



Leveraging Smart Meters with In-Home Displays for Low-Income Customers

Pre-Pilot Key Findings

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Background



- SDG&E applied for an In-Home Display (IHD) pilot with 300 low-income customers that was approved to leverage the installation of Smart Meters.
- Pilot Objectives:
 - Determine the effectiveness of providing feedback to residential customers, i.e. does it impact energy consumption
 - Examine how feedback on cost impacts a customer's motivation to reduce their energy use.
 - Determine if IHDs can help customers to shift their usage to times when costs are lower.
 - If successful and cost-effective, IHDs can be added to low-income energy efficiency program at no cost to low-income customers.

2009 Pre-pilot Overview

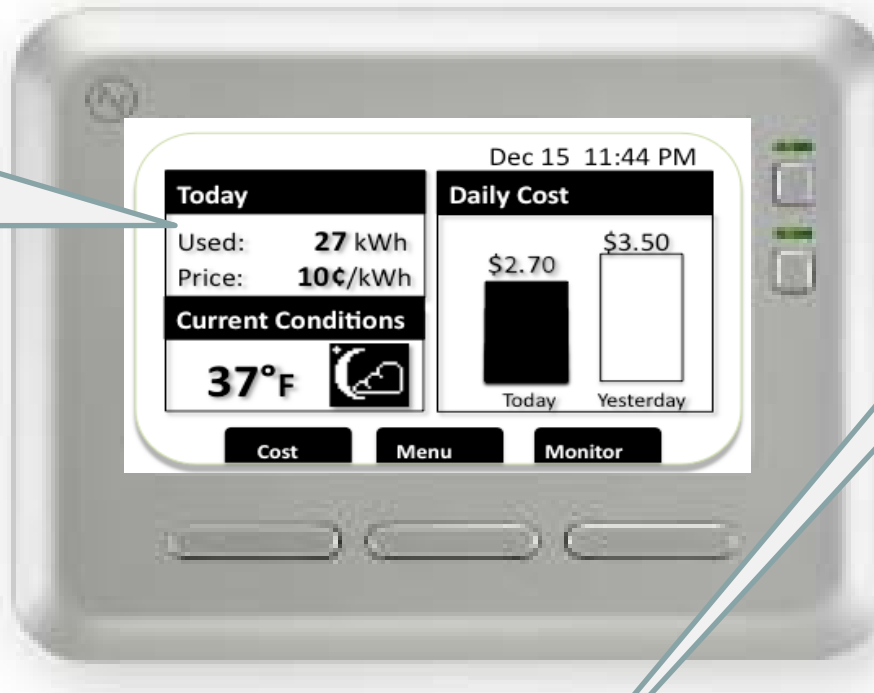


- In 2009, SDG&E recruited 19 customers to “pre-pilot” IHDs from October to January 2010
- Objectives:
 - Gain insight to the customer’s installation experience
 - Gain insight into the relevance and value of device features/functionality
 - Gain insight into customer interaction with the device: frequency, time of day, members in the household, etc.
 - Gain insight on behavioral changes that may occur as a result of having usage and pricing information displayed in real time
 - Increase the effectiveness of the 2010 pilot in terms of the implementation process and the customer experience
 - Test the technology
- Customer feedback obtain through online surveys
- Customers were given \$50 upon device installation and \$10 for each survey completed for a maximum honorarium of \$100

Device Overview

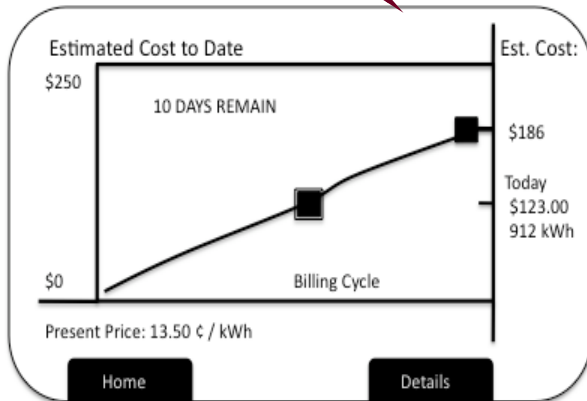


Displays current household energy use, in both kW and dollars per hour;



Receive messages

Track monthly bills with up-to-date billing information and an estimated end of month bill



Menu

- Settings
- Message Log
- Help
- About This Device

Buttons: Home, ↓, Select

Monitor

HOUSEHOLD USAGE

----- **3.60 kW**

Household Cost Per Hour: 36.00¢
Present Price: 10.00¢ / kWh

Buttons: Home

See the cost of electricity in near real-time

Approach



- Identify the target Audience
- Recruit and enroll eligible participants
- Prepare Smart Meter & Backend Systems
- Install new Blue Label Smart Meters
- Install In-Home Displays
- Provide initial incentive gift card
- Perform customer surveys throughout trial period
- Retrieve devices from customers
- Provide incentive cards for completed surveys

