

Trends in the Residential Energy Efficient Remodeling Market

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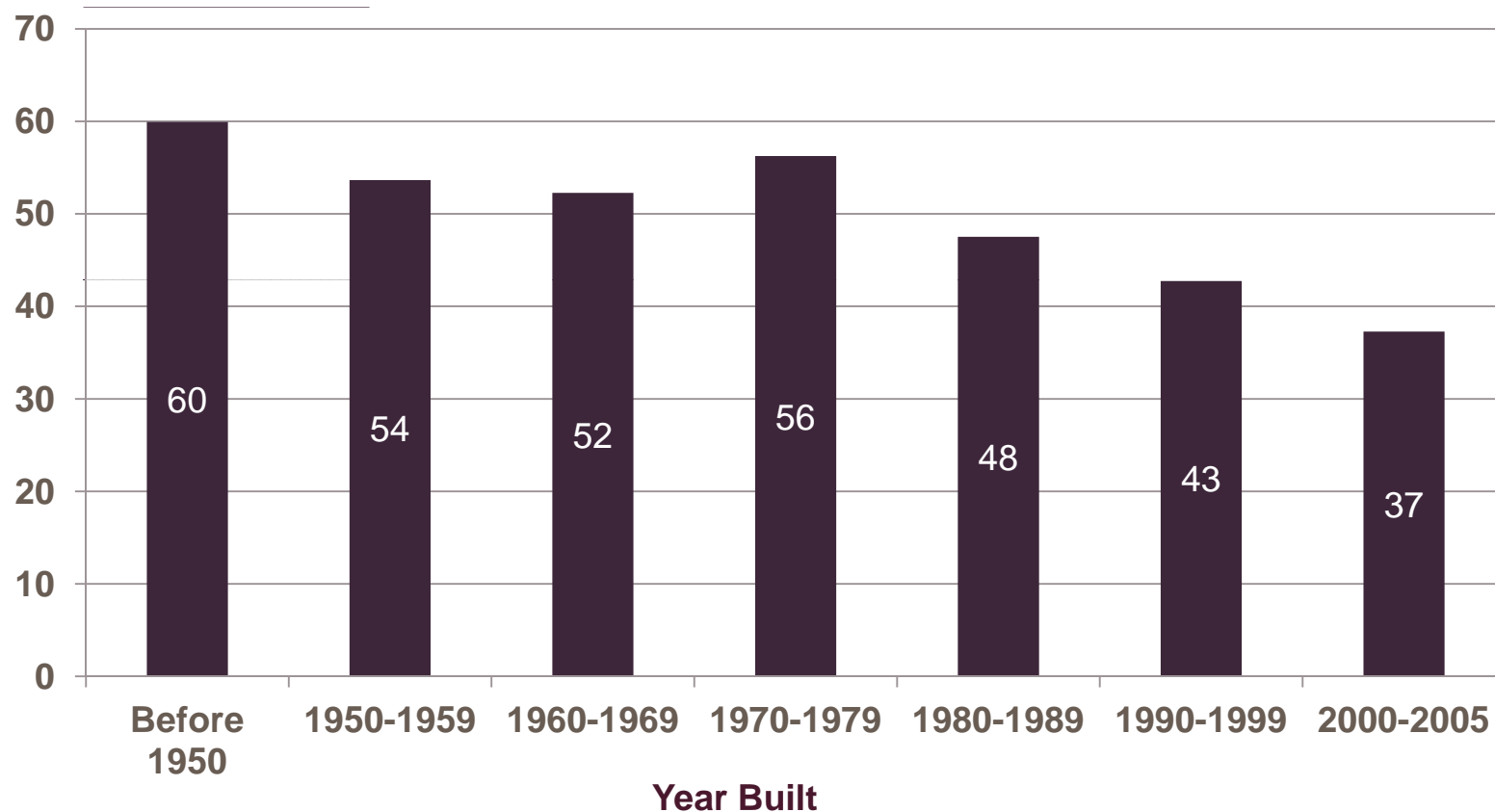
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Purpose of Research

- Explore energy efficient characteristics of owner-occupied housing stock
- Assess the contractor base for installing energy efficient products
- Discover relative trends in consumer demand among products
- Identify and evaluate the role of government policy on the market for energy efficient products

Newer Homes Are More Energy Efficient

Delivered Energy Consumption per Square Foot, 2005 (Thousands of BTUs)

