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Managing the Risks of Climate Change

San Francisco, July 26, 2010

- **Joe Grasso, Cornell University**
- **Jeff Burks, Energy Strategies**
- **Nick Travis, Energy Strategies**



Outline of Presentation

- Introduction and Polling – Joe
- Update on Climate Legislation – Jeff
- Nature of Risk & Financial Exposure – Jeff
- Using tools to measure risk – Jeff
- Cornell as a Case Study – Joe/Jeff
- FASB & Supply Chain Risk – Joe
- Admissions/Recruitment/Community Risk – Joe
- NACUBO & SAP Work - Joe



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NACUBO Sustainability Poll

- How many of your institutions have completed a Greenhouse Gas Inventory to measure the amount of carbon you're producing?
- Of those who have completed a GHG, how many have developed, or are developing, a Climate Action Plan to reduce greenhouse gases?
- How many have joined the Presidents' Climate Commitment or AASHE's STAR program?
- How many have LEED certified buildings on campus?



Roles as Institutional Leaders - Joe as intro to Jeff

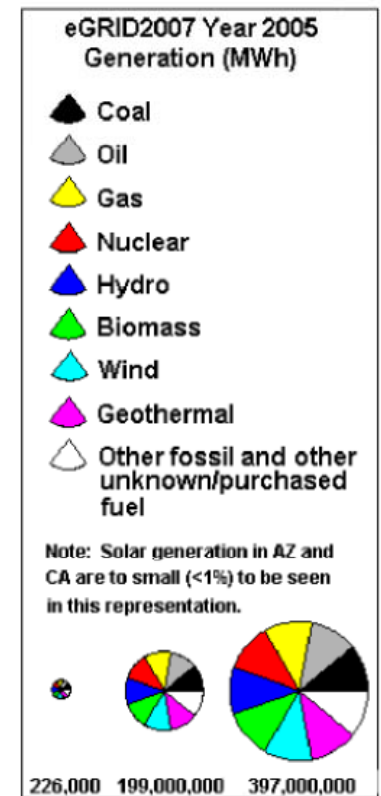
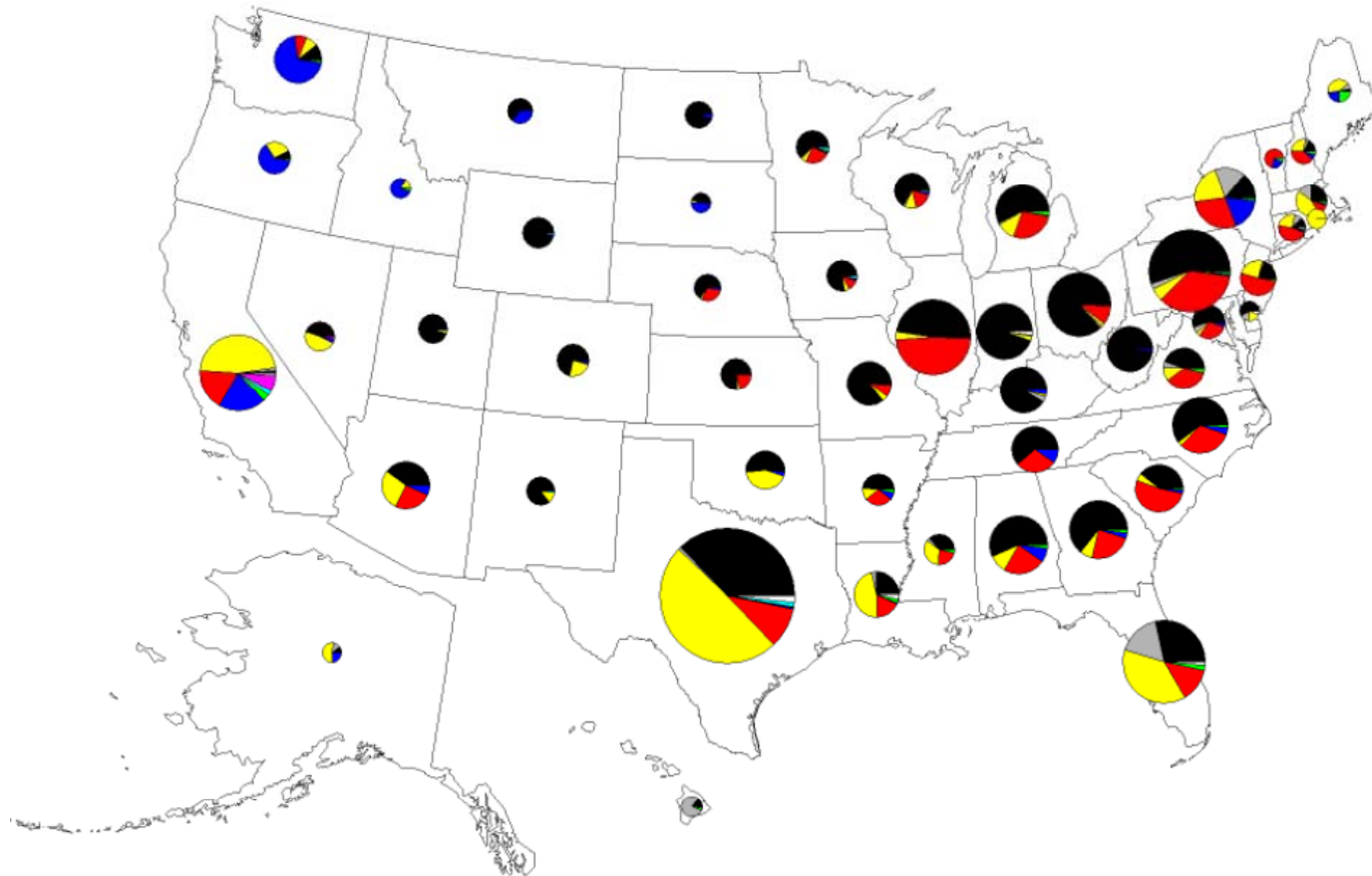
- Understand climate change risks to our institutions and to higher education
- Measure the financial exposure and costs of climate change legislation
- Use financial modeling techniques to determine when and how much to invest in mitigation efforts
- Create a shared vision with our Trustees to make these investments
- Find creative ways to engage our campuses and communities and to create good will



