

Scaling up Clean Energy

Secretary Steven Chu
Clean Energy Ministerial
Washington, D.C.
19 July 2010

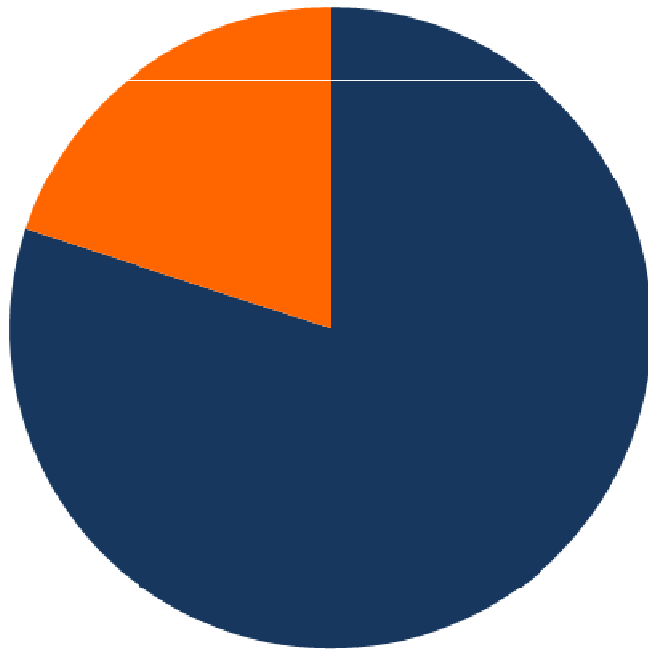


CLEAN ENERGY

MINISTERIAL

Washington, D.C. July 19-20, 2010

Represented here today:



**80% of world
energy use**

4 billion people

\$50 trillion in GDP



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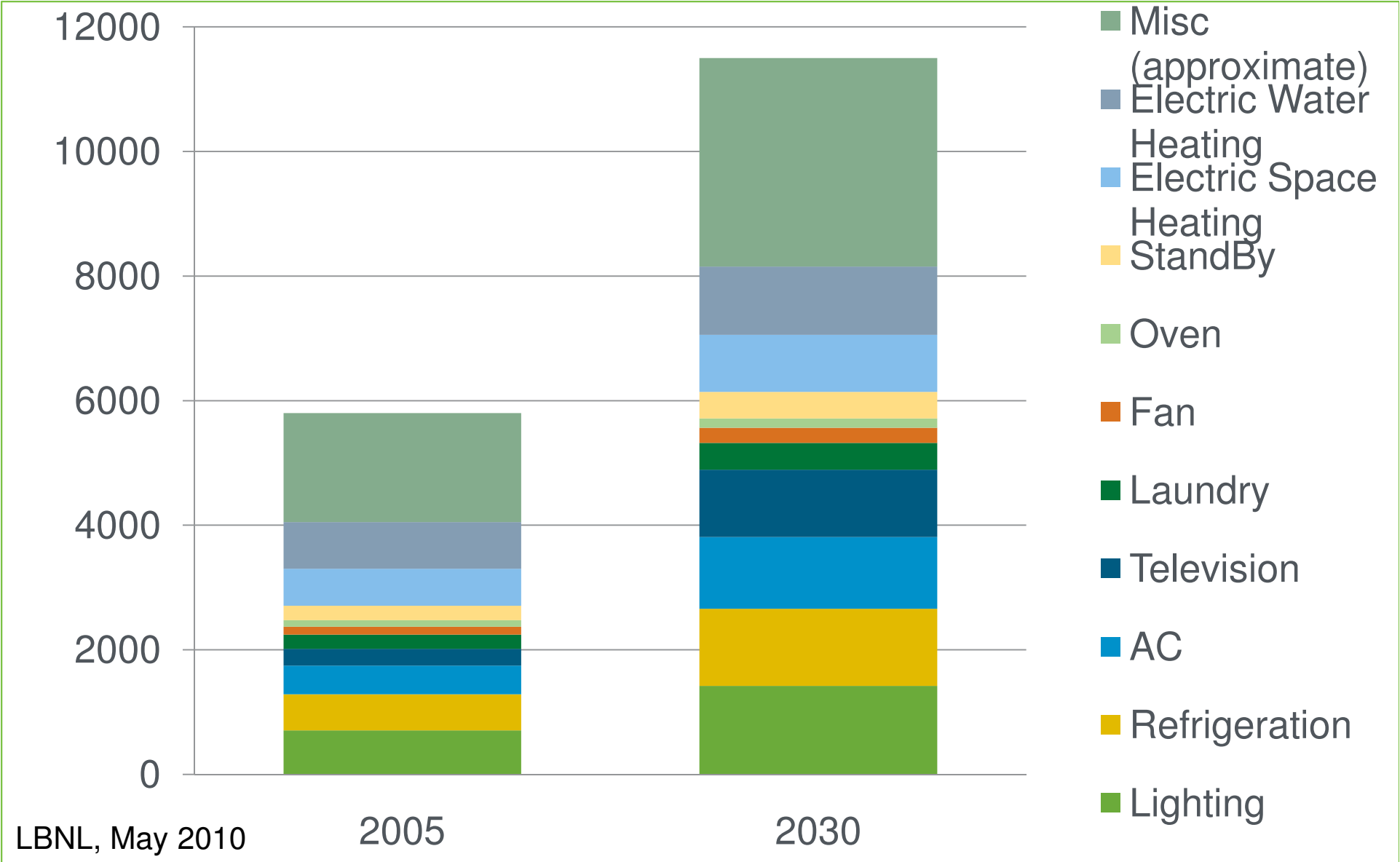
Our goal is action

