

**U.S. House of Representatives  
Committee on Energy and Commerce  
Subcommittee on Energy and Power**

**Hearing  
“The American Energy Initiative”**

**April 4, 2011**

**Testimony submitted by:**

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## **Summary Statement**

America and other mature economies have a unique opportunity to create a 21st Century energy policy. Yet, we continue to depend on an aging energy infrastructure rather than advance the regulatory measures and investment incentives necessary to secure our energy future. By contrast, the world's fastest-growing economies – primarily in Asia – recognize that energy and environmental objectives are compatible and achievable with 21st Century clean coal technology.

Energy is as essential as food, shelter and clothing. Yet, energy inequality and poverty is pervasive and growing as populations multiply and the world enters the early stages of global hyper-growth in energy demand.

Coal is the only fuel with the low cost and large scale to satisfy enormous long-term need. We believe it can be a significant catalyst for economic growth and the low-cost, low-carbon path to our environmental objectives. China is the global model, with the world's most advanced coal fleet and unprecedented investment in clean coal technologies. Peabody is part of this revolution, advancing the next generation of green coal technologies. Led by China, Asia has created a new model for energy innovation with coal, and America can adopt this model as our own.

Mr. Chairman and distinguished members of the Subcommittee, good afternoon. It is my privilege to speak on a topic of vital importance to the American people and the U.S. economy – the global clean energy revolution powered by coal.

I am Chairman of the World Coal Association and Senior Vice President of Government Relations at Peabody Energy, the world's largest private-sector coal company and a global leader in clean coal solutions.

My testimony today will focus on what we see as a widening gap between the energy approaches of the developed and developing worlds.

- First, I will address the unique opportunity for America and other mature economies to create a 21st Century energy policy amid a complex landscape.
- Second, I will touch on the ways in which we continue to depend on an aging energy infrastructure rather than advancing the regulatory measures or investment incentives necessary to secure our energy future.
- Finally, I will address how the world's fastest-growing economies – primarily in Asia – recognize that energy and environmental objectives are compatible and achievable with advanced coal technology – what we call green coal. Asia has created a new model for energy innovation; I will address how America can adapt this model as our own.

\* \* \*

Peabody's market position gives us a broad, global perspective on energy trends. We are the world's largest private-sector coal company with 127 years of mining expertise and a record of world-class practices in safety, productivity and land

restoration. Peabody also is advancing more than a dozen low-carbon projects and partnerships around the world to achieve our ultimate goal of near-zero emissions.

Peabody's market capitalization is currently more than \$17 billion. That may sound significant, but we are responsible for just 2 percent of the world's coal-fueled energy.

The global energy system is massive, and its foundation – fossil fuels – is ubiquitous. What does this energy bring us? Simply put, it delivers our way of life. Energy is as essential as food, shelter and clothing. The United Nations has linked life expectancy, educational attainment and income with per capita energy use,<sup>1</sup> and the World Resources Institute found that with every tenfold increase in per capita energy use, individuals live 10 years longer.<sup>2</sup> Study after study supports the link between energy, health and wealth.

Abundant, affordable energy is a key reason why those of us in the United States have a standard of living that most of humanity is still trying to achieve. The average American annually consumes as much as 44 million Btus of energy. This is six times the per capita electricity use of the average citizen in China and 25 times that of India's population. About half of U.S. energy comes from coal, and yet, as a new report by the Centers for Disease Control (CDC) finds, the U.S. death rate is now at "an all-time low," with the population living longer and healthier than ever before.<sup>3</sup>

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<sup>1</sup> International Energy Agency, World Energy Outlook; Analysis by Dr. Frank Clemente, Pennsylvania State University.

<sup>2</sup> Dr. Mark P. Mills, "Want to Improve Your Nation's Health? Burn Coal," Fueling Our Future, World Climate Report, vol. 3.

<sup>3</sup> National Vital Statistics Reports, "Deaths, Preliminary Data for 2009," Centers for Disease Control, Volume 59, Number 4 March 16, 2011 by Kenneth D. Kochanek, et al.

Many are not so fortunate. Half the global population – 3.6 billion people – lack adequate access to modern power. As many of you know, energy disparities are growing in your districts. Studies show that today even middle-class Americans pay a disproportionate amount of their after-tax income on energy. Nearly six in ten Americans say a monthly increase of as little as \$20 in utility bills would create hardship.<sup>4</sup>

This gap will widen as populations multiply and energy use increases. By 2050, global GDP is expected to increase 255 percent. Electricity generation will be up some 140 percent. The world population will reach 9 billion.

Large emerging nations such as China, India and Indonesia are seeking to increase living standards by industrializing and urbanizing at an unprecedented pace. As a result, the world is in the early stages of global hyper-growth in energy demand. The International Energy Agency (IEA) projects that the world will require 40 percent more energy in the next quarter century.

China alone is responsible for 30, 40 or 50 percent of the growth in many of the world's natural resources. It currently surpasses Japan as the second largest global economy, and last year China exceeded the United States to lead the world in energy consumption. India is close on China's heels, and Indonesia has another 300 million people with rapidly advancing economic gains. All of this growth requires energy – a lot of it.

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<sup>4</sup> "Research Findings on Climate Change, Electricity Usage and Cost, and Cap and Trade Auction Legislation," Lauer Johnson research, April 20, 2009; American Coalition for Clean Coal Electricity (ACCCE), Eugene M. Trisko based on U.S. Bureau of the Census, and U.S. Department of Energy's Energy Information Administration (EIA) data, March 2010.

So, as the Congress considers oil sands and shale gas, nuclear power and geothermal, wind and solar, it is abundantly clear we need them all... and that all these sources are not enough to provide security of supply in the 21<sup>st</sup> Century.

We believe coal is the only fuel with the low cost and large scale to satisfy long-term need in the United States and around the world. Alternatives to coal are small, strained or centered in political flashpoints. Perhaps that is why coal has been the fastest growing fuel in the world for the last decade. The IEA projects that the growth in coal for electricity generation will exceed the growth of any other fuel by more than double in the next 10 years.

Coal's growth only makes sense. It is widely dispersed, broadly available, easily transported, energy-dense and very affordable. In the United States, the delivered cost of coal has averaged just one-half to one-sixth that of natural gas, while oil is headed to \$100 a barrel, and new nuclear construction brings unique risks, both physical and financial.

\* \* \*

Against this backdrop, we believe coal is the catalyst for economic growth. China is a case in point. Here low-cost coal-fueled energy use increased 475 percent since 1990, even as China's GDP also has risen 375 percent, prompting the IEA to call China a "coal-fueled economic miracle."

China is currently the world's largest coal consuming nation – and it is 80 percent coal fueled. China overtook the United States in 2009 to become the world's largest

energy user. Keep in mind that China's energy use was only half that of the United States in 2000. It has quadrupled in a decade.

So, perhaps more than any other nation, China appreciates the urgency of energy investment. In fact, coal-fueled generation is expected to grow 2.5 times in China and 3.5 times in India by 2030. Every four years, China's coal demand growth equals an entire United States of total demand.

China's leaders know that they will need to produce more energy far more rapidly to keep pace with the needs of the Chinese people. They also understand that economic and environmental goals are achievable with technology.

