Scaling up Clean Energy

Secretary Steven Chu

Clean Energy Ministerial

Washington, D.C.

19 July 2010

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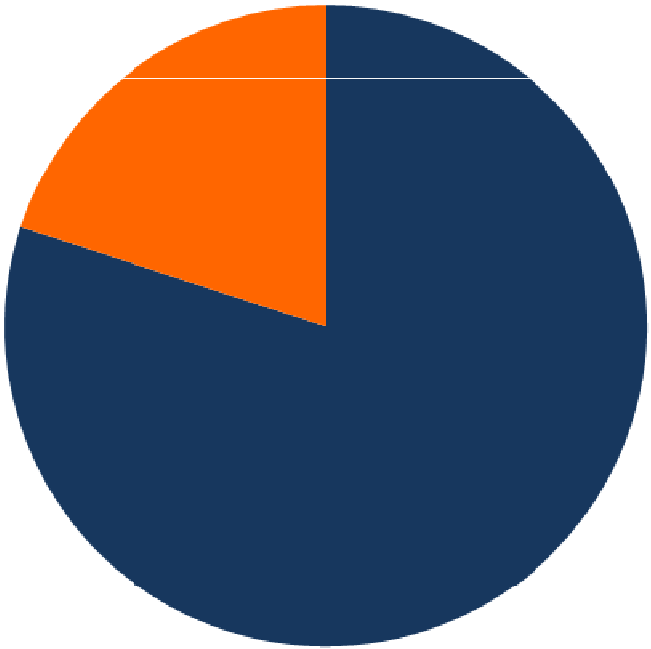
Washington, D.C. July 19-20, 2010

Represented here today:



80% of world energy use

4 billion people

$50 trillion in GDP

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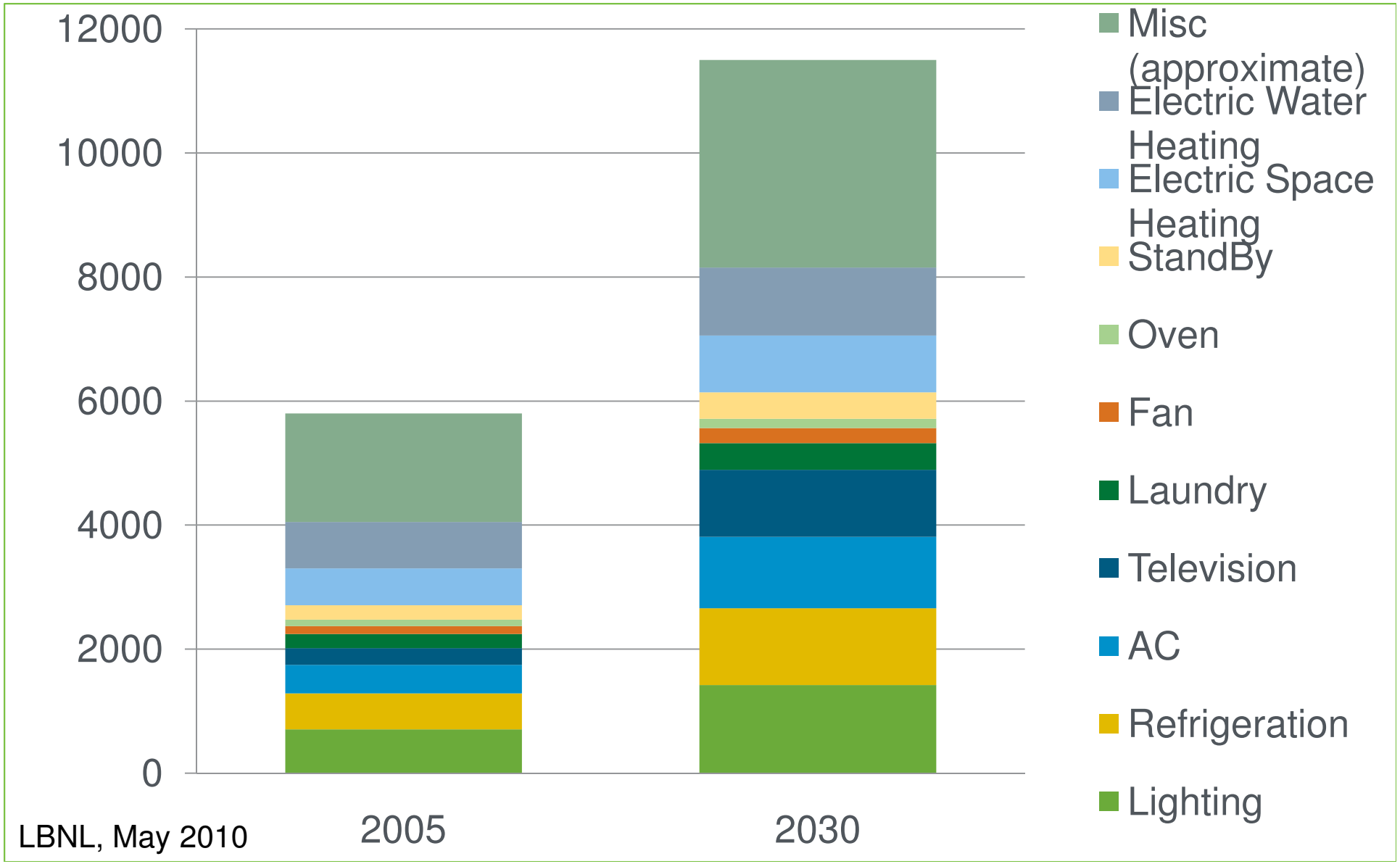
Our goal is action