To collaborate on policies and programs that will accelerate the world's transition to clean energy technologies

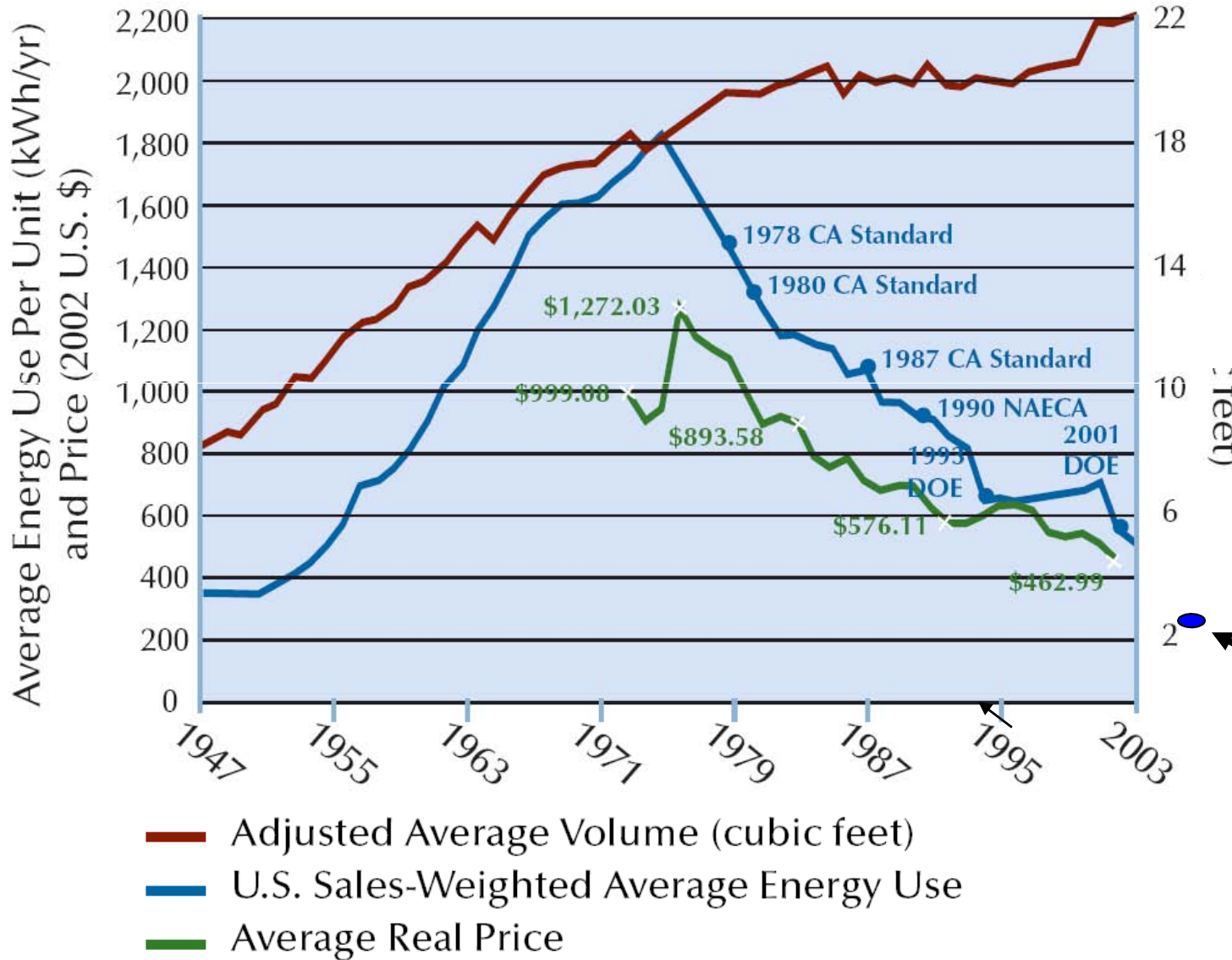
We can go further, faster
by working together to:

