

Final Report

**Air Emission Reduction Incentives
Program Development**

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Prepared for

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EXECUTIVE SUMMARY

In September 2001, SAMI contracted with BBC Research & Consulting (BBC) to assist the Southern Appalachian Mountains Initiative (SAMI) in developing and evaluating potential incentive-based approaches to reducing emissions in the SAMI region. The focus of this work was on institutional (e.g., firm and organizational) emissions and incentives; SAMI examined consumer incentives in a separate effort.

Background

The incentives evaluation was based around a series of workshops with the SAMI Policy and Technical Oversight Committees (PC/TOC) and, ultimately, with the SAMI Operations Committee. In all, two face-to-face workshops and a conference call discussion were held with the PC/TOC and a final workshop was held with the Operations Committee. Between the first and second workshops, BBC also conducted an e-mail survey of SAMI stakeholders and compiled information from interviews with industry representatives concerning incentive-based approaches. The general topics of each workshop were as indicated below:

- Workshop One (PC/TOC, November 1, 2001)—Defining incentives and general category definitions
- Workshop Two (PC/TOC, December 4, 2001)—Narrowing the options
- Conference Call (PC/TOC, January 8, 2002)—Further specification of seven selected alternatives
- Workshop Three (Operations Committee, February 19, 2002)—Potential recommendations

Prior to each of the workshops, BBC conducted research on the topics of discussion through review of existing reports and studies, telephone interviews with state and federal administrators of relevant programs and a limited amount of modeling using SAMI's existing emissions inventory and cost estimates.

Observations

Key observations from this effort are described in the bullets below.

- **Definition of incentives**—There is more than one definition of what is meant by an incentive-based approach. The SAMI PC/TOC opted to focus on a broad definition for purposes of this evaluation, including both positive and negative types of incentives and flexible compliance options such as trading programs.

- **Pros and cons of incentive-based approaches**—In general, there are potential advantages and disadvantages of incentive-based approaches relative to more traditional command and control type regulation:
 - **Pros** Potential advantages include lower cost of reducing emissions, encouraging those who can do more than comply with existing requirements to do so and recognizing that businesses may be able to identify opportunities and more efficient methods of emission reduction.
 - **Cons** Potential disadvantages are that effectiveness and compliance costs are difficult to predict and monitoring requirements can be intensive. Many, though not all, incentive-based approaches could be expected to have a relatively small impact on emissions relative to the levels of reduction found in SAMI's potential strategies.
- **SAMI stakeholder priorities**—Based upon the survey of SAMI participants, stakeholders have both hopes and concerns regarding incentive-based approaches. Stakeholders were generally in agreement that the most important criteria in evaluating any incentive-based approach was the environmental benefit it could provide at the Class 1 sites in the region. Stakeholders differed in terms of other criteria, with industry representatives focused on the importance of low cost to emitters, environmental representatives prioritizing the amount of aggregate emissions reduced and governmental representatives focusing on feasibility of implementation and administration.
- **Industry interviews**—Input was also gathered from approximately 25 face-to-face interviews with representatives of ten of the largest emitting industries in the SAMI region. In general, these representatives were more supportive than not of voluntary incentive programs, though they cautioned that the incentives must be tangible from the firms' perspective, and that some existing incentive programs have not delivered as hoped. Financial incentives, such as tax and rebate programs, received more mixed reviews. While many in industry view trading programs as a flexible compliance mechanism rather than a true incentive-based approach, these representatives were strongly supportive of trading programs if mandatory emission reductions are to be established.
- **Potential alternatives**—The PC/TOC was able to narrow the array of potential options down to seven varied alternatives that fall into essentially three groups. These groups might be described as low cost and moderate reductions, high cost and high reductions and flexible compliance approaches.
 - **Low cost and moderate reductions** Two voluntary incentive-based mechanisms were developed and analyzed in some detail. These alternatives are based upon the most successful voluntary programs to date in the U.S., but each would face a number of challenges in the SAMI context. Potential SO₂ and NO_x emission reductions from either program were estimated at 500,000 combined tons per year or less. Potential incentives include public

recognition, expedited or extended permitting and/or state income tax credits. Utility sources may be less responsive to voluntary programs than other industries given more extensive regulation of utility emissions up to this point.