Update on Climate Legislation

- In May 2009, the American Clean Energy and Security Act (ACES) HR 2454 voted out of Committee and in June approved by Congress.
- Moving from a voluntary-good will mode to mandatory compliance – the landscape has changed.
- Harness the intellectual capital of PCC, NACUBO, Second Nature, and others to bring us to the next generation of initiatives.

Generation by Fuel Type



Source: eGRID2007 Version 1.0 Year 2005 data, www.epa.gov/egridd (created September 2008).



The American Clean Energy and Security Act (ACES) - Congress

- In 2012, establishes annual limits on the emission of carbon and other global warming pollutants.
- Carbon pollution from large sources would be cut by 17% below 2005 levels in 2020, by 42% in 2030, and by 83% in 2050.
- Establishes a cap and trade system of emission allowances that provide economic incentives in reducing carbon.
- New buildings must be 30% more energy efficient by 2012 and 50% more energy efficient by 2016.



The American Power Act - Senate

- Expedites process to construct Nuclear Power Plants, regulatory, tax credits, etc.
- Expands revenue sharing from Offshore Oil and Gas.
- Creates programs for development and deployment of Carbon Capture Sequestration and Conversion Technologies, mostly related to coal.
- Voluntary renewable energy markets, electric vehicles, various clean energy research funds.



