

## Status of CO<sub>2</sub> Emission Adders for Utility Planning in California and Other States



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### Recent CPUC Activity Regarding Utility GHG Emissions

- In 2003-4, the CPUC commissioned a study by Energy & Environmental Economics (E3) and Rocky Mountain Institute (RMI) to update the standard method for estimating the avoided cost of energy efficiency programs, which included a set of values for avoided CO<sub>2</sub> emissions
- Avoided emission costs were initially considered by CPUC as “externalities.”
- However, a 1992 ruling by the Massachusetts Supreme Court made the application of externality values irrelevant, because the practice amounts to making environmental policy via the utility regulatory process, which utility commissions have no authority to do
- However, the E3/RMI team found that future utility costs related to now-unregulated emissions would likely rise

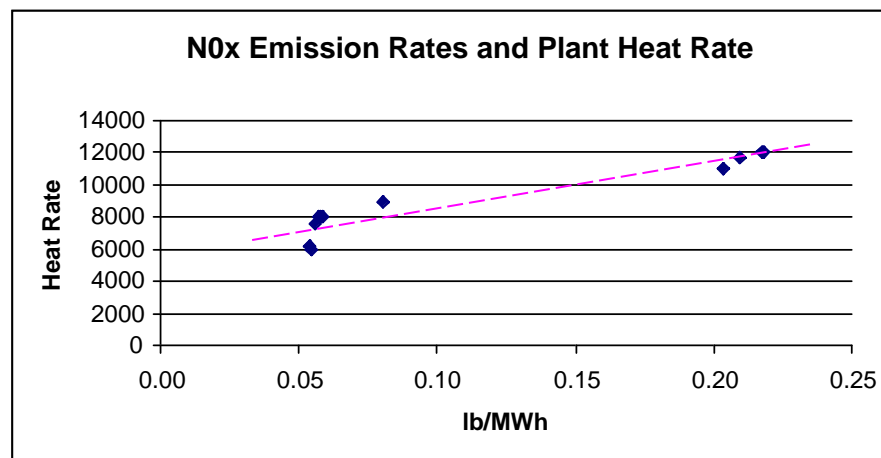
## Mechanics of Calculating the Environmental Adder

Environmental Adder = tons/MWh \* \$/ton

*(emission intensity \* value of emissions)*

- Emission intensity depends on the energy source that is at the margin (short-term and/or long-term), in terms of fuel source, plant age, heat rate, and emission control technology
- The marginal source is determined by the other proposed analytic methods
- The value of emissions is less certain, and must be taken from observations of abatement costs and emission market prices, projected into the future

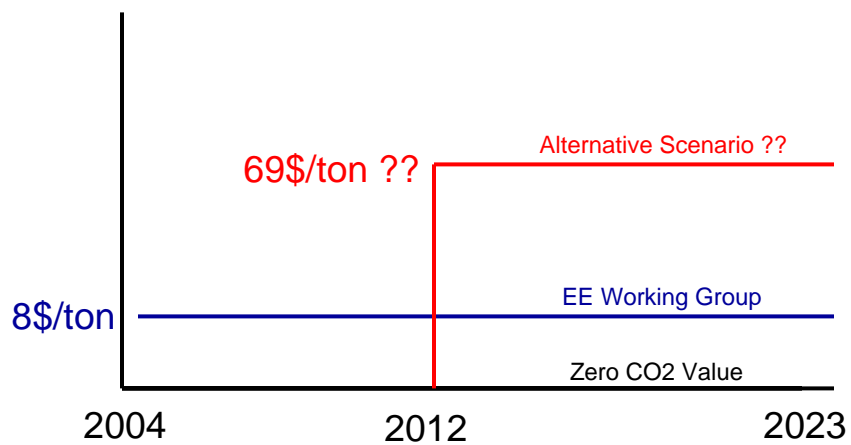
## Emission Intensity Directly Related to Heat Rate (Generator Efficiency) for NO<sub>x</sub> (for CO<sub>2</sub>, Emissions Proportional to Heat Rate)



## Approach to CO<sub>2</sub> Emission Cost Value

- CO<sub>2</sub> emission costs are not externalities, but rather a present value of projected future emission costs
- Direct emission abatement not feasible at present
- Emission reduction costs range from <\$2/ton-CO<sub>2</sub> (forestry and land use) to >\$50/ton-CO<sub>2</sub> (solar, nuclear, geologic sequestration?)
- Markets emerging, not yet mature, especially in U.S.
  - Recent market costs: EU ETS \$22/ton-CO<sub>2</sub>, Dutch CERs \$5-10/ton-CO<sub>2</sub>, World Bank PCF \$5-20/ton-CO<sub>2</sub> Oregon CT \$2-8/ton-CO<sub>2</sub>
- Must also rely on studies that project future marginal costs and market trading prices
  - Model estimates of emission stabilization (no trading) and Kyoto compliance (with trading) range from \$5 to \$69/ton-CO<sub>2</sub>, with a median value around 17 /ton-CO<sub>2</sub>
  - Discounting a future stream of project emission cost values back to 2004 results in a value of \$8/ton-CO<sub>2</sub>

## Alternative CO<sub>2</sub> Scenarios



## Why include CO<sub>2</sub> for avoided cost of energy efficiency?

- Likely development of CO<sub>2</sub> emissions limits on stationary sources over the timeframe of efficiency measures (as long as 20 years)
- Assuming a zero value for 20 years implies a 100% probability of not having any CO<sub>2</sub> limit
  - This would be an extreme assumption
  - This could lead to financial risk of having to offset more CO<sub>2</sub> emissions in the future
- Resulting value is a low estimate of future CO<sub>2</sub> value
  - Report cites ranges from \$5 to \$69/ton-CO<sub>2</sub>
  - Analysis uses \$8/ton-CO<sub>2</sub>, escalating 5%/year

Shouldn't the same logic apply to planning, procurement?

## Recommendations Regarding Avoided Emission Costs

- Treat emissions as a future cost, albeit uncertain, not as an externality
- Include an estimate of the value of reduced CO<sub>2</sub> emissions for efficiency
- Use a value for CO<sub>2</sub> emissions that reflects an 'expected' cost of a CO<sub>2</sub> reductions
- Revisit the assumption on the level of CO<sub>2</sub> value whenever the avoided costs are updated based on current markets

## Current Status of Carbon Adders for California Utilities (& others)

- CO<sub>2</sub> emissions, which were initially considered by CPUC as “externalities,” are now to be treated as avoided future costs with uncertainty like gas prices
- Initially in Dec 2004 and finally in 2005, the CPUC has decided to adopt carbon adders, using the E3/RMI values and methodology, for all long-term utility portfolio planning and modeling, and in the evaluation of procurement bids for new utility supply and demand-side resources
- Idaho and Colorado have adopted similar carbon adders for utility planning and procurement, and PacifiCorp uses a \$8-20/ton-CO<sub>2</sub> value in its IRP

