



# **U.S. Energy Policy**

## **Where are we headed?**

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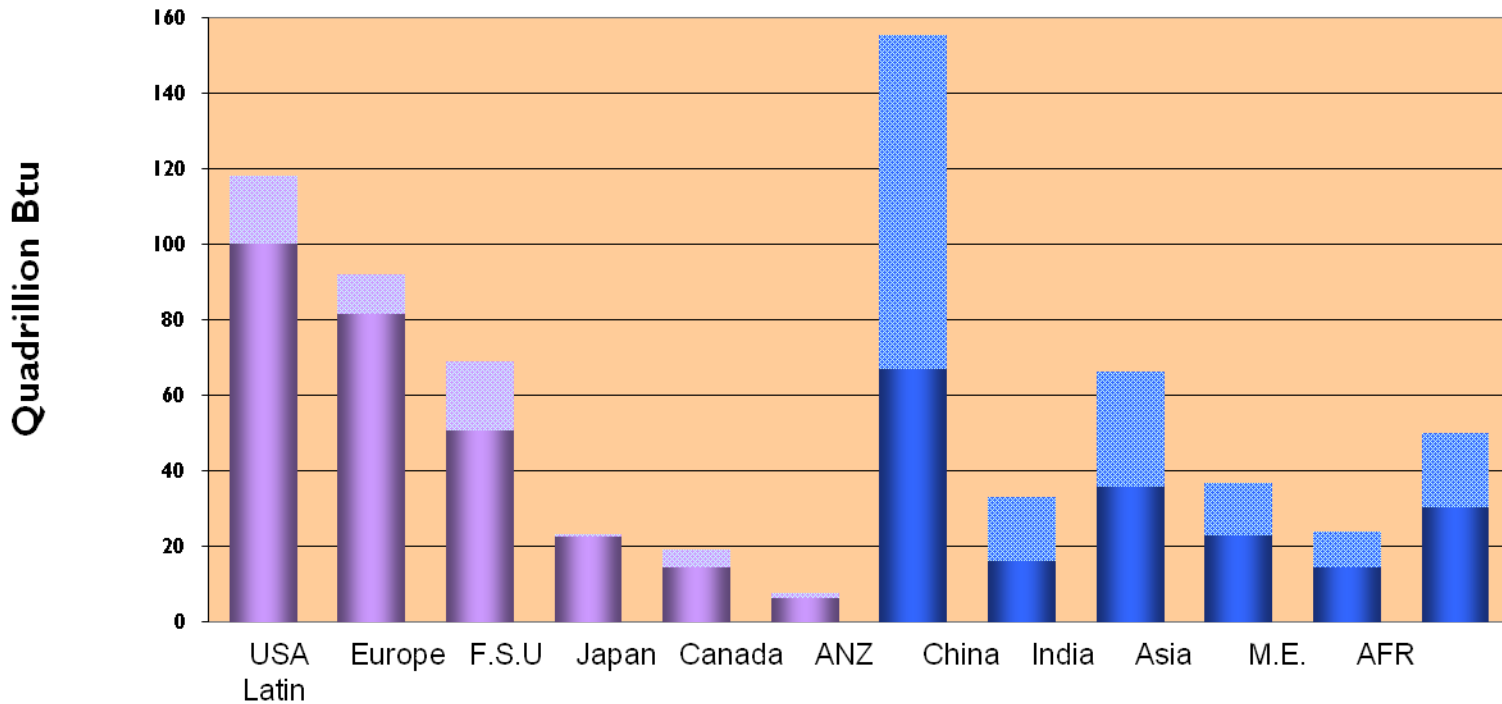
**9 JANUARY 2010**





# Global Energy Demand

## Global Energy Demand by Region: 2005 & 2030



Source: International Energy Agency, 2008.