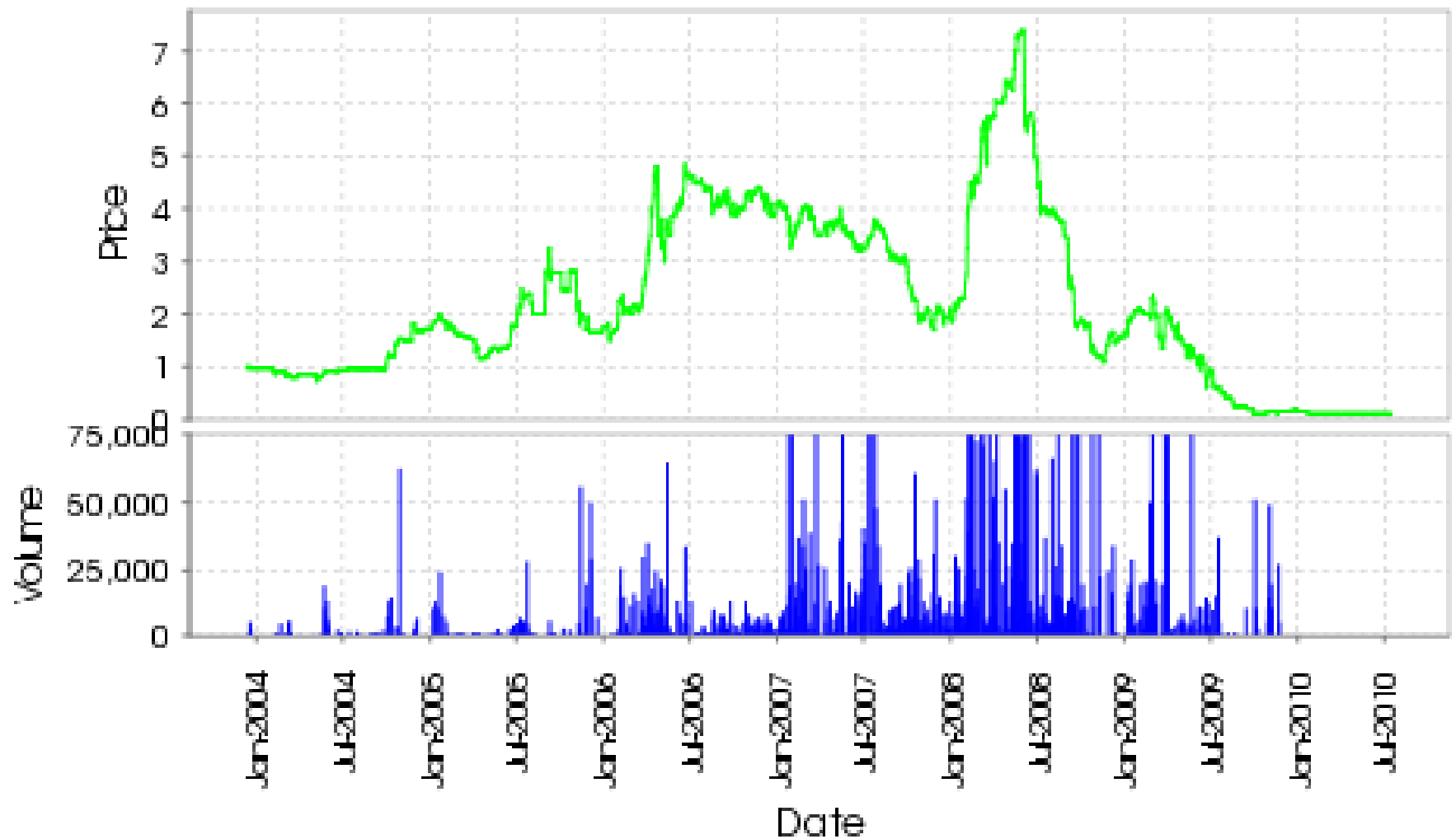
The American Power Act – (continued)

- Reduce economy-wide global warming by 95% of 2005 levels by 2013, 83% by 2020, 58% by 2030.
- Establishes annual tonnage limit on GHG's with one ton equal to one allowance.
- Prohibits covered entities from emitting GHG's in excess of allowable emission levels. Can bank and borrow allowances and use them in future years.
- Establishes a carbon offset program and ensures offsets are additional, measurable, verifiable, and enforceable.



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CCX Carbon Financial Instrument (CFI) Contracts Daily Report





Regulatory and Industry Response to Climate Change

- In January 2010, the EPA issued a new mandatory greenhouse gas (GHG) reporting rule, requiring about 10,000 facilities that are large sources of GHG's to report their emissions beginning on January 1, 2010.
- National Association of Insurance Commissioners (NAIC) is requiring any insurer with over \$500 million in premiums to disclose climate risks to regulators, shareholders, and the public beginning in May 2010.
- NYS Attorney General in lawsuits and subpoenas challenged the climate disclosure of 5 major power producers.



Regulatory and Industry Response - SEC

- In January 2010, US Securities and Exchange Commission issued guidance that publicly traded companies must disclose climate-related material effects on business operations.
- SEC approval of these disclosure rules marks a widespread recognition of the costs, risks, and opportunities climate change brings to US corporate finance and investment decision making.
- College and University investment committees and advisors can now incorporate a firm's exposure to climate change when making investment and asset allocation decisions.



