CCS Legislative Update: Federal and State Action

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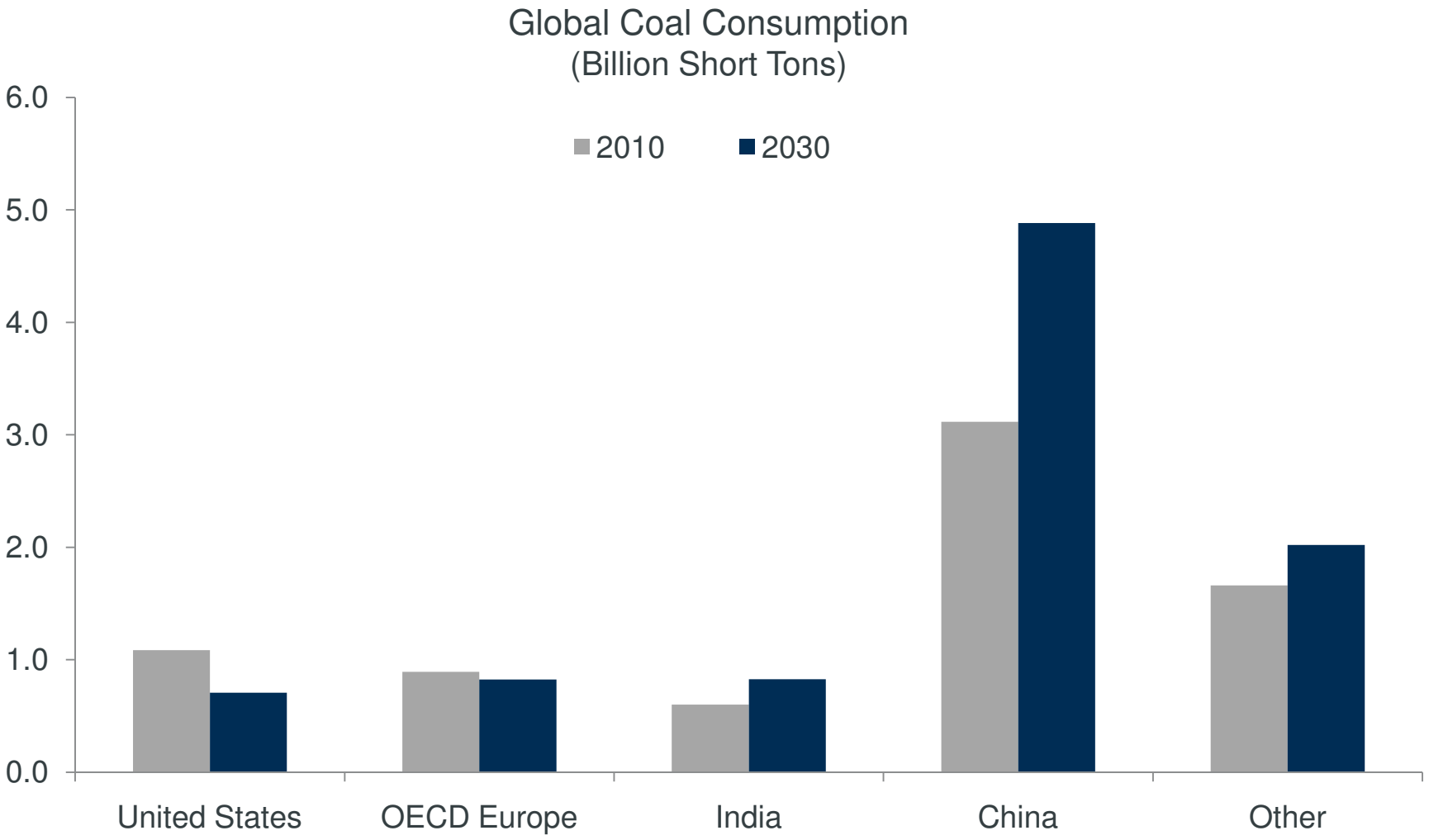
CATF Background

- A “Think and Do Tank” founded in 1996 with offices in Boston, DC, Midwest, Maine, Beijing.
- 20 senior professionals: science, business, law, public relations
- Mission: Catalyze change in business and policy to reduce atmospheric pollution.
- Leverages a network of more than 100 cooperating scientists, technology experts, financial and business development advisors, private companies, environmental and business NGOs.
- Consistently viewed inside Capitol Hill, industry, and media as reliable, fact-based and objective.
- A trusted advisor; not always a “headline” organization.
- Current funding: $4 Million per year, mostly from major US foundations.
  - Approximately half of this amount flows to our expert business and public education network.