Target Audience Selection Criteria



- **SDG&E Screened**
 - CARE participant
 - Single family home
 - Installed Smart Meter
 - Average kWh greater than 500 per month determined by 2008 12-month average
 - Not on Medical Baseline
 - Attempt to enroll former LIEE program participants from 2007 and prior

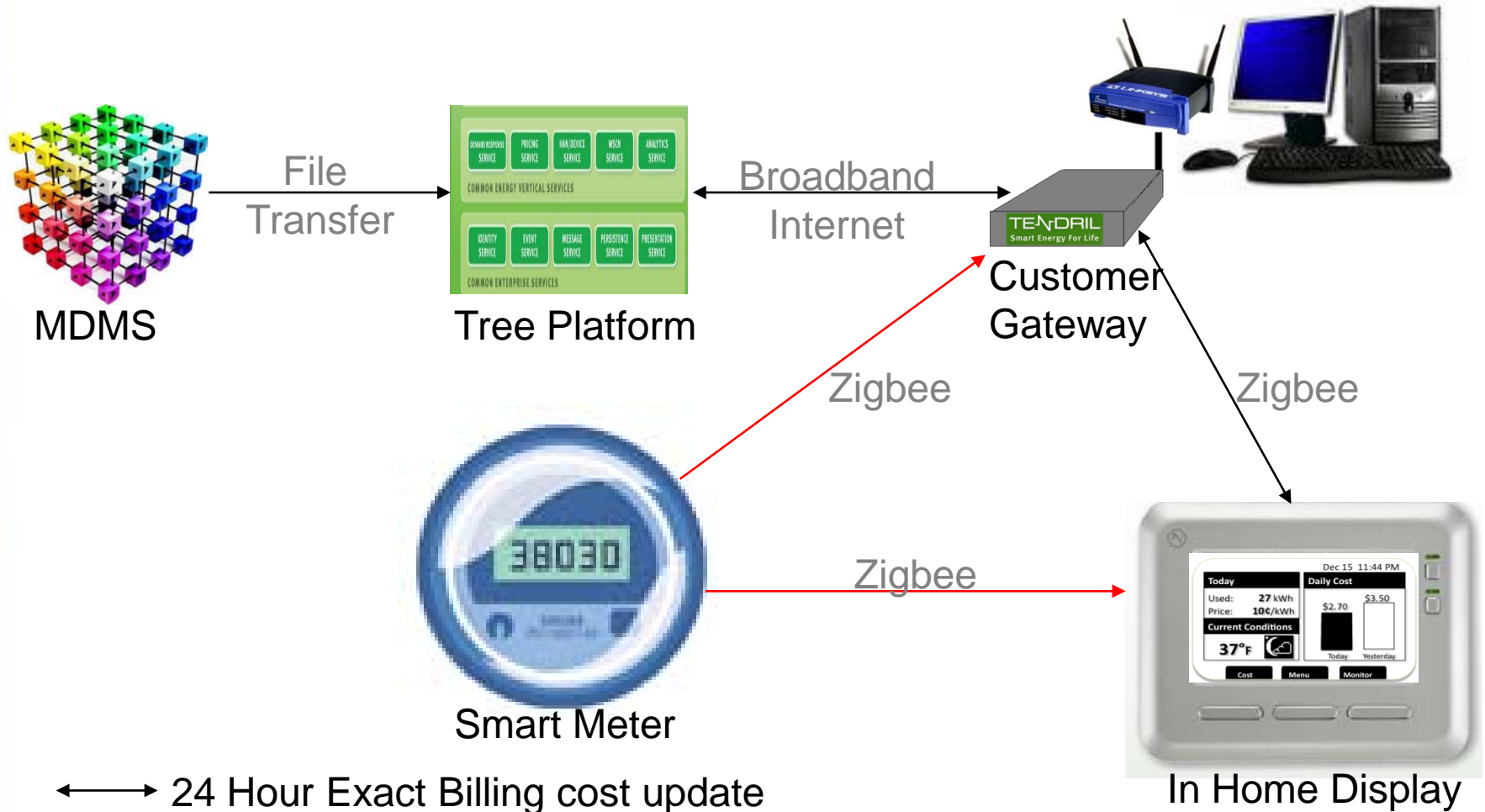
- **Customer Provided**
 - English speaking
 - Broadband internet router with an available Ethernet port