# The New Energy Reality

*Energy Security is central  
to our national and economic security*

- Demand to increase 40% by 2030
  - ❖ 90% in non-OECD countries
- Electricity demand to increase 76%
- 1.6 billion people without electricity
- \$26 trillion of new investment by 2030 to meet rising demand
- Environmental Realities - over 70% of the current GHG emissions are energy related



# Changing Landscape

## ➤ **Coal (50% of US electricity)**

- ❖ Significant Investment in CCS R&D
- ❖ Producers and consumers face regulatory uncertainty
- ❖ Penalized in climate legislation

## ➤ **Nuclear (20% of US electricity)**

- ❖ Eliminated from stimulus
- ❖ No new loan guarantee and reduced funding
- ❖ Yucca defunded and near term reprocessing suspended
- ❖ No relief from payments into Nuclear Waste Fund

## ➤ **Oil (96% of transportation) and Natural Gas (20% of US electricity)**

- ❖ No action to lease areas no longer under moratoria
- ❖ Pulling Back on new allowable oil, gas and oil shale leasing
- ❖ \$80 Billion in New Taxes on oil and gas companies
- ❖ Significant new natural gas finds: gamechanger?



# Changing Landscape

- **Renewables (1.3% of US electricity from wind and solar)**
  - ❖ Enormous increase in R&D
  - ❖ Renewable Portfolio Mandate (both in the House and Senate)
  - ❖ Production Tax Credits, Manufacturing Credits
  
- **Energy Efficiency**
  - ❖ Smart Grid Investments
  - ❖ Numerous New Appliance Standards
  - ❖ \$19 billion new federal R&D
  - ❖ Weatherization and building codes
  - ❖ New CAFE standards for passenger vehicles



# “Green Tape” Stifling Energy Projects

- Energy sector suffers from a lengthy, unpredictable, and needlessly complex regulatory maze
  
- Activists use regulatory process to delay/halt construction of new energy infrastructure
  - ❖ Federal and state environmental statutes—such as the National Environmental Policy Act
  - ❖ State siting and permitting rules
  - ❖ BANANA - “build absolutely nothing anywhere near anything” mentality
  
- “Green” projects are not immune
  - ❖ Renewable energy projects now being snagged, sued, or blocked in states across the country
  