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

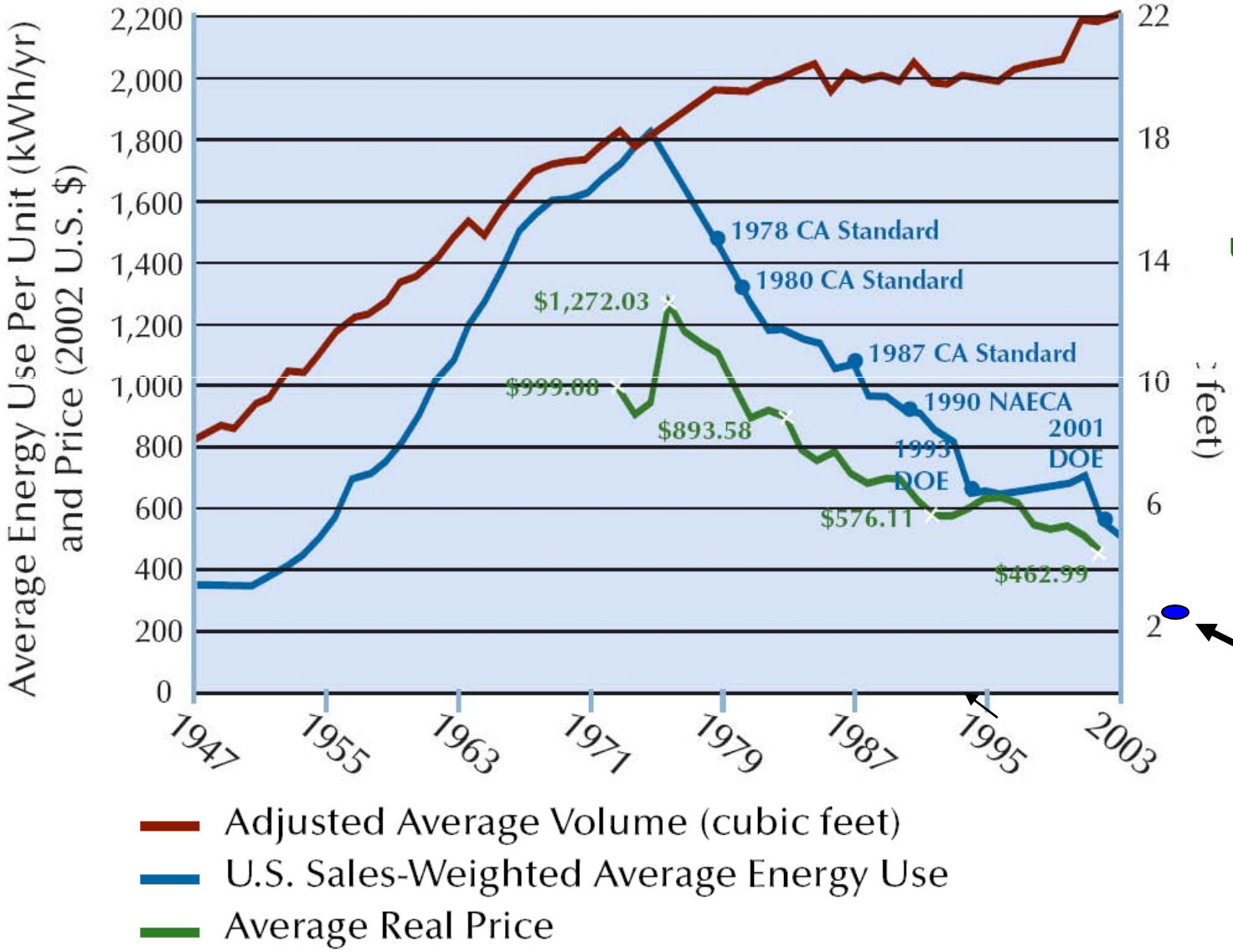
We can go further, faster by working together to:

- Aggressively pursue energy efficiency

Global electricity consumption expected to double from 2005 - 2030



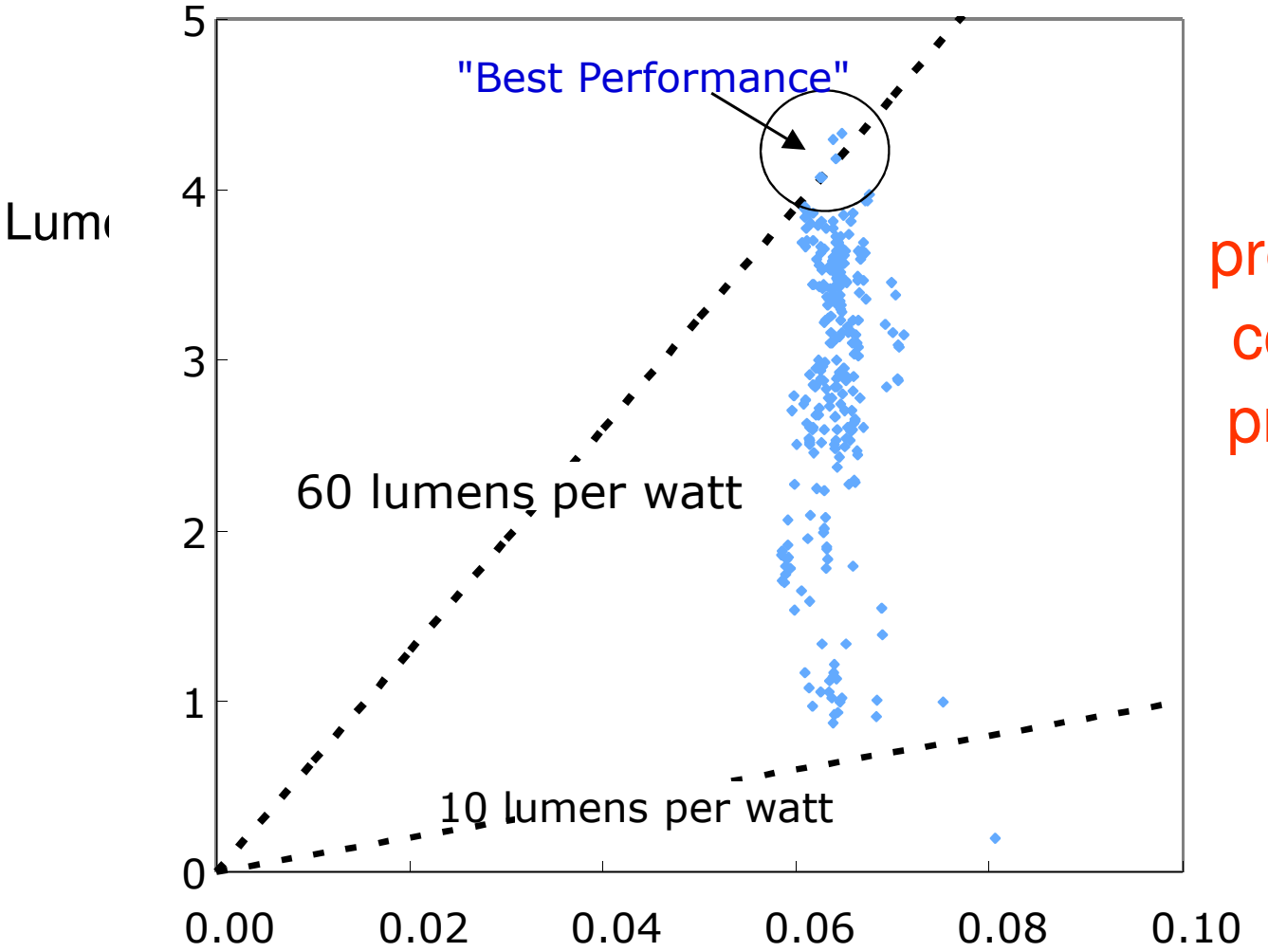
Standards stimulate technology: Refrigerator efficiency standards and performance