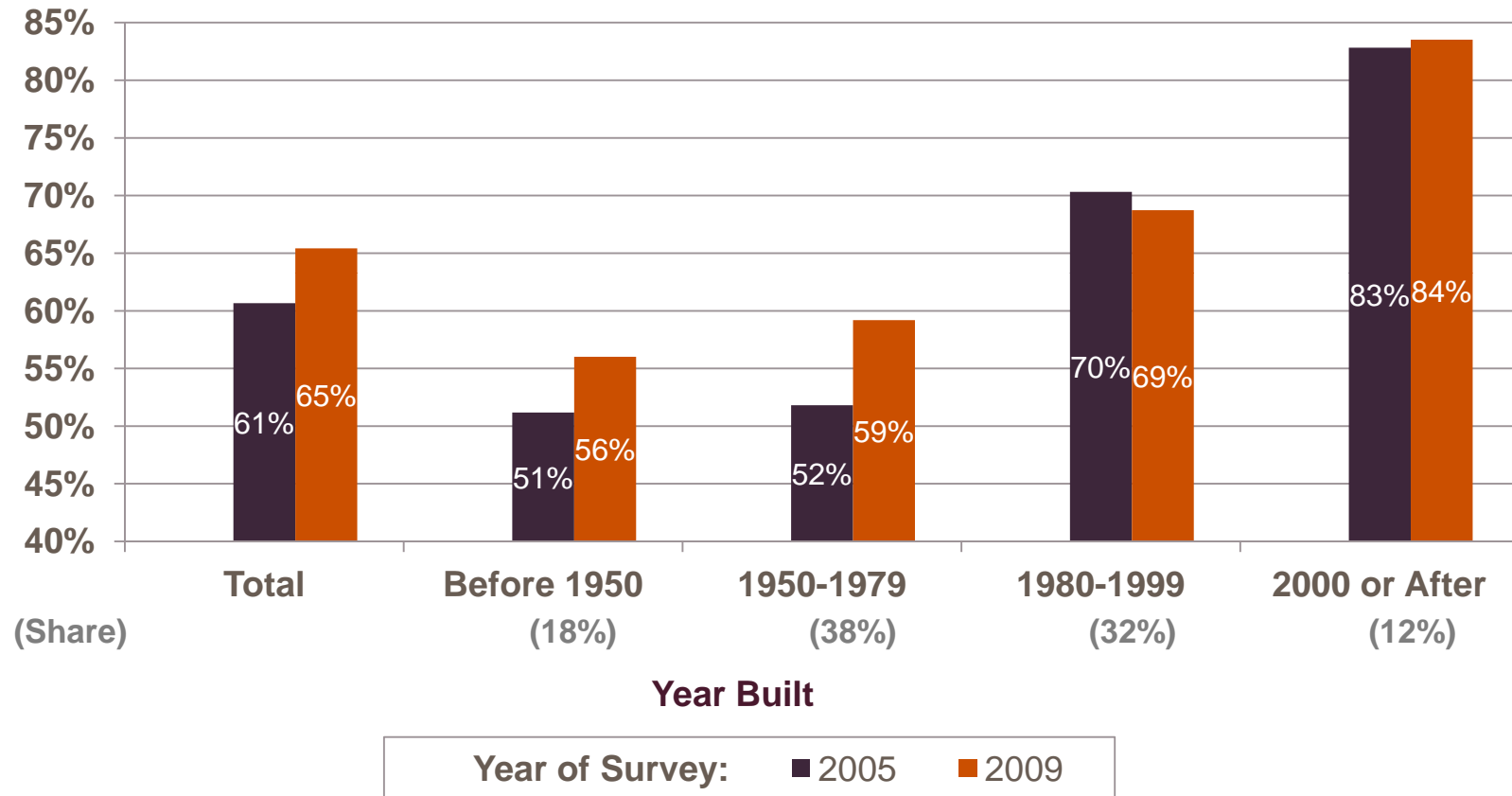


Note: Owner-occupied homes only.

Source: JCHS tabulations of Energy Information Administration, Residential Energy Consumption Survey, 2005.

Windows are Becoming More Energy Efficient

Share of Homes with Double or Triple Pane Glass, By Year Built (Percent)



Note: Owner-occupied homes only.

Source: Energy Information Administration, Residential Energy Consumption Surveys, 2005 and 2009.

JCHS Green Remodeling Survey

- Twice a year since 2008, The Farnsworth Group
- Panel Survey, 250-300 Responses
- Mostly general remodeling contractors
- Track energy efficient and other green remodeling trends
- Asked contractors whether installed 22 select products
- PATH Top Ten, NAHB Research Center (www.toolbase.org)

14 Products Classified as Energy Efficient

- Fixtures for Compact Fluorescent Lights
- High Performance Glazed Windows
- Tubular Skylights
- Centralized Automatic Lighting Controls
- Wireless Thermostats
- Most Efficient Sizing of HVAC System
- Alternative Insulation Materials
- Mechanical Ventilation Dehumidification Systems for Crawlspace
- Solar Water Heaters
- Tankless (Instantaneous) Water Heaters
- Structural Insulated Panels
- Radiant Floor Heating
- Photovoltaic Systems
- Green Roof Systems

Source: NAHB Research Center's Technology Inventory, www.toolbase.org.