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Nature of Risk & Financial Exposure

- Jeff – Here, you and Nick can insert your slides on this major segment of our presentation.
- Energy Strategies can also discuss the tools they use, and then I/we can follow with a discussion of Cornell University



Accounting for Sustainability

- Under a cap and trade system, firms may be required to deliver allowances equal to their emissions, or pay a fine for emissions in excess of remitted allowances.
- Institutions may be able to carry-forward allowances or use future allowances in the current year.
- Institutions may also be allowed to remit project based certificates in-lieu-of purchased allowances.



Accounting for Sustainability

- FASB and IASB are just beginning to focus in a comprehensive way on accounting issues related to emissions trading and allowances.
- Examining: emission allowances, renewable energy certificates, timing of profit and loss from trades, liability recognition and much more.
- TruCost, a British firm, has valued carbon and other pollutants for European companies which are required to report these externalities on their balance sheets.



Explanation of Emission Allowances

- Emission allowances will be granted by the US government (some will be free, others will be sold or bought through auction).
- Allowances give the emitter the right to produce a certain amount of greenhouse gas.
- If the emitter exceeds the allowed standard, they will either have to buy more allowances or pay a penalty.
- The allowances will likely be considered as assets.



Allowances – cost and vintages

- As assets, allowances could be considered as inventory or as intangible assets.
- Allowances can be valued at cost or at fair market value, but this will be complicated since in the early years there will be a combination of free allowances and purchased allowances.
- Some allowances will have different vintages based on the cost of carbon and allowances at the time they are bought or given.



Accounting for Carbon – Obligations and Liabilities

- Colleges and universities emitting carbon will incur a future obligation, once legislation passes, and a liability will have to be recorded.
- Actual Emission Level
 - Allowances or Cap Allowed
- = Excess Emission or Obligation
- Should emission liabilities be recorded on a gross or a net basis?



What are the next steps for the project?

- Deliberate issues: June-Sept. of 2010
- Exposure draft: December 2010
- Re-deliberate issues: March-May 2011
- Final standard: Summer 2011
- Effective date: ???

