



# Solar Housing: Melrose Park, PA

Green Design and the City  
Spring 2004

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# Renewable Energy

- 1970's Energy Crunch
  - Energy Conservation
  - Search for Renewable Energy Sources
  - Increased government subsidies for renewable technology R&D
- Today
  - Renewables still <2% of overall energy portfolio

# Million Solar Roofs Initiative

- US DOE initiative to install one million solar systems on buildings/homes in the US by 2010
- Two types of solar systems
  - Photovoltaic
  - Thermal
- Regional Partnerships

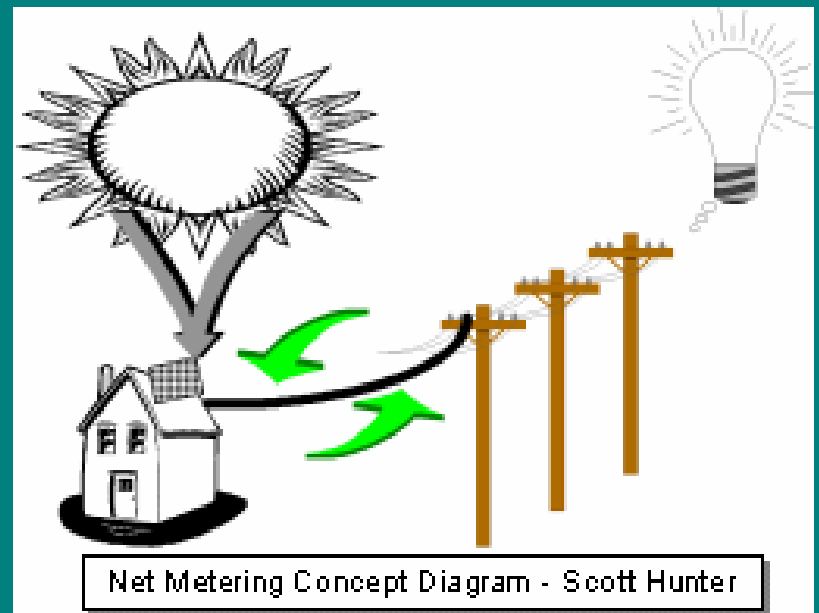
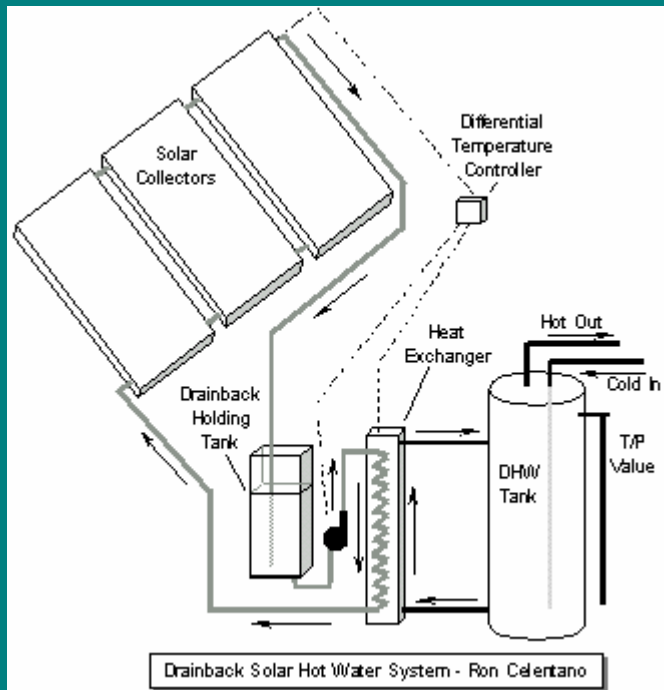
# Renewable Energy: Solar



Thermal



Photovoltaic





- Partnership of local businesses, organizations, and government agencies
- 500 systems by 2010
- SDF Solar Grant
- Energy Coop buy-back

