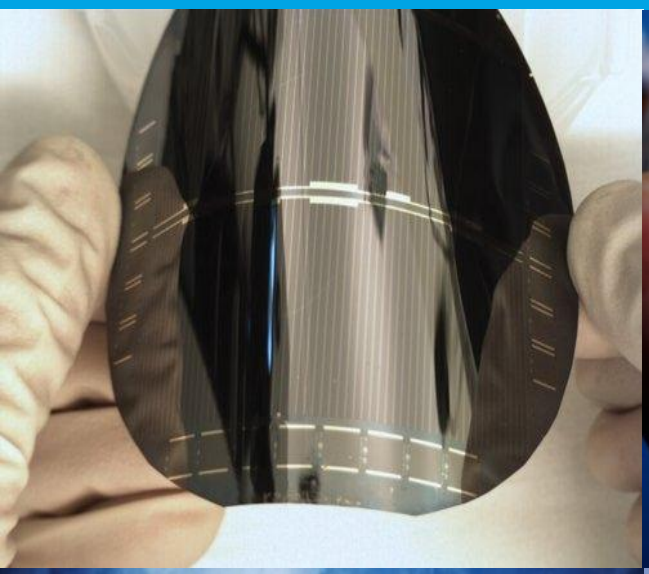
Perspectives on Energy Efficiency

U.S. DEPARTMENT OF ENERGY








2nd U.S.-China Energy Efficiency Forum

May 6, 2011
Berkeley, California

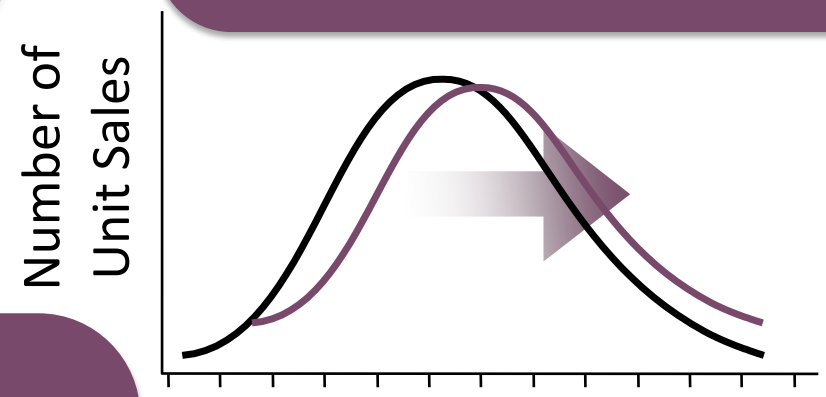
Dr. Arun Majumdar
Director
Advanced Research Projects Agency- Energy
U.S. Department of Energy

Policy Framework

R&D

- Advance innovative technologies for appliances, equipment, and products
- Integrated buildings approaches

At least $23B net benefits



Over 2 quads saved annually

Codes & Standards

- Leverage market priming and advanced technologies
- Broaden coverage and update frequently to capture savings opportunities

