

# Climate-Friendly Technologies – A U.S. Priority

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**U.S. Embassy, Paris**  
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# Climate Change – We Have A Common, Shared Objective ...

The U.S. and more than 180 Other Countries share the UNFCCC's *Ultimate Objective*:

***“ ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system ...***

***... within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.”***

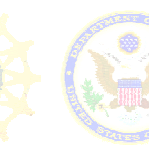
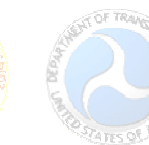
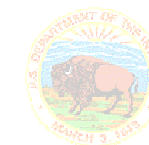
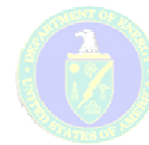


# The U.S. is Committed, With Climate Change Policy and Programs

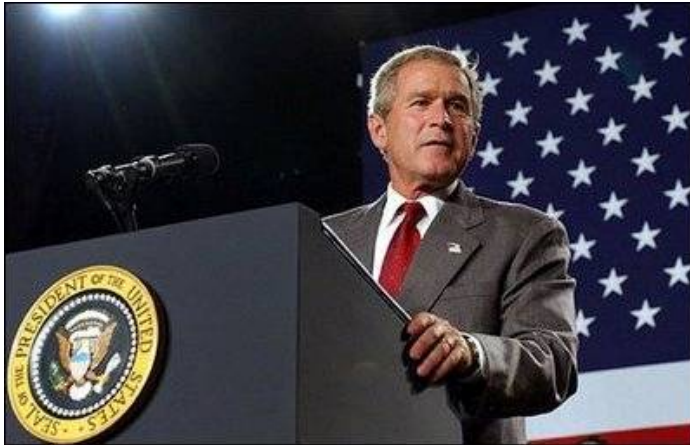
- **Presidential Leadership**
- **Reorganization of Fed. Gov't, Now With Cabinet-Level Engagement**
- **Near-Term Actions**
- **Tax Incentives for Invest's (\$3 B/Y)**
- **\$4+ Billion / Year In Federal S&T**
  - **Science to Inform Policy**
  - **Technology to Facilitate Action**
- **International Initiatives**
- **Pragmatic, Deliberate Approach**
  - **Science, Innovation, Markets**
- **Avoids Failed Strategies of the Past**



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# Presidential Leadership . . .



