

- generating end-user demand, and
- licensing to industry.

In addition to describing each of these strategies in general terms, the case studies are characterized according to which of these strategies was used to achieve commercialization, and conclusions are drawn concerning the usefulness and appropriateness of each strategy.

RESULTS

Market Penetration and Energy Savings

The level of market penetration achieved to date by the 12 innovations ranges from less than 1% for radiant barriers, heat pump water heaters, and dielectric coatings to complete saturation (100% of new residential units) for the flame retention head oil burner. The fully-commercialized innovations were found to be technically mature and without major problems related to acceptance and use. The semi-commercialized innovations, on the other hand, tend to have major unresolved technical or market-related problems.

Energy savings could not be estimated for all of the innovations. However, for the three innovations with the highest predicted levels of energy savings (i.e., the flame retention head oil burner, low-E windows, and solid-state ballasts), combined cumulative savings by the year 2,000 are likely to approach 2 quads. To date the energy savings for these three innovations are about 0.2 quads.

Technology Transfer Strategies

Of the six generic technology transfer strategies available to OBCS, one dominates as a route to successful commercialization, in our small sample of case studies. Contracting R&D to industrial partners is the most commonly used strategy among the innovations studied here. A typical sequence of events (illustrated by the heat pump water heater, the supermarket refrigeration