

Crosswalk between First Two Sections of Charge for Science Advisory Panel on Economy-Wide Modeling of the Benefits and Costs of Environmental Regulation and EPA White Papers/Memos

Section 1 of the charge: Technical merits and challenges in the use of economy-wide models to evaluate the social costs of an air regulation

Charge Question	White Paper/Memo	Relevant Sections
1. What are the advantages and drawbacks of a CGE approach (versus an engineering or partial equilibrium approach) for estimating social costs, including the differences in social costs between alternative regulatory options?	Economy-wide Modeling: Social Cost and Welfare	Entire paper
2. How does each factor listed below affect the technical merits of using an economy-wide model for estimating social costs? Please consider the relative importance of these factors separately. [See charge for list of factors.]	Economy-wide Modeling: Social Cost and Welfare	4 and 5
3. Are other factors beyond those listed above relevant to consider when assessing whether and how to model the social costs of a regulatory action in an economy-wide framework?	Economy-wide Modeling: Social Cost and Welfare	4 and 5
4. What are the particular challenges to representing regulations that are not directly implemented through price in an economy-wide framework? Under what circumstances is it particularly challenging to accurately represent such regulations in these models relative to representing them in other modeling frameworks?	Economy-wide Modeling: Social Cost and Welfare	3 and 4
5. Setting aside benefits for the moment, what are the appropriate metrics to measure social costs? What are the advantages or drawbacks of using an EV measure vs. GDP or household consumption to approximate a change in welfare?	Economy-wide Modeling: Social Cost and Welfare	2 and 6
6. What conceptual and technical merits and challenges are important to consider when incorporating and potentially linking of detailed sector cost models or bottom-up engineering estimates of abatement costs with a CGE model?	Economy-wide Modeling: Social Cost and Welfare	3 and 7
7. Are there other economy-wide modeling approaches beside CGE that EPA should consider for estimating the social costs of air regulations (e.g., input-output models, econometric macro models, dynamic stochastic general equilibrium models)? What are the potential strengths and weaknesses of these alternative approaches in the environmental regulatory context compared to using a CGE approach?	Using Other (Non-CGE) Economy-Wide Models to Estimate Social Cost of Air Regulation	Entire memo (and sections 2 and 3 of social cost white paper

Section 2 of the charge: Technical merits and challenges of using economy-wide models to consider the benefits of an air regulation

Charge Question	White Paper/Memo	Relevant Sections
1. Setting aside costs for the moment, what are the main conceptual and technical hurdles to representing the benefits of an air regulation in a general equilibrium framework (e.g. data requirements, developing detailed subsections of the model such as more realistic labor markets, scale and scope)? What would be required to overcome them?	Economy-Wide Modeling: Benefits of Air Quality Improvements	3, 4, and 5
2. How do we reconcile these two measures [individuals' willingness to pay for risk reductions, and changes in equivalent variation or household consumption]? What type of information does each of these measures convey?	Economy-Wide Modeling: Benefits of Air Quality Improvements	2 and 4.1 (other parts of section 4 are relevant)
3. What are the conceptual and technical challenges to constructing the relationship between public health and economic activity? How can we best capture and communicate the uncertainty surrounding this relationship?	Economy-Wide Modeling: Benefits of Air Quality Improvements	2.3, 3, 4, and 5
4. Is it technically feasible and appropriate, and does the empirical literature credibly support, the modeling of mortality and morbidity impacts as a change in the time endowment? If not, what key pieces of information are needed to be able to incorporate mortality and morbidity impacts into a CGE model? Are there other approaches to incorporating these impacts that warrant consideration?	Economy-Wide Modeling: Benefits of Air Quality Improvements	3.1, 3.2, and 4.1
5. Is there sufficient empirical research to credibly support incorporating other representations of mortality and morbidity impacts or additional benefit or dis-benefit categories? Is there an empirical literature to support the incorporation of potential health consequences of regulation, outside of those directly associated with pollution? What approaches could be used to incorporate these additional effects? What are the conceptual and technical challenges to incorporating them? Under what circumstances would the expected effects be too small to noticeably affect the quantitative results?	Economy-Wide Modeling: Benefits of Air Quality Improvements	2, 4.1 - 4.4
6. Can these changes from employment shifts be incorporated into a CGE model, and if so, how? If these positive and negative impacts from employment shifts cannot be incorporated into the CGE model, can they be reflected in the economic impact assessment, and if so, how?	Economy-Wide Modeling: Benefits of Air Quality Improvements	4.4

Section 2 of the charge (continued):

Charge Question	White Paper/Memo	Relevant Sections
7. Is this a change [in relative preferences as health improves] that could be captured in a CGE model? Under what circumstances would the expected effect be too small to be of importance to the quantitative results? If this effect cannot be modeled, how can the approach to incorporating the change in medical expenditures, as employed in the Section 812 study, be improved upon?	Economy-Wide Modeling: Benefits of Air Quality Improvements	3, 4.3
8. Is there a sufficient body of credible empirical research to support development of a technique for incorporating productivity gains and other benefits or dis-benefits that have not been typically quantified into a CGE framework? If so, are there particular approaches that EPA should consider?	Economy-Wide Modeling: Benefits of Air Quality Improvements	4.5
9. Is there a sufficient body of empirical research to support the development of techniques for incorporating [non-market] impacts into existing CGE models that may be available to EPA? What are the particular challenges to incorporating non-use benefits into a general equilibrium framework (e.g. non-separability)?	Economy-Wide Modeling: Benefits of Air Quality Improvements	3.3
10. Relative to other approaches for modeling benefits, what insights does a CGE model provide when benefits or dis-benefits of air regulations cannot be completely modeled? How should the results be interpreted when only some types of benefits can be represented in a CGE modeling framework?	Economy-Wide Modeling: Benefits of Air Quality Improvements	3
11. For some benefit endpoints, EPA takes into account the spatial distribution of environmental impacts when quantifying their effects on human populations. In these cases, is it important to capture the spatial component of health or other types of benefits in an economy-wide framework? What would be the main advantages or pitfalls of this approach compared to partial equilibrium benefit estimation methods used by EPA?	Economy-Wide Modeling: Benefits of Air Quality Improvements	5