- Alternative A—Sector Based Voluntary Incentive Program. Key elements include formation of sector-specific groups to identify best practices for reducing emissions and desired regulatory or compliance incentives for the sector.
- Alternative B—Targeted Emitter Voluntary Incentive Program. Key elements include specific targeting of the largest emitters in the SAMI region and efforts to generate strong positive public relations regarding participation in the program.
- ***High cost and high reductions*** Three alternatives were analyzed that involve either facilitating the pass-through of emission control costs to industry customers, or generating tax revenues and using those revenues to rebate a substantial portion of control costs. These alternatives could, at least theoretically, be designed to achieve the magnitude of emission reductions envisioned in the SAMI strategies. There is some international, but little U.S., experience with such mechanisms and there would be a number of institutional and political challenges in implementing these alternatives.
 - Alternative C—Utility Cost Recovery Program. Modeled upon the current Clean Smokestacks Bill under consideration in North Carolina. Key elements include automatic pass-through of allowable emission control costs to utility customers outside of the traditional public utility commission review process.
 - Alternative D—Sector Tax and Rebate Program. Key elements include the establishment of new taxes on SO₂ and NO_x emissions with the revenues used to defray documented abatement costs in the same sector.
 - Alternative E—Cross Sector Tax and Rebate Program. Key elements include additional taxes on the sale of gasoline in the SAMI region, with the revenues used to defray documented abatement costs for utility and industrial point sources.
- ***Flexible compliance approaches*** Two alternatives based on trading programs were analyzed. Each alternative would primarily serve to reduce the costs and economic impacts if SAMI were to establish a legally mandated regional cap on SO₂ and NO_x emissions.

- Alternative F—Cap and Trade Program. Key elements include the establishment of a regional cap on emissions and trading rules to allow the creation of a regional allowance market. This alternative was designed to essentially reflect the trading assumptions built into the existing SAMI strategies.
- Alternative G—Cross Sector Trading Program. In addition to the elements included in Alternative F, this alternative envisions the establishment of rules to allow mobile source credits to be used in the trading program. While this alternative could potentially further reduce the costs to industry, there is little successful precedent for this approach in the U.S.

Conclusions

Based upon BBC's research and input from the SAMI committees during this evaluation, several conclusions can be drawn regarding incentive-based approaches focused on institutional participants:

- **There is no "silver bullet"**—there are tradeoffs involved with any of the incentive-based approaches. Generally, those with the lowest costs also offer lower potential benefits (in terms of reductions) and high levels of uncertainty. The study team recognizes that SAMI encountered difficulties with an earlier effort to encourage voluntary reductions among regional industries because of concerns that making voluntary reductions would raise the cost of subsequent mandatory reductions to meet forthcoming federal requirements. Similar issues could arise with new SAMI voluntary programs.
- **Appropriate incentive-based mechanisms depend on SAMI's objective**—if SAMI wishes to use incentive-based approaches as an alternative to mandatory regulation of emitters, the alternatives in the first or second group might be most appropriate. If SAMI wishes to use incentive-based approaches as a means of implementing its strategies, alternatives in either the second or the third group might be the most useful.
- **Implementation issues**—the majority of the alternatives might be most effective if implemented region-wide, though Alternative B and C could be reasonably implemented on a state-by-state basis. While administrative implementation is easier, most of the alternatives may require passage of state legislation in order to be implemented.
- **Now may not be the time**—the SAMI Operations Committee indicated concerns that industry retrenchment during the current economic climate may discourage the success of incentive-based approaches. Individual states may wish, however, to consider developing programs based upon one or more of the seven alternatives at appropriate points in the future.

- **New taxes difficult to implement in current political climate**—Alternatives D and E involve new taxes, and Alternative C implies an increase in utility rates charged to customers. All of these will be difficult to “sell” with current political attitudes.
- **Incentives may be applicable to other pollutants and other sources**—this study only looked at incentives that might reduce emissions of SO₂ and NO_x and focused on larger industries/emitters. Similar incentives may work to reduce other pollutants, especially ones that have not been so heavily regulated, and/or for other or smaller industries/sources.

SECTION I.

Introduction

In September 2001, the Southern Appalachian Mountains Initiative (SAMI) contracted with BBC Research & Consulting (BBC) to assist SAMI in developing and evaluating potential incentive-based approaches to reducing emissions in the eight state SAMI region. The focus of this work was on institutional (e.g., firm and organizational) emissions and incentives; SAMI examined consumer incentives in a separate effort.