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

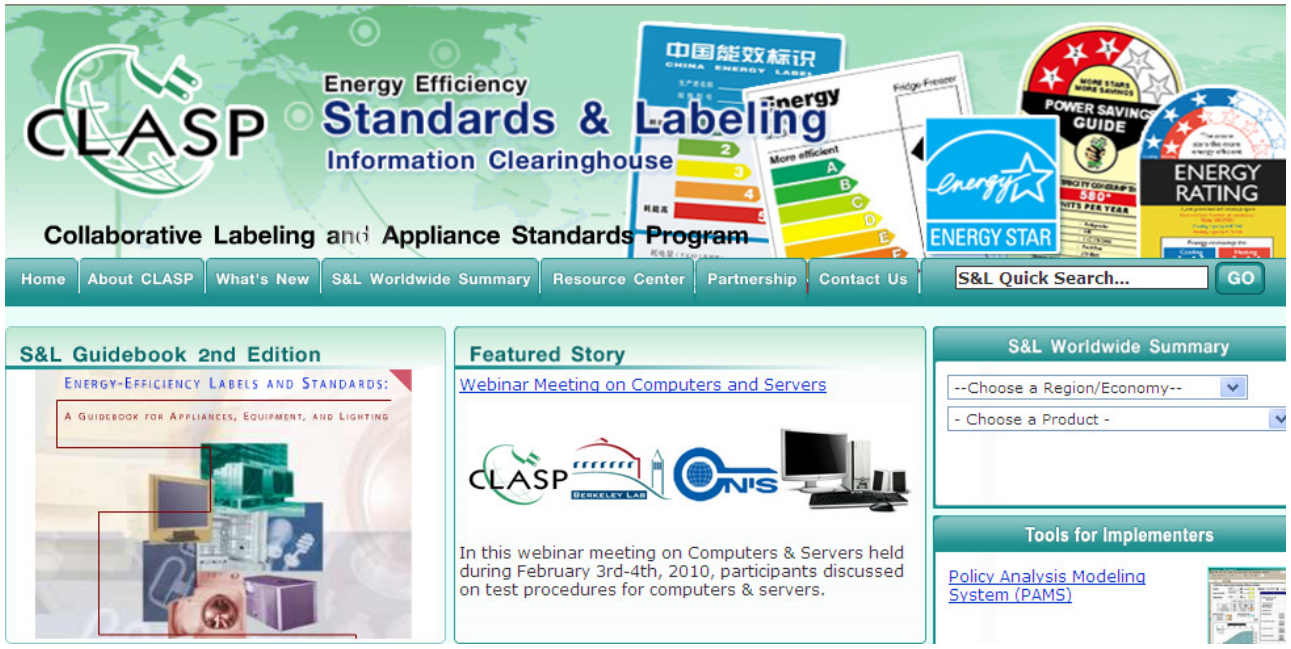


Quality assurance programs protect consumers and prevent "market spoiling"

Mills, E. and A. Jacobson. 2007. "The Need for Independent Quality and Performance Testing for Emerging Off-grid White-LED Illumination Systems for Developing Countries," *Light & Engineering*, 16(2):5-24

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



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:

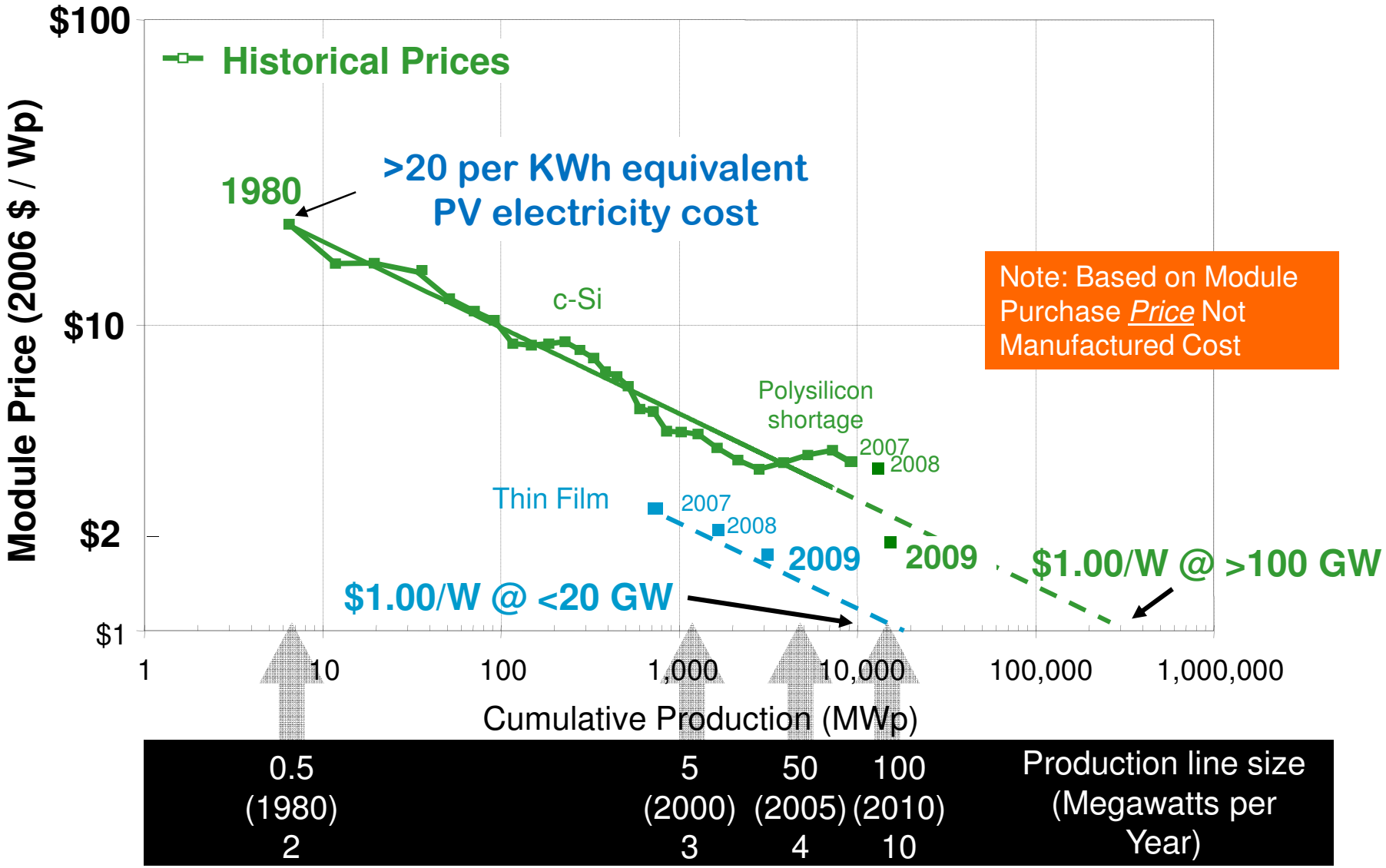
Sunlight energy is reflected back into space rather than heating up buildings and homes in the summer.

