

## Attachment A. Scope of Work

This attachment describes the BBC Research & Consulting (BBC) team's scope of work for developing a test application of the *Framework for Economic Analysis* on behalf of the Western Regional Air Partnership (WRAP). This work will serve three main purposes:

- Apply the framework to a realistic WRAP issue to test its utility;
- Further revise the guidance document we developed previously, the *Framework*; and
- Assist the WRAP Economic Analysis Forum (EAF) in demonstrating the benefits of economic analysis to the WRAP community using the framework and its test application to a realistic issue.

### Approach and Key Assumptions

BBC will continue to work closely with the EAF during the test application process to ensure agreement on the definition of the strategies to be tested and to review key assumptions, methods and preliminary results.

To conduct the application test, BBC will perform each of the 17 steps identified and described in the *Framework*. We do not reiterate each of the 17 steps here. However, it is important to make some initial assumptions concerning the extent of the analysis and choices among methods and data sources in order to define and budget the test application.

The following discussion describes several tasks. For the analytical tasks, we also describe key assumptions for selected steps from the *Framework* that we have made for purposes of scoping, budgeting and scheduling this work. Steps not specifically described within the task narratives below will be performed as part of the test application; they simply have no particular key assumptions associated with them at this point in time.

**Task 1 – Scenario definition and socioeconomic baseline development.** In the initial task, BBC will work with the EAF to define two specific scenarios for purposes of economic analysis. BBC will also develop the necessary socioeconomic baseline information, using the IMPLAN model. In particular, this task relates to the following from the *Framework* steps (and corresponding assumptions for the test application).

- **Step 1. Establish the geographic scope and the discount rate(s) to be used in the analysis.** The analysis will include up to three states and a subset of the tribal lands located within the geographic areas encompassed by the states. Up to three tribes will be included.

- **Step 3. Identify baseline projections of the emissions that are the subject of the strategy.** The WRAP or other WRAP contractors will provide considerable assistance in this step. These inputs will include the types of emissions potentially affected by the test strategies and the current inventory and baseline projections for those emissions at a detailed geographic level (preferably at approximately the county level of detail).
- **Step 4. Develop a corresponding socioeconomic baseline.** BBC will review available documentation on the WRAP’s emissions projections for the study area, focusing on assumed industrial and demographic growth rates underlying the emissions projections. We will then combine the projected growth rates with current economic and demographic information about the study area to develop projected baseline socioeconomic conditions in 2002 and 2018. We will develop baselines for the three states as a whole and the three tribal areas. To conserve study resources, substate geographic detail (except for the test application tribal lands) will be kept to no more than three regions within each state – as opposed to developing separate baselines for each county within the test states.
- **Step 5. Define the regulatory strategy in terms of compliance requirements and timing, affected sources, emission reductions and air quality effects.** The EAF and its other contractors to provide the bulk of the information required to define two specific air quality management strategies (or scenarios).

Task 2 – Performance of the test application. The second task will be the actual application of the *Framework* to estimated benefits, costs, economic impacts and distributional implications of the test application. The following are details related to the relevant steps from the *Framework*.

- **Step 6. Estimate changes in air quality and visibility by location using WRAP models.** BBC will incorporate data provided by the WRAP or WRAP contractors into the benefits analysis, according to the variables identified in the *Framework*.
- **Step 7. Use prior epidemiological studies to estimate health benefits related to the air quality improvement.** This work will be led by Dr. Michael Mueller as BBC’s subcontractor.
- **Step 8. Monetize the estimated health benefits based on benefits transfer values of statistical lives, statistical life years and morbidity avoidance from previous studies.** This work will be led by Dr. Michael Mueller as BBC’s subcontractor.
- **Step 9. Monetize estimated visibility benefits based on benefits transfer values from prior studies.** This work will be led by Dr. Michael Mueller as BBC’s subcontractor.
- **Step 11. Estimate direct compliance costs using engineering estimates of costs of controls applied to specific facilities, analysis of the costs for model plants or, if necessary, application of general control cost values (such as \$/ton for particular pollutants and industries).** BBC will take data provided by the WRAP contractors and incorporate it into the cost analysis in the *Framework*.

- **Step 14. Apply direct benefits and costs to the REMI model to estimate market response and potential effects on economic metrics such as prices, output, employment and earnings.** For the test application, we will use the IMPLAN model. BBC will conduct a brief review of available prior studies (mostly from EPA) to identify potentially relevant elasticities (changes in industry sales/output in response to price/cost changes) for the industries or products most affected by the test strategies. We expect, however, that we will have to primarily rely on simplified elasticity assumptions, based on the nature of the affected industry or product, to convert cost changes into changes in output for IMPLAN modeling. Using IMPLAN, we may have to treat “forward linkages” (impacts on the purchasers of products that experience price changes from the test strategy) primarily in a qualitative, rather than fully quantitative, fashion.
- **Step 15. Potentially conduct more ad-hoc evaluations of the affordability of compliance strategies and potential impacts on the health of specific industries in cases where strategies are narrowly tailored and feasibility of compliance is uncertain.** BBC expects to look at no more than two industries in this step and the analyses will be based primarily on secondary data sources such as County Business Patterns, Economic Census, Risk Management Associates, EPA Sector Notebooks and possibly trade association publications. No original data collection, surveys or industry interviews are anticipated for the test application.
- **Step 16. Report information on air quality improvements, direct compliance costs and industry economic impacts by location to assist tribes in evaluating potential “spillover” effects from State Implementation Plans.** As much as the available data will allow, BBC will examine benefits, costs and impacts on the selected tribal lands in as the same fashion as the statewide analyses.
- **Step 17. Use similar approaches to evaluate potential benefits and impacts on low-income and minority populations and small businesses.** This somewhat simplified analysis will be based on the geographic incidence of benefits, control costs and impacts, the prevalence of small firms in the most affected industries and similar considerations.

BBC will develop a technical report documenting key assumptions, methodological choices, data sources and detailed modeling results from the test application.

Task 3 -- Refinements to the existing *Framework* document. BBC will make any necessary refinements, enhancements or modifications to the existing *Framework for Economic Analysis of WRAP Strategies* guidance document based on the test application experience and input from the EAF.

Task 4 -- Data collection plan. As part of the work conducted under Task 1 and Task 2, BBC will document the data requirements and data sources for the test application in full detail. In Task 4, we will enhance this documentation by identifying additional data requirements necessary to conduct the analysis at a more comprehensive geographic level (e.g. including the full WRAP region). If relevant, we would consider data requirements if other models were used (e.g. the REMI model).