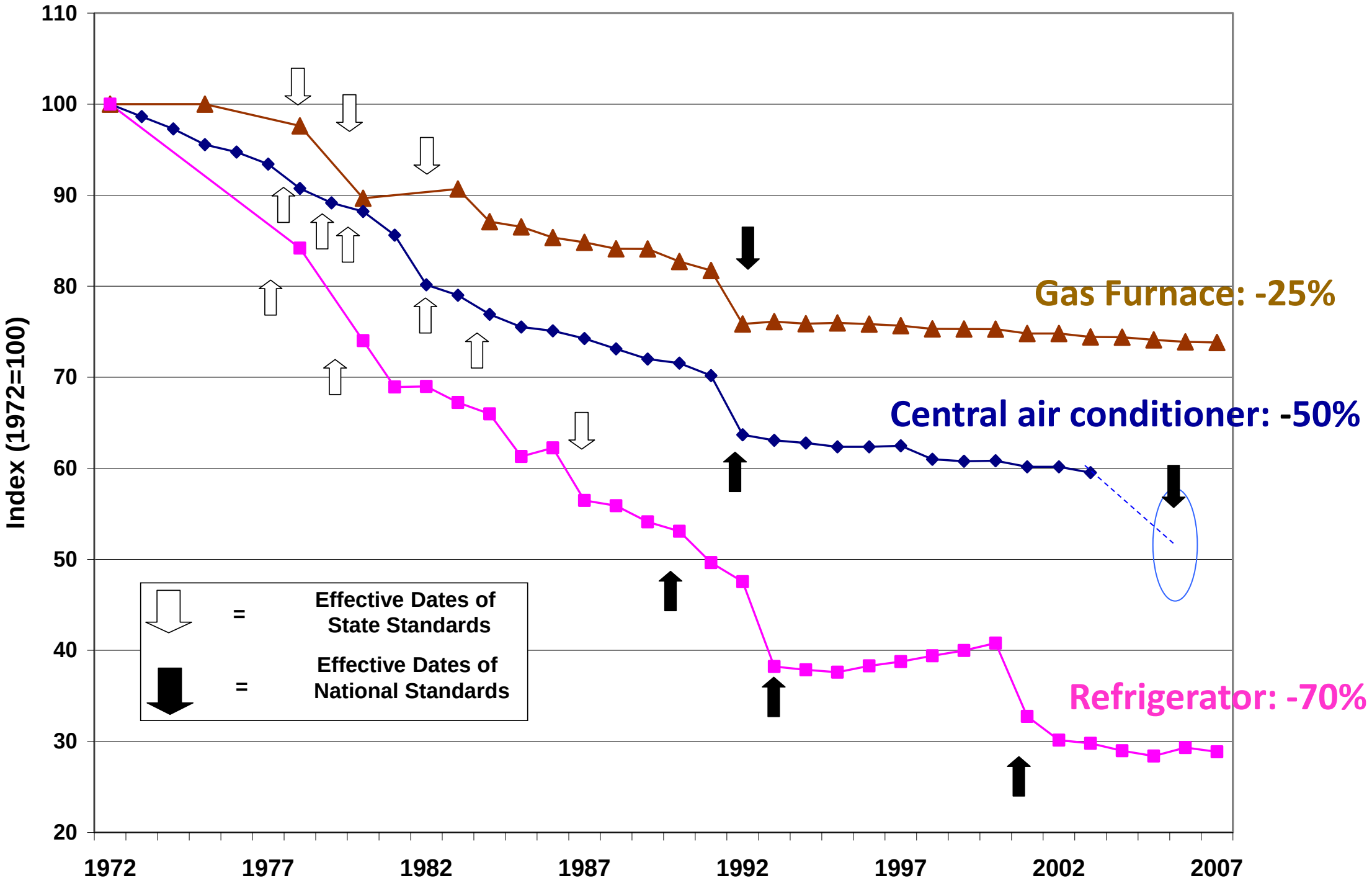
Market Priming

- Pull new products, practices and services into market faster at scale
- Technical support to ENERGY STAR / new higher tier

