

Lesson for Improving Home Upgrade Programs – Better Buildings Accelerator

Wednesday, May 11 from 3:45 – 5:00 pm ET

Hear how home upgrade program administrators have reduced administrative burdens for themselves and their partners and are achieving better results. Home Upgrade Program Accelerator Partners will share their strategies to enhance data management, contractor relationships, and customer experiences and approaches to improve program processes. Explore how these ideas can be implemented in programs across the country.



Lesson for Improving Home Upgrade Programs

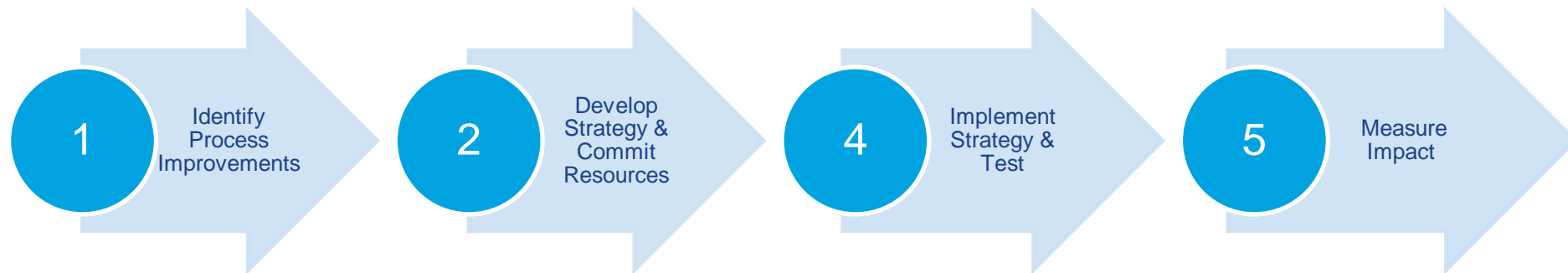
Better Buildings
Accelerator

Moderator:
Dale Hoffmeyer
DOE

Home Upgrade Program Accelerator

VISION

Accelerating adoption data management strategies, including implementation of HPXML throughout the home energy upgrade industry will enable streamlined collection, transfer, and management of data, reduce administrative burden, and improve quality assurance.



Accelerator Partners

- APS
- NYSERDA
- Build It Green
- Enhabit
- Pearl Home Certification
- Building Performance Institute
- Midwest Energy Efficiency Alliance (MEEA)
- Neighborworks of Western Vermont HEAT Squad

Administrators of home energy upgrade programs:

- **Pledge** to implement HPXML and improve program effectiveness.
- **Identify** opportunities for process improvements.
- **Participate** in technical assistance and/or peer sharing forums.
- **Share** materials, results, and lessons learned from their innovative approaches.
- **Report** on progress annually including providing information on reducing program administration costs.

Accelerator Benefits

- Help organizations implement HPXML and other process improvements
- Peer exchange of knowledge and experience
- Reduce program cost and enhance effectiveness
- Improve participating contractor satisfaction
- Receive public recognition as leader in accelerating growth of home energy upgrades


Examples of Improving Data Processing



Higher Cost Effectiveness, Greater Satisfaction

50% 

Less admin
time to review
and approve
projects

66% 

Reduction in
data
processing
time for APS
reporting

31% 

Lower
contractor
admin time to
submit projects

3x 

Increase in
trade ally
satisfaction

*APS results from process improvements
and HPXML, May 2015 ACI Conference*

HPwES Certificate of Completion

Home Performance with ENERGY STAR®
Certificate of Energy Improvements

Home Address:

Work Performed By:

Work Verified By:

Work Completed On:

Signature:


Home Performance Improvements:

Additional Information:

X. Insert Logo Here. First, right click the 'X' and select delete to remove this red box. Then, to upload a logo, click in the white space and choose a file to upload.

X. Insert Logo Here. First, right click the 'X' and select delete to remove this red box. Then, to upload a logo, click in the white space and choose a file to upload.

ENERGY STAR® is the simple choice for energy efficiency. Home Performance with ENERGY STAR is a systematic approach to improving energy efficiency and comfort in homes, while reducing the greenhouse gas emissions that contribute to climate change. Join the millions across America already making a difference at energystar.gov.



Auto-populating HPwES certificate of completion using HPXML

Home Energy Score HPXML Translator

- Enable partners to automatically simplify complex, HPXML-formatted home data into Home Energy Score inputs and generate a Home Energy Score
- Minimize customization of partners' software systems
- Translate HPXML-formatted data into Home Energy Score API data format

ENERGY STAR Home Advisor

- ENERGY STAR Home Advisor is a free online tool that allows you to:
 - Get custom recommendations based on the efficiency features in your home
 - See a summary of energy-saving features of your home in your Home Profile
 - Track your home's energy performance
- Option to use HPXML to send data to populate the Home Profile from software after an audit or home improvement job
- Future development: HPXML exports from the Home Advisor to facilitate interactions with other systems and applications

www.energystar.gov/homeadvisor

Questions? Email: Hudson.Rebecca@epa.gov for more information

The screenshot shows the ENERGY STAR Home Advisor website. At the top, there is a navigation bar with links for 'Ways to Save', 'Home Advisor', 'Knowledge Center', 'Take the Pledge', and 'My ENERGY STAR'. The main header area features the 'ENERGY STAR HOME ADVISOR' logo and a welcome message for 'Rebecca H.' with links for 'account settings' and 'logout'. Below the header, there are two sections: 'My ENERGY STAR highlights' showing 'RECENT ACTIVITY' (1 item on your to do list, 2 completed items) and 'READY FOR YOU' (70 items available), with a 'SAVE YOUR PROGRESS' button. The main content area is divided into two tabs: 'Profile' and 'Recommendations'. Under the 'Profile' tab, there is a section titled 'Review and Edit Your Home Profile' with a brief description of the tool's purpose. Below this, there are three progress indicators for different home categories: 'My Home Basics' (Partially Complete), 'Utility Bills (Home Energy Yardstick)' (Not Started), and 'Lighting & Appliances' (Partially Complete). Each category includes a small image, a description, and a 'View/Edit Profile' link.