# Case Study: Melrose Park



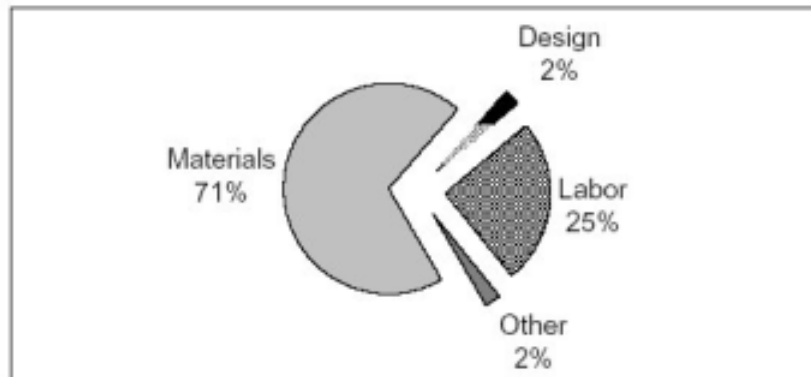
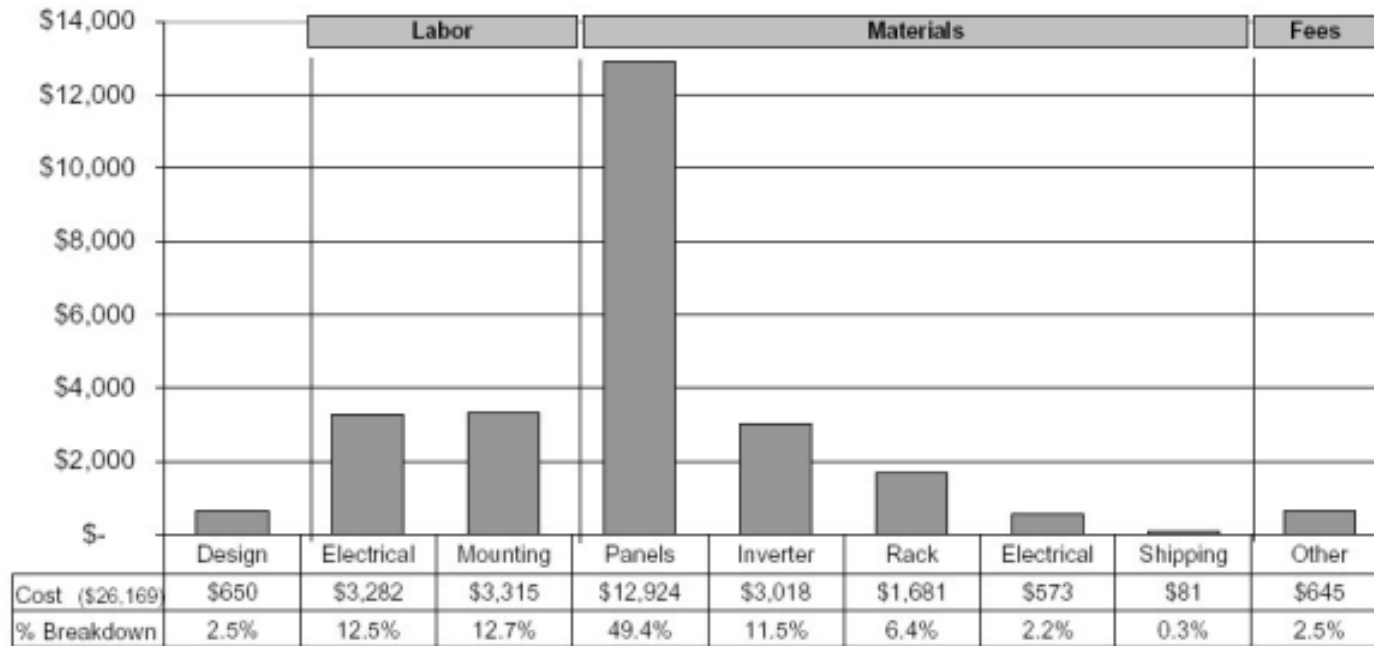
- Owners: Joyce Chin & Andy Rudin
- PV installed 1998
- Thermal Hot Water installed 1999