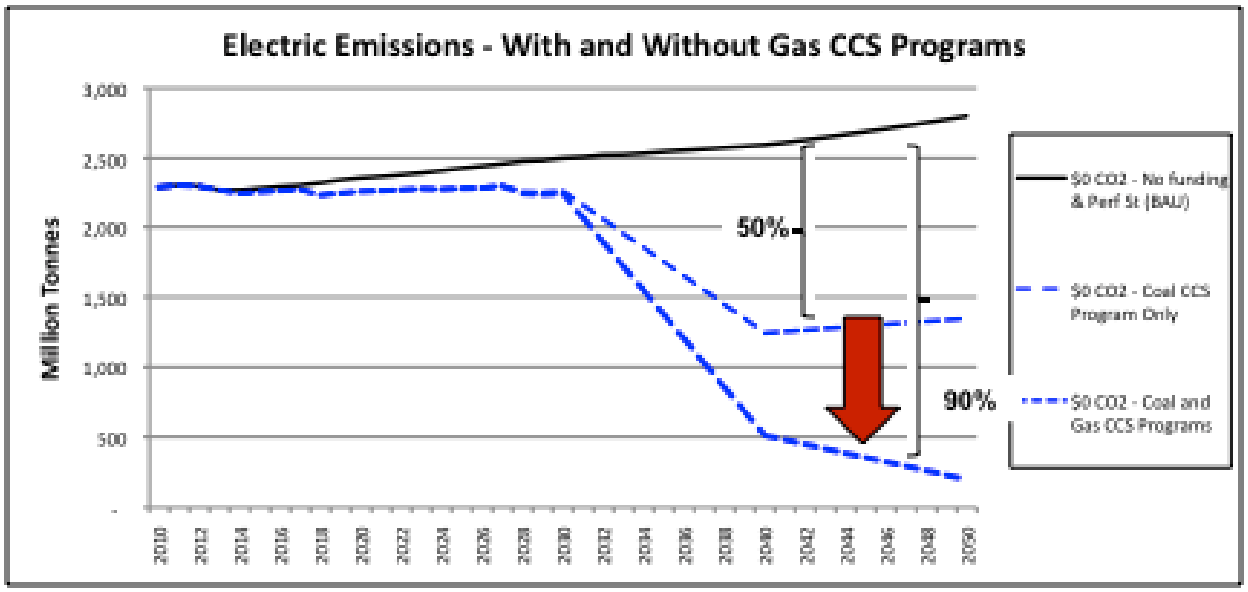
Source: U.S. DOE, Energy Information Administration, *International Energy Outlook 2009,* Table A7, with U.S. Estimates coming from *Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009.*

Need CCS on Gas Plants too

IMPORTANCE OF CCS — Applied to Coal and Gas

To de-carbonize the entire U.S. the electric sector by 2050, other abatement options will be needed:

- Gas combined cycles with CCS – which would be a low cost option if unconventional gas materially dampens long term prices – could drive 90% emission reductions.



- UCG with CCS, at roughly $100/mWh, could be an even lower cost carbon-free resource.

By enacting GHG performance standards that require CCS and funding early CCS commercialization, fossil technologies could be made essentially carbon-free – in this way, CCS could provide a low cost pathway to de-carbonize the entire electric fleet by 2050.