- Aggressively pursue energy efficiency

Global electricity consumption expected to double from 2005 - 2030



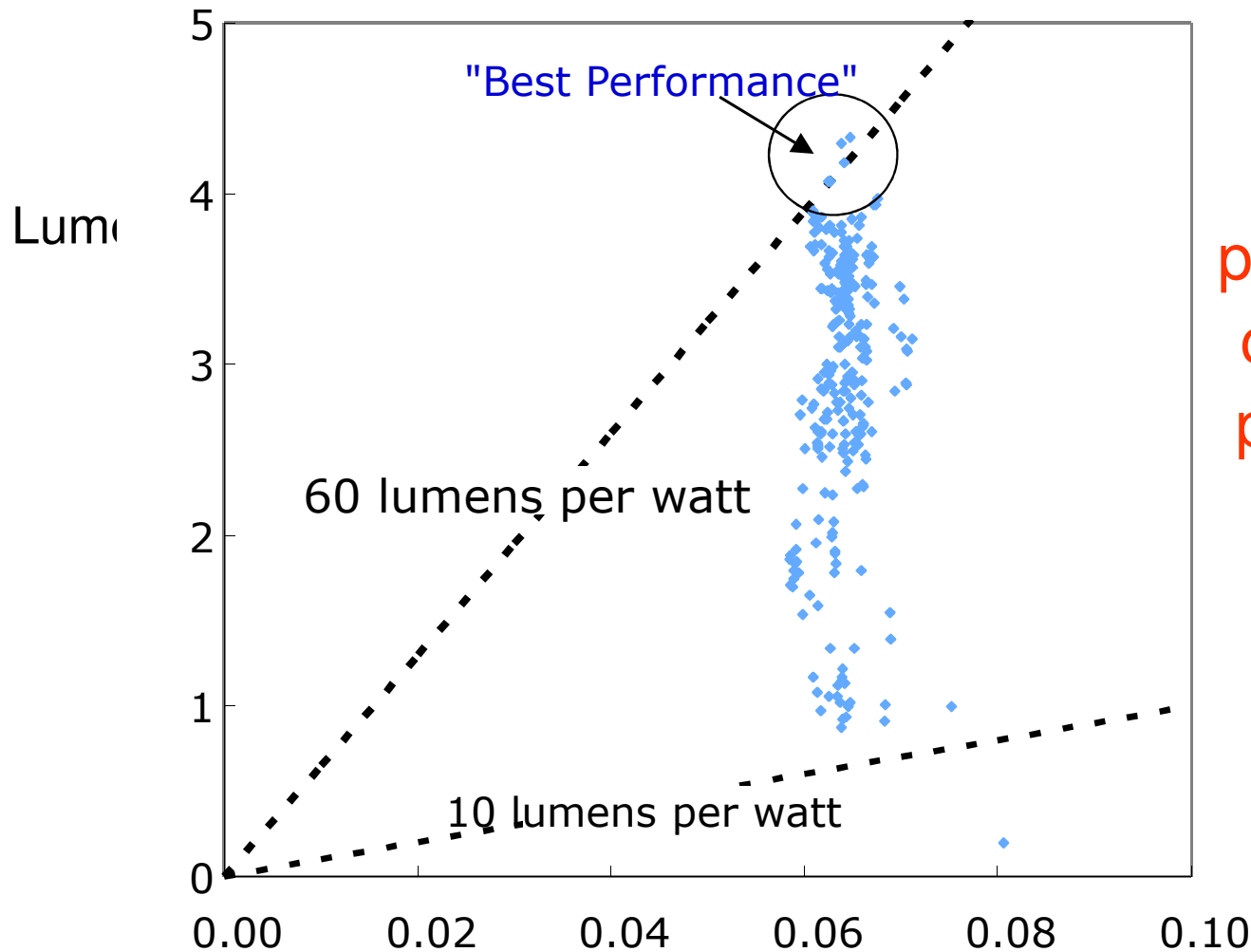
Standards stimulate technology: Refrigerator efficiency standards and performance



The role of technological innovation is constantly underestimated in its ability to lower costs.

Best Available Tech.
254 kwh/yr

Importance of standards: The quality of LEDs in off-grid lighting products varies widely



Quality assurance programs protect consumers and prevent “market spoiling”

Setting common efficiency standards is critical for creating large markets for efficient products

As Energy Ministers, we have the opportunity **today** to make dramatic progress on aligning standards

The screenshot displays the CLASP (Collaborative Labeling and Appliance Standards Program) website. The header features the CLASP logo and the text "Energy Efficiency Standards & Labeling Information Clearinghouse". Below this, it states "Collaborative Labeling and Appliance Standards Program". The navigation menu includes "Home", "About CLASP", "What's New", "S&L Worldwide Summary", "Resource Center", "Partnership", and "Contact Us". A search bar is labeled "S&L Quick Search..." with a "GO" button. The main content area is divided into three sections: "S&L Guidebook 2nd Edition" with a link to "ENERGY-EFFICIENCY LABELS AND STANDARDS: A GUIDEBOOK FOR APPLIANCES, EQUIPMENT, AND LIGHTING"; "Featured Story" titled "Webinar Meeting on Computers and Servers" with logos for CLASP, BERKELEY LAB, and CNIS, and a brief description of the webinar; and "S&L Worldwide Summary" with dropdown menus for "Choose a Region/Economy" and "Choose a Product". A "Tools for Implementers" section includes a link to "Policy Analysis Modeling System (PAMS)". The background of the header shows various energy efficiency labels, including the China Energy Label, Energy Star, and Energy Rating labels.