Contractor Base for Installing Energy Efficient Products Varies with Cost and Payback

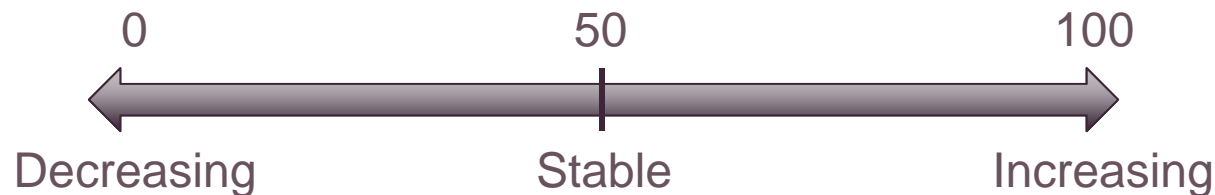
Energy Efficient Product	Share of Respondents Installing During 2009-12
High Performance Glazed Windows	75%
Fixtures for Compact Fluorescent Lights	70%
Alternative Insulation Materials	50%
Tankless (Instantaneous) Water Heaters	40%
Tubular Skylights	1 out of 3
Radiant Floor Heating	
Most Efficient Sizing of HVAC System	
Centralized Automatic Lighting Controls	Less than 1 out of 5
Wireless Thermostats	
Structural Insulated Panels (SIP's)	
Crawlspace Ventilation Systems	
Solar Water Heaters	Less than 1 out of 10
Photovoltaic Systems	
Green Roof Systems	

Source: JCHS National Green Remodeling Surveys, Q1:2009 - Q1:2012.

Trends in Consumer Interest in Energy Efficient Products

- Remodeling contractors asked whether consumer sales/usage of each product was increasing, stable, or decreasing

$$\text{Consumer Demand Index} = [(\text{Share } \uparrow) + \frac{1}{2} * (\text{Share Stable})] * 100$$



- Refers only to the direction of change in sales & usage, and not a level

Higher Scores: Lower Cost, Higher Payback Products

Energy Efficient Product	Consumer Demand Index, Avg. 2009-2012
High Performance Windows	86
Fixtures for CFL's	86
Tankless (Instantaneous) Water Heaters	85
Alternative Insulation Materials	84
Most Efficient Sizing of HVAC System	83
Photovoltaic Systems	79
Solar Water Heaters	77

Source: JCHS National Green Remodeling Surveys, Q1:2009 - Q1:2012.

Lower Scores: Convenience Focus and Design Issues

Energy Efficient Product	Consumer Demand Index, Avg. 2009-2012
Radiant Floor Heating	77
Centralized Automatic Lighting Controls	74
Wireless Thermostats	73
Structural Insulated Panels	70
Crawlspace Ventilation Systems	69
Green Roof Systems	68
Tubular Skylights	61

Source: JCHS National Green Remodeling Surveys, Q1:2009 - Q1:2012.