Santorini, Greece

We can go further, faster by working together to:

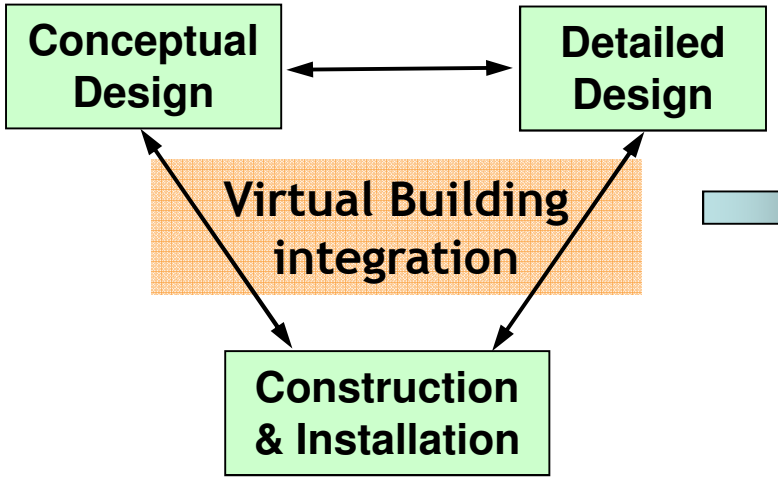
- Aggressively pursue energy efficiency
- Accelerate innovation

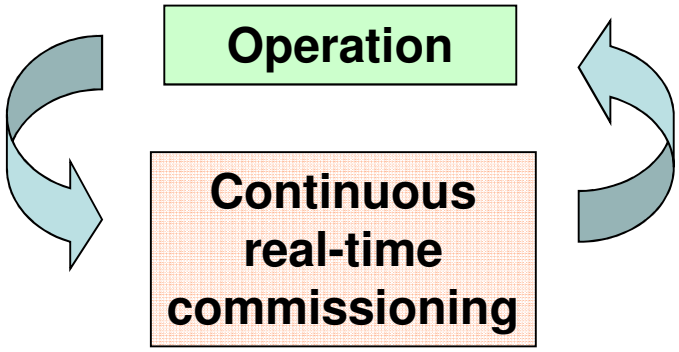
Learning Curves: crystalline silicon and thin-film technology



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 ¾ of the world's known coal reserves.

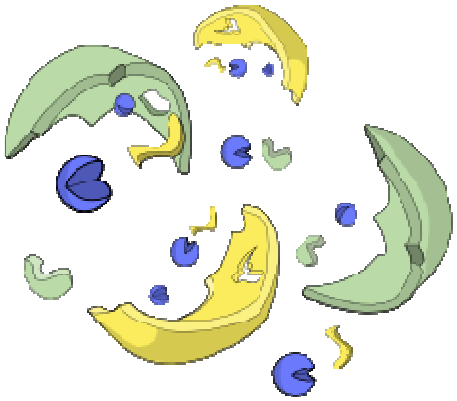
The US is investing $4 billion in CCS, matched by ~$7 billion of private sector money.