Today's Panelist



Tim Miller, Enhabit



Melanie Paskevich, Neighborworks
of Western Vermont HEAT Squad



Torsten Glidden, Build It Green



Streamlining Processes and Data for Contractors and Customers

Tim Miller, CEO, Enhabit




Program Overview

- *Statewide, from Portland pilot*
- *Contractors, lenders, communities*
- *Deep retrofits – \$13-15K avg*
- *Approaching 5,000 homes*



Evolution: Necessity, Complexity

	2010	2012-13	2014	
Customer sign-up	Platform			
Contractor Assignment, scheduling	(manual)	Manual, tools	Platform, tools	
Contractor Tool: data, measures, incentives, bid	None/Excel; manual into PMC system	Workbook & import/export		
Energy savings	PMC system	Workbook (deemed)		
Energy Score	(n/a)	3 rd Party Tool		
Customer Dashboard, Lending	Platform			
Project Manageme	Platform			

Leading programs are helping lift HP to a new level.

CEW: The 2nd program in the country on HPXML – using the tools you already use.



HPXML: The National Data Standard for Home Performance Projects

- Measure impact.
- Optimize the offering.
- Target customers.
- Share your results with you.
- Future: choice in the tools you use every day.
- While keeping costs down.

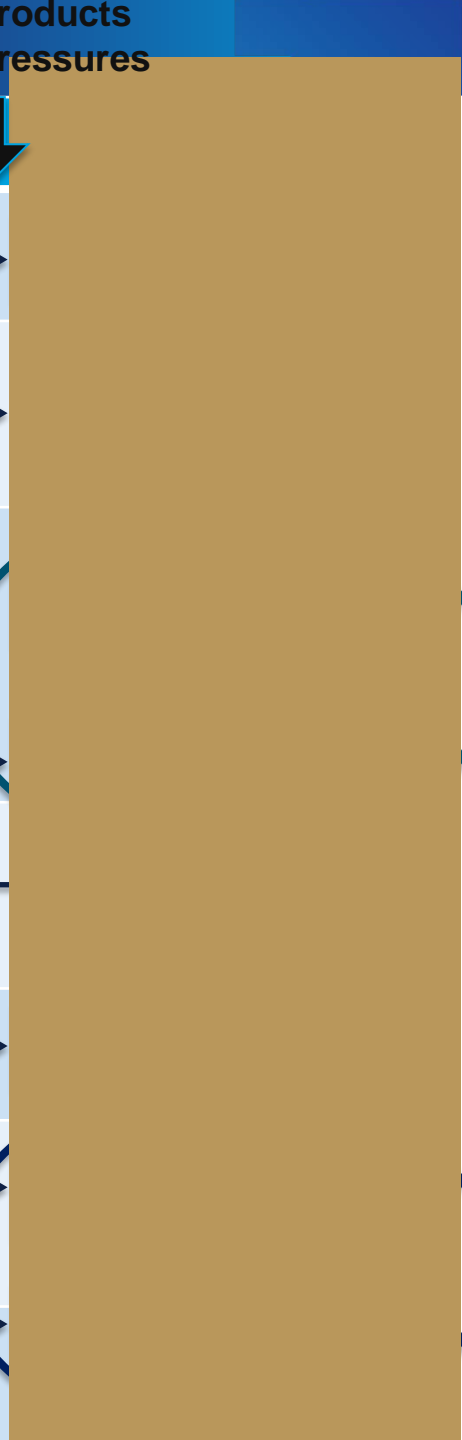
*A complex system
Difficult to adapt
Facing new services and market pressures*



Evolution: Necessity, Complexity

New products
New pressures

	2010	2012-13	2014		2015
Customer sign-up	Platform				
Contractor Assignment, scheduling	(manual)	Manual, tools	Platform, tools		
Contractor Tool: data, measures, incentives, bid	None/Excel; manual into PMC system	Workbook & import/export		HPXML	Workbook & import/export (& manual review)
Energy savings	PMC system	Workbook (deemed)			
Energy Score	(n/a)	3 rd Party Tool			
Customer Dashboard, Lending	Platform				
Project Manageme	Platform				



Transition to 'Threshold' Web-based Tool

Had to replace Workbook (complex, un-supportable)

Risk with external tool >> internal skunkworks

Immediate results >> clear vision

- Web-based (prepopulated, version control, flexibility), HPXML structure, easy to use, mobile

Risks: homegrown tool (myopia, un-supportable path again, staff risk)

Mitigation: common language, 3rd party back-up

Status: Rollout nearly complete, all adopting, improvement with each training

Big Wins:

- Contractor satisfaction
- Contractor time
(saves 50-100 min. per project)
- Staff time
(saves 70 min. per project, roughly .5FTE)

Project Info

Test In

Bidding

Test Out

QR

Save Data

Complete Testin Audit

Documents

Demographics

Notes

Photos

PROJECT ID	ADDRESS	CITY	STATE	ZIP	
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
CUSTOMER	TELEPHONE	EMAIL	AUDITOR / CONSULTANT	CONTRACTOR	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
TEST IN DATE	YEAR BUILT	YEARS IN HOME	ORIENTATION	OUTSIDE TEMP	INSIDE TEMP
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		
GAS UTILITY	ELECTRIC UTILITY	BASEMENT	CRAWLSPACE	ATTIC	ROOF
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
OTHER FUELS			ISSUES		
<input type="checkbox"/> Wood <input type="checkbox"/> Wood Pellets <input type="checkbox"/> Propane <input type="checkbox"/> Fuel Oil <input type="checkbox"/> Other: <input type="text"/>			<input type="checkbox"/> Combustion Issues <input type="checkbox"/> Moisture issues <input type="checkbox"/> Asbestos <input type="checkbox"/> Vermiculite <input type="checkbox"/> Knob and Tube		

