Can Farmers Be Suppliers in a Market for Carbon Credits?

USDA Agricultural Outlook Forum 2004

Trading Environmental Credits

Crystal Gateway Marriott
Arlington, Virginia
February 20, 2004

Zach Willey

What Is Environmental Defense?

- NGO, NYC headquarters
- 400,000+ members
- 200 scientists, economists, attorneys and other professionals
- Projects in USA, Europe, Russia, China, Cuba, the Caribbean, Latin America, Africa & Antarctica
- $44.6 M 2003 budget

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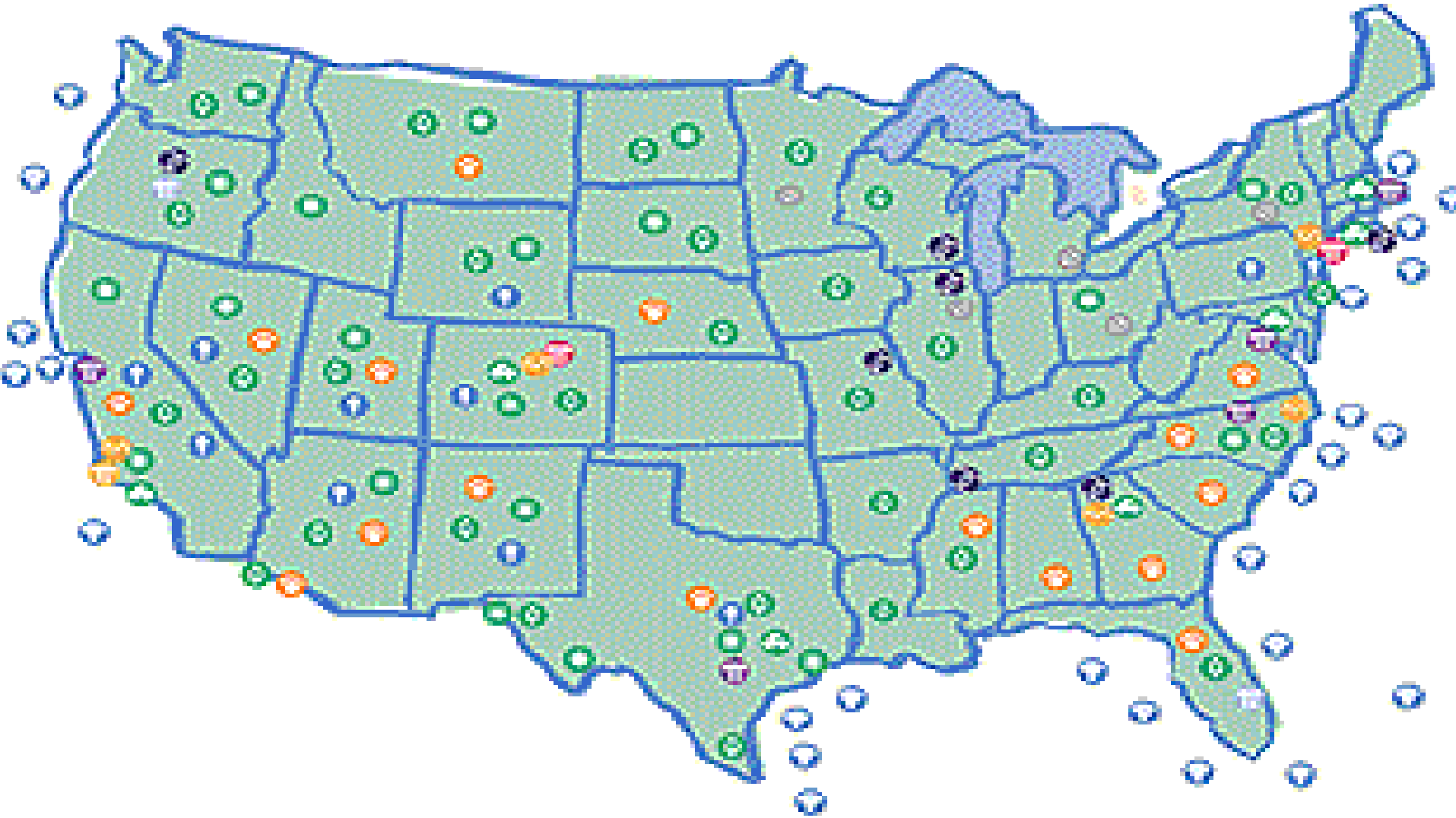
In the United States