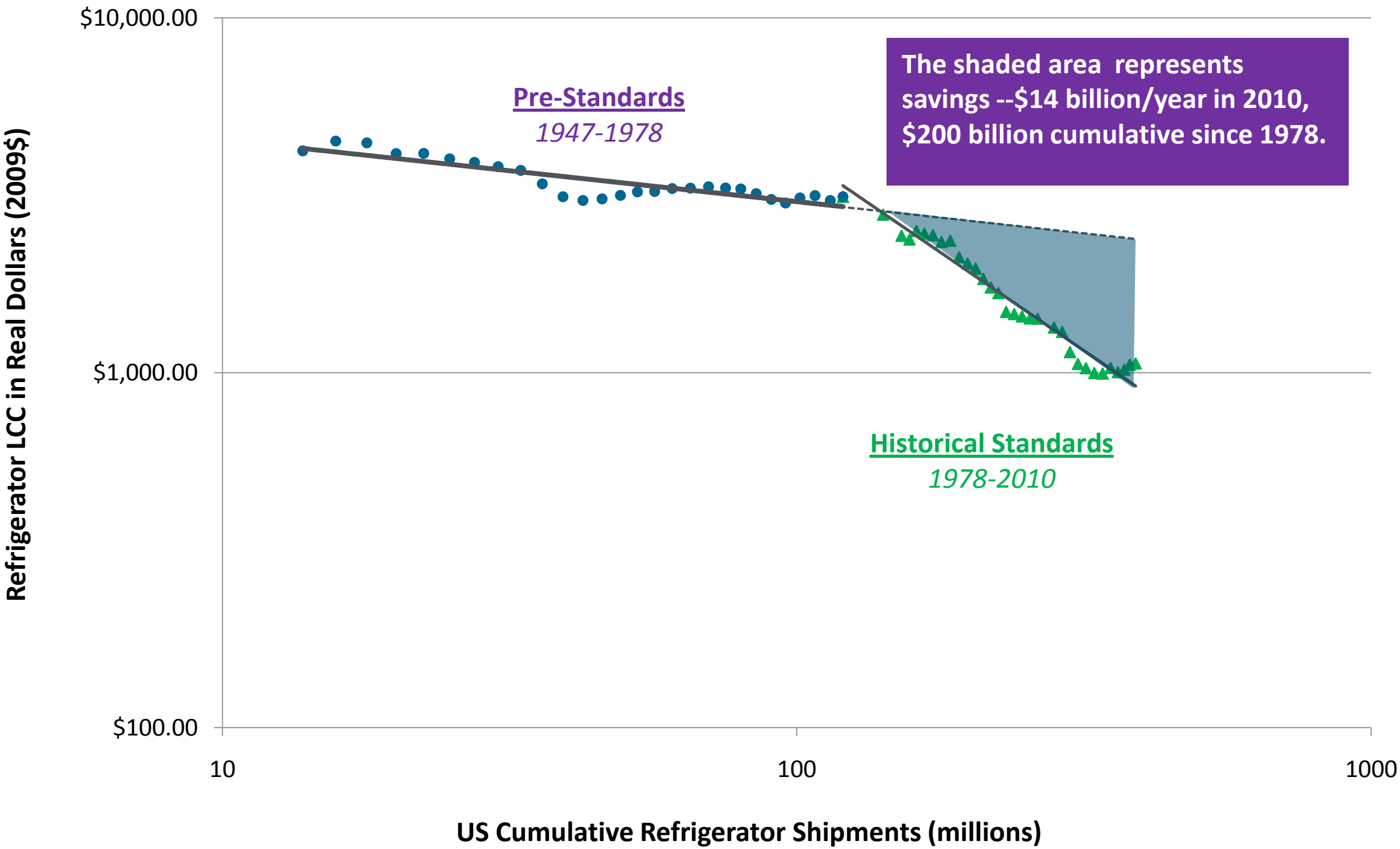
Over 3.5 quads saved annually

U.S. Average Energy Use per New Appliance

Index relative to 1972 = 100



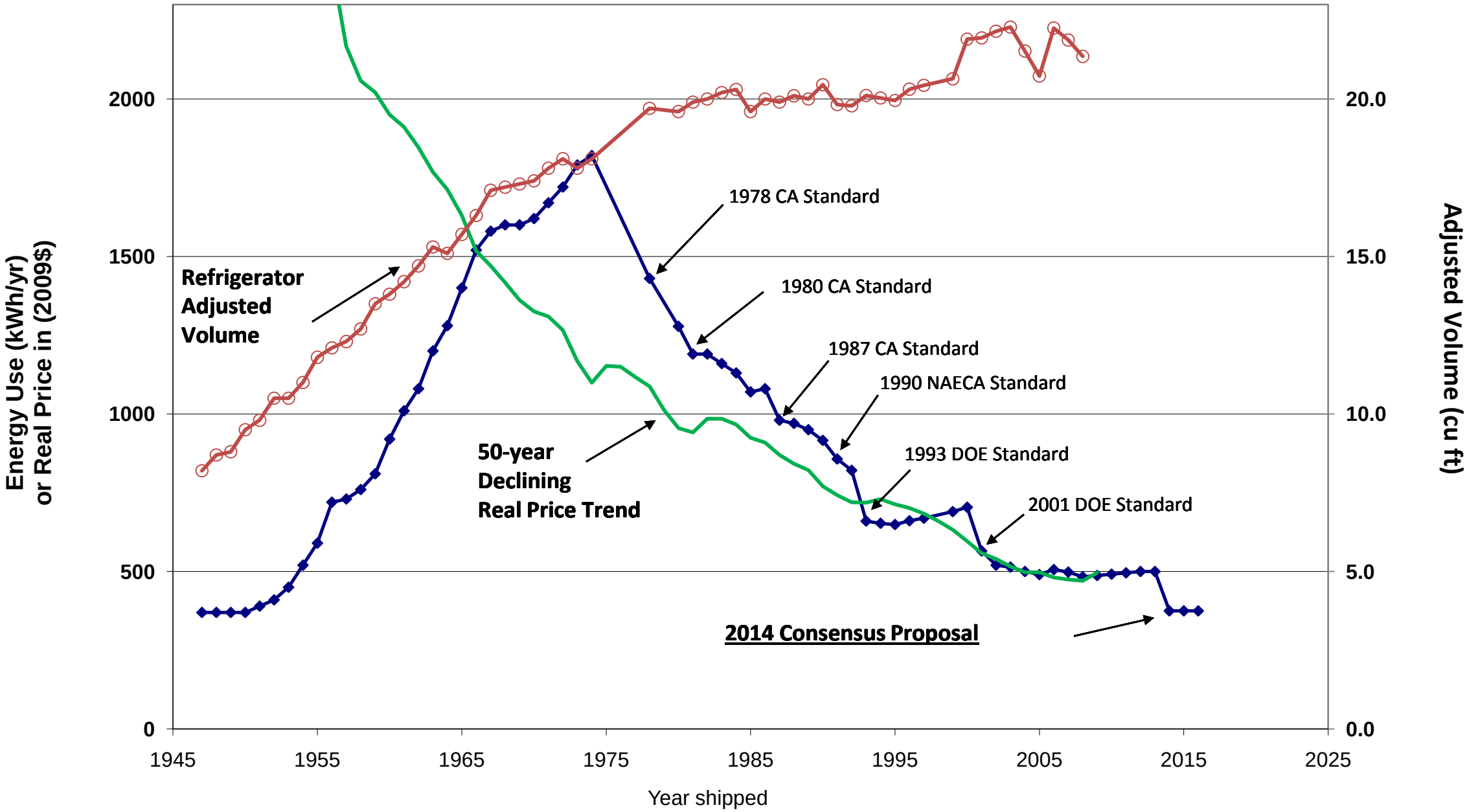
Life Cycle Cost of Refrigerators



Refrigerator Efficiency, Price, and Volume

Annual Energy Use, Volume, and Real Price of New Refrigerators

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



Dow Chemical

Energy-Intensive Manufacturing: Chemicals

Dow Chemical's plant in Hahnville, LA

Results

- Invested $1 billion in energy efficiency since 1994:
  - $9.4 billion in cost savings
  - saved 1,800 trillion Btu – equivalent to the energy needed to power all residential homes in California for more than a year and a half
- Improved energy efficiency 22% between 1996-2005

