

CCS Finance: the Search for the Magic Feather

Mark Brownstein
Deputy Director - Energy Program





The Waxman Markey Framework

Demonstration & Early Deployment

- Carbon Storage Research Corporation
- At Least Five Commercial Scale CCS Projects
- Assessment on Distribution Utilities Based on Fossil Fuel kWhs Delivered
- Approximately \$1 Billion per Year
- Public Meetings & Annual Report
- 10 Year Program

Commercial Deployment

- >200 MW & >50% Coal/PetCoke

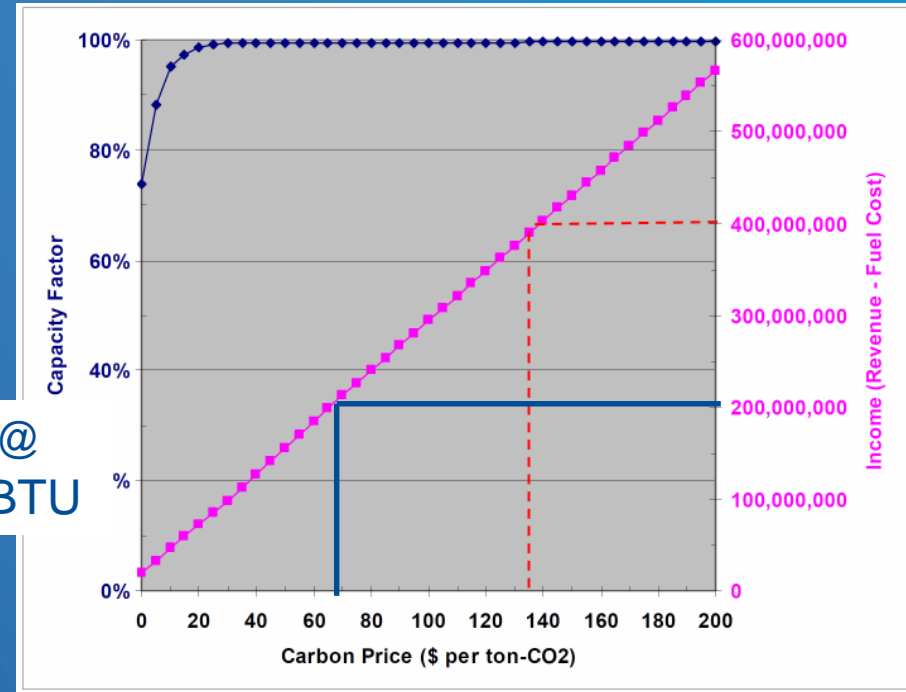
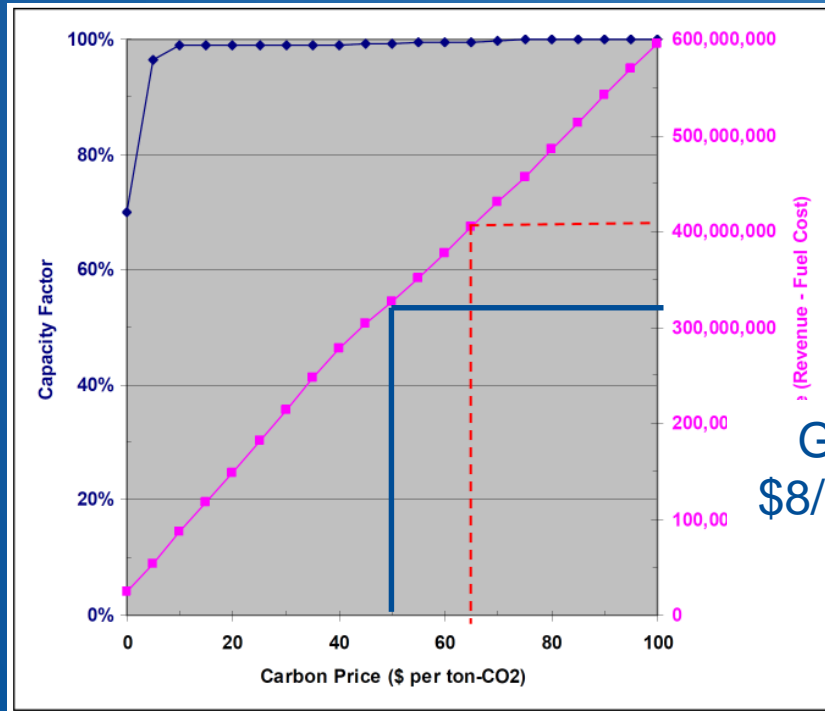
- Phase I: 6 GWs

$$\frac{\text{Tons Avoided} \times \text{Bonus Allowance Value}}{\text{Avg. FMV of Prior Year Allowances}}$$

$$\text{BAV: } 50\% = \$50 \text{ to } 85\% = \$90$$

- Phase II: Up to 72 GWs
 - Reverse Auction; or,
 - Allocation by Tranches for “Reasonable Incremental Capital & Operating Expenses Attributable to CCS”
- Subsidy for 10 Years of Operation