Project Type : Full Project Seismic Radon Solar

Building Model

Notes

Photos

Conditioned Square Footage

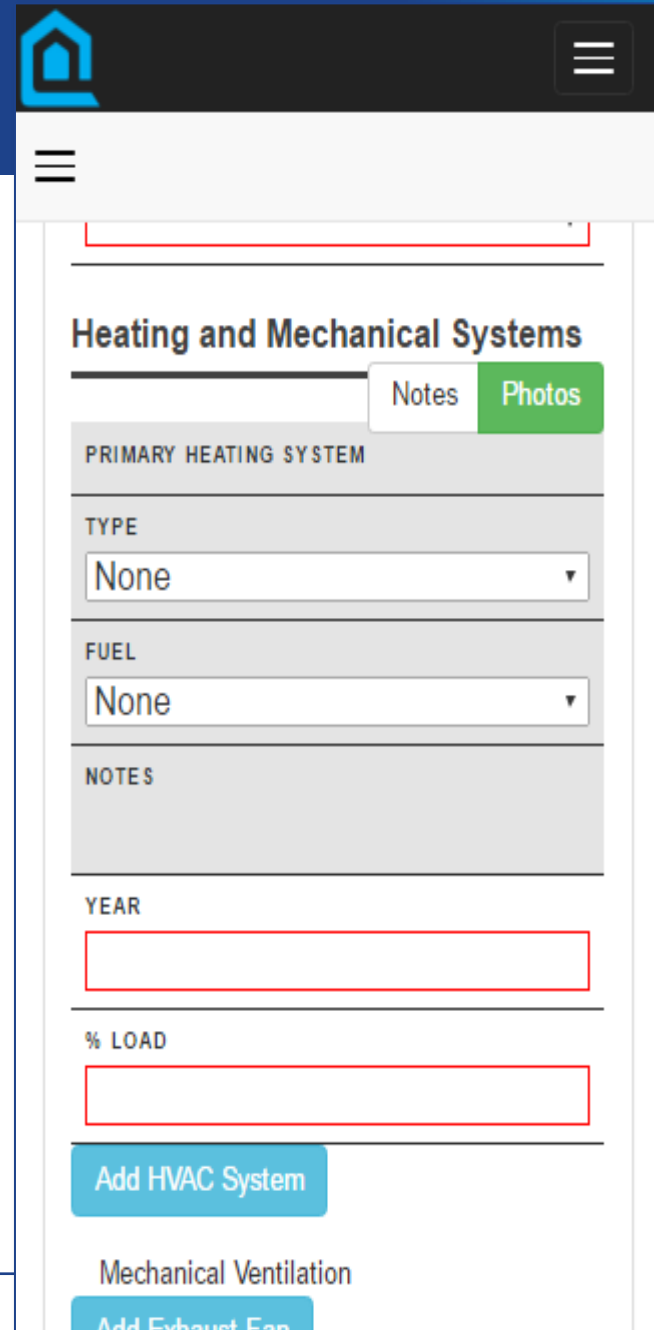
BASEMENT	FLOOR SECTION 1	FLOOR SECTION 2	FLOOR SECTION 3	TOTAL FLOOR AREA
	<input type="text"/>			0

Ceiling Height

BASEMENT	FLOOR SECTION 1	FLOOR SECTION 2	FLOOR SECTION 3	TOTAL VOLUME
	<input type="text"/>			0

Threshold on a computer

Threshold on a phone



The image shows a mobile application interface for managing heating and mechanical systems. At the top, there is a blue house icon and a hamburger menu icon. Below this, the title "Heating and Mechanical Systems" is displayed. To the right of the title are two buttons: "Notes" and "Photos". The main content area is divided into sections: "PRIMARY HEATING SYSTEM", "TYPE" (with a dropdown menu set to "None"), "FUEL" (with a dropdown menu set to "None"), "NOTES" (a text input field), "YEAR" (a text input field), and "% LOAD" (a text input field). At the bottom of this section is a blue button labeled "Add HVAC System". Below this, the text "Mechanical Ventilation" is visible, followed by another blue button labeled "Add Exhaust Fan".

Evolution: Necessity, Complexity

New products
New pressures

	2010	2012-13	2014		2015
Customer sign-up	Platform				
Contractor Assignment, scheduling	(manual)	Manual, tools	Platform, tools		
Contractor Tool: data, measures, incentives, bid	None/Excel; manual into PMC system	Workbook & import/export		HPXML	Workbook & import/export (& manual review)
Energy savings	PMC system	Workbook (deemed)			
Energy Score	(n/a)	3 rd Party Tool			
Customer Dashboard, Lending	Platform				
Project Manageme	Platform				



Transition to Custom Configuration of Salesforce

New services & budget pressures >> new solution

Considered build-our-own, new 3rd party tool, SF; decided on SF

Risks: Configuration vendor/cost, over-design, inflexibility, long-term maintenance

Mitigation: Interviewed for 'configuration' approach; a standard platform in a competitive space; growing internal expertise

Status: Configuration/dev on-path; building a 'backbone' of key functionality first

Looking back...

- Be really sure why you're building something on your own – and thoughtful about when you'll outgrow it...
- Understand why you're using a vendor-built system. What customer type is it really designed for, and is that you? Will you be evolving away?

How unusual is your program?

Does it have to be?

Additional Information





“If you spend the money now, you won’t spend it on utility bills or trips to the hospital because of your asthma or because you got a disease.”

*--Gerry Winfield
Enhabit Homeowner*

THE WORK

- Air sealing + Duct sealing
- Insulate attic, walls, floors
- Window replacement

THE COST

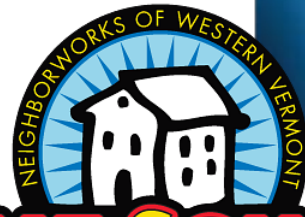
\$15,000

THE RESULTS

Less drafts

Healthier indoor air

Lower utility bills



Lessons for Improving Home Upgrade Programs





NeighborWorks of Western VT

- **Nonprofit** housing organization
- One-stop-shop
- Provide all the answers and support homebuyers and owners need
- Keep customer's best interest front and center
- **Realty, Lending, Financial Counseling and Education, Home Repair, HEAT Squad**
- Part of a national nonprofit network, *NeighborWorks America*





Meet the HEAT Squad

- Providing **support** to improve efficiency of homes/businesses, regardless of income since 2010
- **Reduced cost audits**, same day audit reports, objective advice, help with contractors, in-house financing
- Available in five counties, half of Vermont
- Completed almost **4,000 audits** and **1,500 projects**
- Partners: Efficiency VT, Green Mountain Power, Local Contractors, Energy Committees and Champions





Our Struggle-Strategy-Synergy



- **Struggle** of multiple data entry
- **Strategy** to streamline data entry
- **Synergy** of the overall program



Struggle: Multiple Data Entry

Intake



Lori spends 45 min. processing (1) audit intake... CRAZY!



Struggle: Multiple Data Entry

Audit



CAKESYSTEMS™

1 hr.

Efficiency
Vermont

40 min.

Corey spends almost 2 hr. submitting (1) audit.....

CRAZY!



Strategy: Streamline Data Entry



Intake



Intake goes from 45 min. to 15 min.- cut by 2/3!!
(For 1 audit processed, Lori can now process 3 audits)

HUGE INCREASE IN PRODUCTIVITY!



Strategy: Streamline Data Entry

Audit



1 hr.