- Need to streamline siting, permitting, and environmental requirements

**Siting & Permitting  
Requirements Can Delay  
Needed Infrastructure  
Expansion and Upgrades**








**Want “Green Jobs”? Cut the “Green Tape”**

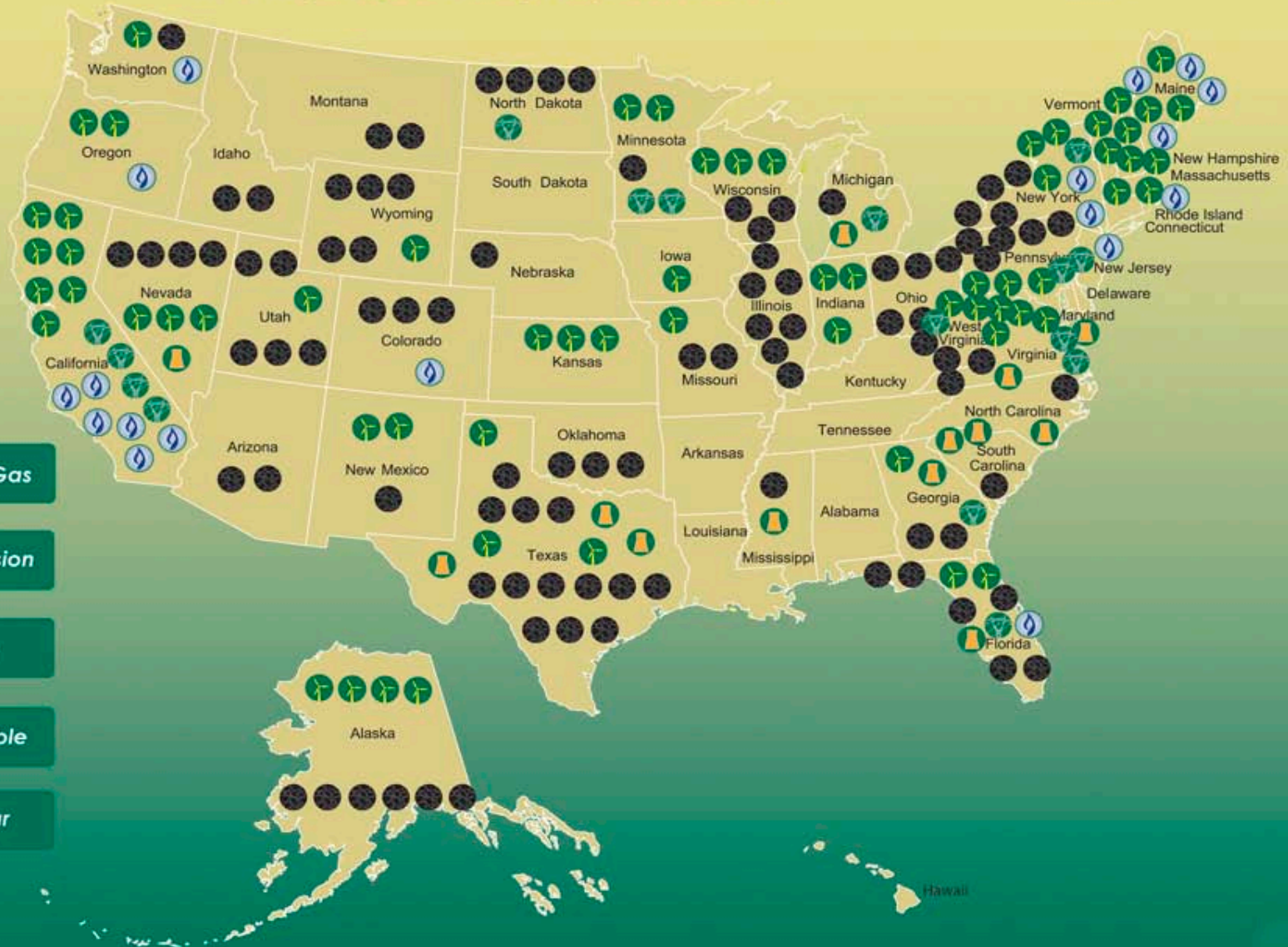


# Project ~~No Project~~

[www.projectnoproject.com](http://www.projectnoproject.com)



-  Natural Gas
-  Transmission
-  Coal
-  Renewable
-  Nuclear





# “Green Tape” in California



- Dozens of applications submitted for new solar and wind facilities in Mojave Desert
- Prospect of legislation to prevent development and delays force several companies to abandon solar and wind projects
- Sen. Feinstein introduces legislation to create two Mojave desert monuments and prevent renewable energy projects on one million desert acres
- California Renewable Energy Mandate
  - 1/3 electricity produced from renewable sources by 2020

"If we cannot put solar power plants  
in the Mojave desert,  
I don't know where the hell we can put it."

California Gov. Arnold Schwarzenegger



# Changing Landscape: Climate Change

- EPA
  - ❖ Endangerment Finding
  - ❖ California Waiver
  - ❖ Mandatory Greenhouse Gas Reporting
- Waxman-Markey Bill
  - ❖ Reduce GHG emissions 17% below 2005 levels by 2020; 83% by 2050
- Senate Hurdles High – Debate Delayed
  - ❖ Sens. Kerry, Graham, and Lieberman
- Copenhagen Accord
  - ❖ New starting point, not legally binding