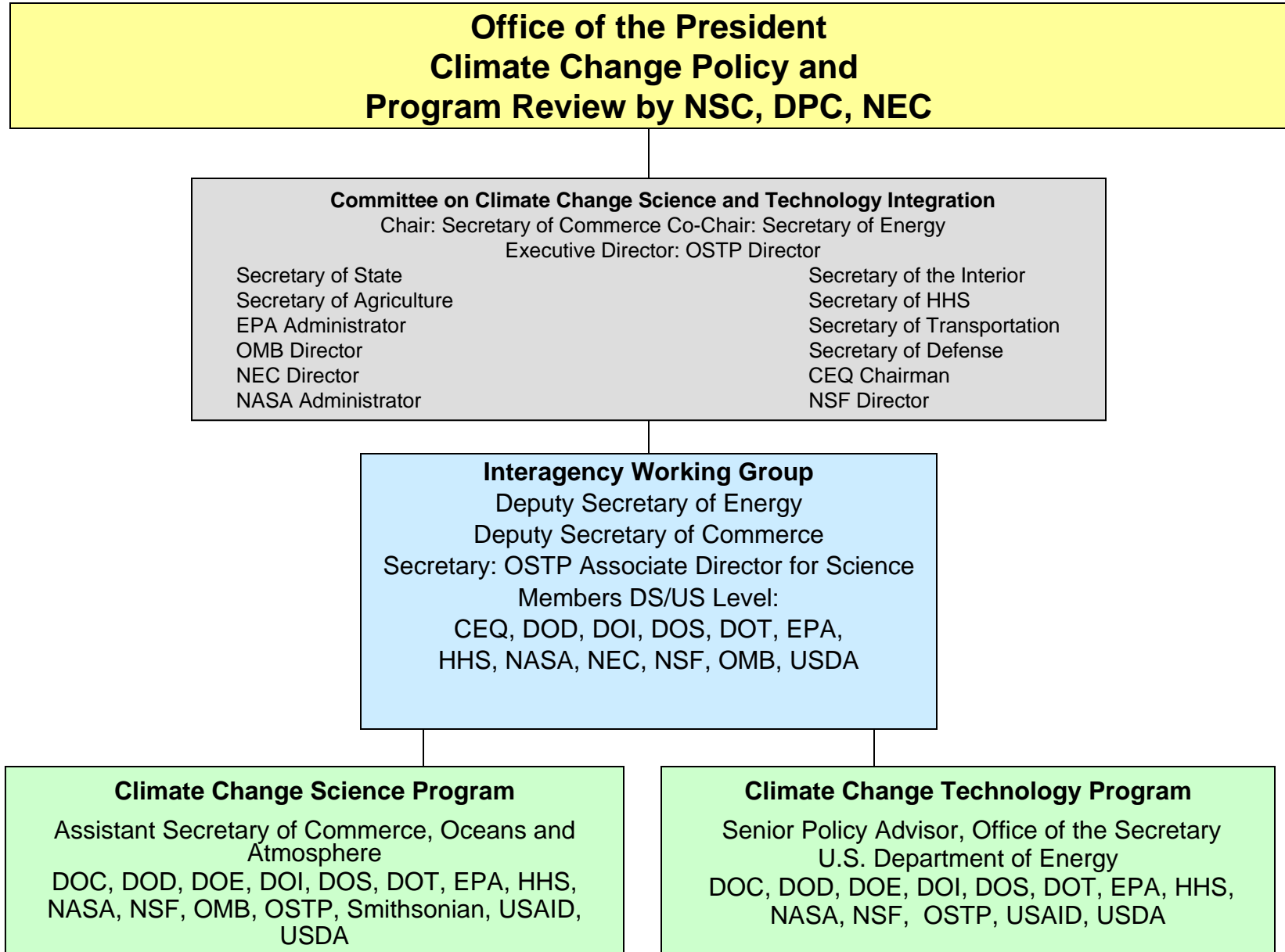
**“I reaffirm America’s commitment to the United Nations Framework Convention and its central goal, to stabilize atmospheric greenhouse gas concentrations at a level that will prevent dangerous human interference with the climate.”**

**“(We will) set America on a path to slow the growth of our greenhouse gas emissions and, as science justifies, to stop and then reverse the growth of emissions.”**

- President George W. Bush  
February 14, 2002



# Cabinet-Level Engagement



# Near-Term Actions . . .

- **Voluntary Programs**
  - **Climate VISION (www.climatevision.gov)**
  - **Climate Leaders (www.epa.gov/climateleaders)**
  - **SmartWay Transport Partnership (www.epa.gov/smartway)**
  - **Voluntary Reporting of Emissions Reductions, EPACT 1605(b)**
- **Incentives for Investment**
  - **Tax incentives for Renewable Energy, Hybrids, Deployment Partnerships**
  - **USDA Incentives for Sequestration**
  - **USAID and Global Environmental Fund Funding**
  - **Tropical Forest Conservation**
- **Rules and Regulations**
  - **Fuel Economy Increase for Light Trucks**
  - **Non-road Diesel Rule**
  - **Interstate Air Quality Rule**
  - **Initiative Against Illegal Logging**

White House Climate Change Fact Sheet website:  
<http://www.whitehouse.gov/news/releases/2003/09/20030930-4.html>

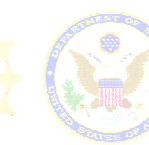
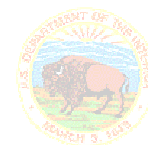