Simple efficiency solutions can have a big impact



Efficient cook stoves

60 – 70% more efficient, less wood-gathering, less deforestation, fewer emissions, improved public health



White roofed buildings:

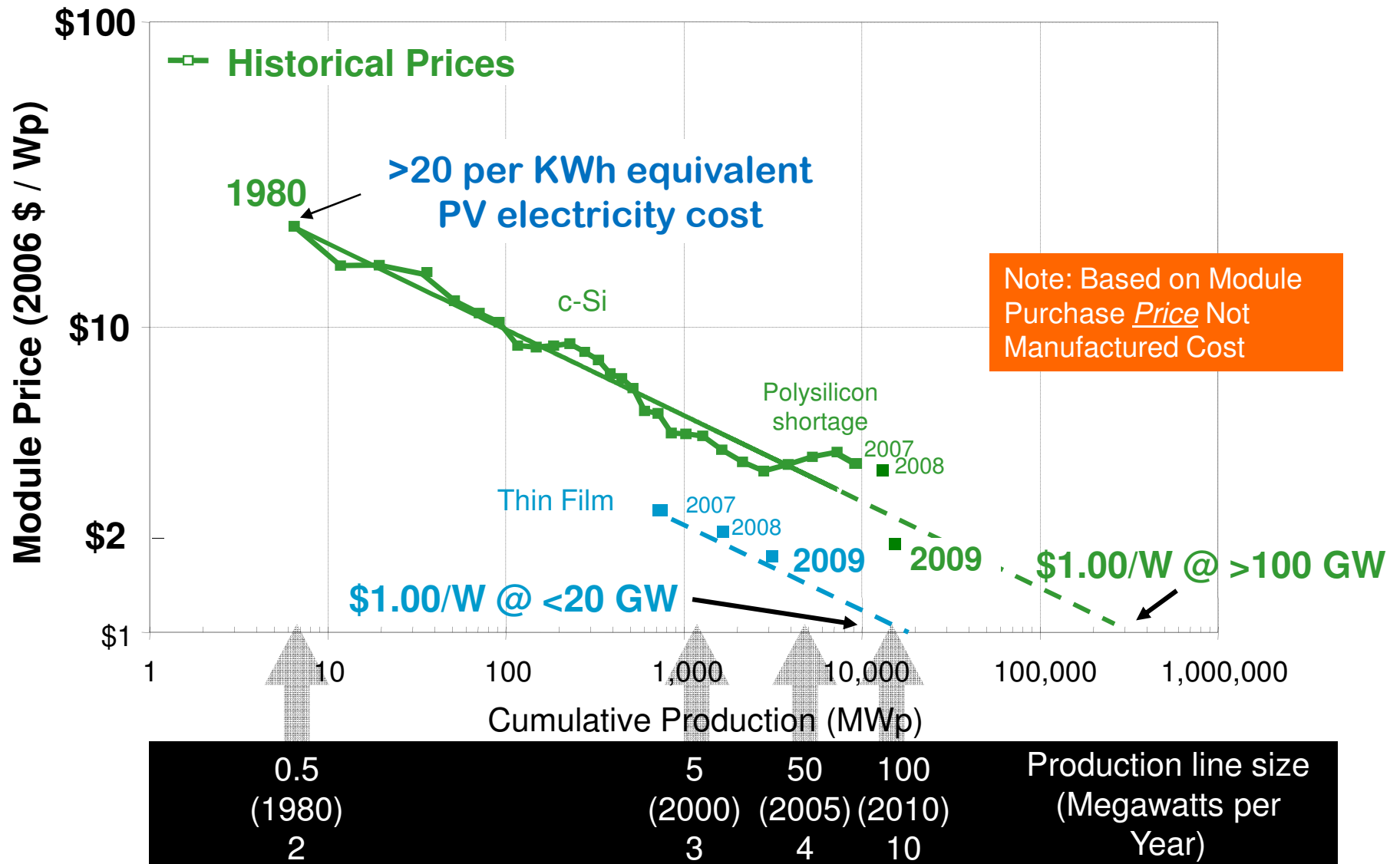
Sunlight energy is reflected back into space rather than heating up buildings and homes in the summer.