\* \* \*

This brings me to my final point: There are multiple pathways to a high-growth, environmentally responsible energy future. To achieve our environmental goals, we believe we can pursue complex regulatory schemes with unintended economic consequences or advance low-cost, low-carbon clean coal technologies that are available today and can succeed at scale.

The choice seems clear. Advances in coal technologies have always met environmental objectives. In the United States, electricity from coal and GDP have more than tripled since 1970; at the same time, criteria emissions per megawatt hour declined more than 80 percent.<sup>5</sup> This is both an environmental success story and a lesson for the future.

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<sup>5</sup> Peabody analysis of U.S. generation from the U.S. Energy Information Administration and total criteria emissions as reported by the U.S. Environmental Protection Agency, most recent available data.

Advanced coal-fueled technology – what we call green coal – builds on past progress. Today’s efficient plants achieve a carbon dioxide (CO<sub>2</sub>) emissions rate that is typically 15 percent better than the existing fleet and as much as 40 percent better than older plants being replaced. Replacing the world’s older coal plants with new construction would be the carbon emissions equivalent of removing the entire U.S. passenger car fleet from our roads.

The world’s fastest-growing nations have taken notice. While the United States debates energy options, China is deploying solutions. As part of its current Five Year Plan and 863 Program,<sup>6</sup> the Chinese are building the world’s most advanced coal-fueled fleet. China is home to one-third of the 430 gigawatts of supercritical and ultrasupercritical power plants in operation or under construction worldwide. That’s more than any other nation.

Indeed, China has become a testbed and factory for the most advanced coal-fueled technologies. China is investing in clean energy technologies on an enormous scale. In 2010, China increased advanced energy spending 30 percent to a record \$50 billion. While it can take a decade to get a permit for an advanced coal plant in the United States, in China permitting can be completed in a matter of years. The U.S. can claim some of the best scientific minds and strongest research institutions in the world, but the Chinese have a unique capability to implement ideas generated by our academics.

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<sup>6</sup> “The Green Giant,” Dec. 21, 2009, The New Yorker.

China's President Hu Jintao continues to emphasize China's leadership putting in place a system that supplies, and I quote... 'stable, economic and clean energy.' China in the next decade will have a state-of-the-art coal-based electric generating system that is cleaner and more efficient than any on earth. So we have much to gain through a U.S.-China partnership to advance this technology.

And Peabody is doing its part to advance the next generation of advanced coal technologies in China. In 2011, the company announced plans for a 2,000 megawatt supercritical power plant and large synthetic natural gas (SNG) facility through a partnership with Yankuang Group, a major Chinese mining enterprise. On a parallel path Peabody is pursuing a 1,200 megawatt supercritical power plant with carbon capture through a partnership with Huaneng Corporation, one of China's five largest power generators and Calera. This latter project would capture a portion of carbon dioxide to create cement products.

Another signature project is GreenGen, which is among the world's largest near-zero emissions projects in which Peabody is a partner. Carbon capture and storage (CCS) is often discussed in the abstract, but the science of CO<sub>2</sub> capture and storage is solid: CO<sub>2</sub> can be separated from the emissions stream and compressed into a fluid-like state, making it easier and less costly to transport via pipeline. CCS involves injecting CO<sub>2</sub> into aging oil fields to recover stranded oil or deep into saline aquifers or other geology for safe storage. GreenGen has steel in the ground and is on track to turn on its first 250 megawatt unit this year. Peabody is very proud to be the only non-Chinese partner in this project.

China, along with much of the rest of the world, is investing in energy innovation while the United States is still debating options.

My question to the Subcommittee is simple: What are we waiting for? I sincerely doubt any member supports a policy to import energy innovations from China's high-growth industrial economy. Still, this is the result of inaction.

There is a better way. Advanced coal can combat energy poverty and fuel an industrial rebirth of a magnitude not seen in decades. We believe it will take five steps – what we call the Peabody Plan:

- First: We must work to eliminate energy poverty by ensuring that at least half of new generation is fueled by coal;
- Second: Replace older traditional coal plants with advanced coal technologies;
- Third: Develop at least 100 major CCS projects around the world within 10 years;
- Fourth: Deploy significant coal-to-gas, coal-to-chemicals and coal-to-liquids projects globally in the next decade; and
- Finally: Commercialize next generation clean coal technologies to achieve near-zero emissions.

\* \* \*

Mr. Chairman and members of the Subcommittee, the current U.S. energy system took more than a century to develop and only time and continuous technological development will build the low-carbon, high-growth economy we seek. But one fact is undeniable: Coal alone has the power to address energy inequality, reindustrialize economies and improve the environment. Coal is energy, and energy is life. Thank you.

# ENERGIZING THE WORLD **ONE BTU** AT A TIME

**Peabody**

## Green Coal and 21<sup>st</sup> Century Energy Policy

*April 4, 2011*

*Fredrick D. Palmer  
Senior Vice President  
Government Relations  
Peabody Energy*



# Who We Are...



## *Industry Leader With a 127-Year History...*

- *World's largest private-sector coal company*
- *Known for safety, productivity, land restoration*
- *Large-scale open-cut mining expertise and optimizing resources*
- *Customers on six continents*
- *More than 30 honors for safety and environmental responsibility in 2010 alone*

*The 25-meter thick coal seam at Peabody's North Antelope Rochelle Mine, Wyo., one of the world's largest and most productive coal mines.*

*The PRB coalfield is the most important energy resource on earth, fueling 25% of U.S. electricity.*

# Good Energy Access is a Human Right and Rapidly Rising Need

*3.6 Billion People Have No or Only Partial Access to Electricity*



**Millions of People Who Lack Adequate Electricity**  
**Millions of People Who Have No Electricity**

***“The economic costs of [anti-coal] regulations – particularly the impacts on income and employment – tend to worsen individual health or safety and can shorten lifetimes.”***

– Klein and Keeney, Duke  
“Mortality Reductions From Use  
of Low-Cost Coal-Fueled Power”