A Multi-Variable Equation



GAS @
\$8/MMBTU

CCS Interior West

Coal On Margin

\$6,000 /kW

11,500 BTU/kWh

55/45 Debt to Equity

6.5% Interest Rate

12% ROE

20 Year Book Life

Central California CCS

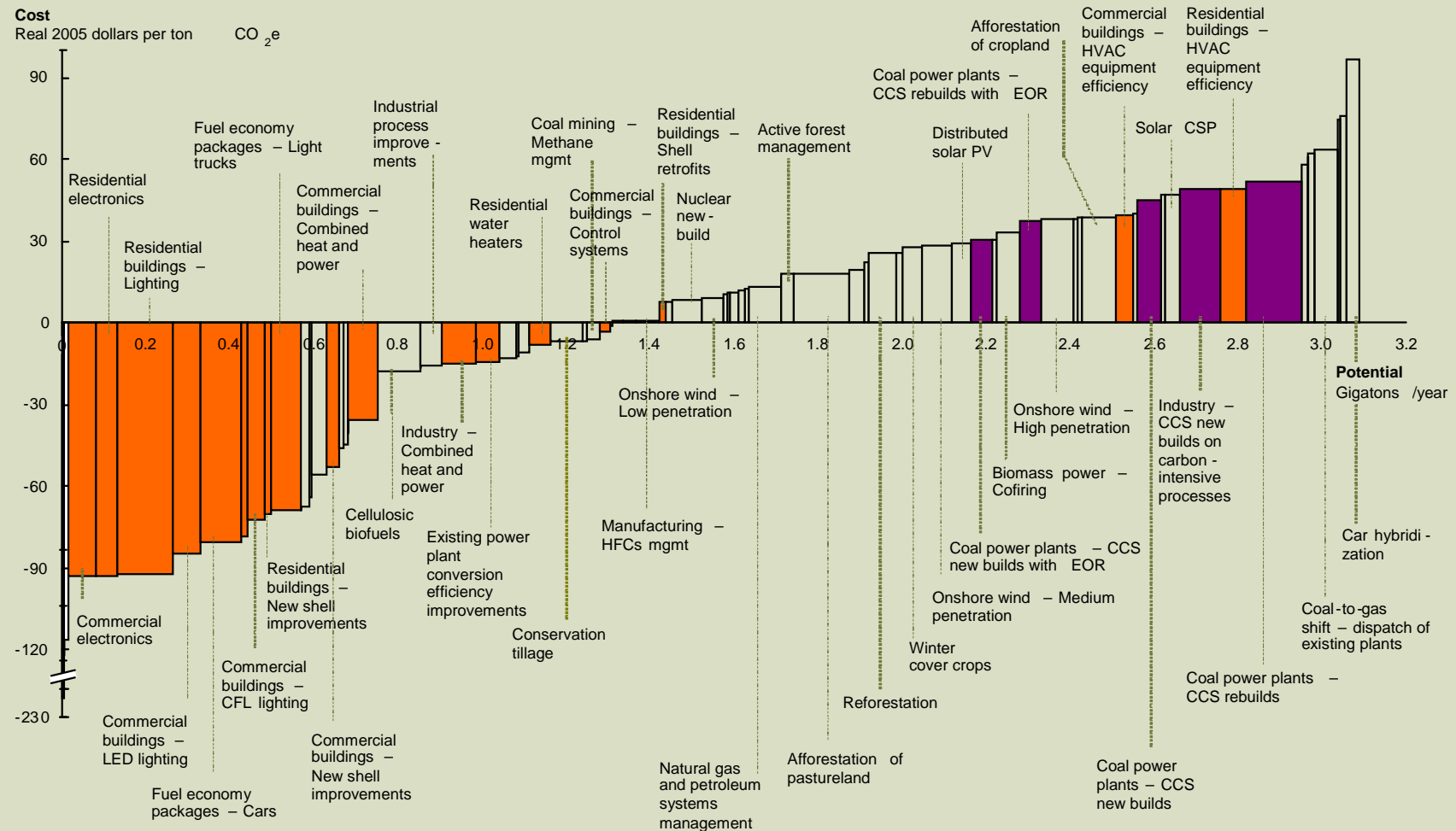
Natural Gas On Margin

Source: Shu, Economics and Policies for Carbon Capture and Sequestration in the Western United States. MIT, 2010

CCS: Only One Piece of the Puzzle

Exhibit B

U.S. MID -RANGE ABATEMENT CURVE – 2030



Working Draft - Last Modified 11/28/2007 12:21:57 PM - Updated 11/17/2007 9:15:15 PM