PNDSA-Entergy Trade

Agricultural GHG Offset Project

- 2000 -- PNDSA-EnvDef MOA =>

PNDSA CO_2 sell offer sheet

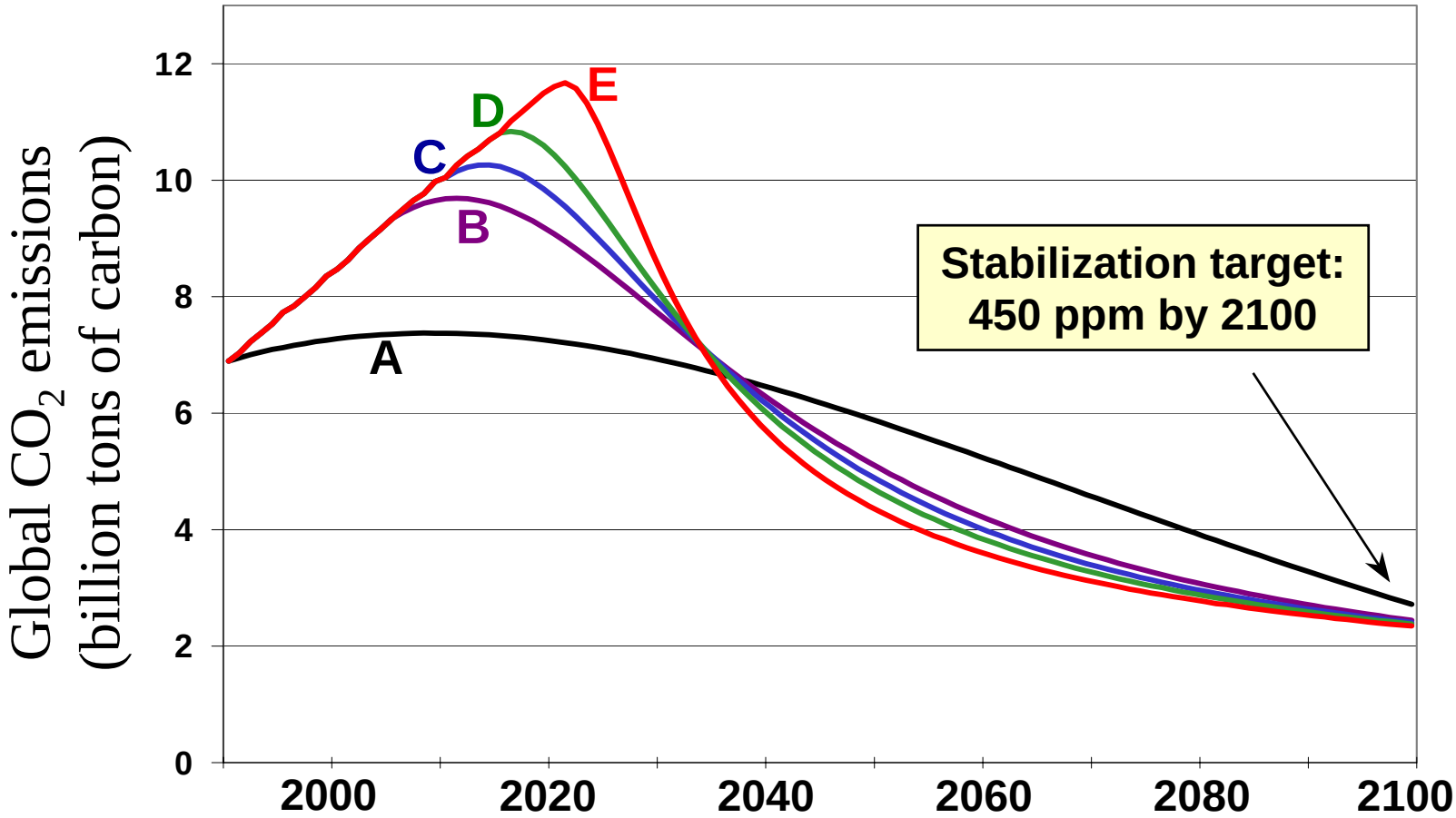
- 2001 -- Entergy member of EnvDef PCA =>

interest in PNDSA CO_2 sell offer

- 2002 -- PNDSA-Entergy GHG offset trade =>

soil carbon leased; CO_2 emissions reductions sold

The Time Window for Effective Reductions is Narrow



A - Reductions begin 1990, gradual, at steepest a 2% annual decline by 2080

B - Reductions delayed until 2005, decline of 2%/year beginning not later than 2035

C - Reductions delayed until 2010, decline of 2.5%/year beginning not later than 2030

D - Reductions delayed until 2015, decline of 3.0%/year beginning not later than 2028

E - Reductions delayed until 2020, decline of nearly 5%/year beginning not later than 2025

Terrestrial GHG Offsets & U.S. Energy

- ***U.S. energy situation***:
  - **High demand growth**
  - **Limited "non- CO_2" supply options**
  - **CO_2 removal at the stack expensive**
  - **Regional air pollution "non-attainment" constraints**
- ***Potential of terrestrial carbon & GHG offsets***:
  - **"Bridge" to lower CO_2 emission future**
  - **Cost-effective compared to CO_2 stack removal**
  - **Ecological co-benefits -- water quality, habitat**
  - **GHG market => supply of GHG offsets**