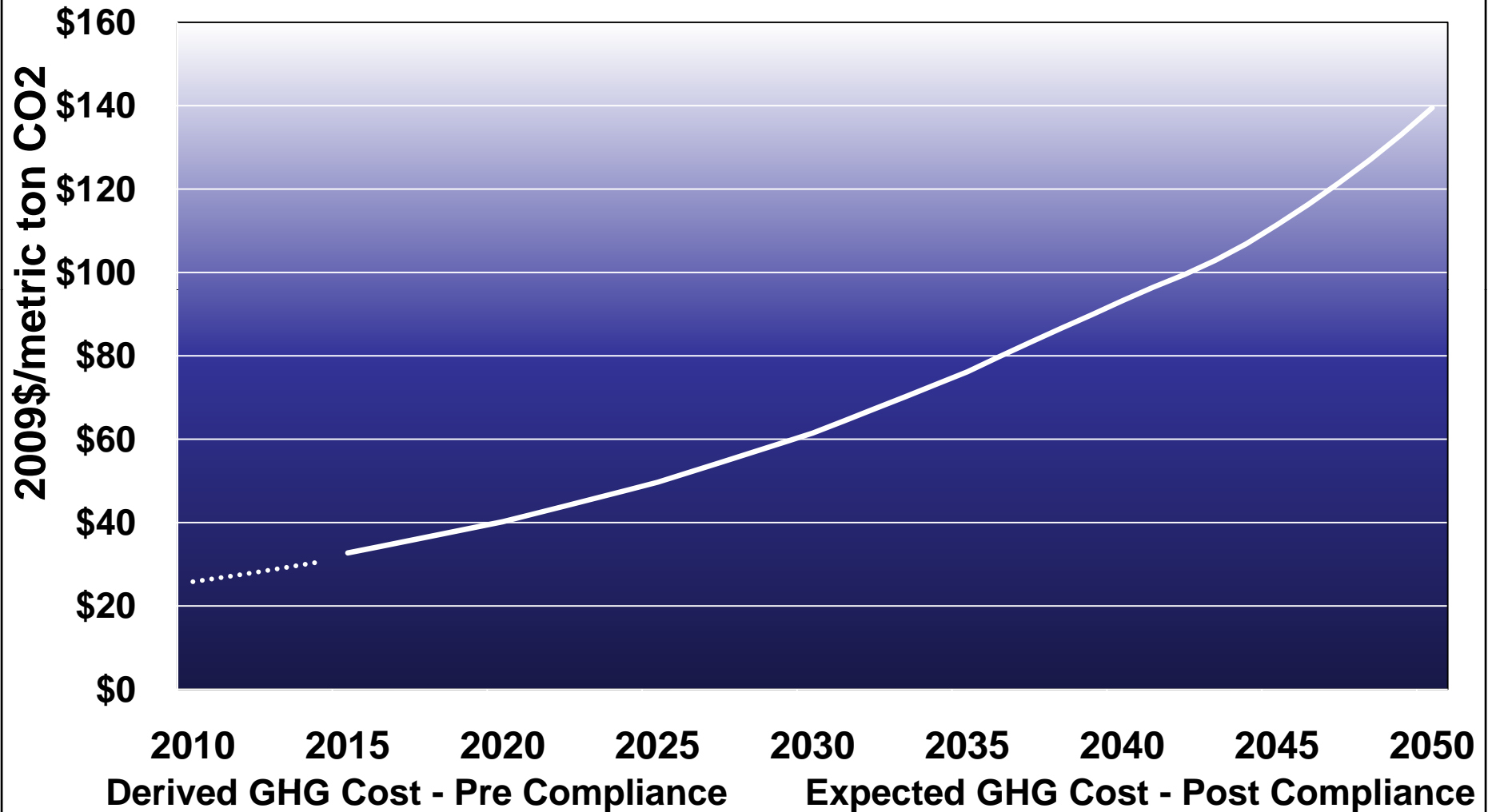


Measuring and Costing Carbon – Cornell Joe and Jeff

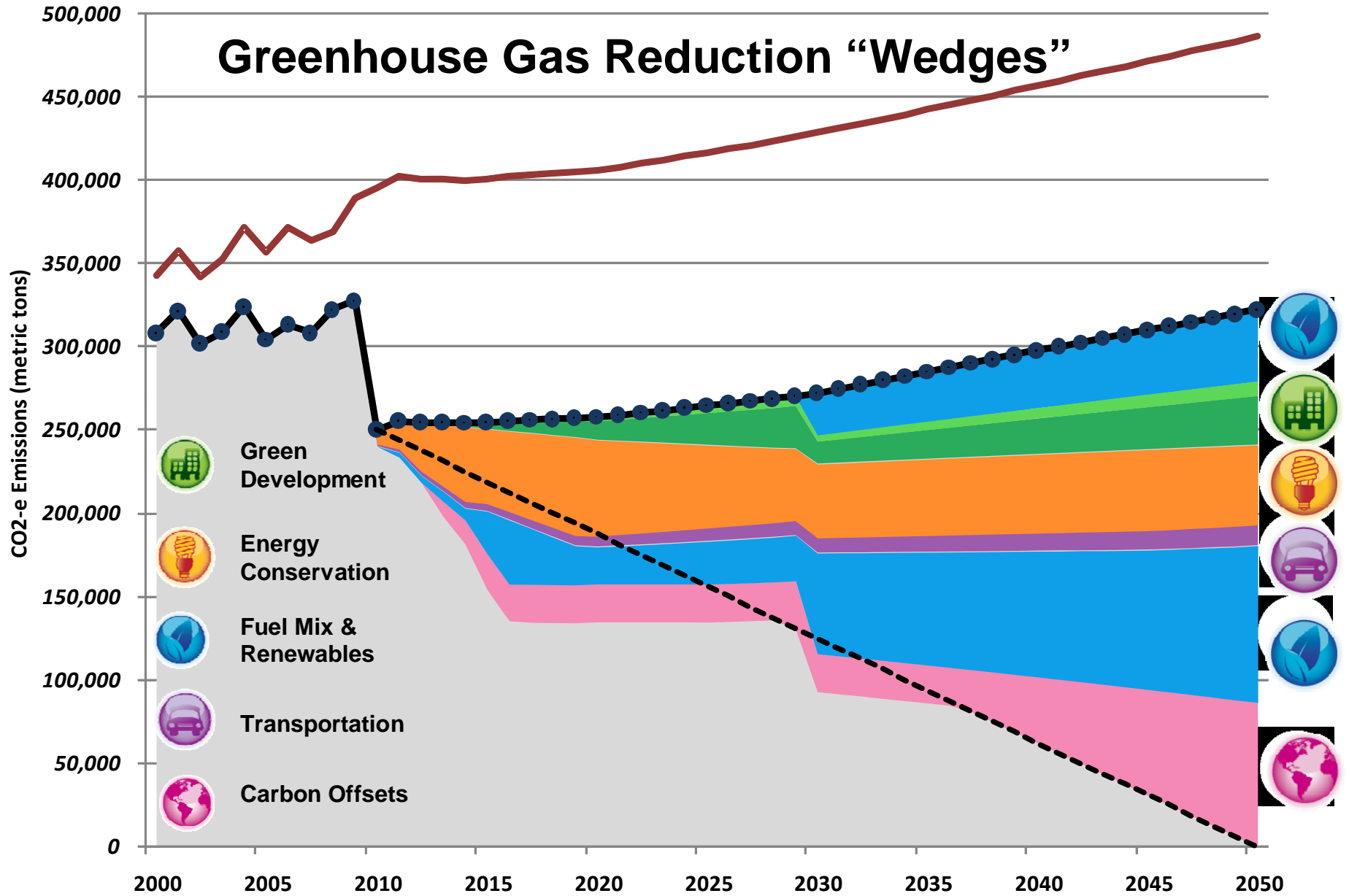
- Cornell completed its GHG inventory and we emit 319,000 metric tons of carbon per year
- Created a baseline of energy use, made energy price forecasts, and assigned a cost to carbon of \$28 per metric ton for the next decade
- Using present value analysis, a mid-range estimate of compliance costs is \$151 million over a 30-year period (range of \$50 m - \$350m)
- Annual costs between \$5 - \$10 million on a \$ 2 billion Ithaca-campus budget.