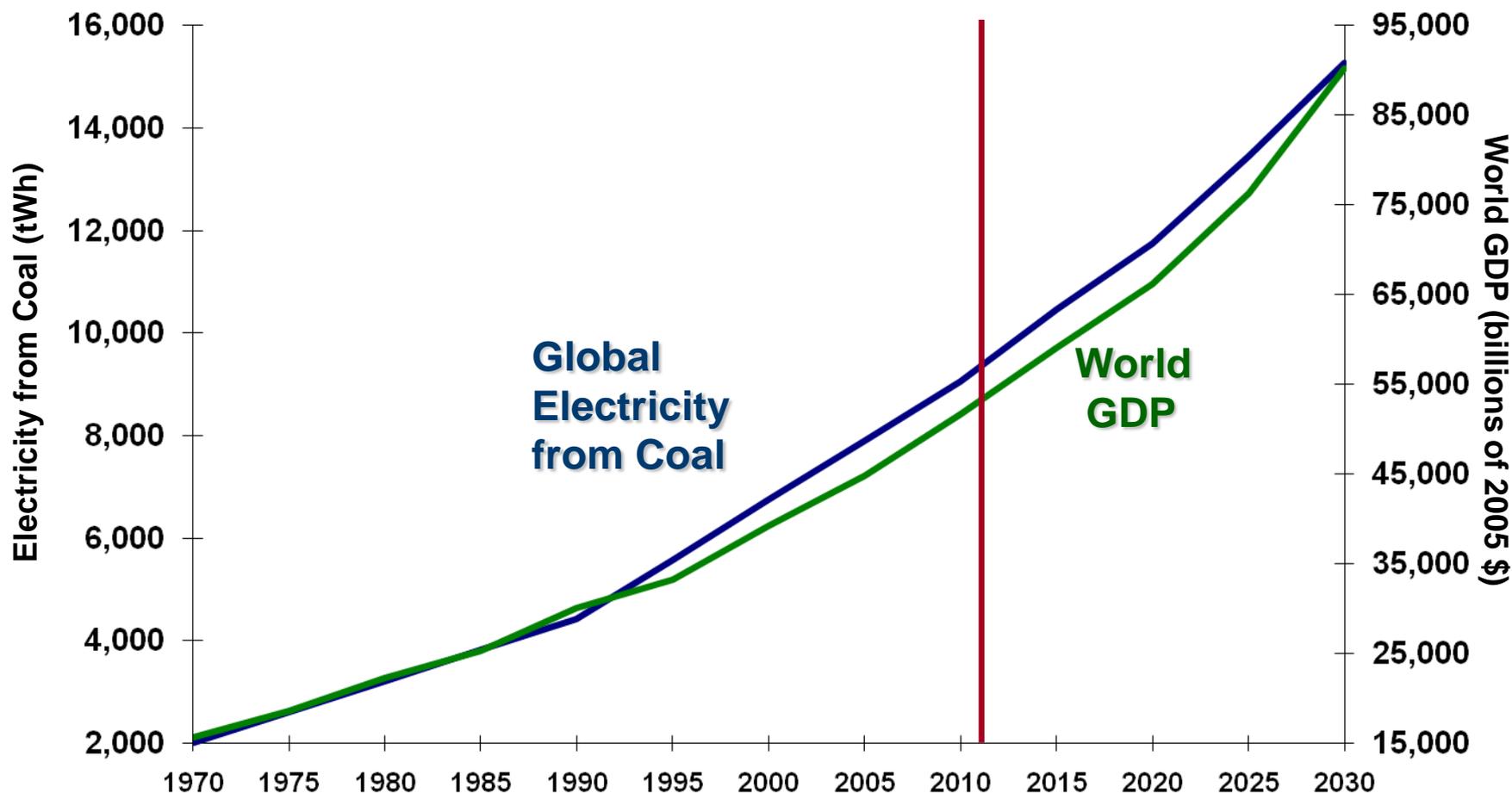
***“By increasing the costs of goods and services such as energy, and decreasing disposable incomes, regulation can inadvertently harm the socioeconomic status of individuals and, thereby, contribute to poor health and premature death.”***

– Johns Hopkins University, Professor M. Harvey Brenner

# Global Coal Use and Economic Growth: Near Perfect Correlation



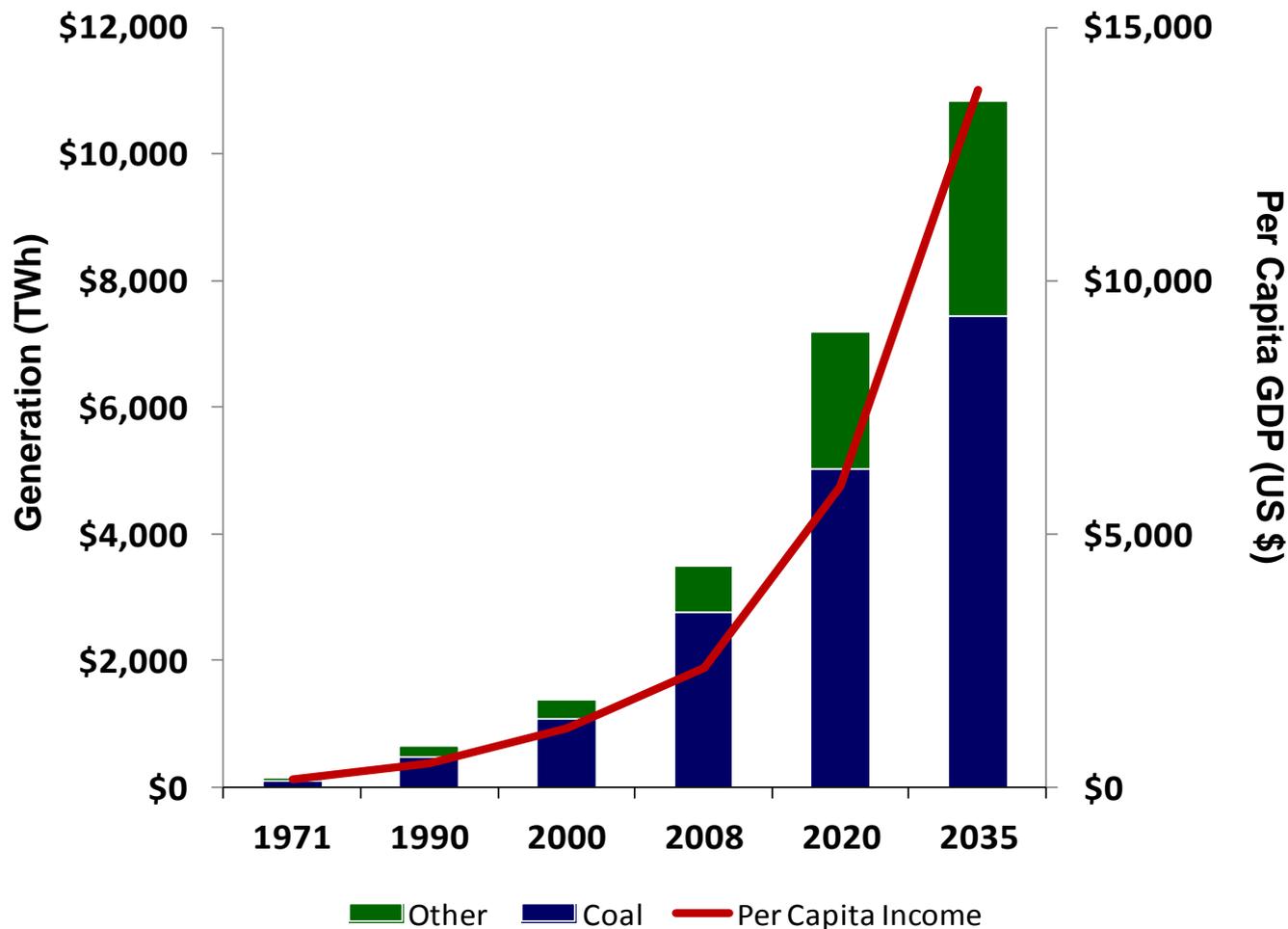
*Coal-Fueled Electricity in 2030: Equal to Current Power in the Western Hemisphere, the EU and Five Times Japan*