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

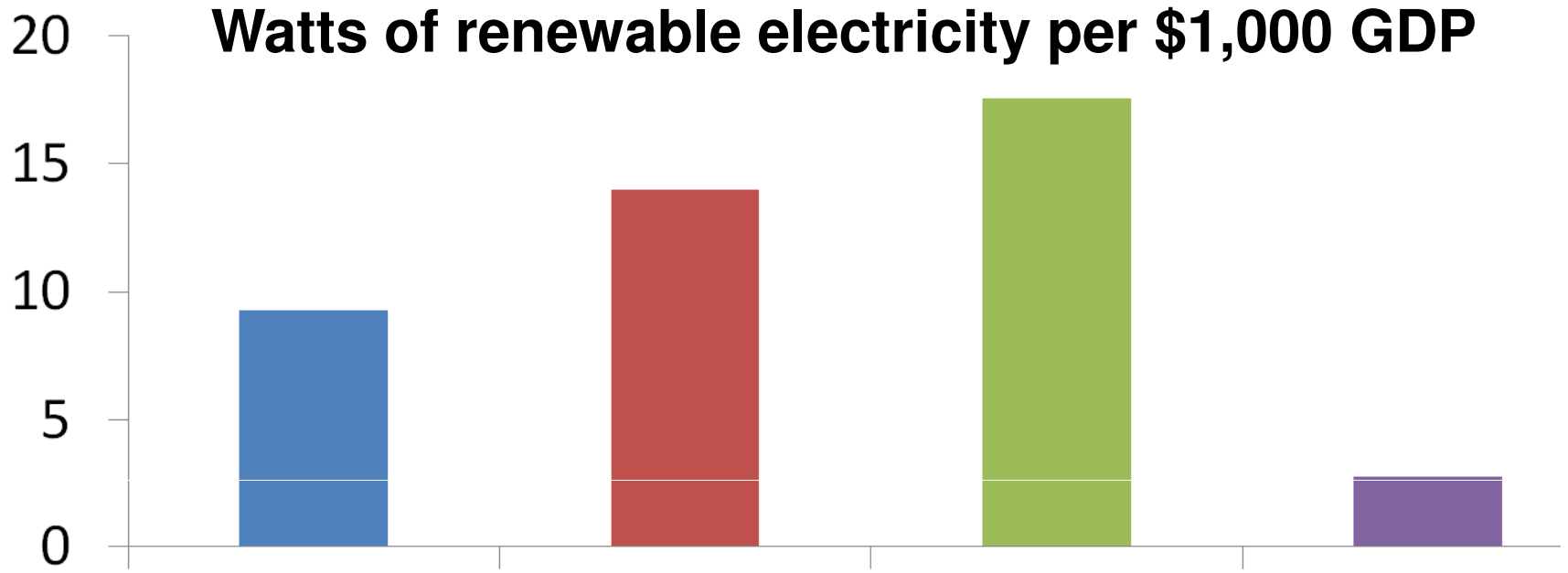
‘Masked' cell wall degrading enzymes within a plant that can be activated after harvest could transform cellulosic biofuels



We can go further, faster by working together to:

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

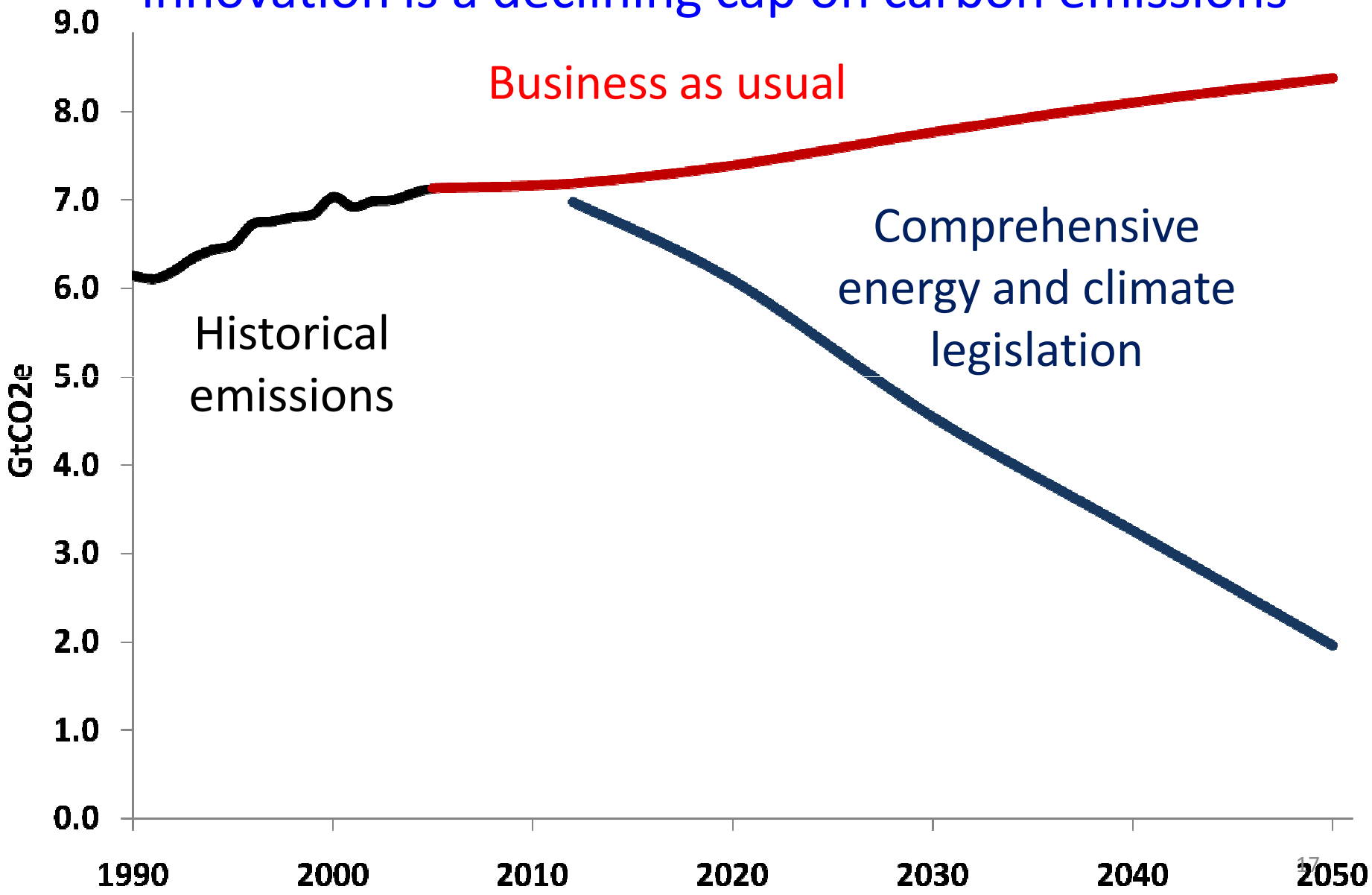
Strong policies drive clean energy investment