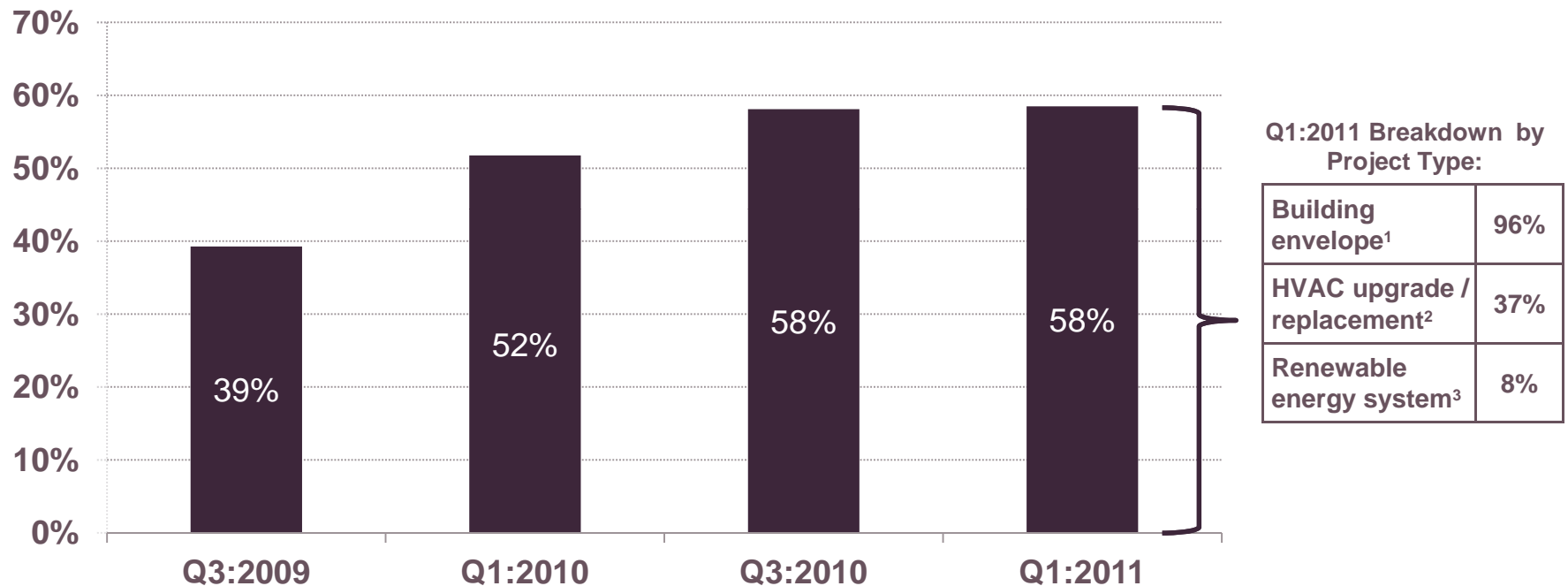
Role of Government Policy

- Federal Appliance Standards are Tightening
- State & Local Building codes
- State Tax Credits
 - Energy Efficiency (10 States)
 - Renewable Energy (25 States)
- Federal Financial Incentives
 - Energy Efficient Mortgages
 - Energy Efficiency Tax Credit (Expired at end of 2011)
 - Renewable Energy Tax Credit (2006-2016)

Source: Database of State Incentives for Renewables & Efficiency (DSIRE), <http://www.dsireusa.org/>.

Many Firms Worked on Projects Subsidized by Federal Energy Tax Credits

Share of respondents who worked on energy tax credit projects (building envelope¹, HVAC system², and renewable energy³ projects)



¹Building envelope projects include insulation, windows, doors, and roofing.

²HVAC systems include heaters, furnaces, boilers, and air conditioners.

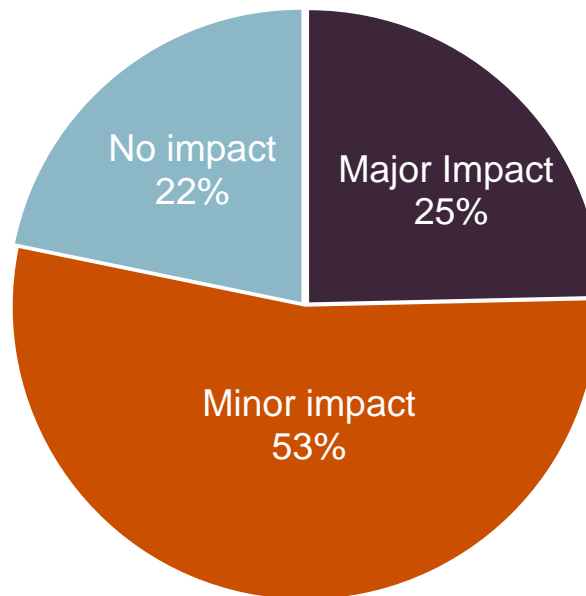
³Renewable energy systems include solar, wind, geothermal, and fuel cell technologies.

Source: JCHS National Green Remodeling Surveys, Q3:2009 - Q1:2011.

Many Remodeling Contractors Perceived a Benefit of the Energy Efficiency Tax Credits

Impact of 2011 expiration of the federal tax credit on residential energy efficiency on green home improvement business relative to 2010

Q1:2012 Survey



Replacements get done anyway, and credits were "added bonus"...

Consumers more concerned about energy savings, quality...

Shifted timing of jobs...

...Without tax credits cost is prohibitive

...Selling point, swayed customers on margin

... Energy efficient sales declining with expiration

...Fewer window and doors jobs with expiration

...Increased awareness → longer term impact

Source: JCHS National Green Remodeling Survey, Q1:2012.

Key Findings

- New homes demonstrate large magnitude of potential for energy efficient improvements
- Contractor base, sales & usage of energy efficient products varies with cost vs. payback
- Many products perceived to have high potential have relatively small contractor base, which may limit future growth
- Government involvement remains high
- Many remodeling contractors perceived a benefit of the energy efficiency tax credits