Solar Homes Bill SB 1

Facilitating SHARP™’s Solar Energy Market Domination

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EEP 142
Overview of Solar Homes Bill SB 1

• Background
  - Co-authored by State Senator Kevin Murray (D-Los Angeles) and Senator John Campbell (R-Irvine)
  - Relates to Gov. Schwarzenegger’s goal of installing one million solar systems over the next ten years
  - Endorsed by the governor, the building industry, and the environmental community
  - Passed its first policy committee, Senate Energy Committee, on April 26th by a 10-0 vote margin
    • The bill now heads to Senate Appropriations in May and then on to the Senate Floor and finally, the State Assembly
Overview of Solar Homes Bill: SB 1

• Policy Specifics
  1. Requires all builders of large single-family home to offer solar power as an option (or make standard) to meet quota of 50% per year
    • Quota is largest area of contention in bill
  2. Institutes a secure rebate fund of $100 million per year
  3. Mandates that solar rebates decline by 7% each year to help ensure a self-sufficient solar market by 2015
  4. Mandates that utilities buy back excess electricity generated by solar systems up to 5% of peak demand
  5. Provides support for incorporating solar into affordable housing
Residential Solar Electric Systems

• Permitting
  - Permitting fees and schedules vary by city
  - Electricity, sewage, and/or building permit

• Installation
  - For maximum efficiency, panels must be south facing and have unobstructed access to the sun
  - A system able to meet the needs of a typical household uses between 300 to 600 sq ft (100 sq ft of PV panels produces about one kilowatt of electricity)

• Maintenance & Warranty
  - After 10-15 years, the inverter must be replaced, costing approximately $1,500
Residential Solar Electric Systems

• Connecting PV System to the Grid
  - Interconnection Agreement with local utility allows households to bank their unused electricity generated by the PV panels and use an equal amount of electricity from the utility without being charged

• Rebates & Tax Credits
  - $2,800 per kilowatt rebate (≈37%) issued by the California Energy Commission (CEC) for installing renewable energy (drops 8% or more June 2005)
    • Does not apply to PV systems greater than 30-kW in size
  - CA Clean Energy Tax Credit of 7.5% (ends December 2005)
PV Affordability

• The economic case for PV - when compared to kerosene, diesel generators, and grid extensions- has already been established
• The capital investment required is still very high
• Ability and willingness to pay are often in conflict

⇒ Sustainable markets can be obtained through subsidies or financing
PV Affordability

- The best financing plans offered in the US are 30-year home mortgage loans....
- SB1 calls for 50% of all new homes built each year to include solar energy....

⇒ SHARP™ is currently forming long-term contracts with home builders
  - SHARP™ PV Systems will be exclusively featured as an add-on (similar to marble countertops) or bundled with the home
  - Roofers will become licensed SHARP™ PV System Installers
SHARP™

- World’s leading producer of solar modules
  - Accounted for 32% of the total global demand of solar energy systems
- 45 years of R&D has lead to numerous innovations in the PV industry
  - Introduced triangular solar modules and PV shingles
  - Sharp-manufactured & branded UL approved inverter
- The only manufacturer to produce both solar modules and inverters
  - Only complete residential system offered
- Production recently moved to US to reduce transportation costs
PV and Home Building

- Financing
- Streamlining of labor and installation costs
- Streamlining of permitting and design reviews
- Ability to design home to ensure maximum sun exposure for the PV panels
- Warranty on PV system set to match length of mortgage
Common PV Producer Profile

PV Component Manufacturers

Distributors & Systems Integrators

Installation & Maintenance

Consumers

Sale & Warranty

Permitting

Financing
## 3 k-W System

<table>
<thead>
<tr>
<th>Item</th>
<th>Without SL</th>
<th>With SL</th>
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<tbody>
<tr>
<td>Gross Price ($9/watt)</td>
<td>$27,000.00</td>
<td>$27,000.00</td>
</tr>
<tr>
<td>Labor/Installation</td>
<td>$8,100.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Sewage Permit (if ground mounted)</td>
<td>$100.00</td>
<td>$0.00</td>
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<tr>
<td>Building Permit</td>
<td>$200.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Solar Permit</td>
<td>$171.00</td>
<td>$171.00</td>
</tr>
<tr>
<td>Plot Plans/Design Review Application</td>
<td>$400.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$35,971.00</strong></td>
<td><strong>$27,171.00</strong></td>
</tr>
<tr>
<td>CEC Rebate ($2,800/kilowatt)</td>
<td>($8,400.00)</td>
<td>($8,400.00)</td>
</tr>
<tr>
<td>CA Clean Energy Tax Credit</td>
<td>($1,395.00)</td>
<td>($1,395.00)</td>
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<tr>
<td>Roofing Savings</td>
<td>($0.00)</td>
<td>($600.00)</td>
</tr>
<tr>
<td><strong>Net Cost</strong></td>
<td><strong>$26,176.00</strong></td>
<td><strong>$16,776.00</strong></td>
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### Financing

<table>
<thead>
<tr>
<th></th>
<th>PV MTI</th>
<th>KB Home Mortgage</th>
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<tbody>
<tr>
<td>Rate/Length</td>
<td>7.50%</td>
<td>5.50%</td>
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<tr>
<td>Length</td>
<td>10 yr</td>
<td>30 yr</td>
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<tr>
<td><strong>Monthly Payment</strong></td>
<td><strong>$234.49</strong></td>
<td><strong>$50.92</strong></td>
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</table>
Notes:
• While the rebate and tax credit remain unchanged, the consumer experiences additional savings with reduced roofing costs.
Conclusions

- SHARP™, through integration with home builders, has lowered the effective price faced by consumers without having to substantially lower their selling price.
- For every doubling of installed systems, the total cost should fall 18%.
  - SHARP™ installed 100,000 systems in 2004.
- Effect of SB 1
  - 200,000 new homes were built in CA last year
    (≈120,000 new solar homes in 2006)
⇒ Quantity should more than double, TC should fall by more than 18%.