Expected Forecast of Greenhouse Gas Emission

Allowance Prices (2009\$)

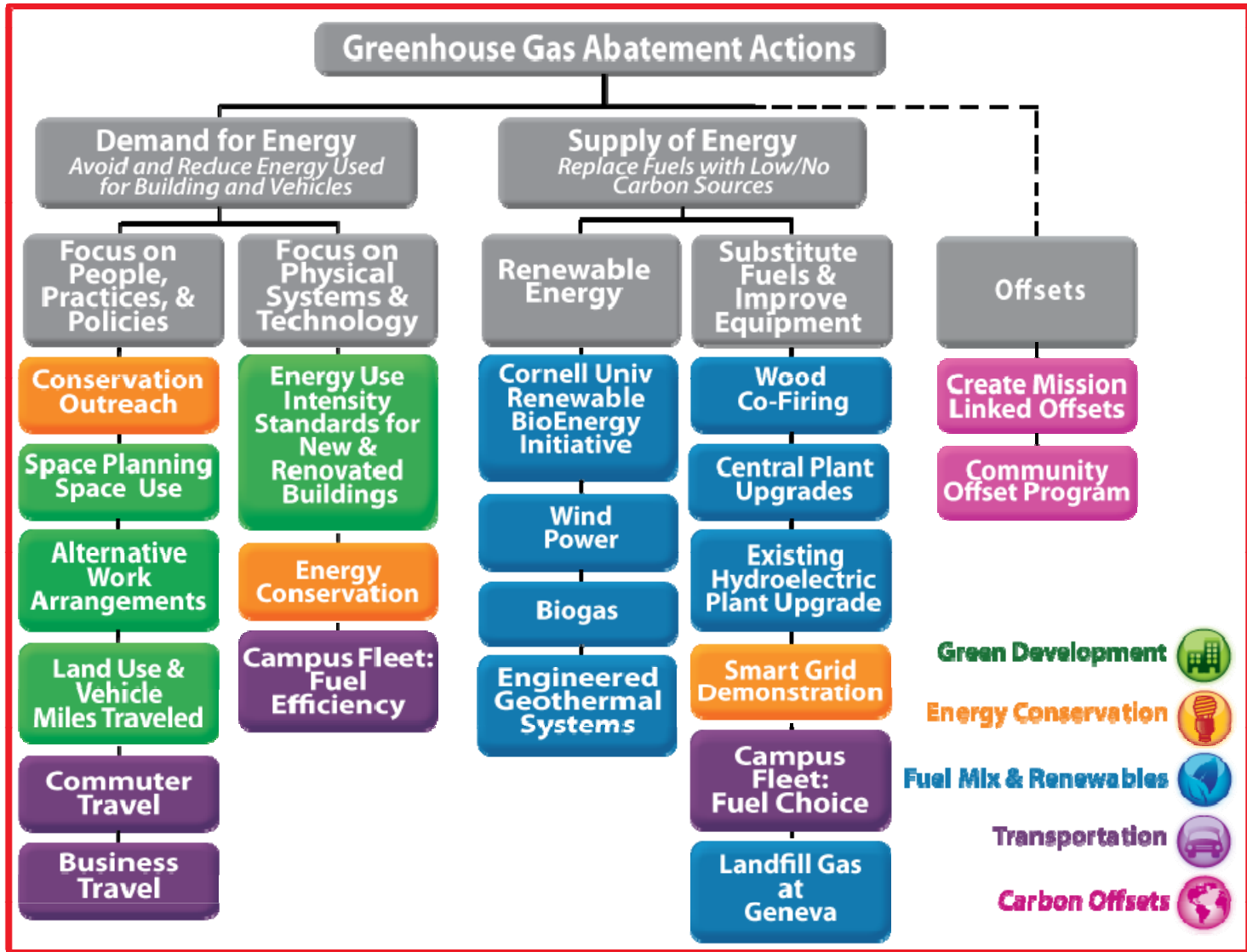


Greenhouse Gas Reduction "Wedges"



— Original Business As Usual (Pre LSC, CCHP, EnCon)
 —●— Business As Usual (After LSC, CCHP, EnCon)
 - - - Neutrality Goal

June 2009





Cornell's Sustainable Decision Approach

- a commitment to well-defined action
- consideration of a full range of creative and feasible options
- reliable and meaningful information
- positive return on investment
- alignment with the academic mission
- a process that is transparent to stakeholders
- provision for learning and improvement through look-back and ongoing adjustment



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Questions for Jeff and Nick

- Here Jeff, you can provide more examples of how you have developed risk analyses for other clients.



Cornell University – Community Partnerships Joe

- As part of its Climate Action Plan, Cornell University will purchase carbon credits in the local community in order to fund carbon reduction measures in Tompkins County.
- Cornell would buy carbon credits that would create a fund which would make low-interest loans to residents of Tompkins County to improve the energy efficiency of their homes.
- The County would recover the loan through tax assessments over the 20-year life of the improvements.
- Cornell students designed software to monitor the results and to assist with the certification effort.



State Finance and Tax Initiatives – Jeff?

- Colorado Carbon Offset Fund
- Oregon – Business Energy Tax Credit Pass Through
- NYS Economic Development Council – President Skorton
- Other Examples



NACUBO's Financing Guide

- Comprehensive survey of financing mechanisms with practical examples
- Revolving Loan Funds
- Grants, Rebates, and Incentives
- Clean Renewable Energy Bonds
- Tax-Exempt Lease Purchases
- Energy Performance Contracts
- Tax Incentives
- Power Purchase Agreements
- Carbon Offsets and REC's



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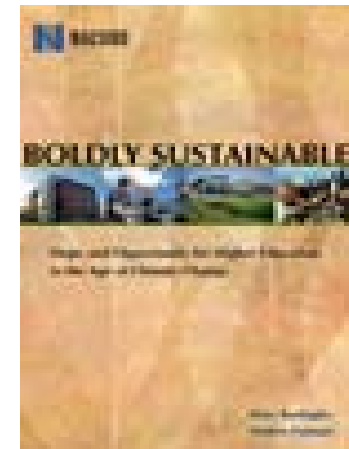
Michele, Tadu, Joe

- Insert some of the items Michele and Tadu had in their NACUBO presentations (e.g. Smart and Sustainable conference; the list of business officer articles; etc.)



NACUBO's Recent Efforts & the Future

- “Boldly Sustainable” by Peter Bardaglio and Andrea Putman.
- Guide to Financing Sustainability on Campuses
- 2009 Annual Meeting in Boston focused on Sustainability
- How can NACUBO and other higher education organizations assist you as we move to this next stage?





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Contact – Insert all of our contact information

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Thanks for attending. Any questions?