Santorini, Greece

We can go further, faster
by working together to:

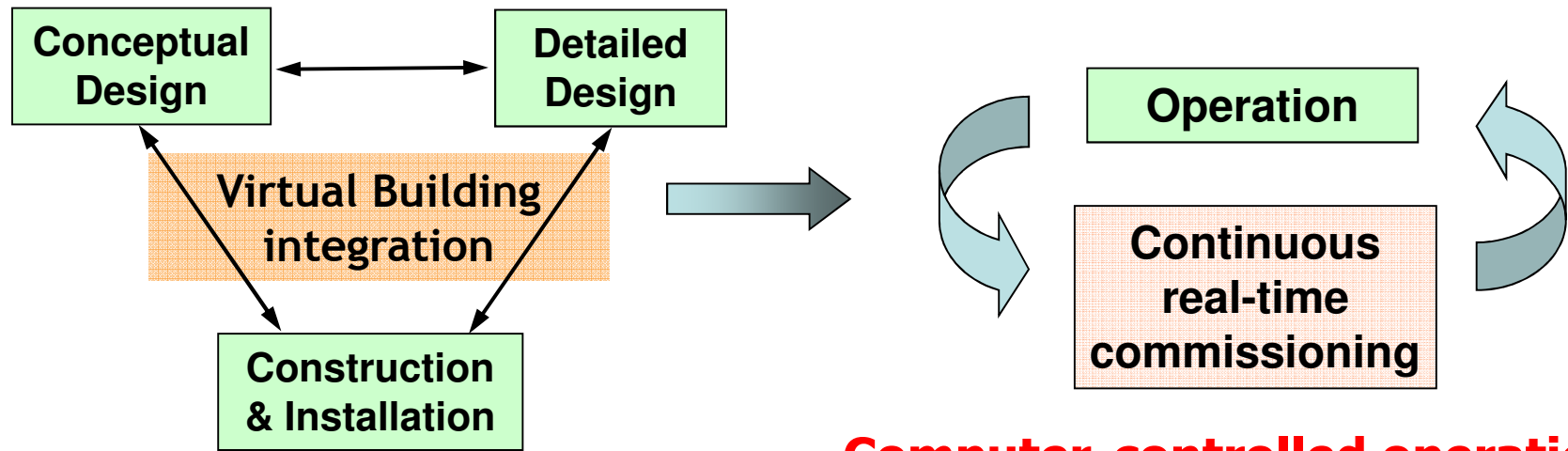
- Aggressively pursue energy efficiency
- Accelerate innovation

Learning Curves: crystalline silicon and thin-film technology



Source: Adapted from National Renewable Energy Laboratory

Buildings consume 40% of energy in U.S.: A new way of designing and constructing buildings.



**Computer-aided design tools
with Embedded Energy Analysis**

**Computer-controlled operation
with Sensors and Controls for
Real-Time Optimization**



- Oxygen sensor
- Air pressure sensor
- Air temperature sensor
- Engine temp. sensor
- Throttle position sensor
- Knock sensor

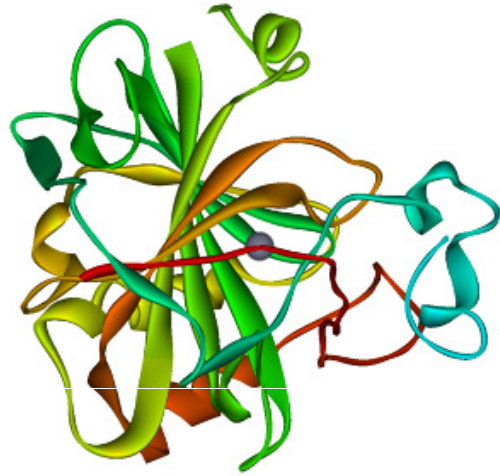


The US, China, Russia, Australia, and India have $\frac{3}{4}$ of the world's known coal reserves.

The US is investing \$4 billion in CCS, matched by ~\$7 billion of private sector money.

We are funding \$8 billion in loan guarantees.

We are working towards reducing costs to allow commercial deployment in 8 – 10 years



A new approach to carbon capture inspired by an enzyme used by the human body

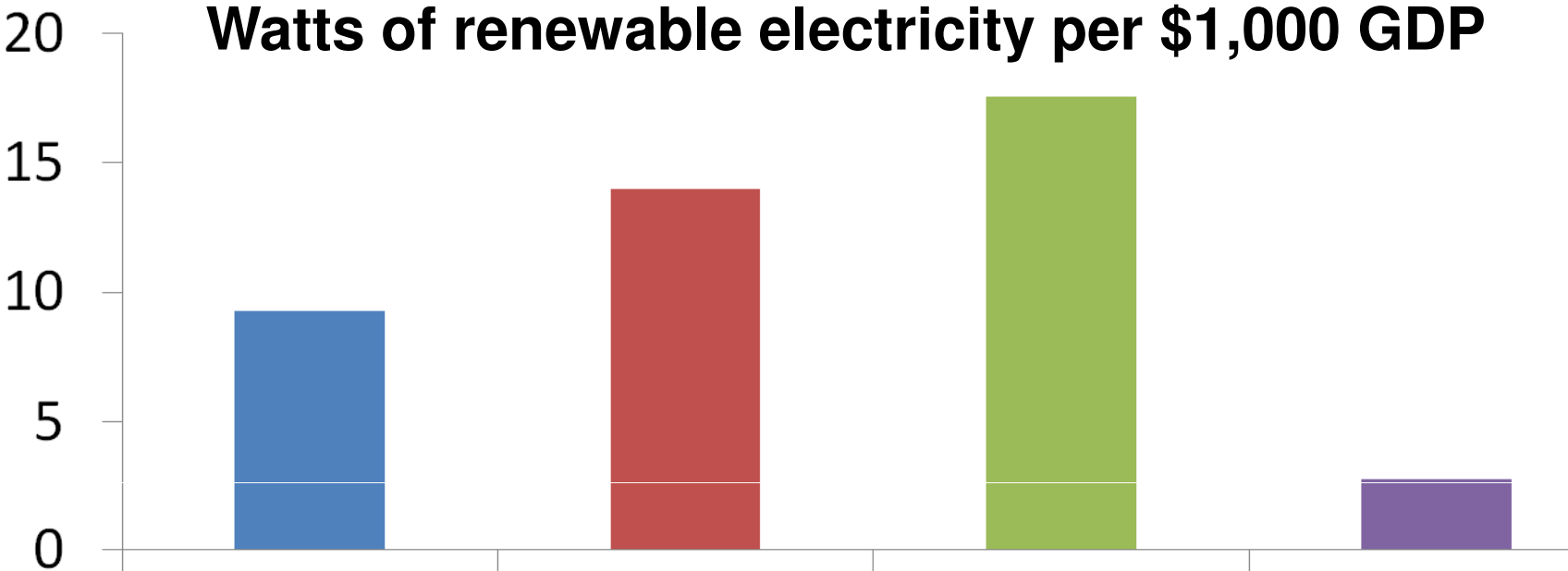
'Masked' cell wall degrading enzymes within a plant that can be activated after harvest could transform cellulosic biofuels