Terrestrial Carbon Sequestration Projects are Diverse

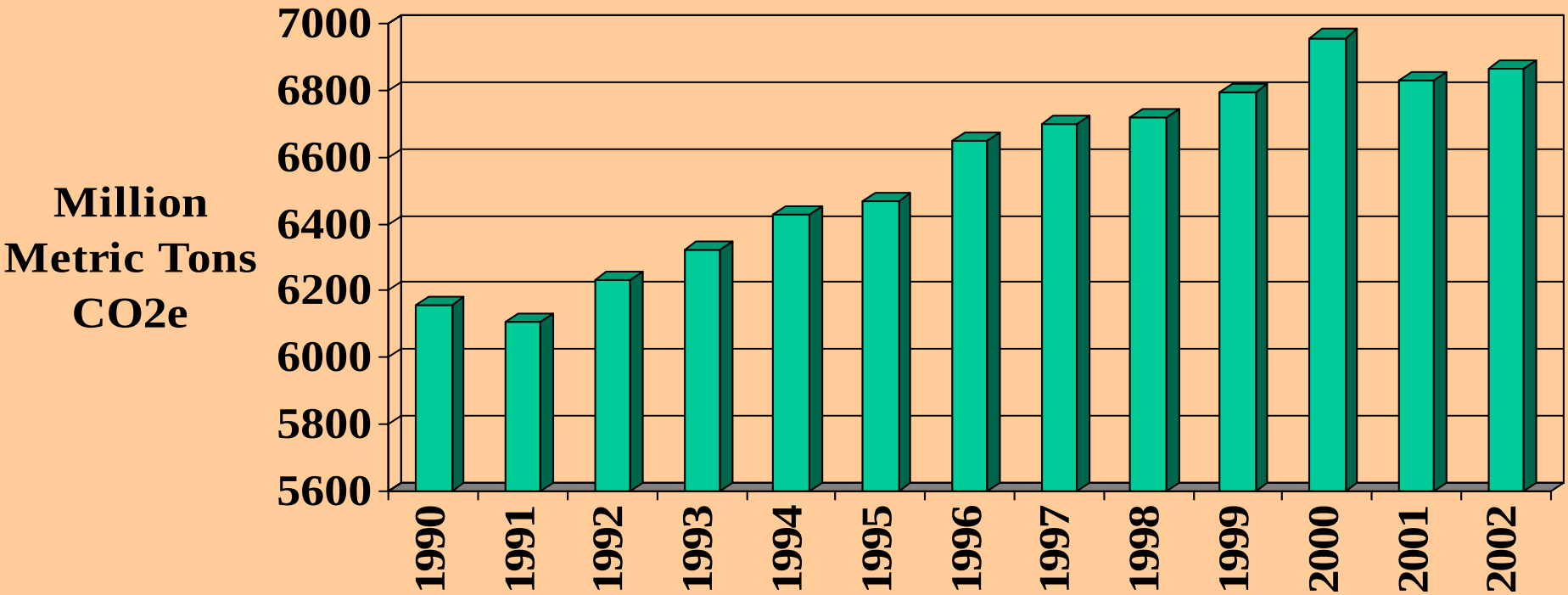
- Reforestation
- Avoided deforestation
- Agricultural soil carbon
- Grasslands
- Riparian zones & wetlands

Carbon Sequestration Environmental Co-Benefits

- Water quality, wildlife habitat, soil conservation
- Markets often fail to value such services
- Valuing carbon leverages conservation resources
- Valuing carbon is positive
  for most ecosystems

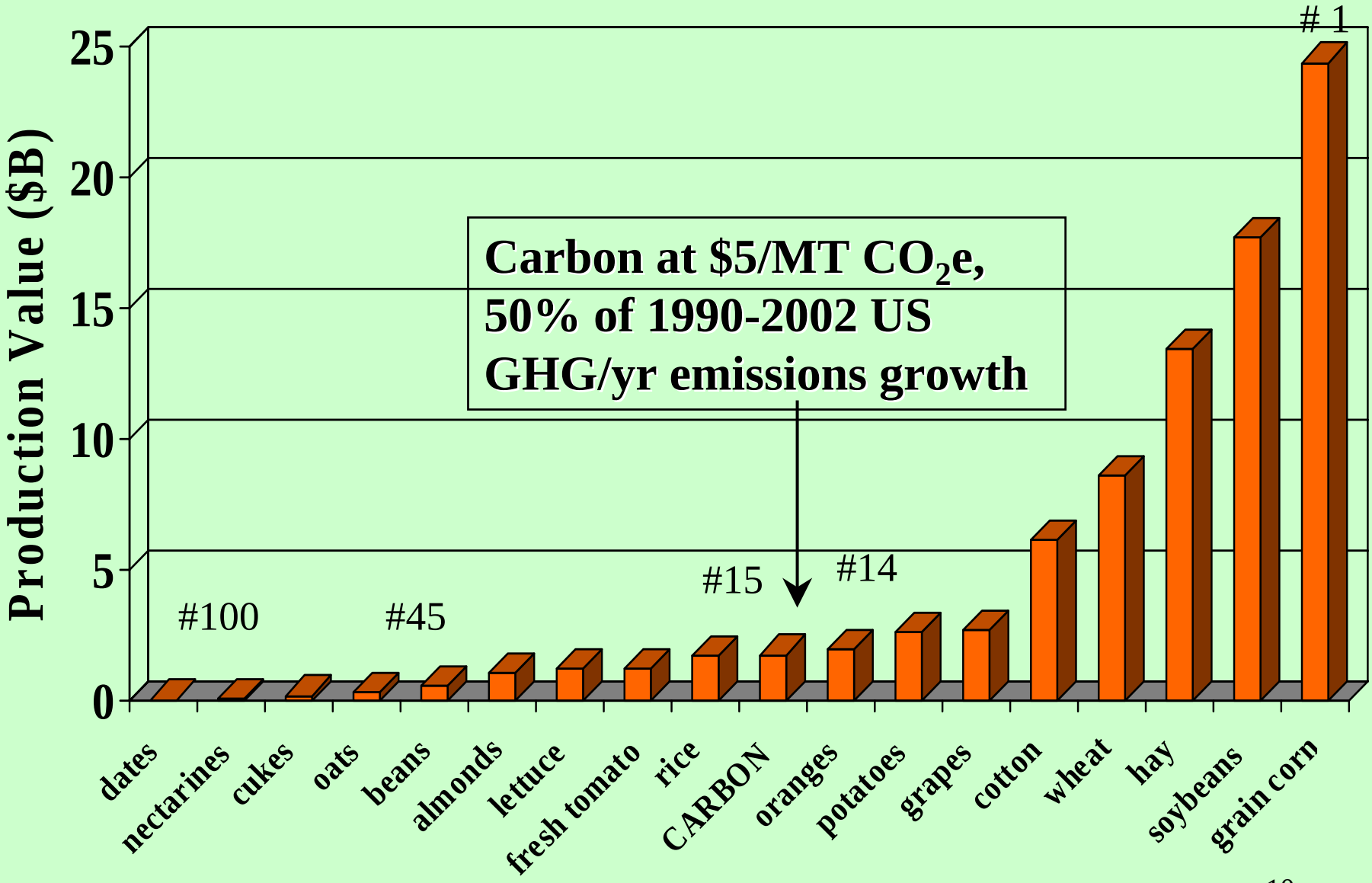
U.S. Emissions of Greenhouse Gases 1990-2002

