DTE INSIGHT: ENERGY BRIDGE ELECTRIC SAVINGS

WHITE PAPER SUBMISSION FOR THE 2017 MICHIGAN ENERGY MEASURES DATABASE

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The DTE Insight Energy Bridge is an add-on to the DTE Insight app and aims to achieve incremental behavior-based energy savings by providing customers with access to real-time energy usage data.

Source: DTE Energy

DTE Insight is a part of DTE Energy's diverse portfolio of residential energy efficiency programs. The app seeks to motivate users to save energy by providing access to a variety of information and tools including energy usage data, target setting, weekly challenges and tips for completing various home projects that can save the user energy and money on their bill.

The DTE Insight Energy Bridge is a hardware add-on that provides real-time energy usage information through the app. Savings from the Energy Bridge are incremental to the app. Customers with an Energy Bridge continue to have access to all other features of the app.

Any DTE Insight app participant can request an Energy Bridge through the app and are then randomly assigned to the participant group, who receives a bridge, or the control group who does not receive a bridge. This method creates an experimental design for evaluation. Once a customer receives their Energy Bridge in the mail they must link it to their AMI meter in order to begin seeing real-time data in the app. The first Energy Bridges were mailed out in August 2014.

The Energy Bridge savings value included in this presentation is based on analysis of 17 months of data from 7,379 participants who have successfully linked their Energy Bridge.

Navigant used an instrumental variable (IV) design to estimate incremental savings from the Energy Bridge. This method produces an unbiased estimate of savings in a Random Encouragement Design (RED).

Illustration of RED Design
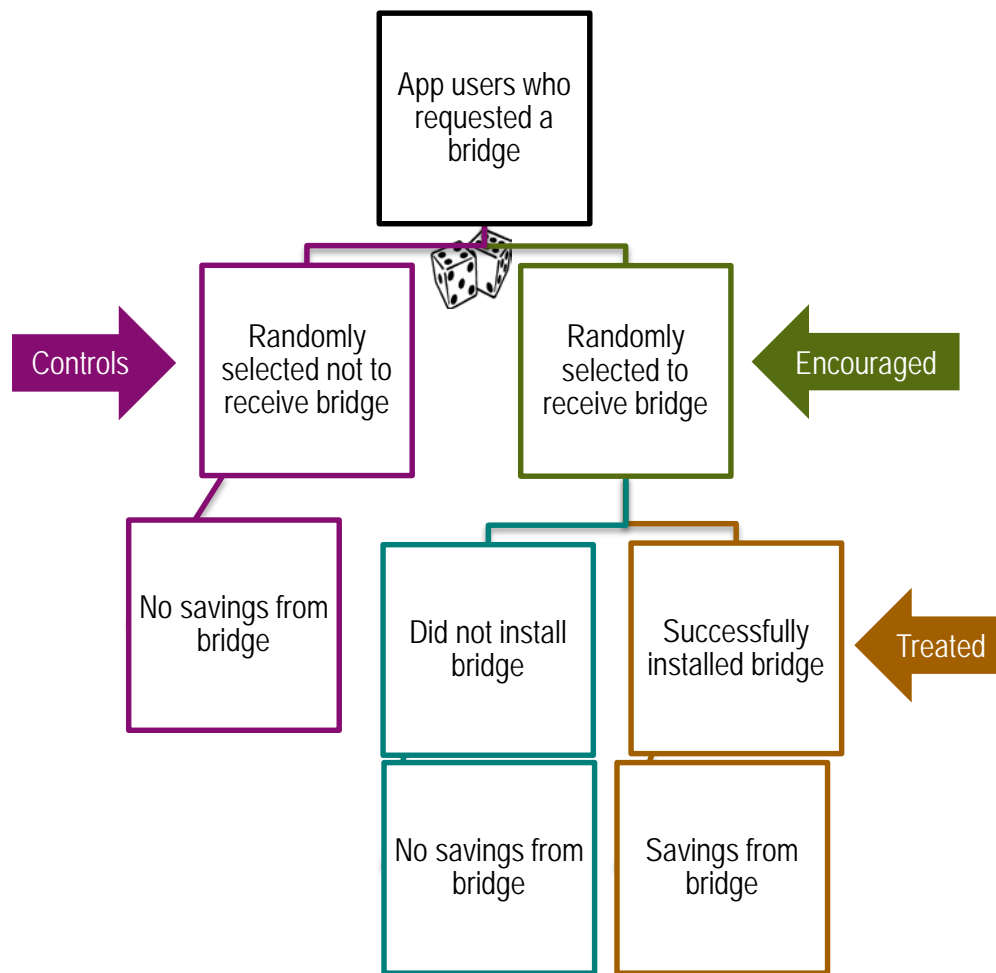
DTE Insight participants who request an Energy Bridge are randomly assigned, based on a 4:1 ratio, to a participant group and a control group. Upon receiving a bridge, participants must link the bridge to their AMI meter in order to see real-time data in the app. Thus, in this RED design, encouragement is receiving an Energy Bridge and treatment is linking the Energy Bridge to the AMI meter.