# China a Global Model, Propelled by the Power of Coal



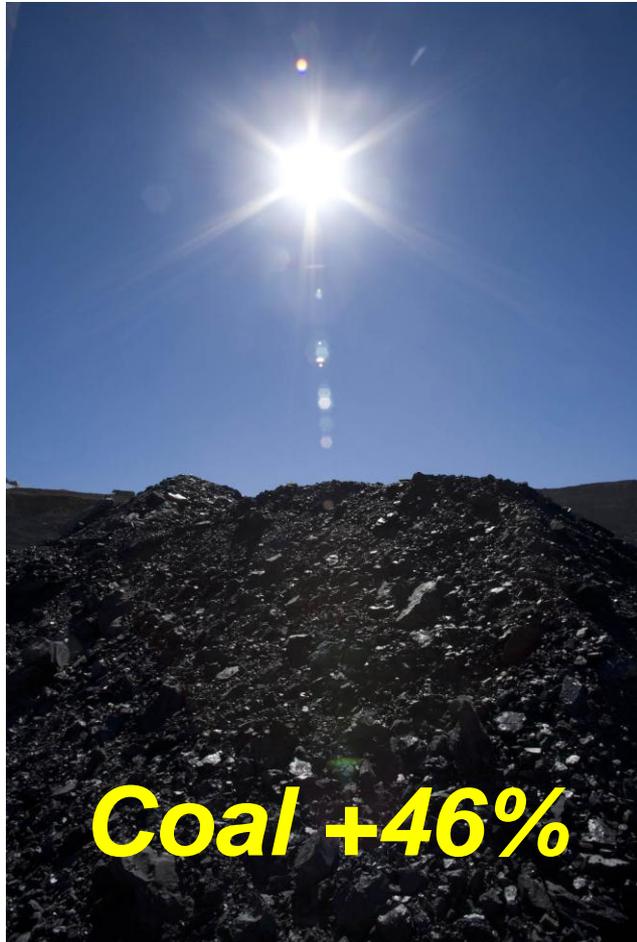
*“Coal has underpinned China’s massive and unprecedented growth in output, fueling an economic miracle...” – IEA*



# Coal: Entering the Early Stages of a Long-Term Supercycle

## Coal: The World's Fastest Growing Fuel for Past Decade

### Growth in Major Energy Forms (1999 – 2009)



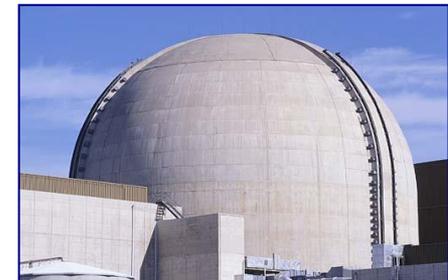
**Natural Gas +27%**



**Oil +10%**



**Hydro +25%**

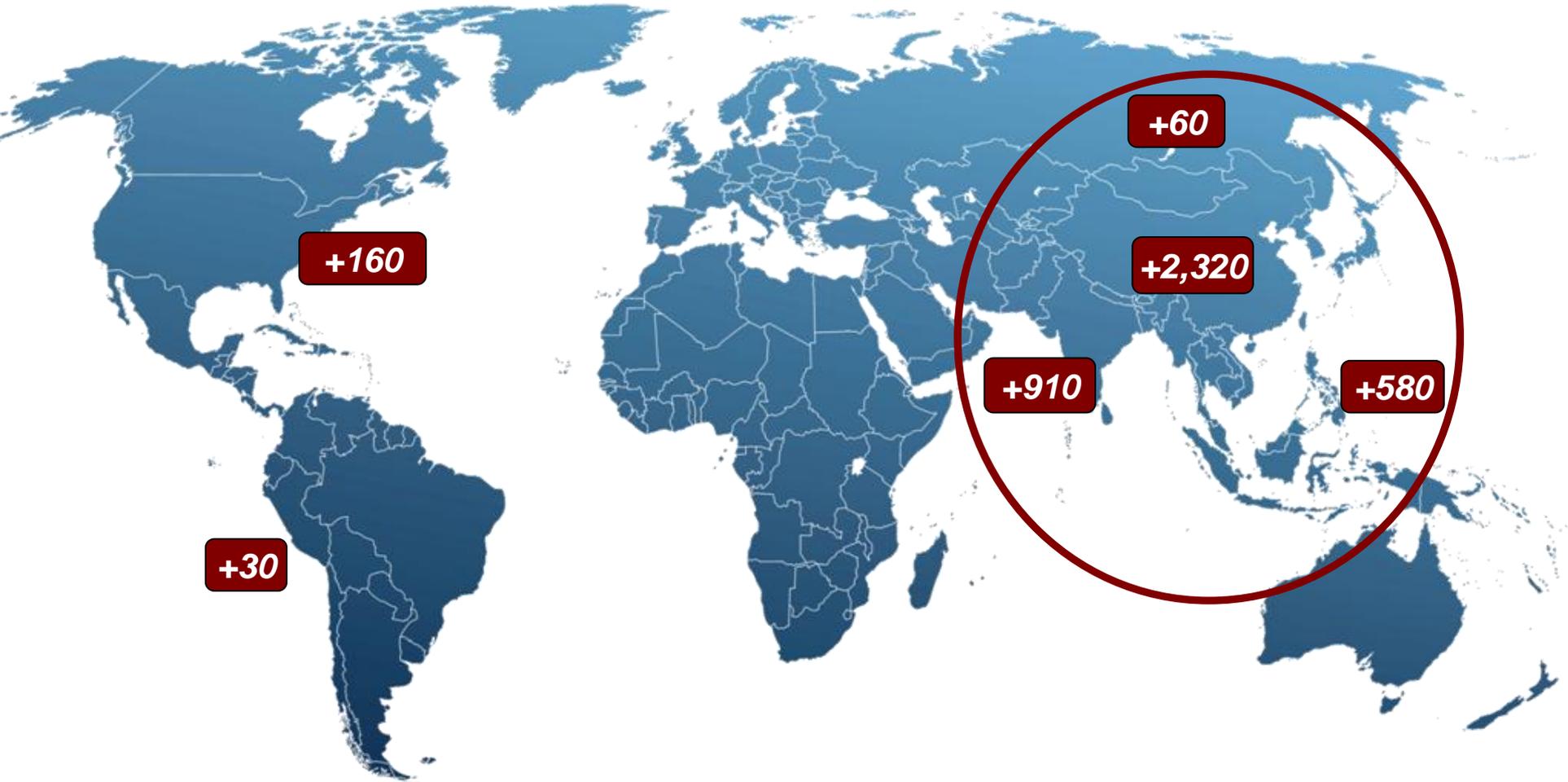


**Nuclear +7%**

# Asia Represents 90+% of 4 Billion Ton Long-Term Global Demand Growth



## China and India Lead Long-Term Coal Demand Growth



 **Growth 2008 - 2035 (Tonnes in Millions)**

U.S. growth presented in short tons.