Enrollment Process for Pre-pilot



- Recruitment letter
- Web enrollment form
 - Confirm eligibility
 - Identified installation preference: SDG&E or Self-Install
- SDG&E response to those submitting interest
 - “Congratulations – you’ve been selected” email
 - “Thank you for your interest, however, you were not selected to participate in this pilot.”
- Notification for meter update
- Scheduled SDG&E installs

Consumption Data Process Flow



↔ 24 Hour Exact Billing cost update

↔ 2 Minute interval energy consumption with cost calculation

Key Findings



- **Overall, the project was very successful.**
 - Participants **understood the features on the IHD** and used the device to **identify ways they could save energy and reduce their utility bills.**
 - Most participants **thought the program went very smoothly** and **nearly all respondents would like to participate in a similar program** in 2010.
- **Installation**
 - Most customers thought the instructions were helpful, didn't have difficulty installing the IHD device, and were able to install it in less than 15 minutes.
- **Frequency of use of the IHD**
 - Most respondents looked at the IHD several times a day or frequently throughout most of the test period.
 - By the end of the test period, **about half of the respondents** looked at it frequently, and the other half about once a day or less.

Key Findings - con't



- **Overall, these are the IHD features that customers looked at most frequently or were the most useful:**
 - Current and daily use; comparisons to previous day
 - Projected monthly cost
 - Time and outside temperature
 - Alert notifications
- **Nearly all respondents took action to reduce their energy use and cost. Here are some of the things they did:**
 - Turned off lights, appliances, and equipment when not in use
 - Used more CFL bulbs
 - Used less heat
 - Reduced pool filter time
- **Energy Savings – Directionally Positive**

What customers said about the IHD



“It helped me to be more aware of turning off lights, etc.”

“Tells a good picture of what electricity I am using at any given time. Helps to remind me to conserve.”

*“This was a wonderful opportunity. ...My daily usage had gone from under \$2.00 a day to over \$5.00. **By using the display, I was able to track the problem and rectify it quickly.**”*

“Great way to make us more aware of our energy usage.”



What customers liked best



"It looks cool on my wall and is a conversation piece as well as a conservation piece."

"I love comparing the day to day energy usage and checking to see if I'm on-track for the end of the month bill."

"I can see how much we are using on a daily basis and can set alerts to notify me when we go over a certain amount. The display is easy to read"

"It allows us to see on a day to day cost of electricity, It is now like a game, trying to beat yesterdays price."



Conclusion & Next Steps



- Early results indicate that this customer segment finds In Home Displays valuable and can benefit from smart meter enabled devices
- Incorporate learnings into full scale pilot
 - Refine plan for full pilot March – May 2010
 - Customer recruitment for full pilot May – June 2010
 - Install IHDs & conduct pilot 2010 July – Dec
 - Evaluation and Final Report June 2011 April –
- Incorporate 250 Programmable Communicating Thermostat (PCT) pilot in 2011 for low-income customers.



Thank You.
Questions?



- Survey Questions

- Developed questions to evaluate customer reactions to and satisfaction with IHD features and functions.
- Customer feedback from the surveys/journals were used to develop subsequent surveys throughout the test period.
- Periodic reporting of participant opinions/behaviors were provided throughout the test period.

Research Sample Survey Questions



1. What was your household's immediate reaction after the installation and exploration of the IHD (discussion, actions, frequency of checking the IHD & PCT, positive or negative reactions to the information)?
2. How often did you look at the IHD when first installed; how often after the first month?
3. Which IHD features did your household like the most (why?) and the least (why?)? For example, what is the usefulness of various features of the display:
 - a) Portable and can be moved to different rooms
 - b) Shows amount of electricity consumed in real time
 - c) Shows cost of electricity consumed in real time
 - d) Shows cumulative use and cost of electricity for the month
 - e) Displays information in graphs
 - f) Shows current time and temperature
4. If you could design an IHD, what would it look like (physical), what information would it provide, and in what form?
5. (If IHD was installed for them:) Do you feel that you could install the IHD yourself or would you prefer to use a professional installer?
6. Do you prefer energy information to be displayed on a stand-alone device or prefer it integrated in another device such as an ipod or iphone?
7. Would you prefer to receive this information on your mobile phone so you can remotely monitor your household energy use anytime and anywhere?
8. What actions did you take following the installation of the IHD and how long did these persist?
 - a) How did time lag between energy use actions you took and the result of these actions (cost savings) impact energy use behavior? (reinforce sustainability?)
9. Did you reduce energy use during peak periods?
 - a) If did not participate by reducing energy use, why?
10. Did the energy and/or cost information have an effect of changing the energy consuming habits of your household?



Pre-pilot Customer Feedback



What customers are saying about the IHD device:

“It helped me to be more aware of turning off lights, etc.”

“Tells a good picture of what electricity I am using at any given time. Helps to remind me to conserve.”

“Great way to make us more aware of our energy usage.”