CAKE SYSTEMS™



*5 min.

Efficiency
Vermont

*Thru API data transfer

Audit data entry goes from 1 hr. 40 min. to 1 hr. 5 min.-
almost cut in half!!!

HUGE INCREASE IN PRODUCTIVITY!



Synergy: Overall Program

“The combined power of a group of things when they are working together that is greater than the total power achieved by each working separately.” -Cambridge Dictionaries Online

- Expanding with less resources (staff), streamlining data entry allows more customers thru the program = **more revenue \$\$**
- Auditors spend less time with audit data entry to do more customer service, higher conversion rate = **more revenue \$\$**

MORE REVENUE = SUSTAINABLE PROGRAM



Hurdles Still to Overcome

- Build bridge between Salesforce & CAKE
- Work on bridge between CAKE & Efficiency VT
- Currently building bridge between website form and Salesforce (ready by Summer 2016)
- Investigate LEAN principles and implement to streamline program further





Thank You

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Residential Home Upgrades in California

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Energy Upgrade California® Home Upgrade

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Better Buildings Summit

Washington DC

May 2016



Home Upgrade

Energy Upgrade California®

Presentation Outline



- Home Upgrade Issues in California
- Responses (short- and long-term)
- Implementation Challenges
- Going Forward
- Questions and Comments



Home Upgrade Issues in California

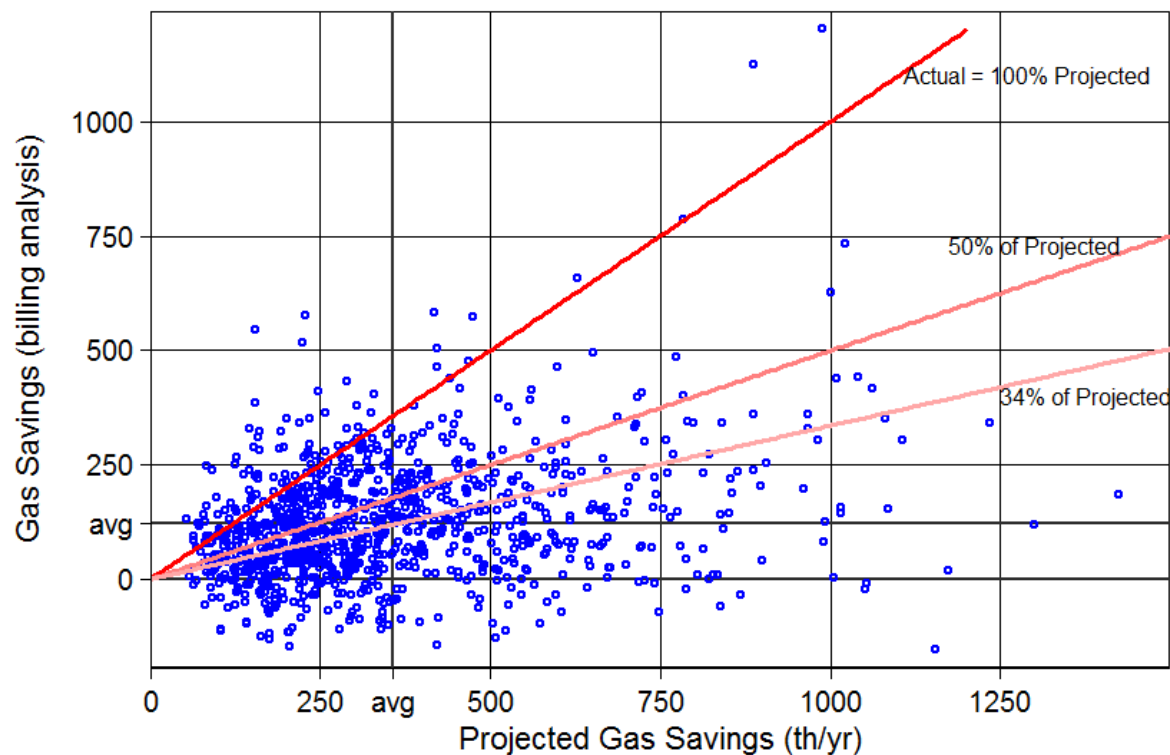


1. Home Upgrade incentive program was limited to one energy-modeling software tool (*contractor pain-point*)
2. That software tool systematically over-predicted savings (*multiple stakeholder pain-point*)
3. CA Public Utilities Commission (CPUC) required additional software modeling options be made available
4. Four new software options were tested and passed modeled savings results screening
5. Newly approved software options have been under-utilized



Is The Program Delivering Savings?

Actual (billing analysis) vs. Projected Gas Savings



Stakeholders

- Utilities
- Counties & RENs
- Contractors & Customers
- Financing Entities
- Regulatory Commission
- Energy Commission



The Response (short-term): Program Incentive Adjustment

A. Savings/ Participation Level: % Reduction*	B. Savings percentage Incentive Amount	C. Energy Savings Incentive amounts \$0.75/kWh and \$2.00/therm*	D. Total Incentive $D = (B+C) \leq \$6,500$
---	--	--	---

10%	\$1,000				
15%	\$1,500				
20%	\$2,000				
25%	\$2,500	+	\$0.75/kWh and \$2.00/therm	=	Final Incentive amount (maximum \$6,500)
30%	\$3,000				
35%	\$3,500				
40%	\$4,000				
45%+	\$4,500				

For EnergyPro modeled savings estimates, site energy percent savings and the kWh, kW & therm savings amounts will be determined by first applying the factors in the table below:

	Electric Energy and Demand (kWh and kW)	Natural Gas Energy (therm)
Heated and Cooled Homes	0.4	0.8
Heated Only Homes	1.0	0.8