PepsiCo

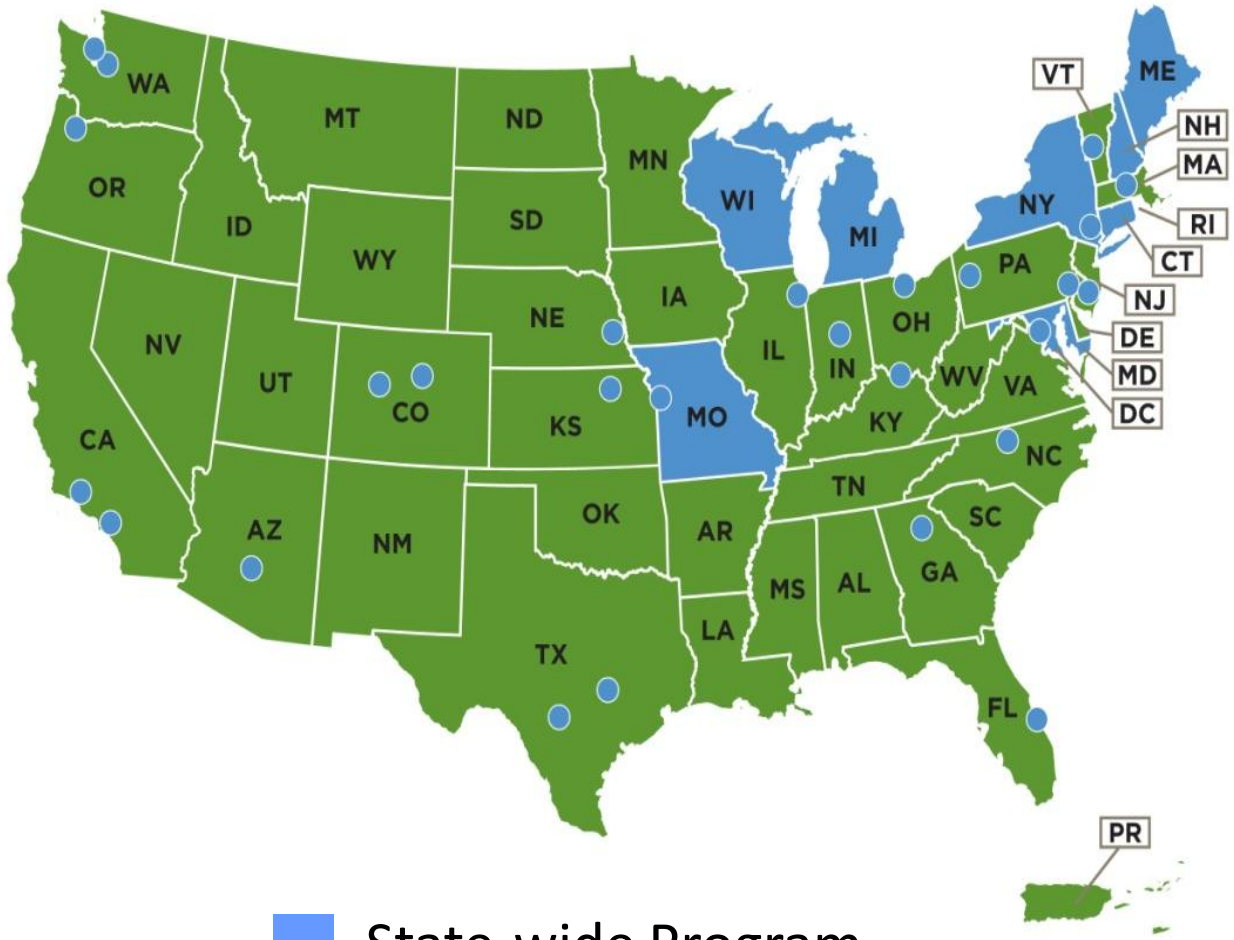
Other Manufacturing: Food production

Results

- From 2006 to 2008, PepsiCo's efficiency measures saved about $100 million in avoided costs, and 170,000 metric tons of CO_2e
- Supplier efforts have identified >$6 million in energy and water-related productivity improvements

Better Buildings: A Diversity of Test Platforms

Goal: Create a self-sustaining market for energy efficiency retrofits



State-wide Program

Overview Statistics

- 3-year grants of $1.5 to $40 million each
- 41 Grant Recipients
  - 25 initial grant recipients in June 2010
  - 9 additional awarded in August 2010
  - 7 additional added from the SEP portfolio in November 2010

Demographic Diversity

- 31 States
- **7 state-wide programs**
- 4 programs span a region or group of locations
- Many programs focus on neighborhoods within a city
- Rural and urban mix
- Socioeconomic mix
- All climate zones covered

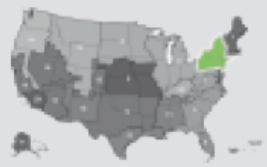
Consumer Information: Efficiency Rating for the Home