	Germany	Spain	China	United States
Policies include:	Carbon cap	Carbon cap	Renewable electricity standard	Some state policies
	Green Bank	National efficiency target	Feed-in tariffs	intermittent federal tax credits
	Renewable electricity standard	Feed-in tariffs	Tax incentives	

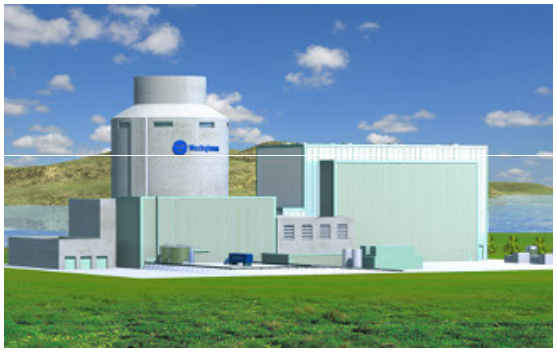
Source: REN 21; IMF, Center for American Progress

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



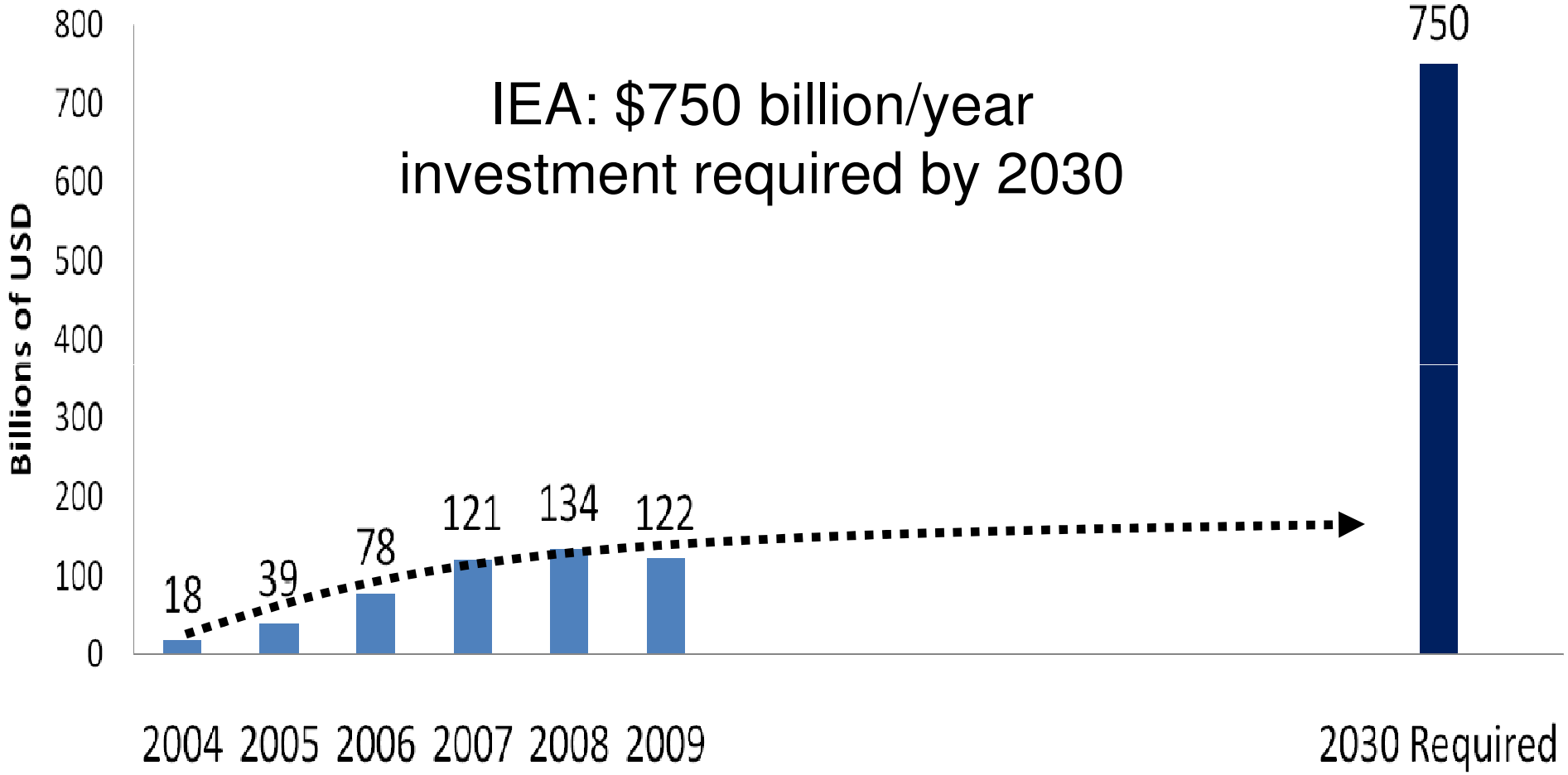
Westinghouse AP1000 design