# Tax Incentives for Investment . . .

## Nearly \$4 Billion/Year in Tax Incentives

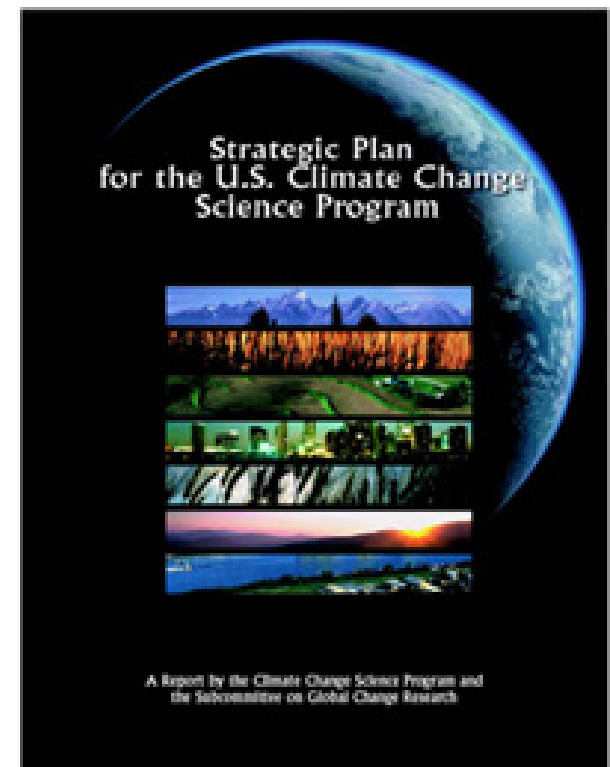
## \$M / Year

• Renewable Energy Production Credits	355
• Residential Solar Energy Systems (Tax Credit)	10
• Hybrid and Fuel Cell Vehicles (Tax Credit)	316
• Industry for Landfill Gas and Combined Heat and Power	133
• Biofuels, Coal Bed Methane (Production Credit)	1,000
• Biomass Ethanol (Exemption from Excise Taxes)	1,100
• Hydroelectric, Biomass Elec. (Excl. of Interest on Bonds)	100
• Clean Fuel Cars, Truck and Refueling Stations	50
• Investment Tax Credits for Solar, Geothermal Facilities	50



# Science -- Seeking Better Knowledge and Understanding . . .

- **U.S. Climate Change Science Program**
  - An Ambitious Program of Research
  - \$2 Billion / Year
- **Climate Science Goals**
  1. Improve Knowledge of Climate and Environment
  2. Improve Quantification of Forces Driving Changes to Climate
  3. Reduce Uncertainty in Projections of Future Climate Changes
  4. Understand Sensitivity and Adaptability of Natural and Manmade Ecosystems
  5. Explore Uses and Limits of Managing Risks and Opportunities



[www.climatescience.gov](http://www.climatescience.gov)





# Technology -- Seeking Better and More Cost-Effective Solutions . . .

- **U.S. Climate Change Technology Program**
  - **An Ambitious Program of RDD&D**
  - **\$3 Billion / Year**
- **Climate Technology Goals:**
  1. **Reduce Emissions From Energy End Use & Infrastructure**
  2. **Reduce Emissions From Energy Supply**
  3. **Advance CO<sub>2</sub> Capture & Sequestration**
  4. **Reduce Emissions From Non-CO<sub>2</sub> Gases**
  5. **Enhancing Measurement & Monitoring**
  6. **Fortifying Foundations**