Context

Over the past several years, SAMI has undertaken an array of technical research related to air quality in the Southeastern states, particularly focusing on the Class I sites in the Appalachian Mountains. The ultimate purpose of SAMI's research is to assist the eight SAMI states in developing policies to protect and enhance air quality in the region. SAMI expects that adoption and implementation of SAMI recommendations will occur, if at all, through essentially voluntary political decisions on a state-by-state basis.

In this context, incentive-based approaches were believed to potentially offer an attractive alternative to command and control regulation. Incentive-based approaches can, at least theoretically, offer opportunities for achieving emissions reductions at lower cost and with greater flexibility than specific control requirements. Such approaches may be more readily acceptable to businesses and politicians. Because incentive-based approaches rely upon market mechanisms and voluntary behavioral responses, however, the outcomes from such approaches can be more difficult to predict than traditional control mandates.

Purpose and Methodology

The purposes of this effort were to develop information about the incentive-based options that could be available to SAMI and to seek to facilitate development of consensus recommendations regarding specific incentive-based approaches.

The evaluation was organized around a series of workshops with the SAMI Policy and Technical Oversight Committees (PC/TOC) and, ultimately, with the SAMI Operations Committee. In all, two face-to-face workshops and a conference call discussion were held with the PC/TOC and a final workshop was held with the Operations Committee. Between the first and second workshops, BBC also conducted an e-mail survey of SAMI stakeholders and compiled information from interviews with industry representatives concerning incentive-based approaches. Prior to each of the workshops, BBC conducted research on the topics of discussion through review of existing reports and studies, telephone interviews with state and federal administrators of relevant programs and a limited amount of modeling using SAMI's existing emissions inventory and cost estimates.

Results

Through the process of this evaluation, SAMI was able to winnow down the wide range of potential incentive-type approaches to a set of seven potential alternatives. These alternatives represent a continuum of varied approaches ranging from voluntary incentive programs to flexible compliance options such as trading programs. Generalized estimates of the potential effectiveness, direct costs to participants and administrative costs were developed for each of the seven alternatives.

Implementation requirements and key challenges for each alternative were also identified.

SAMI did not ultimately endorse or reject any of the seven potential alternatives developed through this evaluation. Instead, it is hoped this information may be useful to the SAMI states in the future if and when they decide they would like to consider incentive-based approaches to making air quality improvements.

SECTION II.

Study Process

In establishing this effort to develop potential incentive-based strategies, SAMI and BBC selected an approach which emphasized an interactive process with SAMI stakeholders. Although BBC also conducted independent research to bring information to this process, the insights and contribution of stakeholders was a vital part of this effort. This section describes the study process.

Task 1

As outlined in the Request for Proposal (RFP) and our proposal, the purposes of Task 1 were to characterize the array of potential incentive options and to elicit the interests and priorities of the varied stakeholder groups involved in the SAMI process.

The first objective—characterizing and discussing the range of potential incentive mechanisms that SAMI could consider—was achieved through a workshop conducted with the PC/TOC in Nashville, Tennessee, on November 1, 2001.

The second objective—eliciting the interests and priorities of SAMI stakeholders—was undertaken through a combination of three vehicles:

1. direct feedback from stakeholders represented at the November 1, 2001 workshop during the course of workshop discussions,
2. distribution, collection and analysis of a structured survey of active SAMI stakeholders regarding incentives—conducted by e-mail between November 5th and November 25th, and
3. feedback concerning incentives obtained during the course of approximately 25 interviews conducted with firms in ten selected industries as part of the SAMI competitiveness assessment.¹

Task 1 Workshop. On November 1, 2001, BBC facilitated a workshop about incentives and this study with members of the PC/TOC and SAMI staff. The PowerPoint materials used to facilitate the discussion are included as Appendix A.

Key points of discussion at the workshop, and the consensus of the group on these points, are described below:

- ***How does SAMI wish to define incentives?*** Workshop participants reviewed two alternative definitions of incentives. The broader definition, from the United States Environmental Protection Agency (USEPA), included any type of mechanism that used financial means to motivate emission reducing behavior—potentially including any

¹ Case study industries included: electric utilities, natural gas transmission, textiles, primary metals, paper/paperboard, chemicals, liquid fuel providers, trucking, railroads and coal mining.

market-based mechanism (such as trading programs) and both positive and negative motivators. The narrower definition, from the Global Environmental Management Initiative, defined incentives as rewards for voluntary environmental improvement (positive motivators only).

Workshop participants clearly held differing views on how incentives should be defined. The group agreed, however, to use a broad definition at the outset of this study rather than foreclosing options that did not meet the narrower definition.