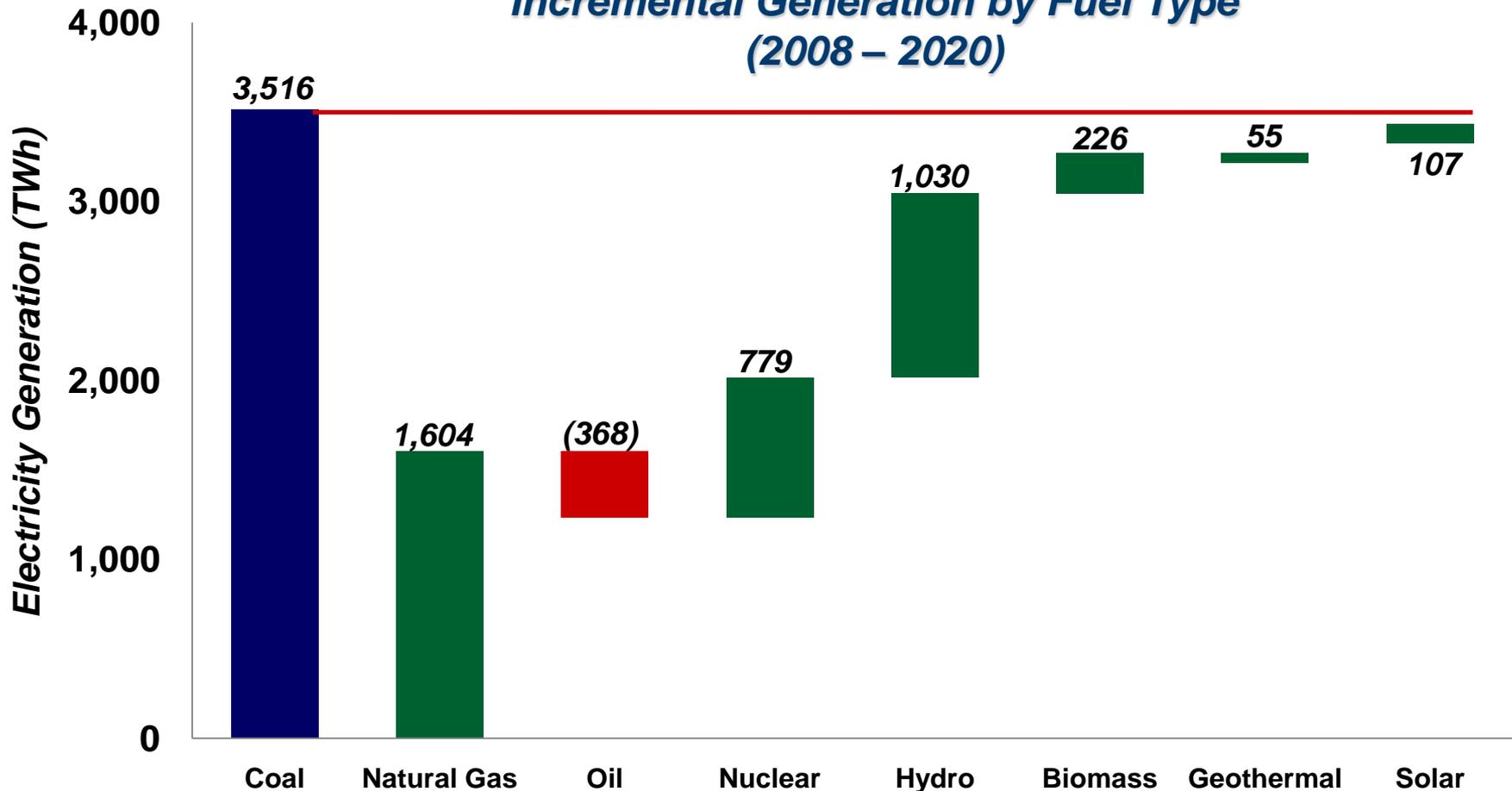
Source: World Energy Outlook 2010, International Energy Agency; Annual Energy Outlook 2011 Early Release, Energy Information Administration; Peabody analysis.