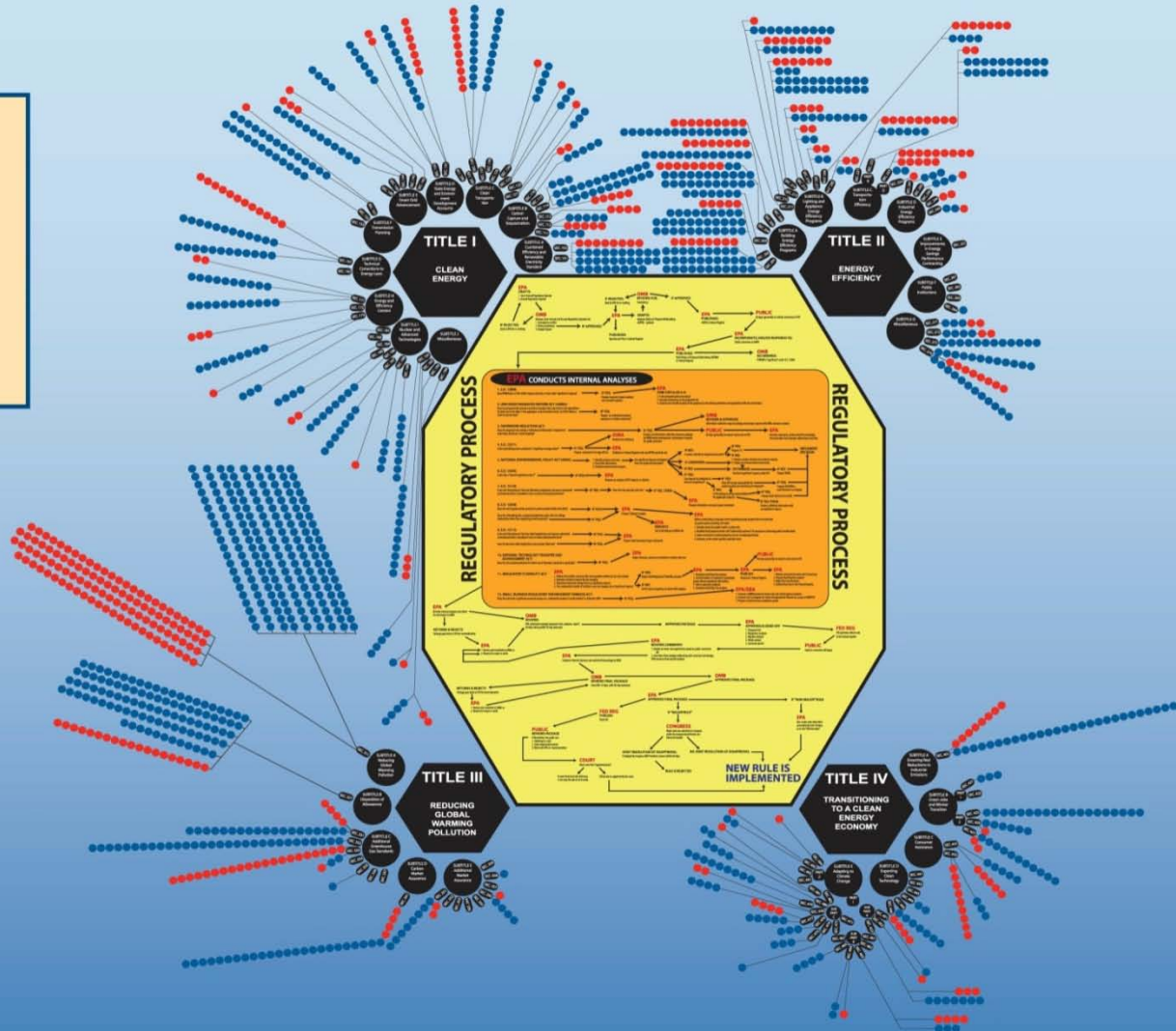


# Impact of Waxman-Markey Legislation

## AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009 (H.R. 2454) **REGULATIONS & MANDATES**

**TOTAL**

- 397
- 1060





# Impact of Waxman-Markey Bill on the U.S.

- According to a May 2009 study released by the National Black Chamber of Commerce and conducted by CRA International, the enactment of H.R. 2454 could result in the following economic impacts:
  - ❖ **Cost of carbon credits/allowances** to reach \$22 per metric ton of CO<sub>2</sub> by 2015, \$46 by 2030, \$124 by 2050. The cost of credits is restrained by availability of international offsets.
  - ❖ **Retail electricity rates would rise** by an estimated 7.3% in 2015, 22% in 2030, and a large amount of 45% in 2050. Retail natural gas rates would rise by 10% in 2015, 16% in 2030, and 34% in 2050. Rate increases above represent artificially lower increases to the extent that utilities return the value of their free allocations under ACES to customers through reductions in fixed charges.
  - ❖ **The cost of using motor fuels would increase** 12 cents per gallon by 2015. After that, the cost will increase 5% (23 cents per gallon) by 2030 and 11% (59 cents per gallon) by 2050
  - ❖ **The United States would face a net reduction in employment** of 2.3 million to 2.7 million jobs in each year of the policy through 2030. These reductions are net of substantial gains in “green jobs.” While all regions of the country would be adversely affected, the West, Oklahoma/Texas and the Mississippi Valley regions would be disproportionately affected.
  - ❖ **In 2015, gross domestic product (GDP) is estimated to be** 1.0% (\$170 billion) less than business-as-usual levels, driven principally by declining consumption. In 2030, GDP is estimated to be roughly 1.3% (\$350 billion) below the baseline level. In 2050, GDP is estimated to be roughly 1.5% (\$730 billion) below the baseline level.