The relevant savings estimate is for customers who successfully installed the bridge (treated). However, there is a delay between when DTE ships the bridge and when the customer links it, and not everyone who receives a bridge successfully links it. The decision of whether or not to link the bridge, and when to link it, are non-random choices. This means an estimate comparing treated customers to the control group directly would produce a biased estimate of savings.

To produce an unbiased estimate of savings, the evaluation team utilizes an IV design in which a billing observation in a month after a bridge has been linked, which is non-random, is predicted by (or "instrumented" for) the observation being post encouragement (or in a month after the bridge is received), which is random. Savings are then calculated using a regression model comparing the encouraged, treated, and control customers.

Source: Navigant

Average Energy Bridge percent savings from August 2014 through December 2015 were 3.21%.

Percent Energy Bridge Electric Savings
August 2014 – December 2015
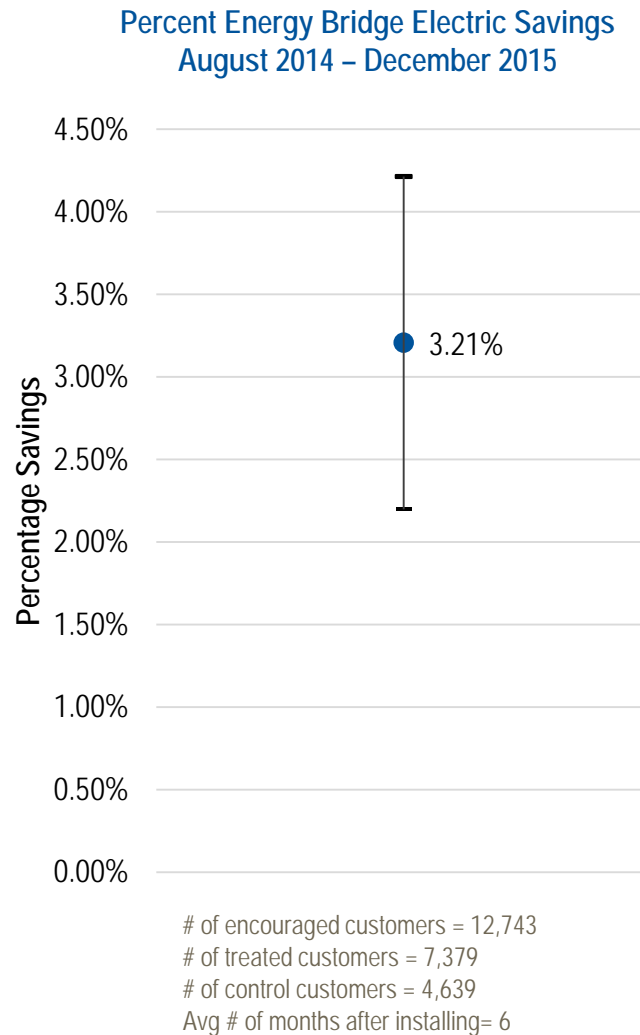
- Energy Bridge savings are incremental to the Insight App. As a result, savings values are net of joint savings with other programs. We assume no incremental channeling from the Energy Bridge.

- Both single-family and multi-family customers can participate in the DTE Insight program. As a result, the savings estimate represents average savings for both single and multi-family customers.

# of encouraged customers = 12,743
# of treated customers = 7,379
# of control customers = 4,639
Avg # of months after installing= 6

Source: Navigant analysis of customer billing data

A deemed savings estimate based on the evaluation to-date may over- or under-estimate future savings due to the savings life cycle, seasonal effects, and cohort effects. Future calibration activities will address these considerations.

Considerations	
Seasonal Effects	The Energy Bridge was available for install beginning in August 2014; this analysis covers August 2014 through December 2015. Although a full year of data is used, it is possible the savings will differ when weather differs from the conditions observed in this analysis period.
Savings Life Cycle	The evaluation team has observed that customer engagement with feedback programs often decline over time without prompts to stimulate engagement. DTE plans to make future updates to the app that are expected to enhance engagement which may influence savings from the Energy Bridge.
Cohort Effects	If early adopters achieve higher or lower savings than those customers that install the bridge later, these savings values may be an over- or under-estimate.

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The evaluation team recommends including the DTE Insight Energy Bridge as an electric measure in the 2017 Michigan Energy Measures Database.

The evaluation team recommends including single-family and multi-family electric savings of 3.21% for the DTE Insight Energy Bridge in the 2017 Michigan Energy Measures Database (MEMD).

As noted previously, the current savings estimate may over- or under-estimate true savings due to seasonal effects, cohort effects and savings life cycle. To address the savings life cycle, Navigant recommends developing annual savings estimates (i.e., Year 1 savings, Year 2 savings, etc.) similar to Home Energy Reports.

In addition, deemed savings are subject to MEMD calibration research. Navigant recommends regular calibration for this measure.

Annual savings would be calculated using the formula below:

Savings Rate x Number of Active Participants x Average Usage from Controls for the Prior Program Year

where:

o   the number of active participants is defined as electric single or multi-family customers with AMI meters who downloaded the app, linked the app to their DTE account, received an Energy Bridge, linked the Energy Bridge to their AMI meter, and had an active account with DTE on the last day of the program year

o   controls are defined by the randomization associated with the RED design described on page 3 of this white paper