Based on Global Warming Potentials



[Source: USDOE, 2003]

Illustrative Ranking of Carbon as a Crop in U.S.

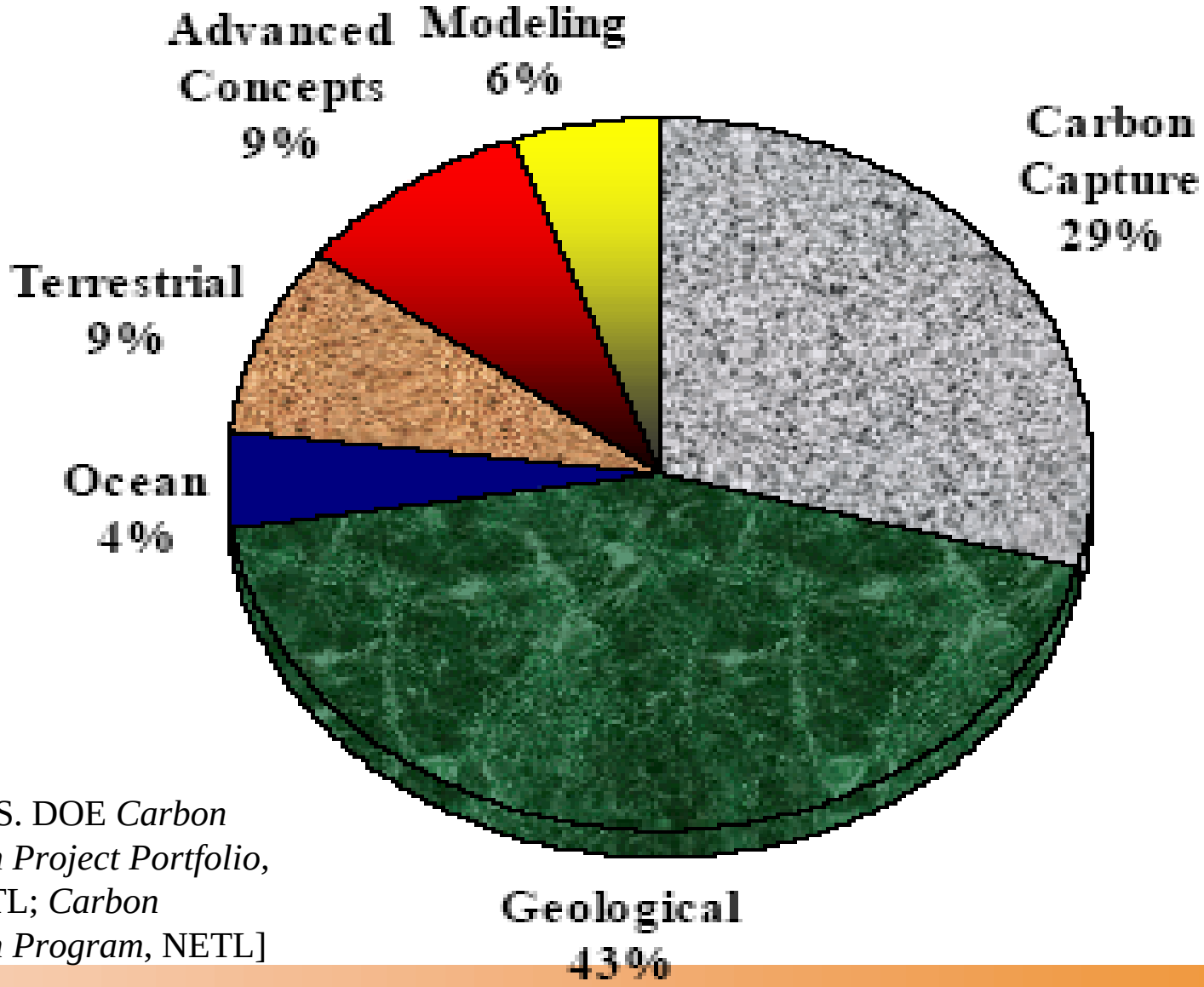


[Source: USDA - National Agricultural Statistics Service – US Crop Rankings - 1997 Production Year Ranking Based on Value of Production]

GHG Reductions/Offsets Alternative Investment Options Electric Power Sector

- Fuel Switch from Coal to Natural Gas
- Heat Rate Improvements
- Biomass Co-Firing
- T and D Efficiency Improvements
- Environmental Dispatch
- Demand Side Management
- Install Renewable Generation
- Landfill Methane
- Buy “Green Tags”
- Biological Sequestration
- EA Market
- Removal/Disposal

DOE Carbon Sequestration R&D Program



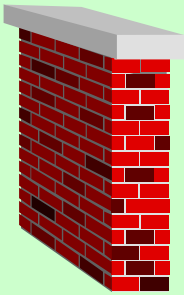
[Sources: U.S. DOE *Carbon Sequestration Project Portfolio, FY2002*, NETL; *Carbon Sequestration Program*, NETL]

*Estimated Number of U.S. Forest & Agricultural GHG Offset Projects (thru 2002)**

Type	Number Projects
Reforestation	30
Forest Conservation	7
Soil Conservation	5
Urban Forestry	2
Forest Management	3
Total	47

* Report to Environmental Defense, Trexler & Associates, Feb 2003

Supply-Side Barriers to Ag Soil Carbon as GHG Offsets in the U.S.



- **Definitional standards** – measurement precision, baselines, additionality, leakage, permanence
- **Measurement & verification** service sectors not formulated
- **Qualified aggregators** not readily available
- **Producers not familiar** with soil carbon offsets
- **Producers adverse** to long-term offset sales contracts

Carbon Sequestration & Terrestrial GHG Offsets Scientific Committee on "Gold Standards" for Quantification & Accounting

Field Manual Project -- 2004

- Committee of independent university scientists
- Develop & publish manual for field evaluation of prospective terrestrial GHG offset projects
- Staffed by Environmental Defense, consulting scientists, & peer reviewers
- Publication by university press in late 2004/early 2005
- Agricultural cropping, forests, range & grass lands, livestock management, wetlands

Verification & Certification of GHG Offsets

- **Verification** – confirmation using objective data that reported GHG offsets accurately reflects actual GHG offsets
- **Certification** – procedure for accredited verifier to give written assurance that GHG offsets conform to specified requirements of an accrediting agency

Agricultural GHG Offset Supplies --

Changing Practices Can Produce in 2 Ways

***Reduce Direct GHG Emissions*:**

- Precision **nitrogen fertilizer use** reduces N_2O and CO_2
- **Fuel use** reductions lower CO_2 emissions
- Changes in **livestock management** reduce CH_4
- **Biofuel** reduces use of CO_2-intensive fossil fuels

