

Comments on  
“Three Alternatives for  
Implementing Multi-Dimensional  
Cost-Effectiveness Analysis”

NCEE Symposium on  
“Cost-Effectiveness Analysis for  
Multiple Benefits”

September 9, 2003

# General Thoughts

- Evaluation of cost-effectiveness in multiple pollutant context is challenging
- Method should be consistent with stated purpose or objective
- Step back and ask “What is purpose here?”
  - Choose among alternative control technologies to achieve emission targets (least-costs)
  - Select control technologies that achieve ambient air quality standards (least-costs or max net benefits)

# Costs & Benefits / Apples & Oranges

- Alternative 1: Cost-based adjustments to single pollutant CE ratio
  - Apples & apples but difficult cost allocation problem
- Alternatives 2 & 3: Benefits-based adjustments to single pollutant CE ratio
  - Apples & oranges by “subtracting co-benefits from costs”
  - Comparison of incremental costs to associated benefits implies  $MC = MB$  or crossing line to cost-benefit analysis
  - Focus time & resources on cost-benefit ratio not adjusted CE ratio

# Alternative 3

## Subtract Environmental Adder Value

- Too simplistic and not credible/defensible
- Adder values are likely to be
  - Missing or Incomplete
  - Not representative (source, region, etc)
  - Not academically/scientifically accepted
- Bottomline: introduces more potential issues that it solves and thus not likely to meet purpose

# Alternative 2

## Subtract Estimated Co-benefits

- What about potential for negative CE ratio?
  - Use of ‘conservative values’ not consistent with best science and no guarantee of  $CE > 0$
- What about incomplete/missing co-benefits estimates?
  - Not all health/welfare effects are quantified and monetized for all pollutants (e.g., ecosystems, toxics)
- Bottomline: Requirements same as cost-benefit analysis so ‘just do it’
  - Air quality modeling, health and environmental impacts, valuation of avoided effects

# Alternative 1

## Subtract MC of Other Pollutant Control

- In concept, . . . should produce same result as comprehensive emission trading system
  - Depends upon completeness and accuracy of underlying data to develop MC curves
- Prefer we avoid use of assumed caps on cost per ton estimates
- Focus efforts on obtaining better quality data on control measures / technologies
  - Address variability in costs and control effectiveness estimates (across and within source groupings)
- Ongoing efforts on AirControlNET can help here

# Emissions Targets or Ambient Targets?

- Goals tend to focus us on improvements in air quality levels, e.g., NAAQS for criteria pollutants
  - Effectiveness of emission reductions depends upon their efficacy in reducing ambient concentrations of air pollution (complex chemistry re secondary formation)
- Restate the obvious—ton of NO<sub>x</sub> is not a ton of SO<sub>2</sub> is not a ton of VOC
- But also note that a ton of NO<sub>x</sub> is not necessarily a ton of NO<sub>x</sub>, etc.
- Bottomline: we can address multi-pollutant issue by expressing CE ratio in \$ per ug or ppb rather than \$ per ton of emissions reduced

# Summary

- Need to address issue of cost-effectiveness evaluation in multi-pollutant context
  - Improve \$/ton metrics
  - Pursue \$/ug metrics
- Simple not always better—world is only going to get more complex
  - Focus on credible and defensible methods and underlying data
  - Take advantage of advancing science and technology to improve understanding and technical inputs to environmental decision-making