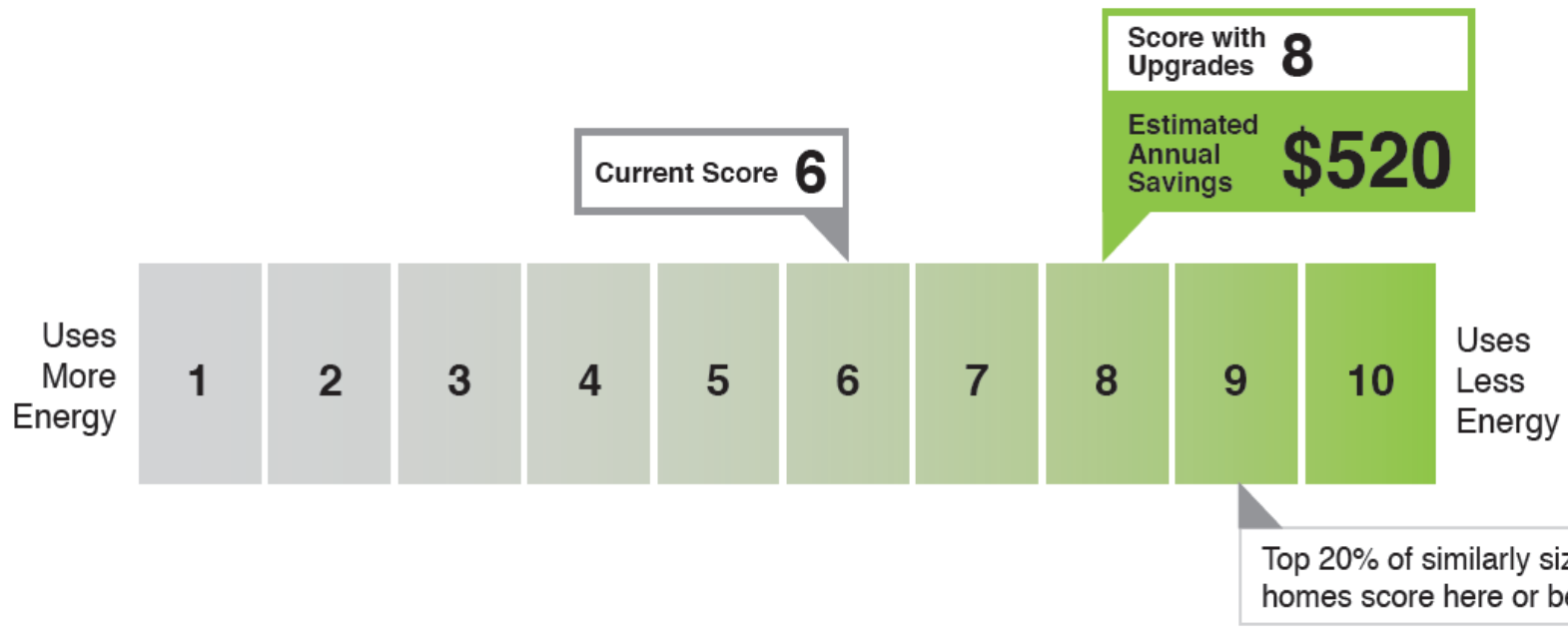
HOME ENERGY SCORE

Address **555 Park Lane**
Pittsburgh, PA 99999

Total Energy **190 MBTUs / year**
Home Size **1,500 square feet**
Air Conditioning **Yes**

Climate Zone





Energy use reported in Million British Thermal Units (MBTUs). Estimated savings reflect the amount a homeowner will save on their annual utility bill if all recommended improvements are made. Both energy use and savings estimates assume that 2 adults and 1 child live in the home. Your actual energy use and savings will depend on how you maintain your home, how many people live there, your day-to-day habits and weather. To learn more about how to save energy and money in your home, as well as more about the home energy score, visit: **homeenergyscore.gov**

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ISO 50001

The ISO 50001 energy management standard will help facilities accomplish the following:

- Benchmark, measure, and document energy intensity improvements.
- Create transparency and facilitate communication of energy resources
- Promote energy management best practices
- Provide framework for promoting energy efficiency throughout the supply chain
- Facilitate energy management improvements in the context of GHG emission reduction projects.

ISO 50001 could influence up to 60% of the world's energy demand across many economic sectors

International Organization for Standardization

Status of ISO 50001 Energy Management Standard

- Under development by ISO Project Committee 242; United States and Brazil lead effort with United Kingdom and China
- 51 countries participating
- Currently in Draft International Standard phase
- Ready for publication by mid-2011