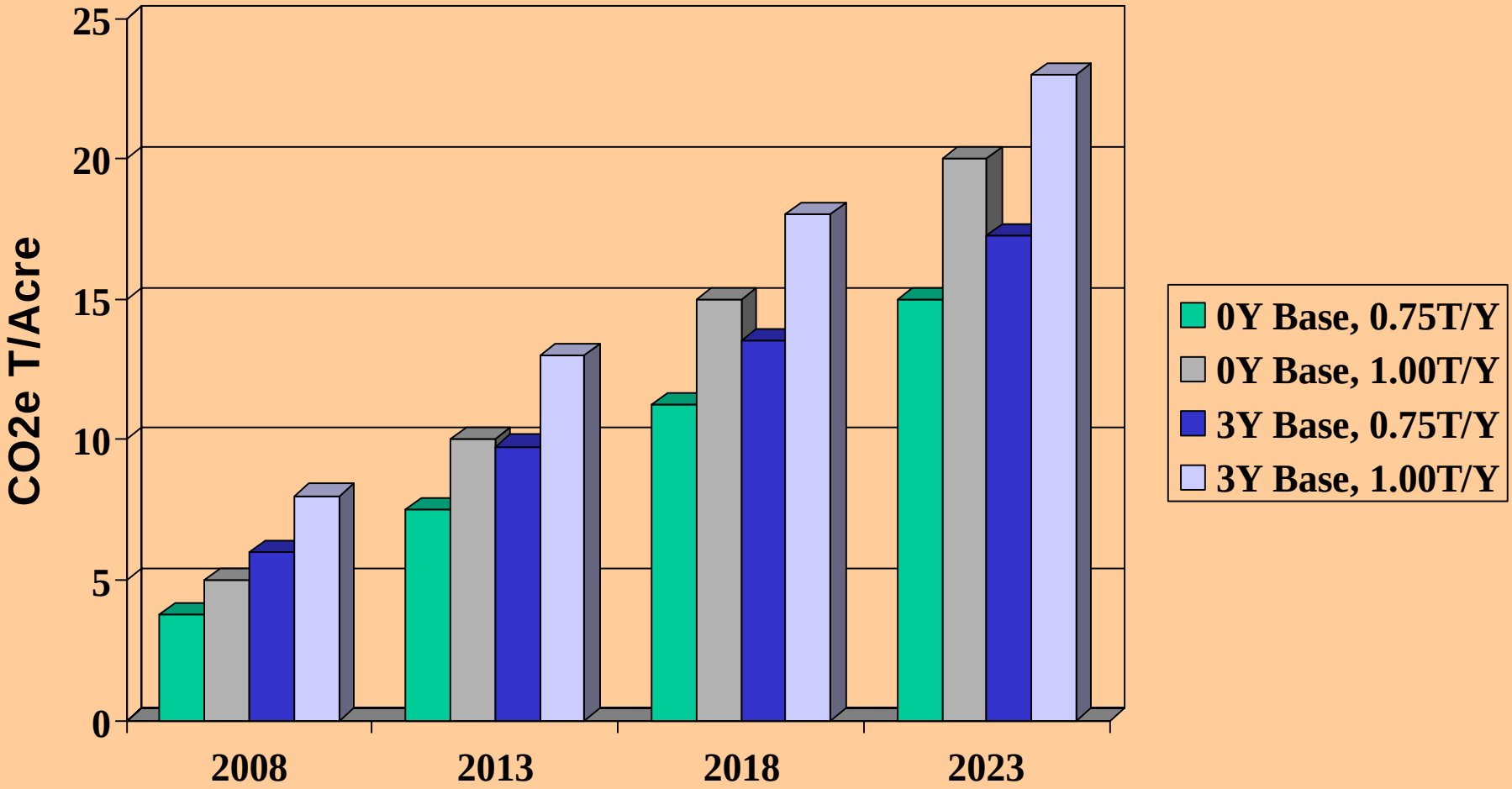
Sequester Carbon:

- No or low **tillage**
- Diversified **rotations**
- Winter **cover crops**
- No summer **fallow**
- Change **soil inputs**