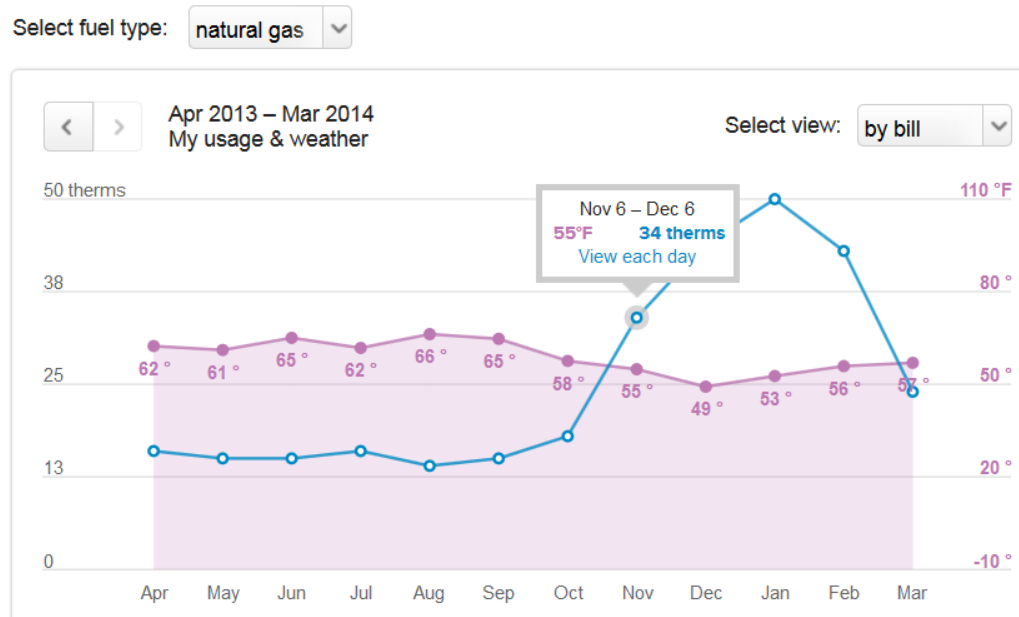
The Response (long-term): CPUC Project Directive

"We direct Commission Staff and the IOUs to work collaboratively with the California Energy Commission and other Energy Upgrade California stakeholders to identify approaches to adequately **broaden allowable software under Energy Upgrade California** while containing costs required for needed Commission Staff Reviews"



The Response (long-term): Addressing related issues

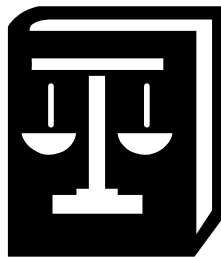
- **CalTEST** opens the door for more software choices
- **HPXML** makes this possible ('speaking the same language')
- **CalTRACK** drives more accurate modeling predictions over time



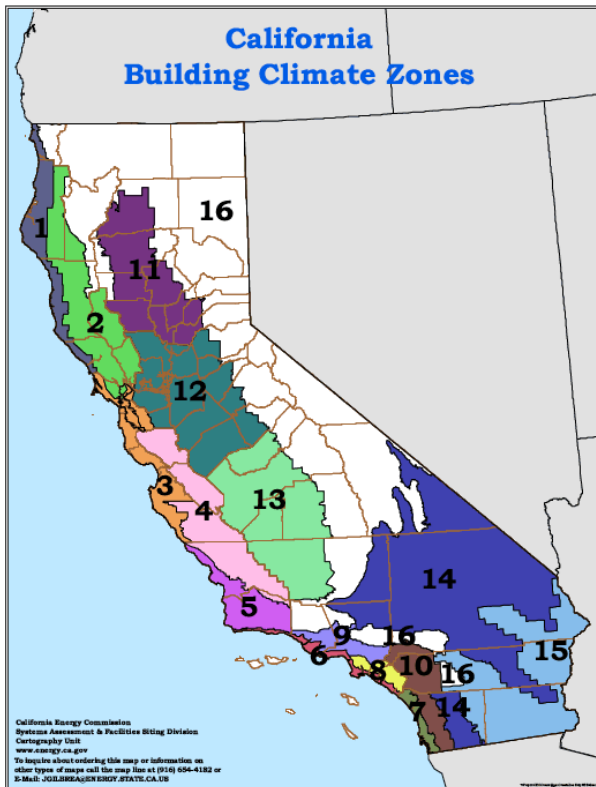
CalTEST

California Test for Energy Software Tools

- Library of typical EUC Homes with site-specific modeling inputs and matched utility bills
- Vendors use test to improve their modeling
- Program uses test as initial screening tool
- Initial adjustment factor may be applied to savings predictions



CalTEST Base Data Scope



- Selected, primarily, homes with large projected heating or cooling savings (to try to best capture range of variance)
- Selected 12 gas heated homes and 7 electrically cooled homes from Climate Zones 2, 3, 4, 7, 9, 10, 11, 12.



CalTEST Qualification



- Vendors can pass **uncalibrated** (for use without 13 months prior energy usage data) or **calibrated**
- Only software that passes CalTEST **uncalibrated** can be used without calibration to utility bill usage data
- Qualifying pass rates: 80% avg. modeled savings accuracy



CalTEST Vendor Status



- **Passed (Approved for use in CA):**
 - ✓ OptimiserEnergy - Optimiser V2.1
 - ✓ PSD - TREAT V4
 - ✓ Snugg Home - SnuggPro V4 (calibrated only)
 - ✓ Earth Advantage - CakeSystems (un-calibrated only)
- **Approval phased-out 2/1/2016:**
 - PSD - TREAT V4 (*no kW output for CA*)
 - EnergySoft - EnergyPro 5 (*proprietary XML file*)



Project Website - www.caltrack.org



EMPIRICAL SOFTWARE SCREENING TOOL

The purpose of CalTEST is as a screening tool that will determine a minimum level of accuracy of software based on actual CA homes. The test will provide data to software vendors that is similar to what would be collected in a real world audit, and based on data collected on the actual homes in the test set. We will then compare your predictions to our weather normalized actual savings to determine realization rate and variance of your tool.

We have carefully screened homes to find 20 homes representative of CA EUC homes in terms of climate, ECMs, energy use, measured savings, and a range of other variables. A complete summary of the selection process can be found in the selection documentation.

Vendor Steps for Completing CalTEST

CalTEST will be conducted in two phases. First, vendors will complete the spreadsheet below that does not contain usage data (uncalibrated). Once that is submitted a second sheet will be provided that includes usage data so that vendors can resubmit with calibration (per calibration requirements below).

