

Presentation to the SAB Economy-Wide Panel

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Dr. Ann Wolverton

National Center for Environmental Economics

U.S. EPA

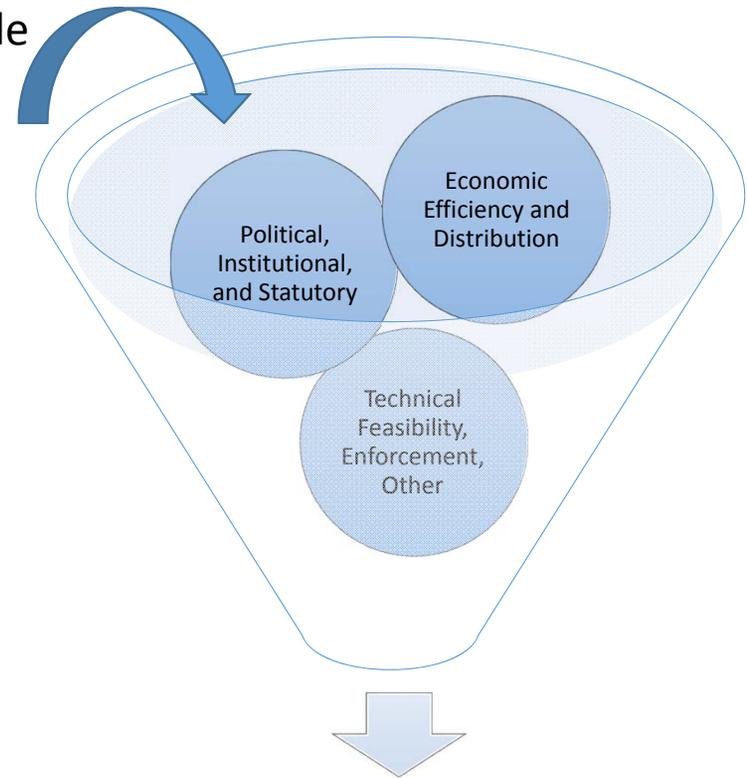
EPA Conducts Two Main Types of Analyses

- They inform policy decisions as allowed by statute by answering:
 - 1) Is it theoretically possible for the “gainers” from the policy to fully compensate the “losers” and still remain better off? (**benefit-cost analysis** shows positive net benefits)
 - 2) Who are the gainers and losers from the policy and associated economic changes? (**economic impact analysis**)
- Today and tomorrow’s discussion focuses on the technical merits and challenges of using economy-wide models in the context of **benefit-cost analysis**

While Important, Economic Analysis Is Only One of Many Decision Criteria

- Political Factors
- Statutory Instruction
- Institutional Feasibility
- Technical Feasibility
- Benefits and Costs (Economic Efficiency)
- Enforceability
- Distributional Concerns
 - Economic Impacts
 - Environmental Justice
- Ethics
- Sustainability

Many Possible
Regulatory
Alternatives



Preferred Alternative(s)

Analysis is also often constrained by time, budget, data, and method availability considerations

- Statutory and court-order deadlines may limit how much analysis can be conducted within a given timeframe
- Investments in analysis are also guided by overarching budget priorities
- Limits in availability of data and/or models/methods interacts with time and budget considerations
 - With shorter timeframes there is greater reliance on estimates from the literature, available data sources, and off-the-shelf models
 - With more time, possible to invest in data and model development to fill identified information and knowledge gaps
 - Possible to make broader investments in data and models of general use to the Agency outside of a regulatory context via funding of research, for example

CGE Models in EPA Regulatory Analyses

- CGE models have been used by EPA to analyze proposed climate legislation and the effects of the Clean Air Act broadly
- To-date, they have only been used to evaluate a few specific, very large air regulations
 - Used for analysis of social costs only and sometimes linked to electricity sector model
- These EPA CGE analyses have found that:
 - Effects are often small in terms of changes in household consumption or industry output;
 - Social cost estimates are sometimes higher, sometimes lower, sometimes very similar to partial equilibrium estimates
- Outside organizations are using CGE models to analyze EPA air regulations, too
 - Key challenge has been how to evaluate and interpret external analyses
- EPA has limited experience using other types of economy-wide models to analyze the effects of an air regulation

Use in Benefit Cost Analysis

- Using CGE models to evaluate social costs and benefits can pose particular technical challenges in the context of an air regulation
 - Regulations are typically emission-rate and/or technology-based standards that do not simply introduce wedge between the unregulated and regulated market price
- The aggregate nature of CGE models may miss details about compliance strategies that matter when estimating the social cost of an air regulation
 - Linking partial and general equilibrium approaches may help bridge this gap but introduces many new challenges
- CGE models that do not include benefits yield an incomplete picture of the effects of a regulation on the economy and economic welfare
- Even when benefits are incorporated into CGE models, they typically only represent a small subset of the full range of benefits from an air regulation

SAB Panel Discussion

- EPA has provided white papers/memos to help inform the Panel's discussion and response to the first two sections of the charge
 - Intended as starting points for discussion
 - We hope Panel members also leverage their substantive collective expertise
 - This is a prospective exercise: where, when, and how economy-wide models may add value in future regulatory analyses of individual air regulations
- Given the exploratory nature of the panel, EPA does not intend to revise the white papers/memos in response to Panel discussion but is open to supplying additional information as needed
 - E.g., illustrative runs using CGE models already available to EPA; greater EPA context in specific areas; investigating related literatures with which the Panel is less familiar

SAB Panel Discussion

- While we are asking for input on how to improve future capabilities (e.g., research priorities, inter-model comparison exercises), EPA also needs advice and recommendations to help improve regulatory analysis in the near-term
- Given current and future time and resource constraints, as well as the other modeling tools available in EPA's toolbox,
 - What are the technical merits or challenges of using CGE or other economy-wide models for regulatory analysis based on current capabilities?
 - Are there longer-term priorities to consider with respect to improving capabilities of CGE or other economy-wide models to evaluate social costs, benefits, and/or economic impacts of air quality regulations?
- Lay foundation – first step in a longer process to improve how EPA leverages these models in regulatory analysis

Currently, EPA analysts have little guidance on

- What criteria to use in evaluating whether/when to use an economy-wide approach
- How to interpret results from a CGE model that only partially represents costs and/or benefits
- How to compare results from a CGE model to engineering or PE approaches used to estimate costs or benefits
- Whether other (non-CGE) economy-wide modeling approaches offer added value (e.g., in their ability to differentiate between short and long run welfare effects)

Reminder of what's coming next:

- Remaining sections of the charge questions will be discussed in a future, to-be-scheduled in person meeting
 - Can EPA use economy-wide models to inform **economic impacts** analysis?
 - Is it defensible for EPA to **directly compare estimates of social costs, benefits, and economic impacts** generated through different approaches when estimating economic effects of regulation?
- As such, some topics that arise may be tabled or revisited by the Panel when the remainder of the charge is discussed, as appropriate