# Future Coal Generation Growth: More Than Double That of Any Other Source



*Exceeds Growth in Gas, Oil, Nuclear, Hydro, Biomass, Geo & Solar*

*Incremental Generation by Fuel Type  
(2008 – 2020)*

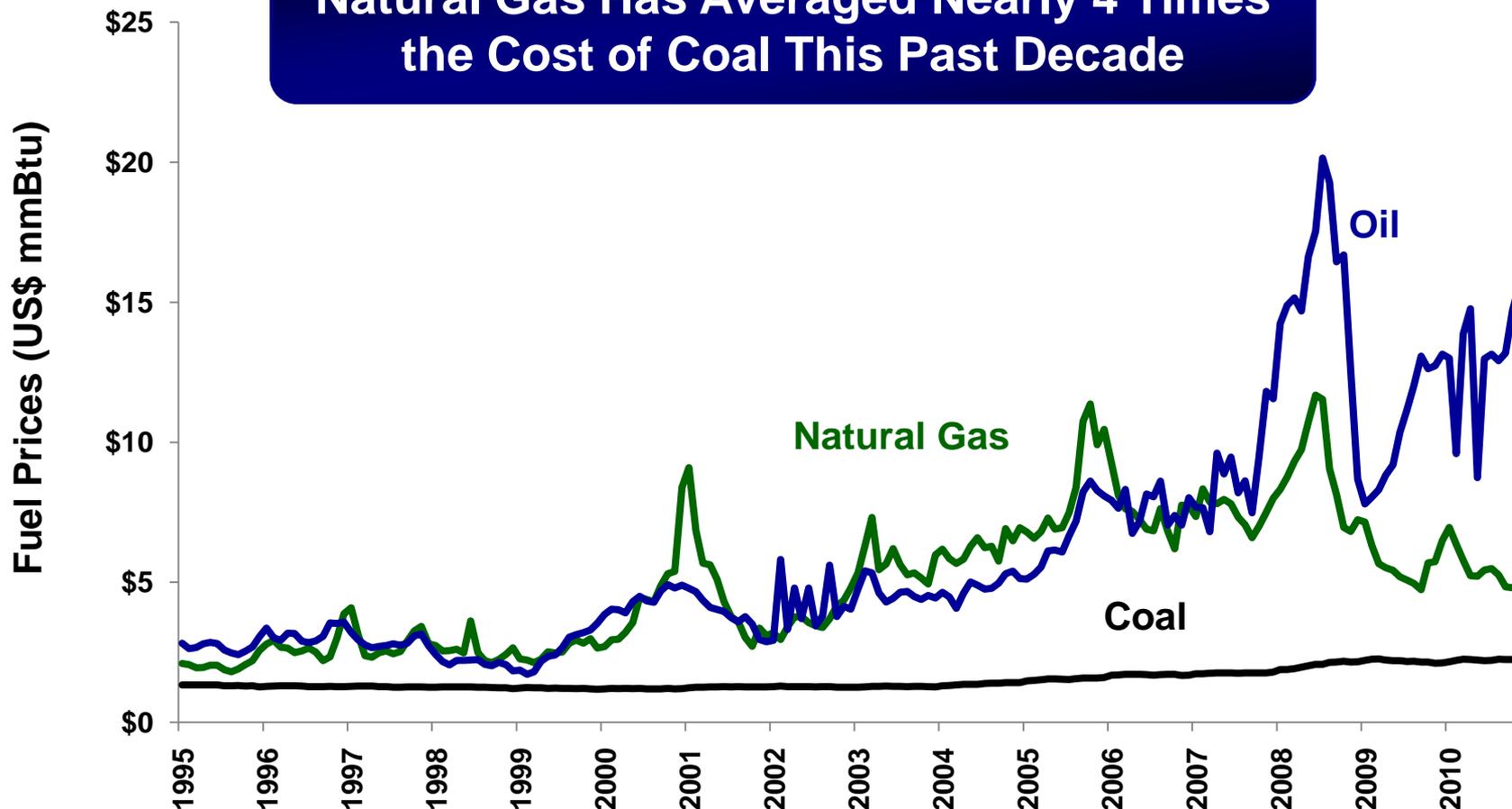


# Energy Access Means Reasonable Costs and Reliability



*U.S. Natural Gas Cost More than 2x Coal, Oil Cost 6x Coal in 2010*

**Natural Gas Has Averaged Nearly 4 Times the Cost of Coal This Past Decade**

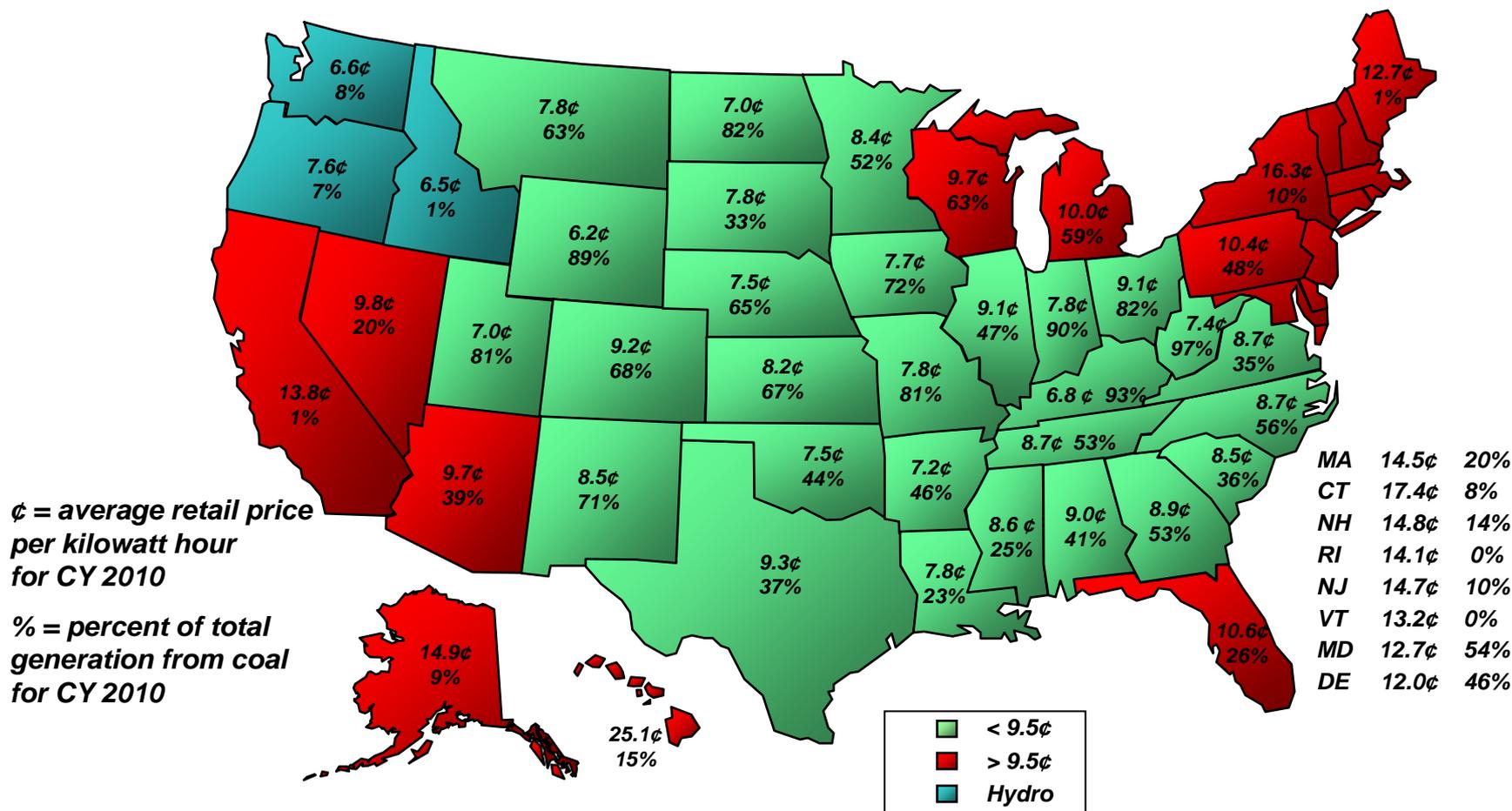


Price of fuel delivered to the plant includes all commodity, freight, taxes and other costs incurred in the delivery of the fuel.  
Source: Ventyx, Monthly Plant Fuel Purchase Price (modeled), Jan 1995 - Nov 2010 (monthly).

# Coal is the Rock that Built America's Middle Class



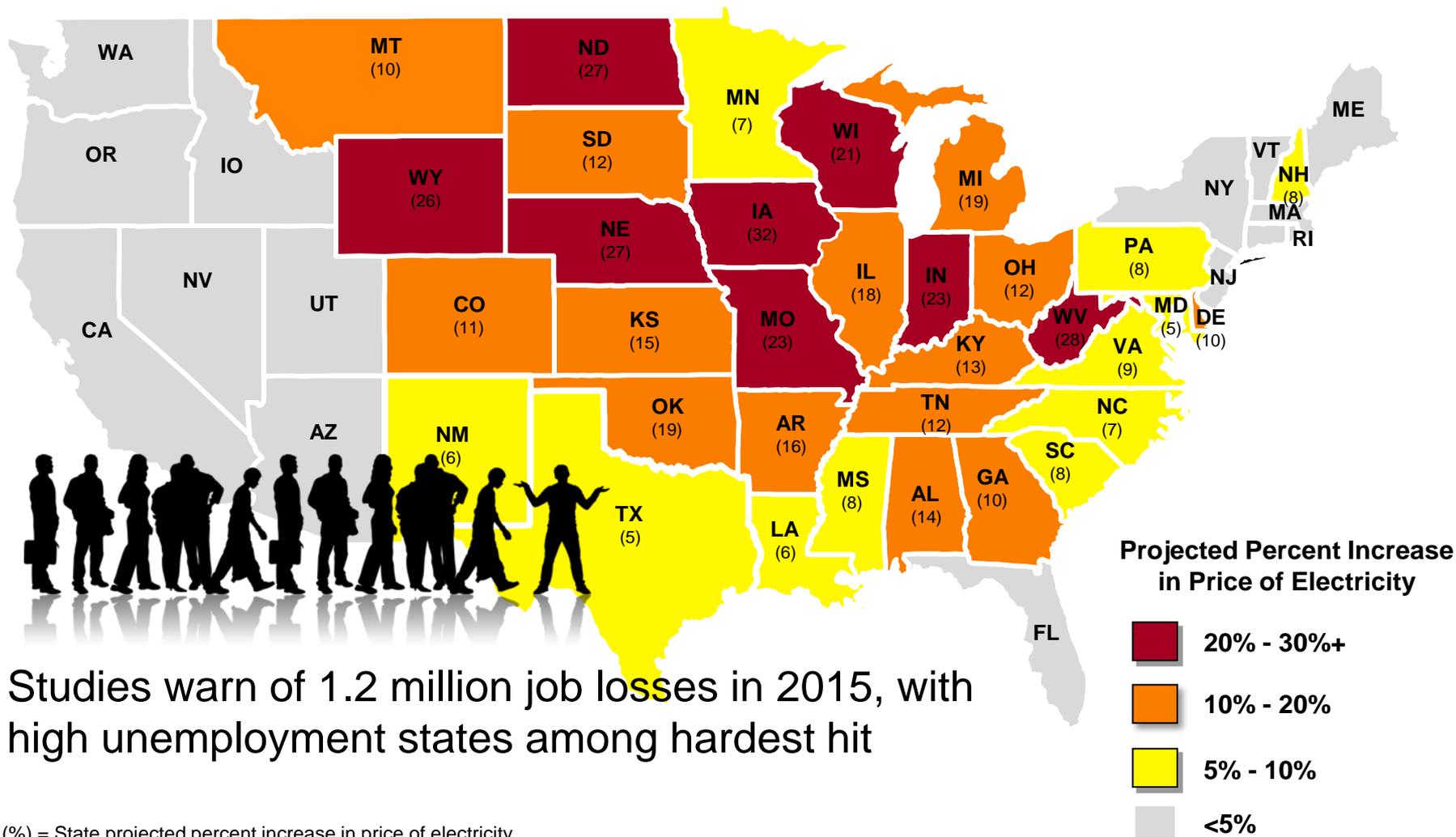
**Some 217 Million Americans – 70%+ – Depend on Low-Cost Coal**