- ***How does SAMI see incentives fitting into its strategy?*** Workshop participants were asked the following question: "***Does SAMI see incentives as a means of implementing/achieving the emission reduction strategies it has been analyzing (e.g., Bold with Constraints, etc.) or as an alternative to the strategies?***"

Participants responded that their interest in incentives could be either as a means of achieving the SAMI strategies or as an alternative to the strategies. At least one participant from a state regulatory agency indicated an interest in having "a menu of options."

- ***Incentive categories.*** BBC presented a classification scheme, originally developed by USEPA, as a means of structuring the discussion about various incentive options. Following more detailed discussion of each category later in the workshop, participants revisited the classification scheme and were asked to help us identify which categories to focus on.

Participants agreed that BBC should focus on four of the categories: 1) voluntary programs, 2) subsidies, 3) taxes and rebates, and 4) trading programs. Specific comments provided by workshop participants in relation to each of the four categories are discussed below.

- ***Voluntary programs.*** Various workshop participants had experience with one or more of the example programs identified in the presentation and provided feedback concerning that experience. A number of other example programs were identified, including: Climate Challenge Program, DOE Best Practices Program, green pricing programs (such as the TVA Green Power Switch Program) and the Kansas City voluntary ozone program.
- ***Subsidies.*** Again, participants had experience with various programs in this category. It was noted that changes in the federal tax credits (improved depreciation allowances) for pollution control equipment (formerly Section 169) have greatly reduced their benefit. Some additional program examples suggested by participants included: programs offered under the Federal Energy Management Program (FEMP) and the North Carolina Clean Smokestacks Bill.

- **Taxes and rebates.** In this area, it was noted that Title V fees, which place a cap on the total amount of the fee rather than continue to rise with larger emission volumes, actually provide a disincentive for reduction.
- **Trading programs.** In this area, it was noted that other important trading system features include phasing, early reduction credits and opt-in provisions. In particular, some industry representatives experienced with the Acid Rain Trading Program indicated that implementing the program in phases and allowing for early reduction credits (or banking) was very important. It was also noted by one participant that the Acid Rain Trading Program has adversely affected air quality at the SAMI Class I sites, indicating that a geographically adjusted trading ratio might be important if trading programs are used as a vehicle to help meet SAMI's objectives.

Incentives survey of SAMI stakeholders. As the final element of the first workshop, BBC and workshop participants discussed the upcoming survey of SAMI stakeholders concerning incentives. The survey instrument was refined through the discussion. Following the workshop, BBC administered the e-mail survey with the assistance of SAMI staff. The stakeholder survey is described and analyzed in Appendix B.

Task 2

As outlined in the RFP and our proposal and confirmed at the Task 1 Workshop, the purposes of Task 2 were twofold. The first objective was to develop preliminary definitions and estimate the potential effectiveness of various incentive-based alternatives for each of the four incentive categories agreed upon at the Task 1 Workshop. The second objective was to develop and review a proposed ranking of these alternatives.

The first objective—developing a preliminary definition and estimating the potential effectiveness of the various incentive-based alternatives—was achieved through a four-step procedure.

1. We identified and reviewed existing domestic and international incentive-based programs within each of the four incentive categories agreed upon in the Task 1 Workshop.
2. We compiled and reviewed input from the Task 1 Workshop, the SAMI Stakeholder Survey and industry interviews regarding objectives and concerns about incentive programs and suggestions about specific mechanisms.
3. We characterized existing programs and program effectiveness through personal interviews with program staff and a review of appropriate secondary sources.
4. We employed these characterizations of existing programs to develop preliminary definitions of incentive-based alternatives.

The second objective—developing and reviewing a proposed ranking of the alternatives—was accomplished through the following sub-tasks:

- Using the results from the Stakeholder Survey administered as part of Task 1, as well as industry input regarding incentives collected during the course of interviews for the SAMI Competitiveness Assessment, we established three criteria upon which to evaluate the various incentive based alternatives. These three criteria were environmental benefit, cost to industry and ease of implementation/administration. The tabulated survey results and industry comments are included in the PowerPoint presentation in Appendix C.
- We then developed a three-tiered ranking system (Best, Medium, Worst) for each of these three evaluation criteria. Rankings for environmental benefit and cost to industry were based largely on anticipated results relative to established SAMI Strategy B1 emissions reductions and associated cost estimates. Rankings for the third criteria were based on whether or not a program precedent existed and whether the alternative would require significant administrative manpower.
- We reviewed the evaluation and ranking of these incentive-based alternatives during the course of the Task 2 Workshop conducted with members of the PC/TOC.

