Putting the Pieces Together: Incentives for High Performance Homes in Arizona

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Overview

- Incentive goals
- Federal and state tax credits
- Utility incentives
  - energy efficiency
  - renewable energy
- Examples
  - High Performance Home (EE only)
  - Zero-Energy Home (EE and RE)
- Incentive options for high performance homes
Incentive Goals

**Government**
- Help overcome market barriers to new building practices and technologies
- Enhance energy independence / energy security
- Address global climate change and improve air quality

**Homebuilders and homeowners**
- Reduce risk and lower initial costs to investment in more efficient homes

**Utilities**
- Lower on-peak electricity demand and natural gas consumption
- Reduce energy use and system costs

Federal and State Tax Credits

<table>
<thead>
<tr>
<th>Tax Credit To / Amount</th>
<th>Builder</th>
<th>Homeowner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal Tax Credits</strong> (scheduled to expire 12/31/08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy efficient new homes</td>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>Solar PV systems</td>
<td></td>
<td>$2,000</td>
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<tr>
<td>Solar thermal systems</td>
<td></td>
<td>$2,000</td>
</tr>
<tr>
<td><strong>State Tax Credits / Exemptions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar systems (PV or solar thermal)</td>
<td>25% of cost (max $1,000)</td>
<td></td>
</tr>
<tr>
<td>Property Tax Exemption – solar systems</td>
<td>RE systems not included in assessment values</td>
<td></td>
</tr>
<tr>
<td>Sales tax exemption – solar systems</td>
<td>No sales tax</td>
<td></td>
</tr>
</tbody>
</table>

For more information, see:  
[www.dsireusa.org](http://www.dsireusa.org), [www.seia.org](http://www.seia.org) and [www.azcommerce.com/energy](http://www.azcommerce.com/energy)
Utility Programs and Incentives:
Current Structure

- **Energy Efficiency**
  - Utility rebates
    - **APS**: $400 per home (ENERGY STAR)
    - **TEP**: $400 per home (Guarantee Home)
    - **SRP**: PowerWise Homes – Tier 1 and new Tier 2
    - **Southwest Gas**: ENERGY STAR Homes
  - Technical assistance and training
  - Sales and marketing support

- **Renewable energy**
  - PV: $3.00/watt (grid connected)
    - 2 kW system = $6,000 rebate (approx. 40% of cost)
  - Net metering: retail or time of use rates
  - Solar hot water: $0.50 per kWh
    - Typical system (3,000 kWh/year) = $1,500 rebate

**Example 1: High Performance Home (EE only)**

- **40% or greater energy savings (versus 2006 IECC) from energy efficiency measures**

- **Incremental cost to builder**
  - Incremental cost: $3,500 - $4,000
  - Federal tax credit ($2,000)
  - Utility rebate (current) ($400)
  - Net incremental cost: $1,100 - 1,600

- **Annual savings versus a typical home**
  - Grid electricity: 7,000 kWh (40% reduction)
  - Peak electricity demand reduced by 50%
  - Natural gas: 280 therms (57% reduction)
  - Annual energy cost savings: $1,170

*Also meets ENERGY STAR new homes qualification requirements.*
Example 2: Zero-Energy Home (EE and RE)

- 50% or greater energy savings
  - EE measures plus 2 kW PV and solar thermal hot water
- Incremental cost to builder
  - Incremental cost: $22,000 - $24,000
  - Federal tax credit ($2,000)
  - Utility rebates – EE ($1,000)
  - Utility rebates – RE ($7,500)
  - Net incremental cost (builder): ~$12,000 – 14,000
- Annual savings versus a typical home
  - Grid electricity: 10,000 kWh (54% reduction)
  - Peak electricity demand reduced by 70-75%
  - Natural gas: 310 therms (63% reduction)
  - Annual energy cost savings: $1,241
  - Value of PV generation: $260 per year

Summary: current incentive structure

<table>
<thead>
<tr>
<th></th>
<th>High Performance Home (EE only)</th>
<th>Zero Energy Home (EE and RE)</th>
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</thead>
<tbody>
<tr>
<td>Incremental cost to builder</td>
<td>$4,000</td>
<td>$22,000</td>
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<tr>
<td>Federal EE tax credit</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Utility incentives</td>
<td>$400</td>
<td>$7,900</td>
</tr>
<tr>
<td>Total incentives</td>
<td>$2,400</td>
<td>$9,900</td>
</tr>
<tr>
<td><strong>Net cost to builder</strong></td>
<td><strong>$1,600</strong></td>
<td><strong>$12,100</strong></td>
</tr>
<tr>
<td>Homeowner tax credits (federal and state)</td>
<td></td>
<td>$5,000</td>
</tr>
<tr>
<td>Annual energy savings, homeowner</td>
<td>$1,170</td>
<td>$1,500</td>
</tr>
<tr>
<td>Net savings, homeowner (mortgage + utilities)</td>
<td><strong>$91 / month</strong></td>
<td><strong>$84 / month</strong></td>
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</table>
Incentives and Homeowner Cashflow

High Performance and Zero Energy Home with and without incentives, versus a typical home

Typical Home | High Perf. Home - w/ incentives | High Perf. Home - no incentives | ZEH - w/ incentives | ZEH - no incentives
--- | --- | --- | --- | ---
Utility Bill | +$90 | ($21) | +$80 | ($120)
Mortgage | | | | |
Total | | | | |
Monthly net cash flow | | | | |

Source: SWEEP High Performance Homes Report, October 2007

Incentive levels: Illustrative examples

- **Incentive Tier 1** – ENERGY STAR qualified
  - $350 – 500 per home
- **Incentive Tier 2** – minimum 40% energy savings*
  - Utility Incentive amount: $800 – $1,200 per home
  - Meet ENERGY STAR, Federal Tax Credit guidelines (Utah)
  - HERS Score: 70 or lower
  - Plus ‘measure bundle’?
    - e.g., ENERGY STAR Lighting (>50%) and appliances
- **Incentive Tier 3** – Net-zero energy home – 50% or > energy savings
  - Utility Incentive amount: $8,000 – 10,000 per home
  - HERS Score: 60 or lower (New Mexico)
  - Includes Tier 2 plus solar PV, solar thermal
  - Optional incentives for additional measures, e.g.,
    - Higher SEER AC (or evaporative cooling)
    - ENERGY STAR Lighting (per fixture)
    - Additional PV (per kW): $3.00/watt

* Versus 2006 IECC code-compliant home.
Summary

- Incentives help achieve multiple goals
  - Remove market barriers to more efficient homes
  - Save energy and reduce peak electricity demand
  - Reduce GHGs and improve air quality

- High performance / ZEHs are cost-effective with incentives
  - Incentives support introduction of advanced technologies
  - Costs also offset by changes in design practices, e.g., advanced framing, downsizing HVAC systems
  - Achieves positive net cash flow for homebuyer

- Issues and next steps
  - Developing incentive programs for high performance homes, including ZEH
  - Providing technical support, marketing, sales, education to homebuilding industry, homebuyers
  - Streamlining incentive process and leveraging federal, state tax credits, and municipal programs (e.g., permit fee rebates)

SWEEP:

*Dedicated to More Efficient Energy Use in the Southwest*

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