# Growing Recognition that Regulatory Approach Takes Wrong Path



## Regulation Drives Electricity Rate Increases Across Heart of Nation



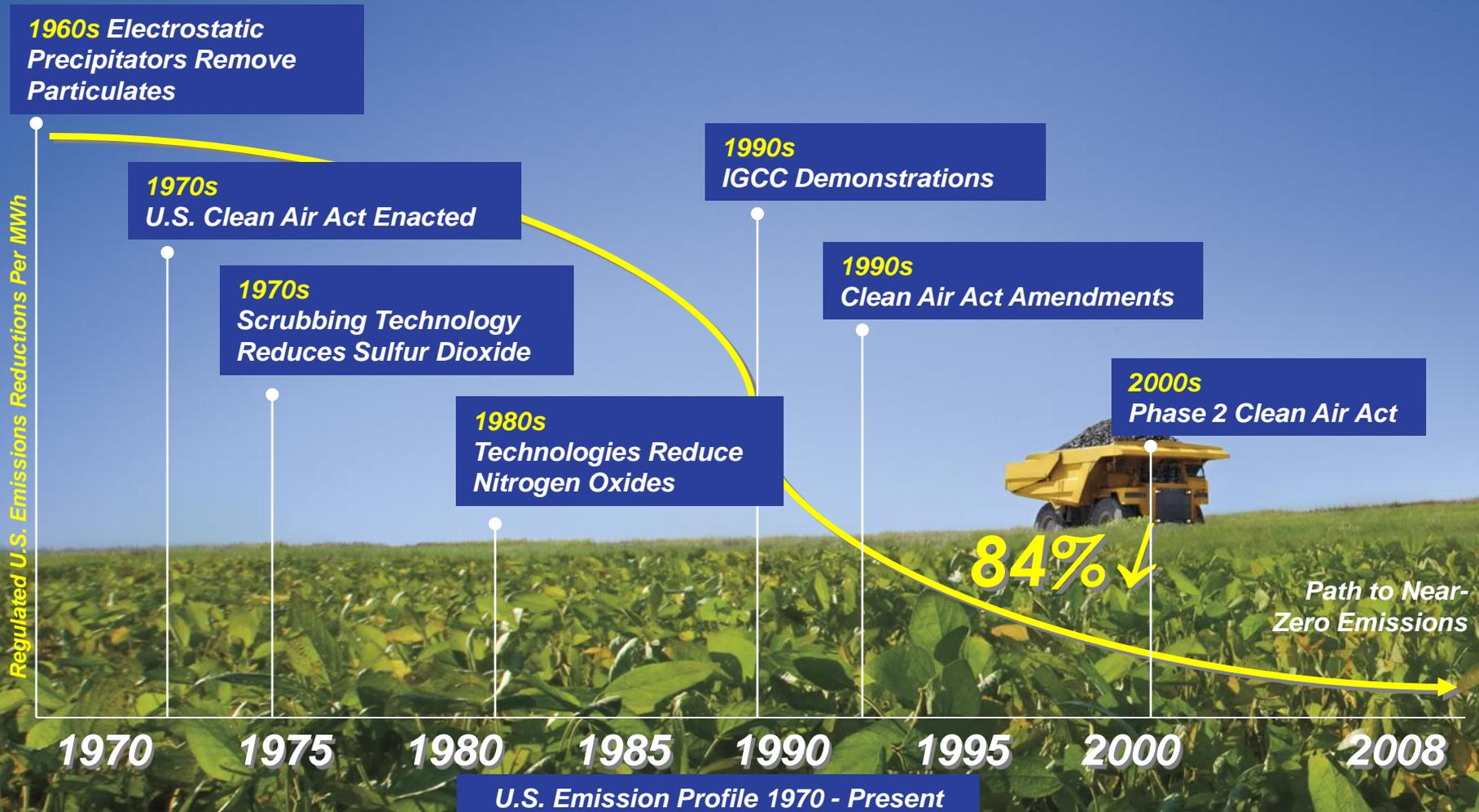
Studies warn of 1.2 million job losses in 2015, with high unemployment states among hardest hit

(%) = State projected percent increase in price of electricity

Source: Burns & McDonnell Analysis (December 2010). Management Information Services, Inc. analysis, January 2011.