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by working together to:

- Aggressively pursue energy efficiency
- Accelerate innovation
- Adopt policies that leverage private sector investment

Strong policies drive clean energy investment



Policies include:

Germany

- Carbon cap
- Green Bank
- Renewable electricity standard

Spain

- Carbon cap
- National efficiency target
- Feed-in tariffs

China

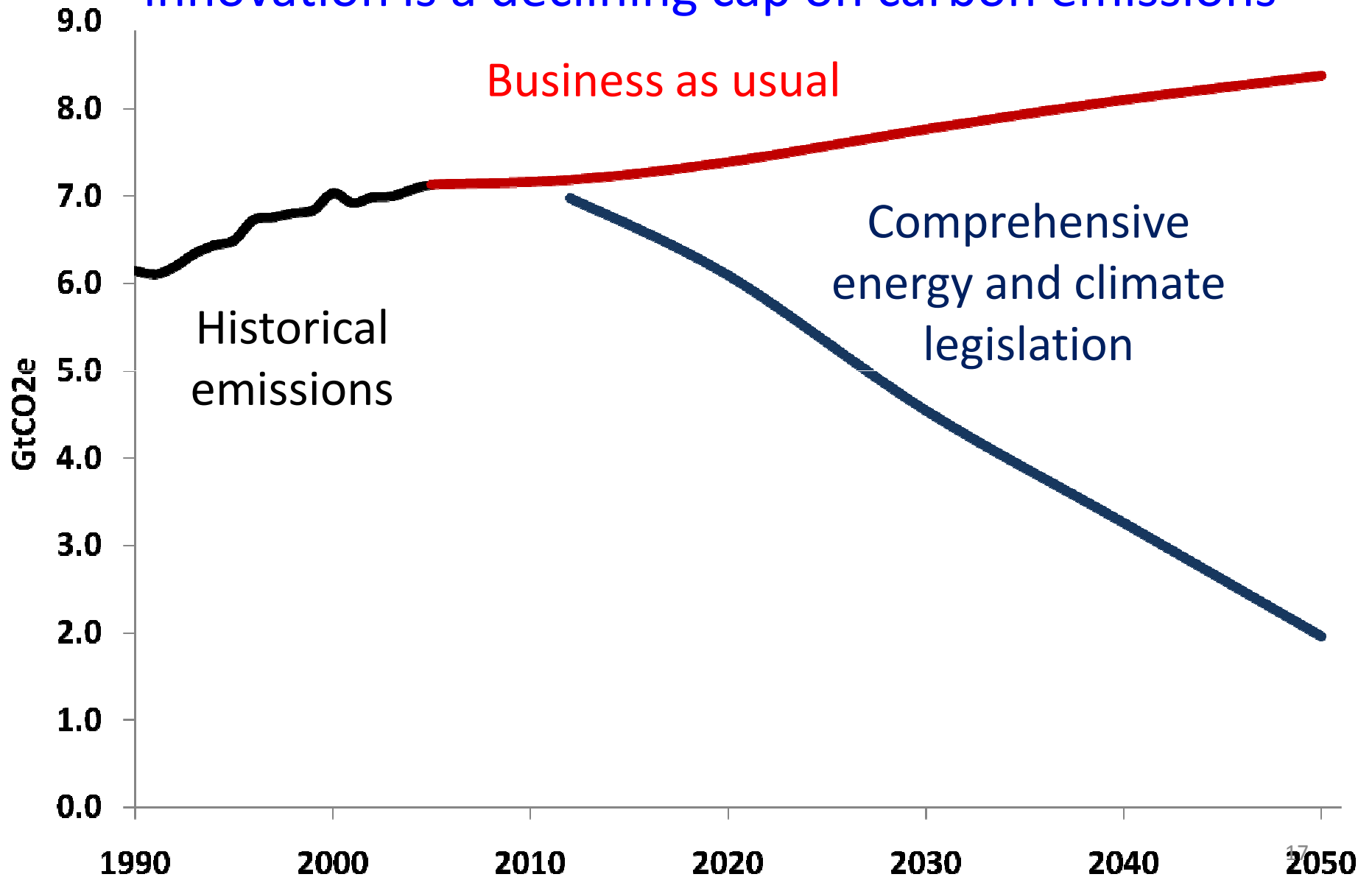
- Renewable electricity standard
- Feed-in tariffs
- Tax incentives