Vendors are given the attached CalTEST Excel workbook containing a summary worksheet, weather data, and anonymized project from each of the 20 test homes for CalTest, without usage data. The first worksheet in the workbook is the summary of results from each of the test homes. Worksheets 2-21 within the workbook each contain the pre/post building characteristics, pre/post measurements, and pre/post

CALTEST 2014

CalTEST Calibrated - v.3c
[Download File](#) 

CalTEST Uncalibrated - v.3b
[Download File](#) 



At-a-Glance Software Comparison Guide



Software	Key Features & Pricing
Snugg Pro	<ul style="list-style-type: none"> • Retail Price: \$30 per project (based on each unique address entered into system) • Special Pricing for Home Upgrade Program participants: Single project: \$25
PTIMISER	<ul style="list-style-type: none"> • License is per user. Per project and monthly license types available • OptiMiser Silver – \$25.00 per project, No Monthly Fee, \$100 Monthly Fee (includes 40 users per month); No Setup Fees • OptiMiser Gold – \$3.00 per user over 40 users per month, \$100 Monthly Fee (includes 40 users per month); No Setup Fees
CAKESYSTEMS™	<ul style="list-style-type: none"> • License is per user, with three options available: • Pay Per Use – For low volume, \$25.00 per site/audit • Basic Plan – Unlimited audits, no tech support or mobile app use, \$69.99/month • Premium Plan – Unlimited audits, tech support and mobile app use, \$99.99/month

Snugg Pro

PTIMISER
power | simplicity | accuracy

CAKESYSTEMS™

Home Upgrade
Energy Upgrade California®

Advanced Home Upgrade Software Modeling Options

Find out which is right for your business!

HPXML Makes Multiple Software Choices Feasible



- Input data (software/UI) is output in an ‘common language/structure’ (HPXML)
- HPXML Structure is broad and general (the skeleton), allowing for program modeling data capture needs and calculation requirements (the guts) to reside within HPXML framework
- Program specific details don’t necessarily present a ‘breaking change’ to HPXML
- HPXML is **open-source** and updates are managed by user/stakeholder consensus



HPXML Drives Alignment



- The software must be able to provide data in HPXML format
 - HPXML output data specification has been circulated and reviewed
 - Based heavily on APS/NYSERDA/LEAP requirements with CA-specific uses/definitions (within HPXML) as well as a couple of additions
- Each CA implementer is able to accept HPXML files into CRM and/or data-tracking systems.
- Software vendors update User Interface & Tools to meet CA requirements



HPXML Standard/Structure Maintained by DOE (NREL)

Complex Type BuildingDetailsType

Namespace: <http://hpxml.org/hpxml/2011/1>

Diagram

Showing:

- Annotations
- Attributes
- Diagrams
- Facets
- Instances
- Model
- Properties
- Source
- Used by

Close

Used by: Element Building/BuildingDetails

Model: BuildingSummary{0,1}, ClimateandRiskZones{0,1}, Zones{0,1}, Enclosure{0,1}, Systems{0,1}, Appliances{0,1}, Lighting{0,1}, Pools{0,1}, MiscLoads{0,1}, HealthAndSafety{0,1}, extension{0,1}

Children: Appliances, BuildingSummary, ClimateandRiskZones, Enclosure, HealthAndSafety, Lighting, MiscLoads, Pools, Systems, Zones, extension

Source:

```
<xs:complexType name="BuildingDetailsType">
  <xs:sequence>
    <xs:element name="BuildingSummary" minOccurs="0">
      <xs:annotation>
        <xs:documentation>Overall characterization of building for descriptive, rather than modeling purposes</xs:documentation>
      </xs:annotation>
    </xs:element>
    <xs:complexType>
      <xs:sequence>
        <xs:element minOccurs="0" name="Site">
          <xs:complexType>
            <xs:sequence>
```

HPXML Structure Based on BPI & DOE Standards



Building Performance Institute, Inc.
BPI Standards



ANSI/BPI-2400-S-2012
Standard Practice for Standardized Qualification of Whole-House Energy Savings Predictions by Calibration to Energy Use History



Building Performance Institute, Inc.
BPI Standard

BPI-2200-S-2013
Standard for Home Performance-Related
Data Collection v2.1.0

<https://bedes.lbl.gov>



Building Performance Institute, Inc.
BPI Standard

BPI-2100-S-2013
Standard for Home Performance-Related
Data Transfer v2.1.0

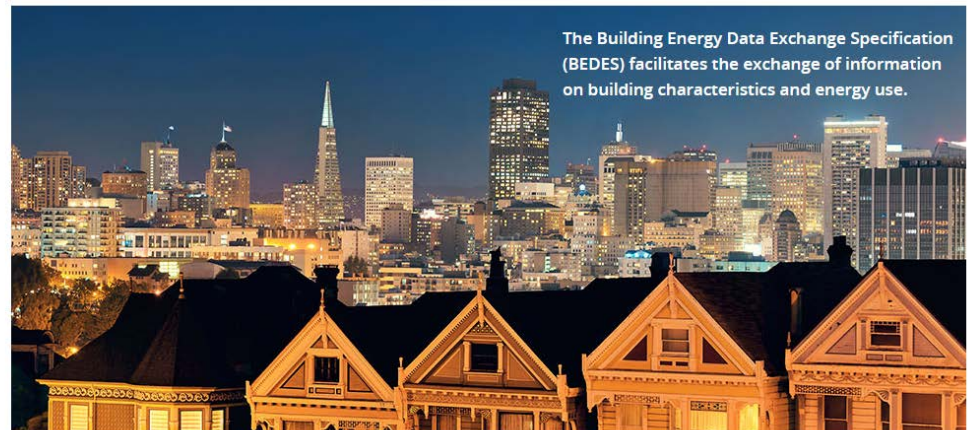


SEARCH



HOME BEDES ONLINE RESOURCES COLLABORATION EVENTS ABOUT CONTACT US

The Building Energy Data Exchange Specification (BEDES) facilitates the exchange of information on building characteristics and energy use.