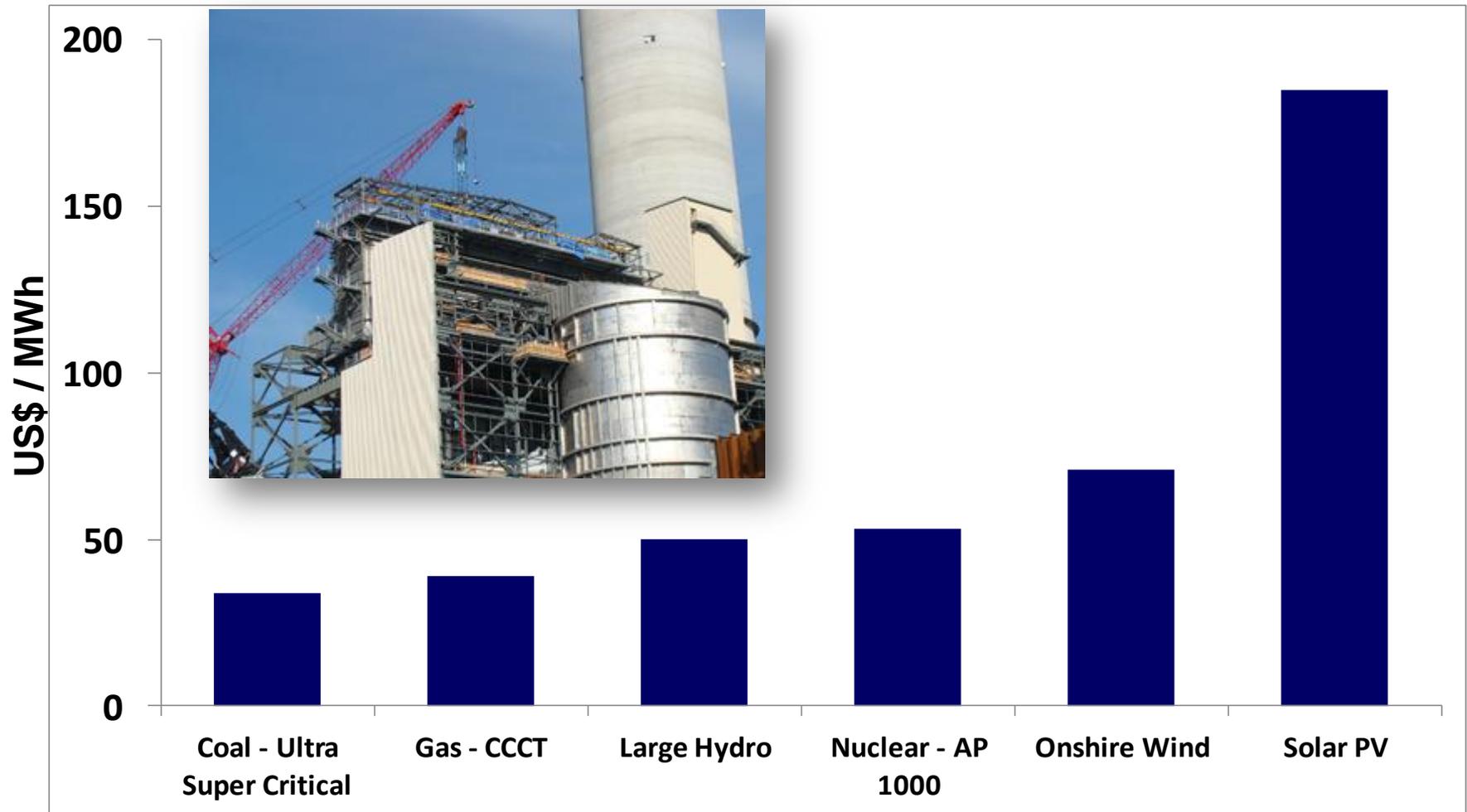
# Technology Works: Proven Green Progress

Since Clean Air Act, Clean Coal Use Triples as Regulated Emissions Decline 80%+



# Supercritical Technology Offers Cost, Environmental Advantage

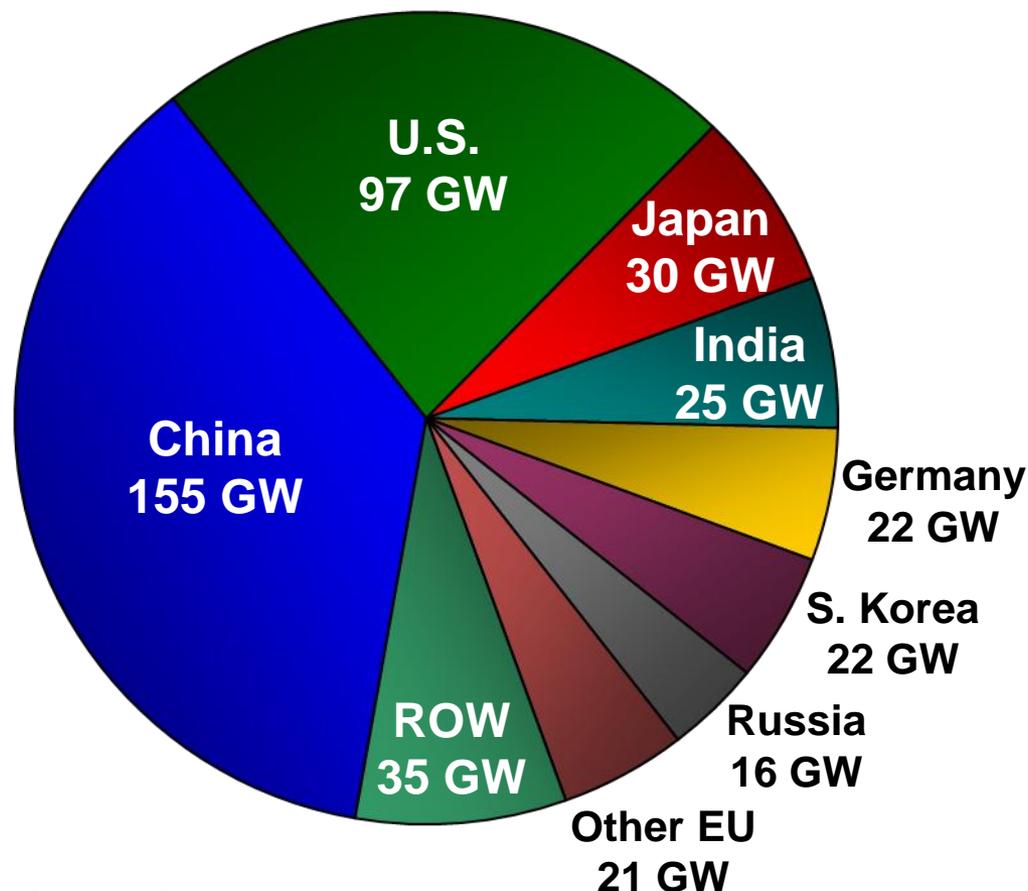
*Technology Reduces CO<sub>2</sub> Emissions Rate 50% Over Oldest Fleet*



# Advanced Generation Vital to Economic and Environmental Goals

***Replacing Older Coal Plants with Supercritical Technology Would Equal Removing the Entire U.S. Auto Fleet from the Road***

***429 GW On Line and Under Construction***



Supercritical and ultrasupercritical operating plants and plants under construction.  
Source: World Bank, 2008 and Peabody analysis.

# Peabody Answers Call: Global Leader in Clean Coal Solutions



- Australia COAL21 Fund
- Global Carbon Capture and Storage Institute
- Consortium for Clean Coal Utilization
- U.S. Department of Energy National Carbon Capture Center
- Coal-to-gas: ConocoPhillips and GreatPoint Energy
- Calera Corp. equity participant; “CO<sub>2</sub> to cement”

# Peabody Plan Would Drive Major Reindustrialization



## 2050 Energy Access



- Eliminate Energy Poverty
- Build Electricity Access for 3.6 Billion People
- Fuel 50% of New Generation with Coal

## Economic Growth



- Replace Older Plants with Supercritical Technology
- Deploy Coal-to-Gas, -Chemicals and -Liquids by 2020
- Achieve \$4.3 Trillion Benefits, 21 Million Jobs During Build

## Environmental Solutions



- Avoid 1.5 Billion Metric Tons of CO<sub>2</sub> Annually
- Develop 100 CCS Projects by 2020
- Commercialize Near-Zero Emissions Technology

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## Green Coal and 21<sup>st</sup> Century Energy Policy

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