- Improved **grazing** practices
- Vegetation **buffers**
- **Convert** marginal agricultural land to grassland or forest

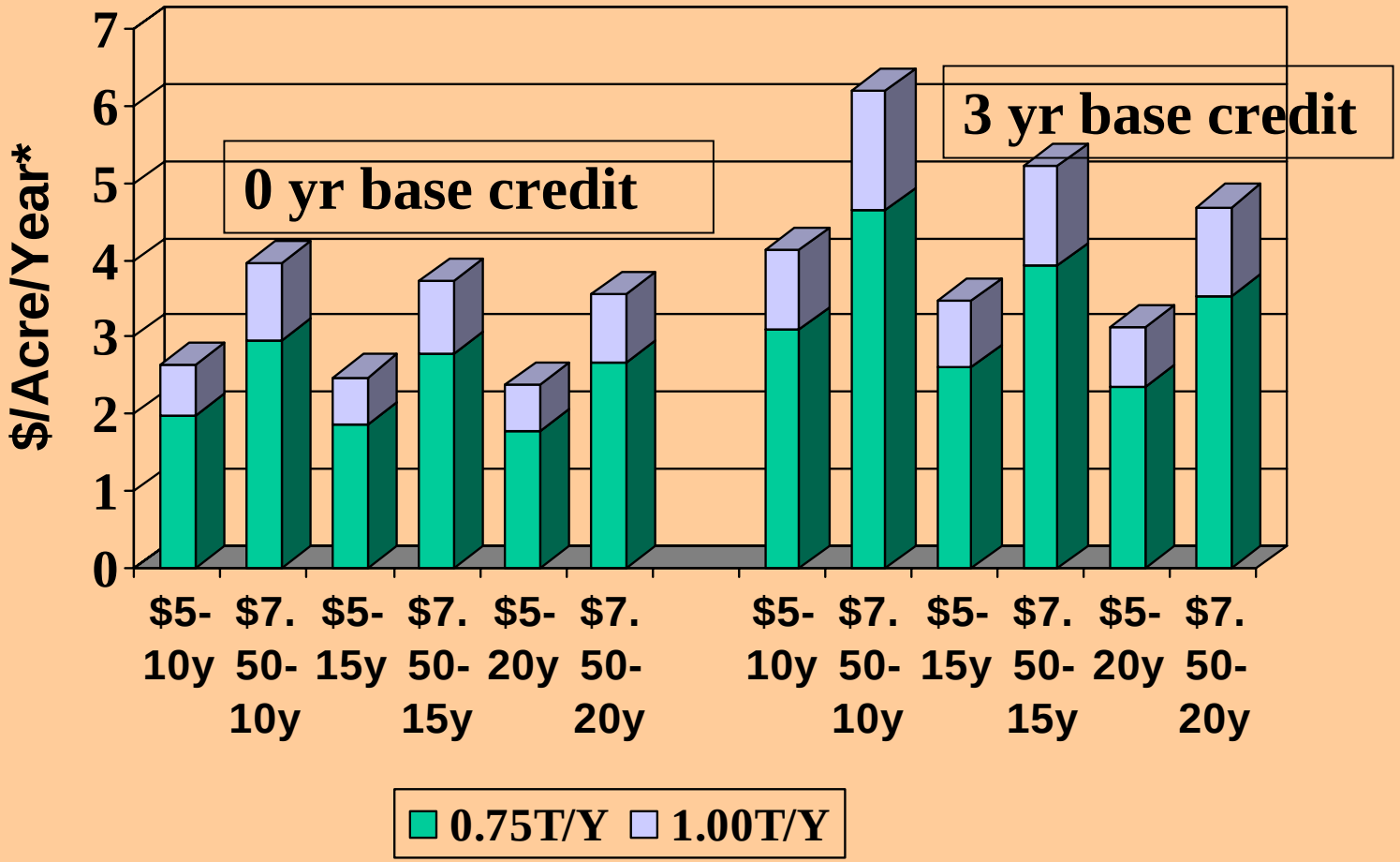
Types of Agricultural GHG Offset Transactions

