



# Toward Comprehensive Home Retrofit Programs

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# Key Themes of This Presentation

- Things may be different than the last 30 years but the customer is not that different
- Comprehensive home efficiency cannot all be achieved through one event
- Customers Differ- Deep and Broad requires diversified approach
- Working with the way the customer manages investments, don't tell them how to manage
- “Comprehensive” requires making a series of technical and marketing components work
- Technical and market approaches must co-evolve

# History Of Home Retrofit



# Measures/Access Points

## **Retrofit measures (not time dependent)-**

Insulation, duct and air sealing, shower heads,  
(light bulbs)

**Contractor Replace on or near failure-** Windows,  
heating and water heating systems

**Retail-** Appliances, electronics, specialty lights,  
feedback devices

**Behavior management-** multiple access points-  
Training, feedback devices



# Key Market Observations

- ***Most homes are already partially retrofit***
- Many customers have proceeded piecemeal successfully- to a point
- A few customers install many measures at once
- Many *want* to invest out of cash flow
- Financing is widely available to the credit-worthy
- Whole-house projects are a difficult point of entry for the efficiency measures with most electric savings in existing homes (sale-on failure, retail)



# What's Not Home Retrofit (Very Often)

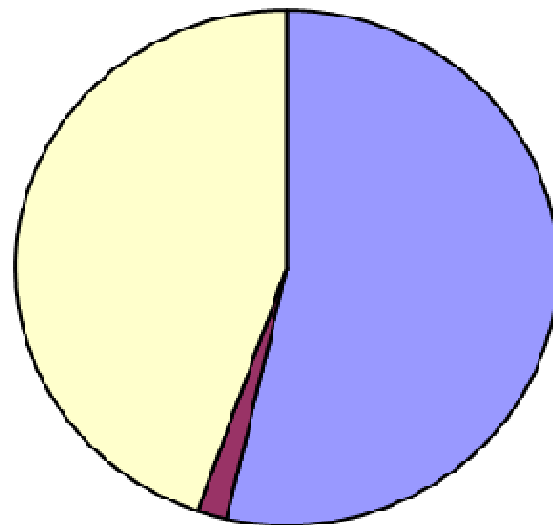
- TV
- Specialty lighting
- Appliances and refrigerator retirement
- Water Heat
- Heat Pumps (except converting resistance to HP)
- AC
- Multifamily
- Mobile homes
- Feedback (some tools)



# Gas Efficiency Potential is Retrofit-

## dominated

SF Gas Potential, 130 Million therms



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■ Wx Contractors

■ Store Sales

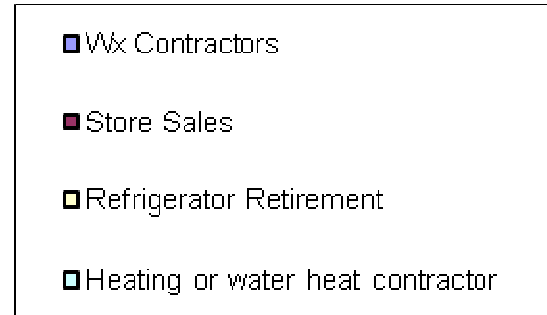
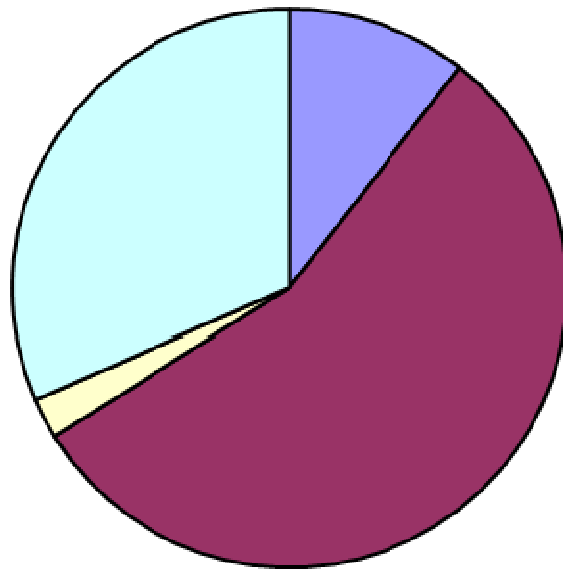
■ Heating or water heat contractor

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# For Electric in Oregon, Retrofit is Modest Share of Total Potential

SF Electric Potential, 131 aMW, w/ emerging technologies



What Works Best?



# Deep Retrofit = More and Deeper Action, Diversified Approach

## ***Distinct Tracks based on Point of Entry and Customer Needs and Resources***

### Sorting:

- Customer Triage if they call
- Improved web advice
- Home Energy Review

### Delivery:

- Vendor-Driven Retrofit
  - Home Performance
  - Bill Financing/Deep Retrofit
- Technical Innovation



# Improved Web Advice (Soon)

## Testing “Energy Savvy”

- Marketing-focused, as compared to technical analysis-focused website
- Rudimentary modeling based on minimum information- detail doesn't help estimate savings
- Direct links to action- incentives, contractors
- Fewest clicks
- Drives user to one of the other tracks



# Home Energy Review (Ongoing)

Checklist onsite audit on request with free CFLs, shower head, aerators

- Training for customer service and deeper sales
- More pointed leave-behind- range of paybacks, next steps
- Test Next Year: Add rudimentary Energy Performance Score, adjust to link to bills to quickly project savings
- Drives to vendor driven track or home performance



## Vendor-Driven (Established)

- Training for customer service and deeper sales
- Multiple measure bonuses
- Adding .22 window measure, ductless heat pumps, EF .67-.7 water heaters
- Adding Tiered Vendor Listings



## Home Performance w/o Bill Finance (Established)

Deep audit to leverage more measures

- BPI certified contractors
- Instrumented home audit- blower door/duct blaster
- Growing quickly

So far, transaction cost and “value added” result in higher contractor bill for same measures- may be a B/C problem in our mild climate

If we eventually go to no pre-test for duct and air sealing, Home Performance may change



# Bill-Financing/Deep Retrofit Clean Energy Works Portland/Oregon (Pilot Underway)

## Federally Supported Deep Retrofit

- Build volume for financing, go to secondary market later
- Energy Advocate, Building Performance elements, Davis Bacon, contractor diversity
- Undergoing continuous refinement

## So far (first few hundred):

- High satisfaction among customers
- Contractors are hopeful as the bugs are worked out
- Zero-down loan is popular, deep retrofit somewhat so
- Med-high income dominates, can get other financing
- Replace heater, water heater as well as efficiency
- Fairly deep retrofits, but some customer drop out to pursue more cost-efficient, less deep paths



# Technical Innovations

Plug loads-

- DVR timer pilot (underway)
- O-Power or other behavioral approaches (underway)
- Hybrid systems- mostly for new (limited)
- No-test duct and air sealing (pilot starting)
- Heat pump control install protocols (pilot underway)
- Insulation innovations are a secondary opportunity- 30 years of progress, need for structural approach (thinking about them)