United States

- Some state policies
- intermittent federal tax credits

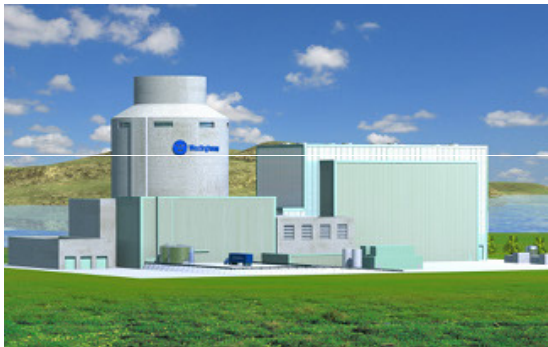
Source: REN 21; IMF, Center for American Progress

The most important policy that will stimulate innovation is a declining cap on carbon emissions



If you ran a power company today and had an aging coal plant that need replaced, would you...

Build a conventional coal plant



Westinghouse AP1000 design

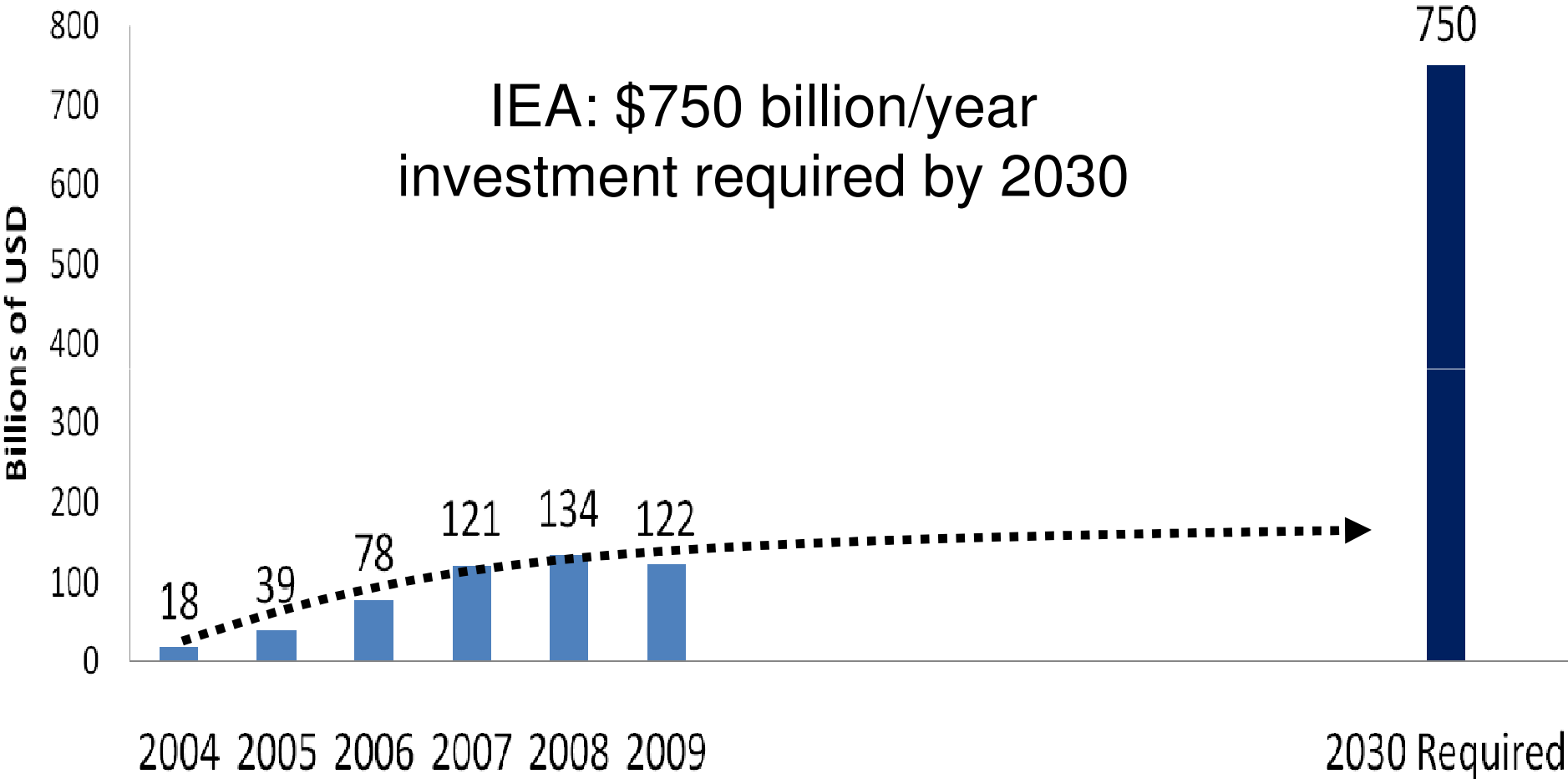
Build a clean alternative – nuclear, wind, or coal with CCS