- ***Outright Sale***
  - Direct GHG emissions reductions -- N_2O, CH_4, CO_2
  - Soil/Biomass Carbon – permanent commitment
- ***Term-Limited Lease***
  - Soil carbon storage
  - Biomass storage

Rates of Carbon Sequestration



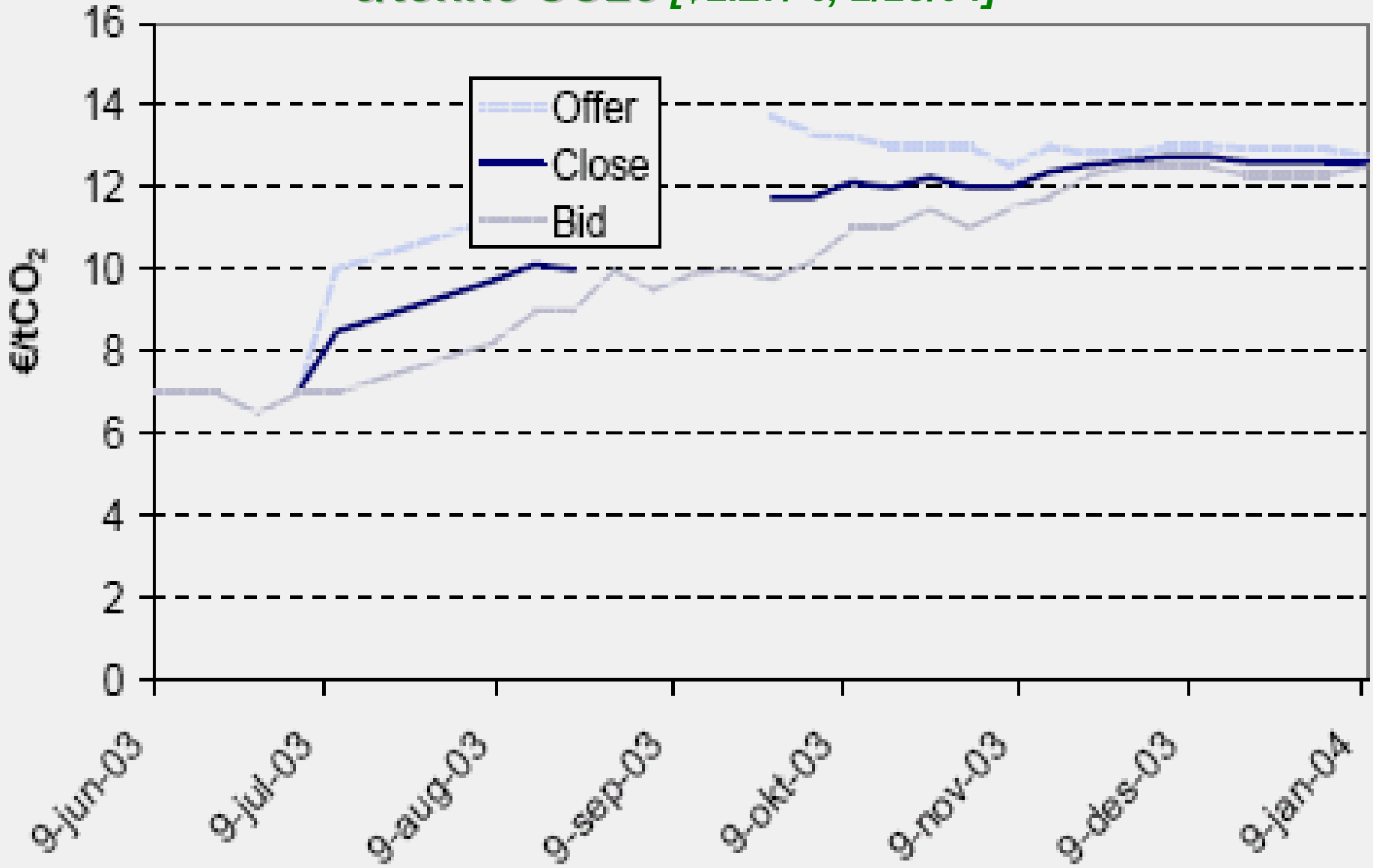
Agricultural Carbon Sequestration Payment Scenarios