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CATF Approach to CCS Solutions

- Support coal projects that advance CCS.
- Studies to understand CCS costs and benefits
  - NorthBridge Group for dispatch modeling on each coal unit in the Eastern Untied States to assess retrofit policies and retirements.
  - Keybridge Research LLC to understand jobs and economic impacts of CCS.
  - Conducted extensive interviews with PCC project developers, technology vendors, and engineering, procurement and construction (EPC) contractors to identify the technology and financial barriers that face pioneer PCC projects.
  - Published “Coal without Carbon” an RD& D blueprint for federal CCS investment authored by researchers at MIT, Tufts, and Lawrence Livermore National Labs.
- Extensive outreach in China to create US-Chinese business partnerships aimed at reducing technology cost.

Observations

- CCS is an orphan among climate solutions.
- Even though proposed climate legislation is not law, it's shadow impacts new builds as utilities stop proposing new coal and proposing new, uncontrolled gas plants.
- Carbon prices found in national legislation aren't enough to drive CCS without significant incentives.
- The most important CCS incentives are coming from states, not the federal government.
- CCS industry must go through phases (next slide)

CCS Industry Phases

Pioneer Projects Phase

- Goal: Eliminate major technical risks
- Need by 2018: Need 10-15 commercial CCS projects.

Cost Reduction Phase

- Goal: Reduce CCS costs by building sufficient quantity to traverse learning curves
- Need by ~2030: Around 50 GW of CCS, including coal and natural gas.

Mature Industry Phase

- Goal: CCS deployed at wide scale to meet climate protection objectives.
- Need by 2050:
  - CCS on nearly all fossil and carbon-intensive industrial and manufacturing processes.

The Carbon Capture and Storage Deployment Act of 2010 (Rockefeller-Voinovich)

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- Title I – Carbon Capture and Sequestration Innovation Program
  - Establishes an $850 million, 15-year cooperative industry-government research program to develop and demonstrate novel and innovative CCS technologies
- Title II – 20 GW Carbon Capture and Sequestration Projects
  - Establishes a wires-charge funded program for the development and deployment of CCS;
  - Fund will generate $2 billion annually for 10 years;
  - Funding will be used for demonstrations greater than 100MW and provided in the form of payment per ton of CO2 captured and then stored or recycled;
  - Revises and expands the existing 45Q tax credit;
  - Expands the Federal Loan Guarantee program by an additional $20 billion
  - Amends the tax code to create a new tax credit to cover up to 30 percent of the incremental costs of CCS systems.
- Title III – 62 GW Early Adopter Program:
  - A new CCS tax credit is established for certified new electric units and certified retrofit units to provide for early adoption of CCS technologies.
- Title IV – CCS Technology Standard for Power Plants
  - Amends the Clean Air Act to provide a standard specifying an emission limit for certain electric generating units once CCS is commercialized and more widely deployed;
  - Also specifies the time within which compliance with the emission limit referred to above must take place.

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Advanced Energy Tax Incentives Act of 2010 (S. 3935)
Bingaman-Snowe

Background - Allocated Credit Structure (Code Section 45Q)

- In 2008 Congress created a tax credit for carbon capture and sequestration (CCS)
  - $20 per metric ton of CO2 for saline injections
  - $10 per metric ton of CO2 for EOR or EGR
  - Capped at first 75 million metric
  - But the credit's current unallocated structure does not permit firms to pre-certify the amount they will claim, so it is uncertain for developers.

What the bill would do

- Raise the per-ton credit amount for permanent sequestration from $20 to $35.
- Increase the total credit from 75 million tons of CO2 to 100 million tons of CO2.
- The bill would create a per-project cap of 10 million tons of CO2 worth of credits
- Turn into an allocated tax credit to facilitate precertification

State Incentives

- State incentives are the largest source of CCS funding in the US.
  - Typical federal support ranges from $100 million to $450 million.
  - Decision to ratebase a new power plant with CCS can be worth $5 billion to $15 billion over 20 years.
- Examples of state incentives:
  - Higher PA tarriff for coal with CCS that qualifies as renewables
  - Illinois Clean Coal Portfolio Standard support for hybrid IGCC (Tenaska)
  - Indiana legislation to purchase off-take from SNG plant (Rockport)
  - California PPA (in process) for IGCC with CCS (Hydrogen Energy)

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Other Federal Action

- EPA greenhouse gas rules
- DOE changes
- EOR as CCS?