# State Impacts of H.R. 2454

Consumers in red colored states will pay more for electricity to make up for the shortfall in allowances (dollars in millions).

Based on the allowance allocation formula in H.R. 2454 for electricity consumers, the red states will not have enough allowances to cover their emissions from electricity generation. The shortfall in allowances to the red states will lead to higher electricity costs for consumers, the total of which will roughly correlate with the dollar losses noted on the map. For example, Texas electricity consumers will see electricity costs go up by roughly \$1 billion. To make up the shortfall, red states will have to seek high-cost, non-CO2 emitting electricity sources, reduce electricity production and consumption, or purchase allowances from the green states, or purchase domestic and international offsets, likely a combination of the three.



Based on Energy Information Administration (EIA) and Congressional Budget Office (CBO) data. Dollars in millions. Approximate cost to customers in 2012 (at CBO estimate of \$15/ton).

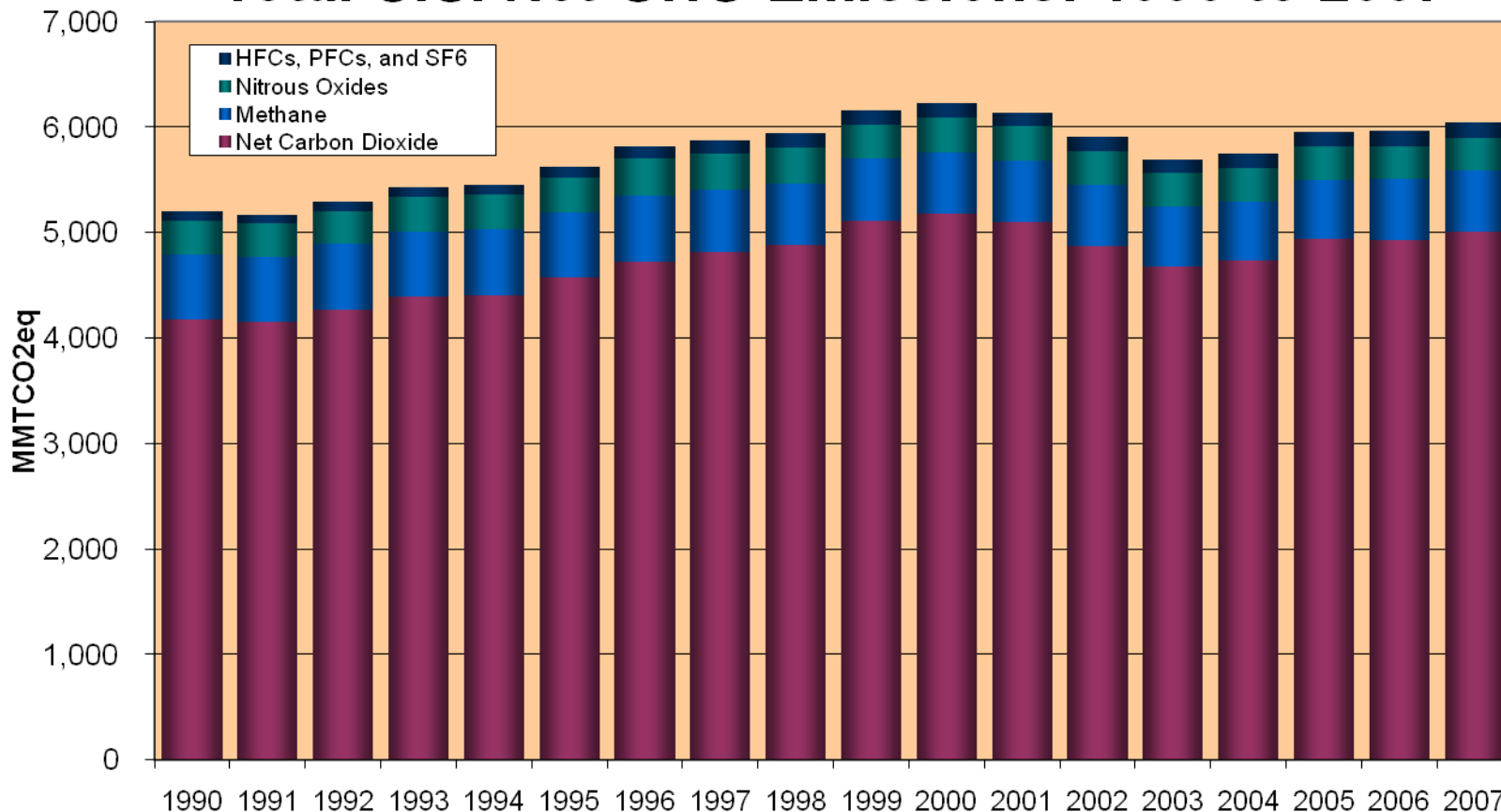


# Where We Are: U.S. GHG Emissions

U.S. *net* GHG gross emissions are about 6 gigatons a year  
Gross GHG emissions about 7 gigatons.

U.S. net GHG emissions were 3% lower in 2007 compared to 2000.

## Total U.S. Net GHG Emissions: 1990 to 2007





# How Big is One Gigaton<sup>1</sup> of CO<sub>2</sub>?

Today's Technology	Actions that Provide 1 Gigaton per Year of Mitigation
Coal-Fired Power Plants	Build 320 “zero-emission” 500-MW coal-fired power plants in lieu of coal-fired plants without CO <sub>2</sub> capture and storage (73% CF)—the equivalent of nearly half U.S. coal-fired nameplate generating capacity
Geologic Sequestration	Construct the equivalent of 1,000 sequestration sites like Norway’s Sleipner project (1.0 MtCO <sub>2</sub> /year)
Nuclear	Build 130 new nuclear power plants, each 1.0-GW in size (in lieu of new coal-fired power plants without CO <sub>2</sub> capture and storage) (90% CF)
Electricity from Landfill Gas Projects	Install 7,700 “typical” landfill gas electricity projects (typical size being 3-MW projects at non-regulated landfills) that collect landfill methane emissions and use them as fuel for electric generation
