Refrigerator Performance

Savings: \( \sim 1400 \text{ kWh/year} \times \$0.10/\text{kWh} = \$140/\text{yr per household} \)

*100 M households = \$14 B/year

Annual Energy Use, Volume and Real Price of New Refrigerators

Sources: AHAM Factbooks, Rosenfeld 1999 and Bureau of Labor Statistics
Wind Resources

- Highest quality wind resources are located in the Central states and offshore.
- Fixed-bottom offshore wind resources also considered in RE Futures modeling.
- Floating-platform offshore wind not considered in RE Futures modeling (focus on currently commercial technologies only).
- Combined onshore and offshore (fixed-bottom) resource is ~10,000 GW.
Wind Power

- “20% Wind Energy by 2030”, 2008
- “Eastern Wind Integration and Transmission Study”, 2010
  - http://www.nrel.gov/electricity/transmission/eastern_renewable.html
- “Western Wind and Solar Integration Study”, 2010
- Hawaii Renewable Integration and Transmission Study

### Typical Rotor Diameters

- Boeing 747: 120m (394 ft)
- 5 MW: 60m (164 ft)
- 3.5 MW: 85m (279 ft)
- 2.5 MW: 100m (328 ft)
- 1.5 MW: 120m (394 ft)
- .75 MW: 175m (216 ft)

Source: EERE/WTP
Can Solar Energy Meet the Challenge?

- Solar technologies have enormous resource potential: ~80,000 GW for utility PV, ~700 GW for rooftop PV, and ~37,000 GW for CSP