer can **expect to save 10% on the electricity bill by enrolling in this rate in relation to your standard rate, which could translate to approximately $5 monthly bill**						

	Not at all likely (1)	Slightly likely (2)	Some-what likely (3)	Very likely (4)	Extremely likely (5)	Not sure/ don't know (6)
savings per thermostat or $25 total per thermostat for the summer season.						

[If customer does not already participate in this program type (AWARE_DR_CONSUMERS1_c IS NOT = 1)]

DR_WILLINGNESS_PTR Next, consider your utility offers a **Peak Time Rebate program** in which you earn a credit or rebate for reducing energy use during critical peak periods (up to 14 days per summer with a max. 4-hour event duration). You will be notified by text, phone, or email the day before events are called. For example, you could receive 95 cents/kWh for the energy reduced during peak periods.

By enrolling in this program, an average customer could earn around $25 per summer by reducing approximately 20% of your energy usage during peak demand periods. There is no penalty if you are unable to shift your energy usage.

How likely would your household be to participate in this type of **Peak Time Rebate** program?

1. Not at all likely
2. Slightly likely
3. Somewhat likely
4. Very likely
5. Extremely likely
6. Not sure/don't know

DR_WILLINGNESS_RES1 If your utility offered a(n) **[Residential DR Option]** program that **[Residential DR Option Description].**

How likely would your household be to participate in this type of program?

1. Not at all likely
2. Slightly likely
3. Somewhat likely
4. Very likely
5. Extremely likely
6. Not sure/don't know

Residential DR Option [Randomized option choice, hide lettering from respondent:]	Residential DR Option Description
If respondent doesn't already participate in DTE's EV program (AWARE_DR_DTE1_d IS NOT = 1) a) Electric Vehicle (EV) Load Control	offers customers who own and charge a plug-in electric vehicle at home an upfront payment (such as a rebate on a smart charger), plus an ongoing participation payment in exchange for allowing the utility to shift charging from periods of high demand (typically weekday afternoons) to nights or weekends
b) Battery Control	offers customers with on-site battery storage systems (e.g., a battery charged by an on-site solar system or a standalone battery) an upfront payment and/or an ongoing participation payment in exchange for allowing the utility to discharge the battery during peak demand periods.

COVID-19 Impacts

COVID_EWR How has the COVID-19 pandemic impacted your household's decision-making around energy efficiency upgrades? We are…

1. Much ***less*** likely to pursue energy efficiency upgrades
2. Slightly ***less*** likely to pursue energy efficiency upgrades
3. Just as likely to pursue energy efficiency upgrades (i.e., there has been little or no impact)
4. Slightly ***more*** likely to pursue energy efficiency upgrades
5. Much ***more*** likely to pursue energy efficiency upgrades

COVID_DR How has the COVID-19 pandemic impacted your household's decision-making around demand response programs that reward electricity customers for voluntarily agreeing to reduce energy usage during periods of high electricity demand? We are…

1. Much ***less*** likely to pursue demand response participation
2. Slightly ***less*** likely to pursue demand response participation
3. Just as likely to pursue demand response participation (i.e., there has been little or no impact)
4. Slightly ***more*** likely to pursue demand response participation
5. Much ***more*** likely to pursue demand response participation

Recent Energy Use Actions

ACTIONS Which of the following **energy-efficient** products have you installed in the last 12 months, if any? Please select all that you have installed. **[Randomize Response Options]**

1. LED lighting
2. Advanced Smart (Tier 2) Power Strip
3. Smart thermostat
4. Occupancy Sensor

5. Low-flow Showerhead
6. Low-flow Faucet Aerator
7. Heat Pump Water Heater
8. ENERGY STAR Mini-split Heat Pump
9. Heat Pump Clothes Dryer
10. Air Sealing
11. ENERGY STAR Front-Loading Clothes Washer
12. Home insulation
13. High Efficiency Storage Tank Water Heaters
14. High Efficiency Tankless Water Heater
15. Hot water pipe insulation
16. None

Decision Factors

DECISIONS How important are the following factors in **driving the decisions you make about energy-consuming equipment** in your home? Please rank each factor on a scale of 1 to 5 with 1 being "not at all important" and 5 being "very important". **[Randomize response options.]**

1. Desire to test new technologies
2. Environmental issues such as climate change, pollution and waste
3. Reduce the need for additional power plants and support grid reliability
4. Financial considerations (ability to earn investment money back quickly though energy bill savings)
5. The amount of money the technology will save me
6. Support my community and/or state's energy initiatives
7. Advanced features or settings like internet connectivity, remote control from a tablet or smartphone, etc.
8. The availability of incentives and rebates