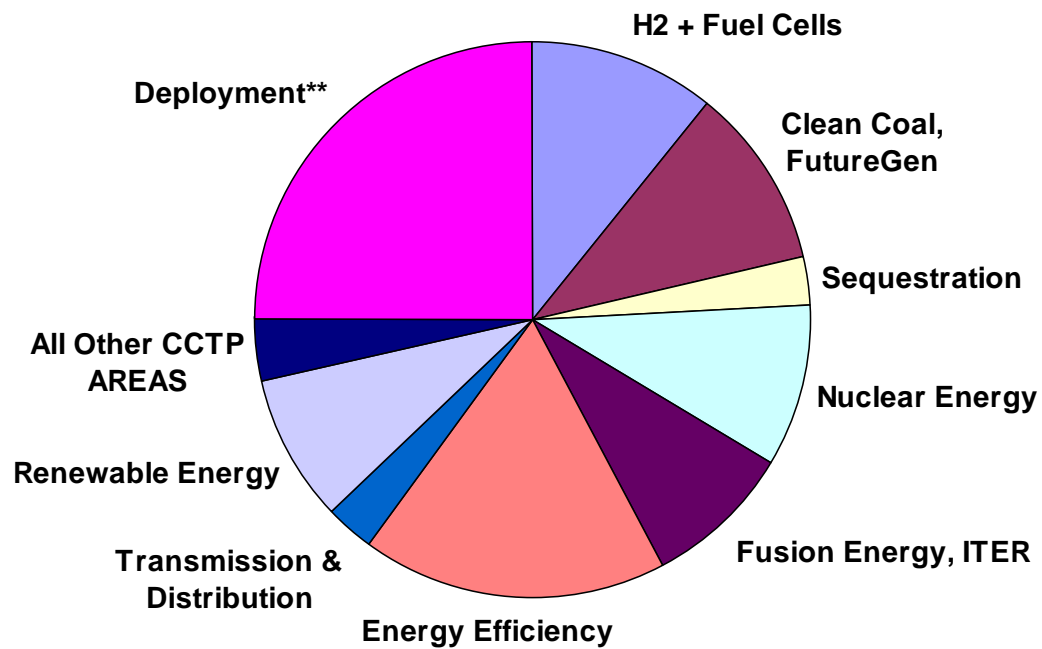
[www.climatetechnology.gov](http://www.climatetechnology.gov)



# Climate-Friendly Technologies

## Percent of CCTP FY05 Budget Request\*

Total Multi-Agency  
FY05 Budget Request:  
\$ 3,135 Million



\* Includes: RD&D + Deployment

\*\* Deployment is 92% Energy Efficiency 10



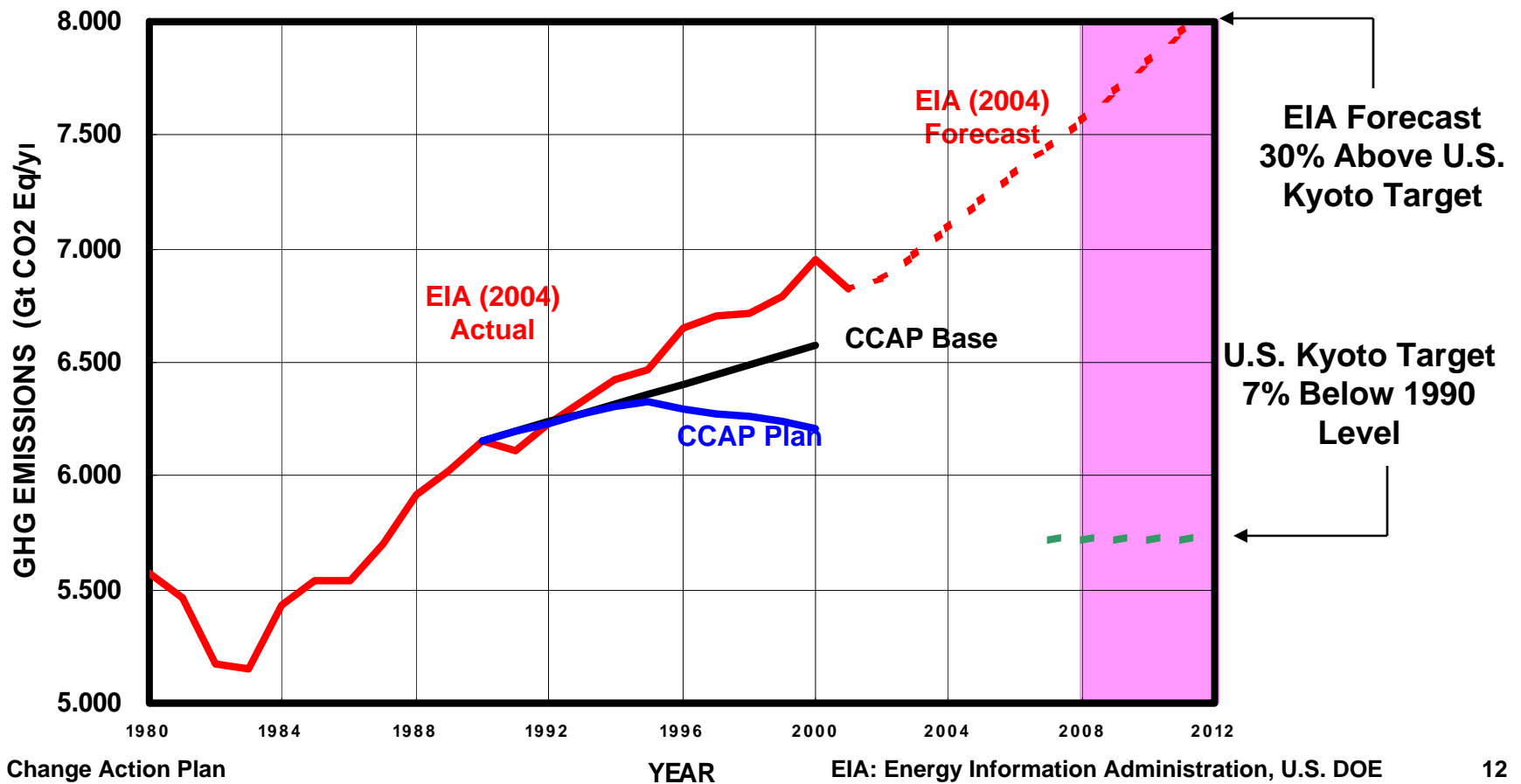
# International Technology Initiatives . . .