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

Wait for a clear policy on carbon and build nothing

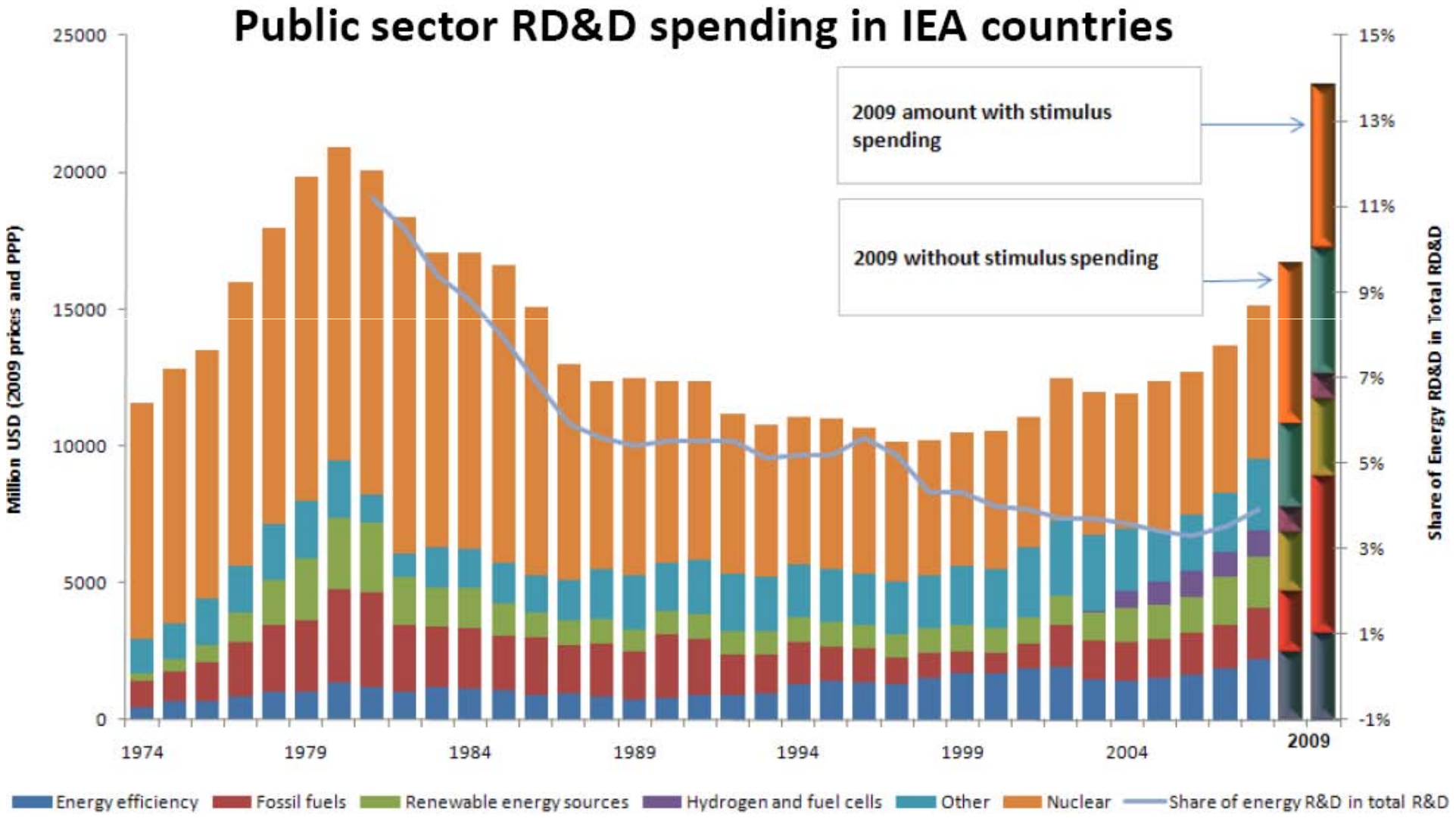
How do we expand a clean energy revolution at a time of long-term fiscal constraints?

Clean energy growth stalled with the economic recession



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

Stimulus spending worldwide boosted clean energy spending significantly



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We in this room can change how the world uses energy