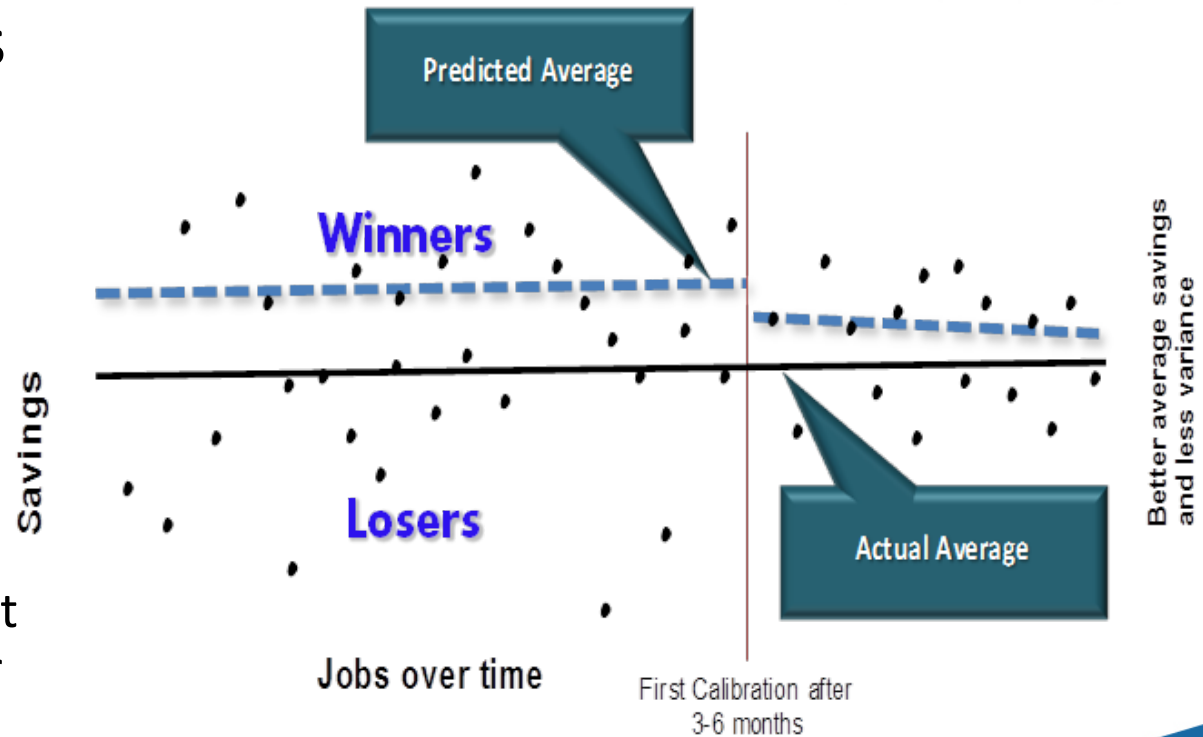
The Building Energy Data Exchange Specification (BEDES, pronounced "beeds") is a dictionary of terms and definitions commonly used in tools and activities that help stakeholders make energy investment decisions.

BEDES Online

CalTRACK: Delivery of Predicted Savings

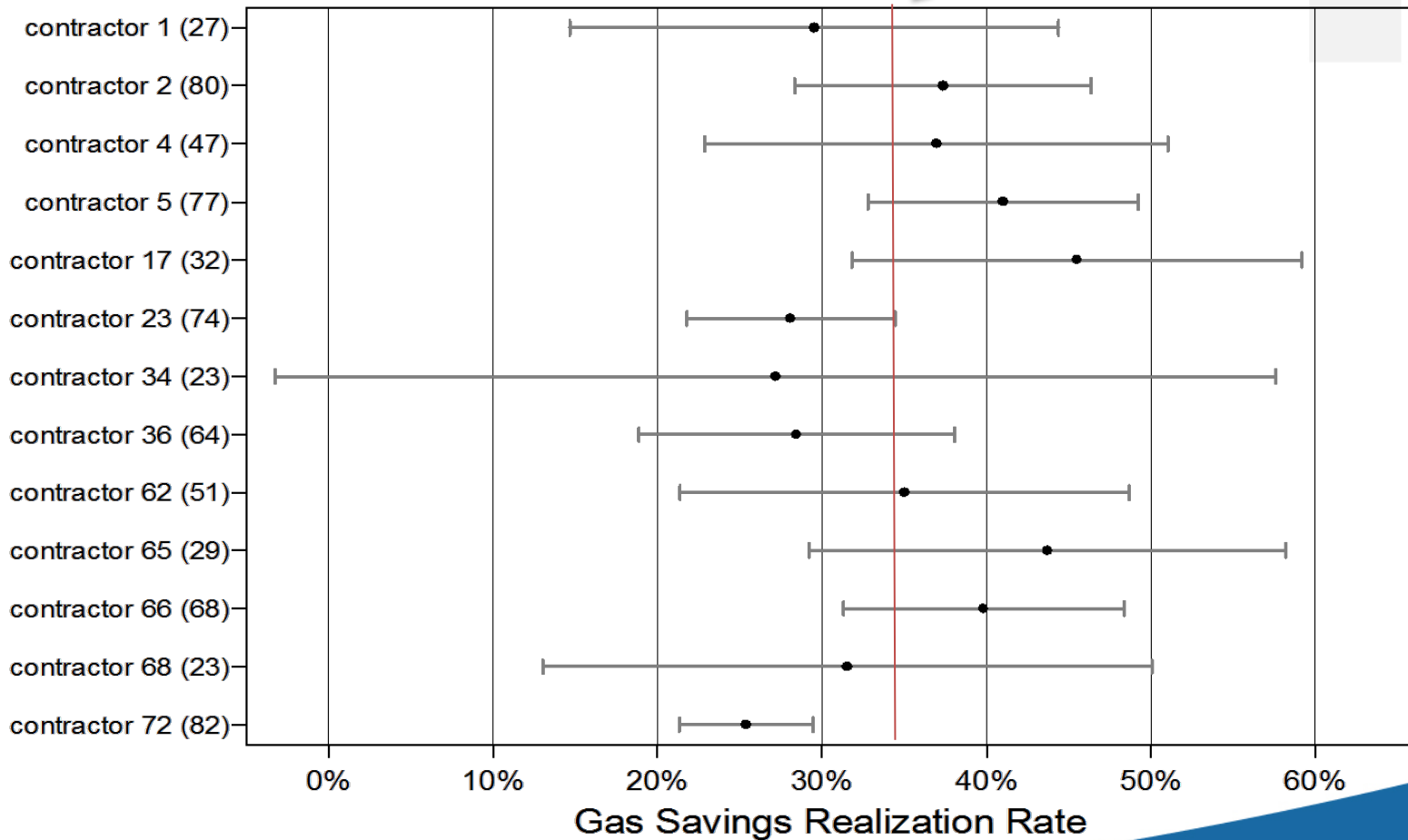
California Data-Driven Tracking and Analysis

- Jobs tracked by software version used
- Savings predictions compared to weather normalized post retrofit billing data (Calibrated vs. Un-Calibrated)
- If inaccuracies identified at the software level, vendor can revise software or an adjustment factor can be applied to reconcile future model predictions



CalTRACK – Contractor Feedback

Avg. Gas Realization Rate (2010-2012 Data): 34%



Contractor Performance Report



- Comparison of contractors performance against other EUC participating contractors (by percentile not name):
 - Average realization rate on predictions
 - Variance levels
 - Efficacy of delivered savings by project size
- Detailed analysis to inform improvement
 - Performance on Heating / Cooling / Baseload
 - Types of measures employed
 - Program wide benchmarks
- *Co-development of this report with contractors*



Improve Motivation for Incentives



Now:

- The higher the savings a contractor predicts, the higher the incentive their clients get
- The less you can get away with doing, the more profitable you are

Future:

- The more savings the contractor delivers, the more incentive their clients get
- The better you deliver on savings, the more profitable you are (happy customers, pay-for-performance, etc.)