# Photovoltaic System

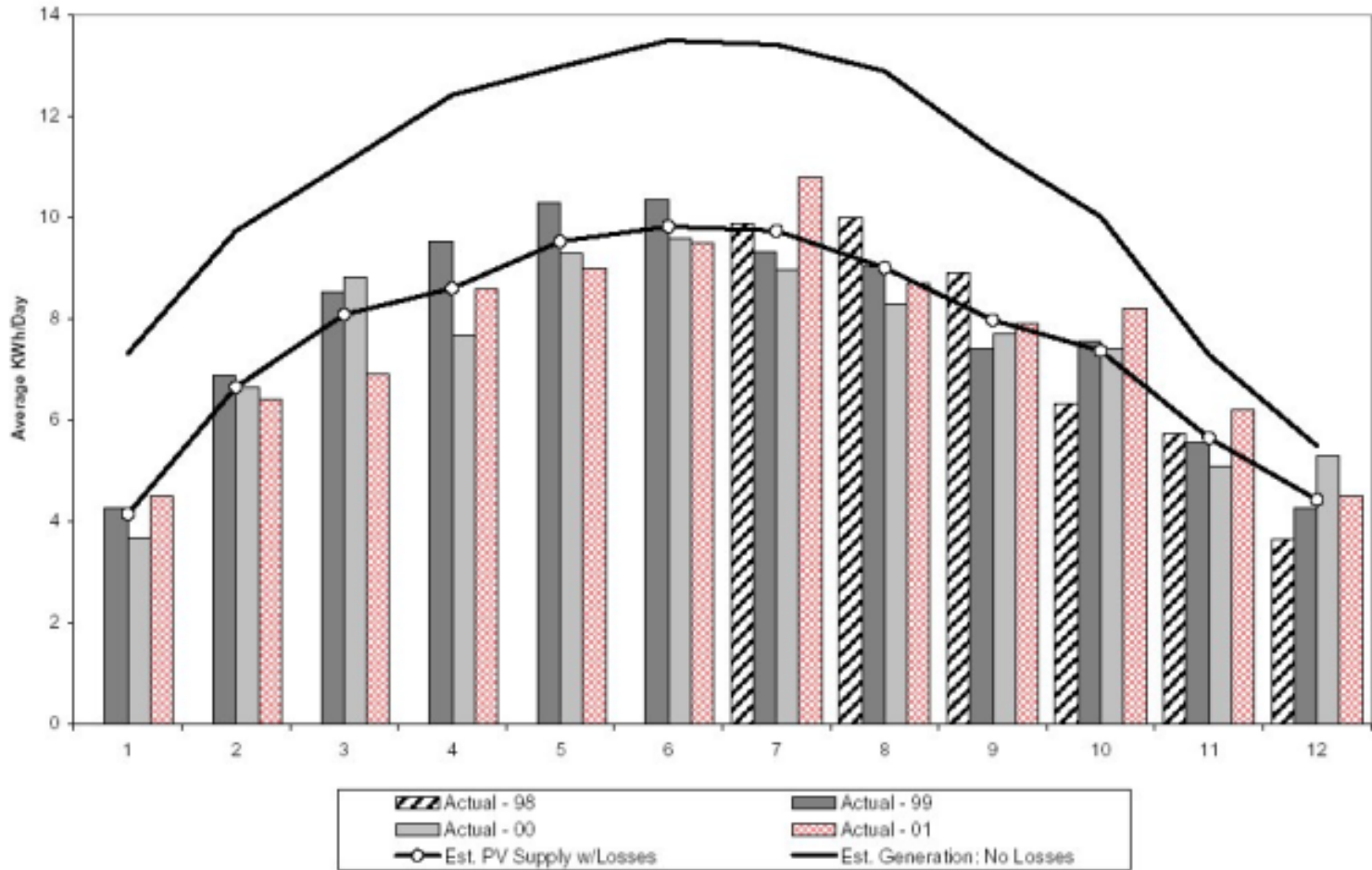


- 36 75 Watt Panels
- Total Power: 2.7 kW
- Inverter – DC to AC
- Net Metered
  - Energy used v. energy generated
  - Meter spins backwards during surplus

### Installed Cost Breakdown - Rudin's 2.7 kW PV System



Comparison of Estimated PV Generation and Actual PV Generation Rudin House



# Payback on Investment

\$ 28,000	Initial Cost
(10,800)	Initial SDF Grant
<u>(2,775)</u>	SDF Performance Grant
\$14,425	
(305)	Annual Avoided PECO cost
(200)	Excess Generation Sold

$$14,425/505 = 28.5 \text{ years}$$

# Environmental Benefits

- Amount of air pollution that will be prevented over twenty years at Melrose Park residence:
  - 68,487 lbs of CO<sub>2</sub>
  - 527 lbs of SO<sub>2</sub>
  - 150 lbs of Nox
  - 28 lbs of Hg

# Owner's Pride

**“My rooftop system provides clean, local electricity...”**

**- Andy Rudin**

# Advantages vs. Disadvantages

- Renewable
- Reduces Air Pollution
- Diversifies Energy Portfolio
- Energy Independence
- Seasonal
- High First Cost
- Zoning
- Space Intensive