Efficiency	Deploy 290 million new cars at 40 miles per gallon (mpg) instead of new cars at 20 mpg (12,000 miles per year)
Wind Energy	Install 127,500 wind turbines (2.0-MW each, operating at 0.45 capacity factor) in lieu of coal-fired power plants without CO <sub>2</sub> capture and storage
Solar Photovoltaics	Install 1.7 million acres of solar photovoltaics to supplant coal-fired power plants without CO <sub>2</sub> capture and storage (10% cell DC eff’cy; 1700 kWh/m <sup>2</sup> solar radiance; 90% DC-AC conv. eff’cy).
Biomass Fuels from Plantations	Convert to biomass crop production a barren area about 5.4 times the total land area of Iowa (about 200 million acres)
CO <sub>2</sub> Storage in New Forest.	Convert to new forest a barren area about 2.5 times the total land area of the State of Washington (over 100 million acres) (Assumes Douglas Fir on Pacific Coast)

<sup>1</sup>Gigaton = 1 billion metric tons.

<sup>2</sup> Based on current technology and U.S. data.

Source: Climate Change Technology Program. 2006. *Strategic Plan*. (Numbers updated and converted from carbon equivalents to carbon dioxide.)



# U.S. Energy Strategy: More Realism Needed

## ***“NO SILVER BULLET APPROACH”***

- Recognize role for nuclear and clean coal
- Support sustainable policy for renewable energy
- Advance new alternative transportation fuel options that do not conflict with rising food demands
- Increase domestic oil and gas
- Modernize our infrastructure
- Exert authority to get beyond NOPE syndrome (less burdensome regulation)
- Invest in technology solutions and our intellectual foundation for innovation



# Road Ahead: Clouds on the Horizon

- America needs more not fewer options
  - ❖ American energy = jobs, technology, and industries
- Growing gap between Public and Policymakers
  - ❖ Public needs better informed debate on costs and benefits of proposed policies
- Need certainty to unlock projects and capital
- Role of private sector vs. public sector
- Challenges will grow internationally – will the U.S. counter or shift in power?

**American competitiveness depends on affordable energy and predictable investment climate.**