Align Incentives



Past: *Incentives based only on % Savings*

- Smaller projects tended to more easily achieve larger percentage with modest kWh/therms savings

Now/Future: *Incentives based on predicted kWh/Therms savings using more accurate software*

- Greater incentives align with those homes where the greatest overall kWh/therms savings can be achieved



Key Challenges in CA Implementation

- New software options have been under-utilized (comfort with using EnergyPro, transition impacts contractor processes)
- Contractor/User Training (sufficient scope & availability)
- Multiple Stakeholders, Multiple processes
- Existing QA Processes & Protocols
- Information Systems (validation & maintenance of standard)



Key Changes in CA Output Data Specifications

- Guiding Principles:
 - Build on APS/NYSERDA/LEAP use cases for CA program needs (CA Data Set)
 - Add elements to support CalTrack realization rates
 - Encourage calibration, implement BPI 2400 standard
- Key Changes:
 - Broke out consumption & savings by heating, cooling, baseload, kWh & Therms
 - Added kW savings based on hourly CA weather data by CA Climate Zone
 - Added pool pumps & thermostatic shower valves
 - Needed to refine data reporting dependencies
 - Needed to resolve/align measure nomenclature



Photo copyright Bill Jacobus



Home Upgrade

Energy Upgrade California®

Future State of the State

Key direct benefits that HPXML facilitates:

- Software accurately predicts savings on average
- Contractors deliver on predicted savings
- Homeowners get the energy savings that are proposed
- Programs pay for *actual* savings
- Stronger link between incentives and savings



Market Transformation

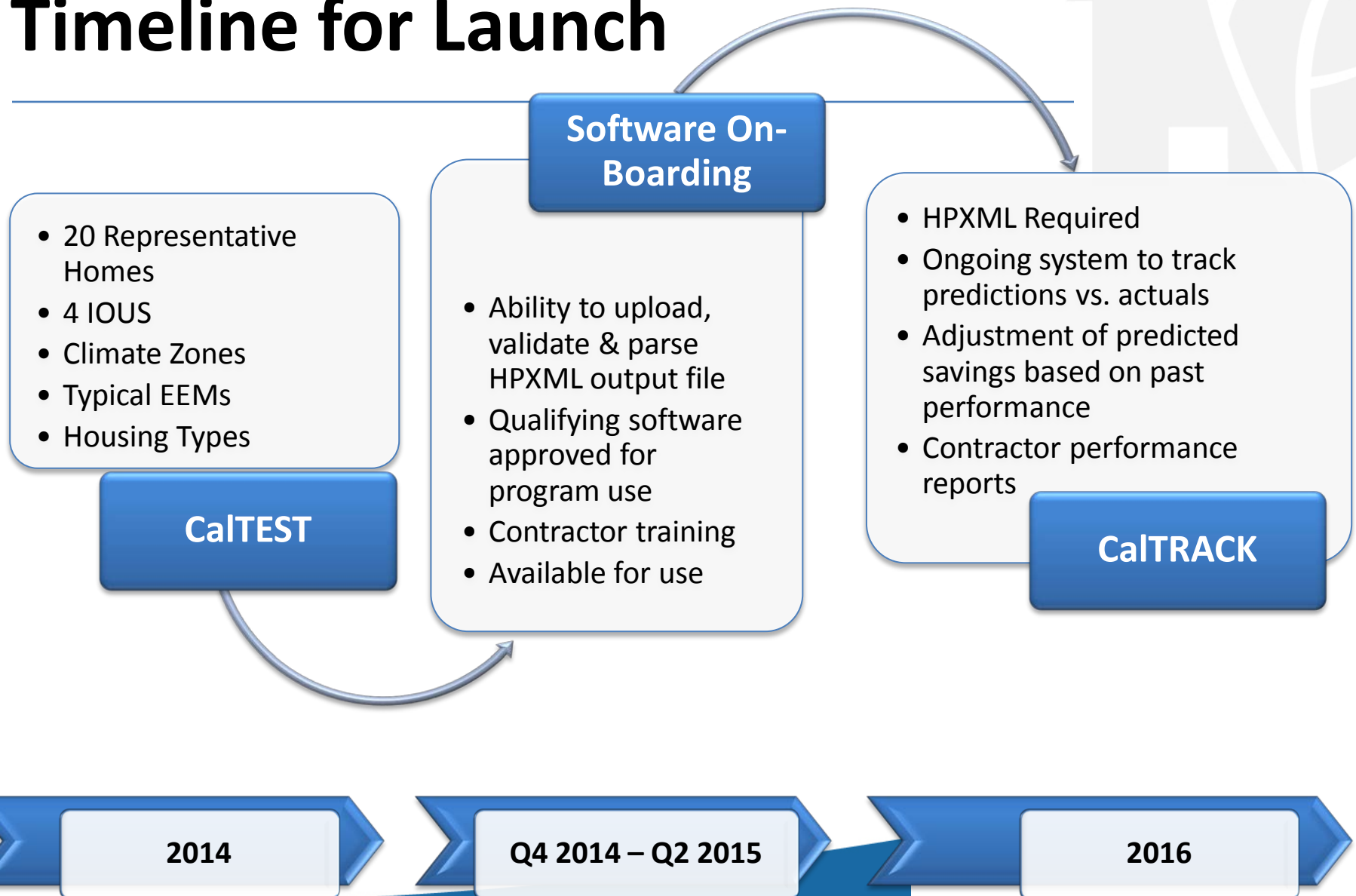


Key indirect benefits that HPXML facilitates:

- Driving demand/quantifying value of energy efficiency work
 - ✓ Home Energy Score
 - ✓ Bringing green building data to the MLS
- Designing better, more cost-effective programs
 - ✓ Less risk (greater predictability) for investors
 - ✓ Better environment for private capital and industry investment
 - ✓ Data sharing and comparative analysis (CA, Other States, DOE, Other industries)



Timeline for Launch



Questions and Comments

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