- | <b>International Technology Initiatives</b>   | <b><u>Countries</u></b> |
|---|-------------------------|
| – International Partnership for a Hydrogen Economy:   | 14 + EU                 |
| – Generation IV International Forum:  | 10 + Euratom            |
| – International Methane to Markets Partnership:   | 8                       |
| – Carbon Sequestration Leadership Forum:  | 16 + EC                 |
| – ITER:   | 6                       |
| <b>International Science Initiatives</b>  |                         |
| – Global Earth Observation System of Systems:   | 50 + EC                 |
| – Fluxnet (AmeriFlux, CarboEurope, AsiaFlux, KoFlux, OzFlux, Fluxnet-Canada, ChinaFLUX, Others) |                         |
| <b>Complemented by Bilateral Agreements for CC Tech</b>   | <b>14</b>               |



# U.S. Lessons Learned From the 1990's ...

## CCAP\* GHG EMISSION PROJECTIONS (U.S.)



# A Path Forward Involves ...

- Continued Leadership from the Top
- Near-Term Actions – Voluntary, Augmented by Financial Incentives
- Progress in Climate Change Science Will:
  - Reduce Uncertainty and Illuminate Risks and Benefits
  - Add Relevance and Specificity to Assist Decision-Makers
- Progress in Climate Change Technology Will:
  - Create New, Better Cheaper Solutions
  - Facilitate Means for Change and Smooth Transition
- Expanded Opportunities for Cooperation Among:
  - Business, Industry, States and NGOs
  - Research Institutions and Academia
  - Cooperative Frameworks Abroad
- Building a Bridge to the Future with Broadened Support



# Technology Scenarios Glimpse the Future

## Technology Scenario #1: “Closing the Loop on Carbon”

*Advanced Coal, Gasification, Carbon Capture, Sequestration, and Hydrogen Technologies Augment the Standard Suite of Technologies*