Wait for a clear policy on carbon and build nothing



How do we expand a clean energy revolution at a time of long-term fiscal constraints?

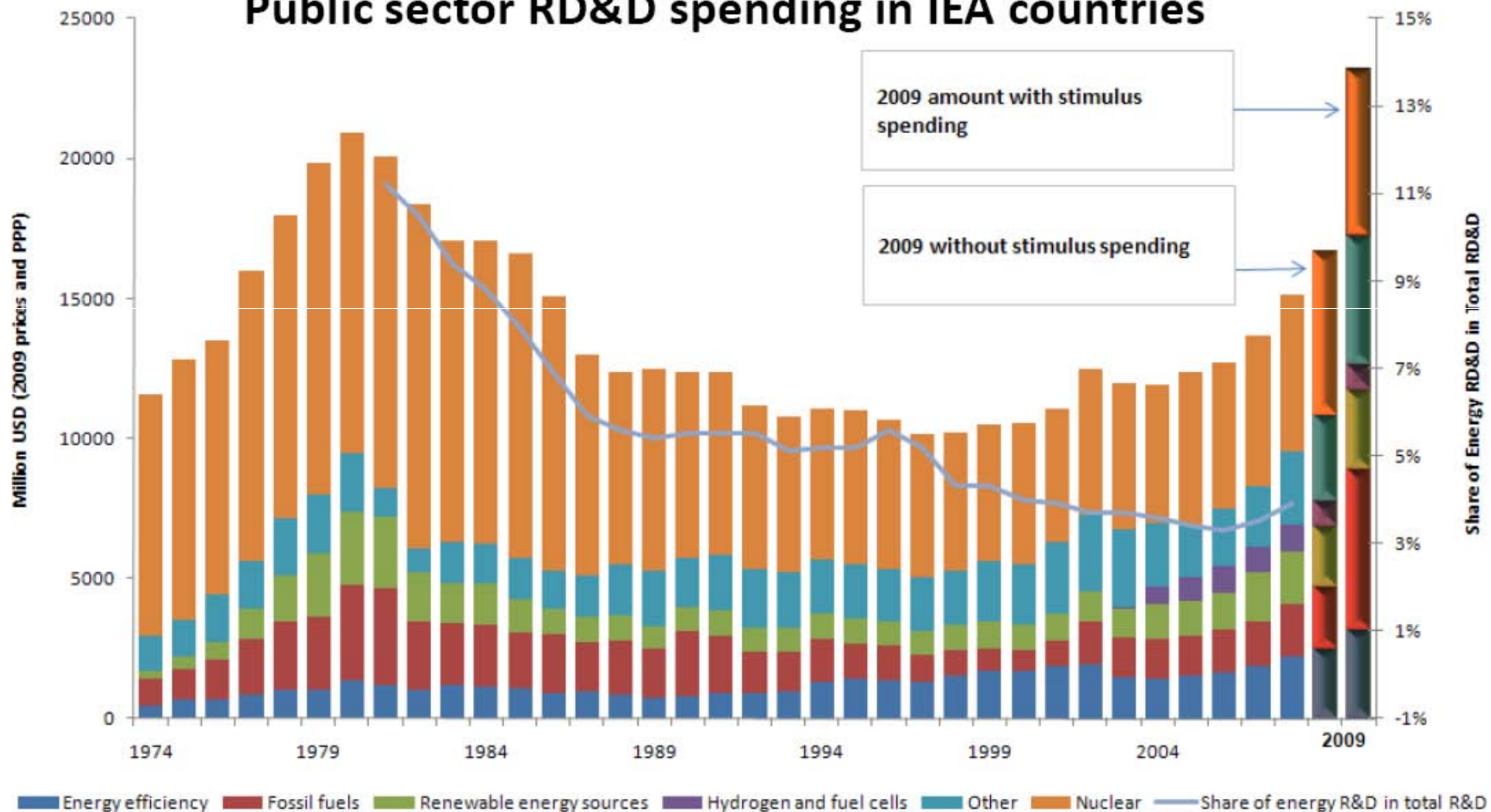
Clean energy growth stalled with the economic recession



Sources: Pew Charitable Trusts (historical)
IEA (target required)

Stimulus spending worldwide boosted clean energy spending significantly

Public sector RD&D spending in IEA countries





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We in this room can change
how the world uses energy