[*Annual average payment, 3% rate]

European Carbon Prices

€/tonne CO2e *[$1.27/ €, 1/13/04]*



[Source: Point Carbon, 1/9/04]

GHG Trading Initiatives in U.S.

- *Private sector*
  - Bilaterals
  - Individual company programs
  - Exchanges
- *Public sector*
  - Northeast States cap-and-trade program
  - California auto GHG emissions cap
  - Oregon new power plant CO_2 mitigation

Elements of Agricultural CO_2/GHG MOU (2003-05)

- ***GHG Offset Standards***
  - **"Gold Standard" field manual**
  - **Pilot project applications**
- ***Regional GHG Offset Supply -- Demonstration Projects***
  - **Diverse regional agricultural settings & partners**
  - **Aggregator development**
  - **GHG offset sell offers**
  - **3rd party verifiers**
- ***GHG Offset Demand***
  - **Energy companies**
  - **Portfolio development**
- ***GHG Offset Trades***
- ***Federal & state policies***
- ***Partnerships***

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National Association of Conservation Districts

Mississippi Ag GHG Offset Aggregation

Project Development 2003-04

- **MSWCC-EnvDef MOA**
  - **Investigate carbon, water quality, agricultural economic opportunities**
  - **Field projects**
  - **Communication/education**
  - **Signed in 7/2003**

- **MSWCC CO_2e Sell Offer**
  - **Estimate CO_2 and N_2O potentials**
  - **Identify terms -- price, contract duration, M&V, risk**
  - **Draft "one-pager" sell offer summary of terms**
  - **Facilitate bi-lateral credit acquisition dialogues**

MISSISSIPPI Soil & Water Conservation Commission
EARTH GREEN - WATER CLEAN

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Offer Sheet – Key Elements

CO2e Offsets from _____ Agriculture in ____, USA, ___, 2004

- **Type of Project**
- **Location of Project**
- **Measures Implemented**
- **Organization(s)/Individuals**
- **Total Project Offer Price (U. S. $)**
- **Project Description**
- **Duration of and Rights to Offsets**
- **Price & Payments**
- **Estimated Total Carbon Dioxide Emission Offset (metric tons of CO2 or C equivalents)**
- **Verification of Amounts**
- **Termination of Sale or Rental Agreements**

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Demand-Side Barriers to Ag Soil Carbon as GHG Offsets in the U.S.

- **Weak demand & prices** – U.S. demand so far "voluntary"
- **Buyers** not familiar with agriculture
- **Permanence**
  - **Permanent sale/soil C easement preferred --** makes ton of soil carbon offset equivalent to ton of reduced GHG emissions
  - **Leases seen as a liability** at end of lease term
  - **GHG portfolio management** –asset pricing methods not commonly applied by buyers

U.S. Demand for GHG Offsets -- Why U.S. Companies Buy

- Voluntary GHG commitments
- Acquire low-cost mitigation credits for long-term risk management
- Comply with contractual or regulatory requirements
- "First-mover" advantage in GHG credit market
- Competitive advantage
- Public relations

WSJ.com THE WALL STREET JOURNAL. ONLINE

September 10, 2003

POLITICS AND POLICY

Cinergy Pledges 5% Emissions Cut

Company Is the First to Spell Out Reduction Plan in Bush Program

By JOHN FIALKA , Staff Reporter of THE WALL STREET JOURNAL

……. "We'll let the economics dictate where the cheapest reductions are," said Cinergy Chairman and Chief Executive James E. Rogers, who noted that the company may also invest in "offsets," including agriculture and forestry projects that tend to reduce atmospheric levels of carbon dioxide and other gases. Environmental Defense, a nonprofit environmental group in New York, will serve as an adviser to the company. An as-yet unnamed independent company will serve as auditor of the reduction project, Mr. Rogers said. ……

PCA Partnership for Climate Action

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PCA partners have a market capitalization of $360 billion in key industrial sectors

ALCAN

bp

DUPONT The miracles of science

Entergy

ONTARIO POWER GENERATION

PECHINEY

Shell International

SUNCOR ENERGY

Selling Ag GHG Offsets in the U.S.
Is Voluntary Demand Sufficient?

- Amounts of GHG offset **purchases not significant** in US to date
- **Ag GHG offsets cost-effective** compared to many other GHG control options
- Technical & institutional **barriers** to supply of ag GHG offsets **beginning to be addressed**
- EU GHG allowance/offset market did not take off until **GHG caps** imposed on energy sectors