## Technology Scenario #2: “A New Energy Backbone”

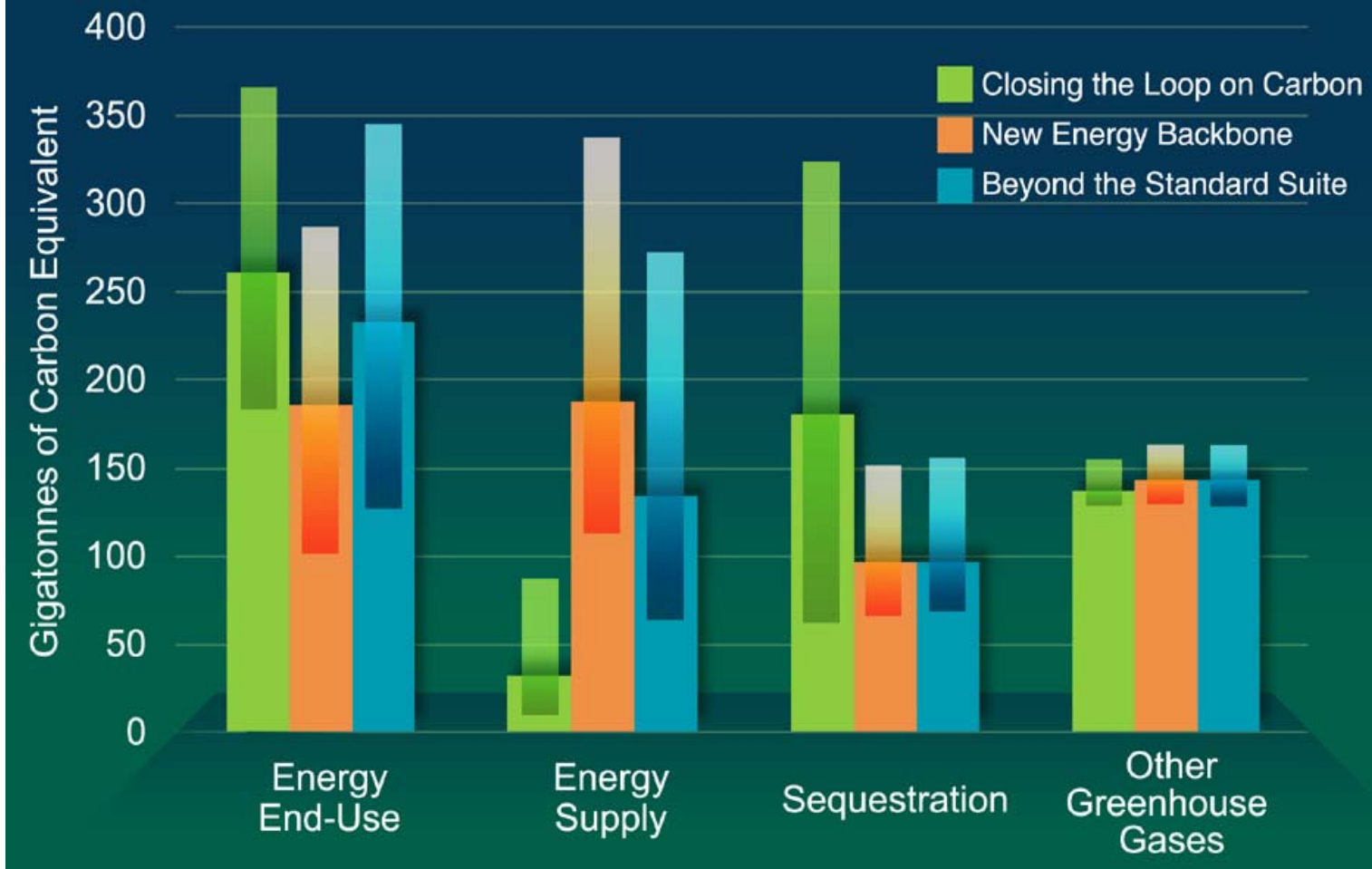
*Technological Advances in Renewable Energy and Nuclear Power Give Rise New Competitive Realities, Reducing Dominant Role of Fossil Fuels*

## Technology Scenario #3: “Beyond the Standard Suite”

*Novel and Advanced Technologies (e.g., Fusion, Large Scale Solar, and Bio-X) Emerge to Play Major Roles, Complementing the Standard Suite.*



# Potential Contributions to Emissions Reduction



Source: Placet M; Humphreys, KK; Mahasenan, NM. *Climate Change Technology Scenarios: Energy, Emissions and Economic Implications*. Pacific Northwest National Laboratory, PNL-14800, August 2004. Available at: <http://www.pnl.gov/energy/climate/technology.stm>

# Climate Friendly Technologies