Barriers

BARRIERS Which of the following factors are likely to **prevent** your household from taking action on the way you consume energy in your home, including installation of energy efficient equipment or participation in demand response programs? Please rank each factor on a scale of 1 to 5 with 1 being "not at all likely to prevent…" and 5 being "extremely likely to prevent". **[Randomize response options.]**

1. Limited information about costs and benefits
2. Ability to find a skilled and/or trusted equipment installers
3. Potential for disruption during equipment installation
4. Lack of access to energy efficient products in local stores or from local contractors
5. I have limited time, attention or ability to seek out information about energy efficient technology or utility demand response programs
6. Lack of trust in the available information
7. The upfront cost of higher efficiency technologies or equipment
8. Limited or no access to financing options like a credit card, store credit account, or loan to purchase the new appliance/measure

Demographics

BASELINE1 What type of system(s) do you use to heat your home? Please select the **primary** system that you use.

1. Natural gas boiler
2. Natural gas furnace
3. Electric furnace
4. Air source heat pump
5. Dual-fuel heat pump (ASHP with natural gas furnace backup)
6. Ground source heat pump
7. Variable refrigerant flow heat pump
8. Packaged terminal heat pump
9. Ductless mini-split heat pumps
10. Other: please describe:_____
11. Don't know
12. Prefer not to say

BASELINE2 What type of water heater(s) do you use at your home? Please select the **primary** water heater that you use.

1. Electric tankless water heater
2. Electric water heater with storage tank
3. Natural gas tankless water heater
4. Natural gas water heater with storage tank
5. Heat pump water heater
6. Other: please describe:_____
7. Don't know
8. Prefer not to say

DEM1. Including yourself, how many people lived in your home during the past 12 months?

1. Number of people (1-12): _____ **[Only allow whole numbers 1-12]**
2. 13 or more
3. Prefer not to answer

DEM2. In what year were you born?

1. Year born (1900 – 2003), specify year: _____ **[Only allow four-digit numbers between 1900-2003]**
2. Don't know
3. Prefer not to answer

DEM3. Which of the following best describes your home?

1. Single-family detached home
2. Single-family attached home such as townhouse or row house
3. Apartment or condominium
4. Mobile (manufactured) home
5. Other, please specify:

DEM4. Approximately how many square feet is your residence?

1. Less than 1,000 sq. ft.
2. Between 1,000 and 1,999 sq. ft.
3. Between 2,000 and 2,999 sq. ft.
4. Between 3,000 and 3,999 sq. ft.
5. Between 4,000 and 4,999 sq. ft.
6. Greater than 5,000 sq. ft.
7. Don't know

DEM5. What is the last grade of school you completed?

1. Grade school or less (1–8)
2. Some high school (9–11)
3. Graduated high school (12)
4. Vocational/technical school
5. Some college (1–3 years)
6. Graduated college (4 years)
7. Post graduate education
8. Prefer not to answer

DEM6. How would you describe your race or ethnicity?

1. Caucasian (or White)
2. African American (or Black)
3. Arab American
4. Latino (or Hispanic)
5. Asian descent
6. Native American/Indian
7. Other, please specify: _____
8. Prefer not to answer

DEM7. What was your <u>total family income</u> was in 2020 before taxes and including Social Security or other payments?

1. Less than $10,000
2. $10,000 to just under $20,000
3. $20,000 to just under $30,000
4. $30,000 to just under $40,000
5. $40,000 to just under $50,000
6. $50,000 to just under $60,000
7. $60,000 to just under $70,000
8. $70,000 to just under $80,000
9. $80,000 to just under $90,000
10. $90,000 to just under $100,000
11. $100,000 to just under $150,000
12. $150,000 or more
13. Don't know
14. Prefer not to answer

Close

CLOSE1 Those are all the questions we have, thank you for your help! Would you like to receive the $15 e-gift card or online debit card, or credit to donate to a charitable organization, at **[Email]** or at another email address? You will receive the gift card within 4 to 6 weeks of survey completion.

1. Yes, please send the gift card to **[Email]**
2. Please send the credit for the e-gift card, online debit card or charitable donation to another email address (please specify): **[OPEN ENDED, require valid email address]**
3. No thanks, I do not wish to either receive or donate the gift card

CLOSE2 This concludes the survey. The Michigan Public Service Commission thanks you for your participation in this survey. If you have any questions about the survey or how your responses will be used please reach out to us at Michigan.EnergyStudy@guidehouse.com.