Task 2 Workshop. On December 4, 2001, BBC facilitated a workshop concerning the preliminary definition, potential effectiveness and proposed ranking of various incentive-based alternatives with members of the PC/TOC and SAMI staff. The PowerPoint materials used to facilitate the discussion are included as Appendix C.

Key points of discussion at the workshop, and the consensus of the group on these points, are described below:

- **Incentive alternative definitions.** BBC presented a list of incentive-based alternative definitions within each alternative category, along with our rationale for each definition. During the workshop presentation, participants were asked to review these definitions and suggest modifications, additions or deletions. Specific comments provided by workshop participants for each of the alternatives are discussed below.
 - **Voluntary programs.** There were few specific comments regarding voluntary incentives alternatives. Workshop participants agreed that the “sector-based” and “targeted emitter” alternatives were the most appropriate for SAMI to consider.² One participant wondered about the exact nature of the incentive in these types of programs, which led to further discussion regarding the nature of incentive programs in general. BBC suggested that if any alternatives from this category were selected for inclusion in possible recommendations, we would work with the Committees to more specifically define the incentive mechanisms.
 - **Subsidies.** In this category, workshop participants focused quickly on the “cost sharing” alternative, based largely on the proposed North Carolina Clean Smokestacks Bill. One participant was concerned about whether the incentives provided by this bill would be enough to obtain desired emissions

² The largest emitting sectors in the SAMI region are listed in Exhibit III-1 (Section III, Page 5).

reductions. Another participant noted that since cost sharing reduced a utilities risk profile, such an alternative could induce regulators to significantly reduce the rate of return that they were obligated to provide the utility.

- **Taxes and rebates.** The workshop saw a lively debate regarding alternatives in this category. It was noted in the presentation that taxes and rebates are more commonly used in Europe and there was some sentiment that they might not be appropriate for SAMI. One participant went so far as to say that he was opposed to emissions taxes in principle, and felt that even if the program included a rebate based on emissions abatement, SAMI was “moving down a slippery slope.”

Workshop participants were most intrigued with the notion of taxing mobile sources and distributing the revenue among point sources as an abatement incentive. There was some concern, however, that such a tax might drive away the tourist sector that SAMI states had worked so hard to cultivate. One participant, however, noted that a per-gallon tax on mobile sources would probably not be any more difficult politically than imposing a tax on the region’s utilities. Another participant raised the idea of taxing the sale of high emissions vehicles in the SAMI region, saying that instead of a “California car” you could have a “SAMI car.”

- **Trading programs.** There were very few comments from workshop participants regarding trading programs. There was some discussion of an approval from the Region 4 EPA office to allow the counting of mobile source reductions as new source set-asides. There was also discussion of whether the increased flexibility resulting from trading programs was really an abatement incentive or not. Overall, it was agreed that cap and trade programs have been analyzed in great detail, and that we would do better to focus any further analysis elsewhere.
- **Criteria for evaluating incentive alternatives.** BBC presented three separate criteria, derived from the results of the SAMI Stakeholder Survey, to be used in evaluating various incentive-based alternatives for the SAMI region. These criteria were benefit, cost to participants and ease of implementation/administration. Workshop participants were asked to comment on the appropriateness of these criteria.

Participants generally agreed that the evaluation criteria proposed by BBC were the criteria most appropriate for evaluating incentive alternatives within the SAMI region.

- **Incentive alternative ranking system.** BBC presented a preliminary incentive alternative ranking based on the three evaluation criteria discussed above. Workshop participants engaged in a lively discussion about whether a “SAMI strategy” or a “no reduction” baseline should be used in ranking the environmental benefit and cost to industry of alternatives. Participants agreed to move ahead with BBC’s rankings based on SAMI strategies, though some felt that all alternatives had been evaluated “somewhat harshly.”

Workshop participants also agreed that the “environmental benefit” criterion should be used to establish a preliminary “hurdle” for alternative evaluation. That is, SAMI would only consider those alternatives that scored a “Best” or “Medium” under this criterion. Under this criterion, four alternatives were eliminated from further consideration. Further, one alternative that had been given a medium ranking on environmental benefit (Energy Source Subsidy) was eliminated as being infeasible.

- ***Incentive-based alternatives selected for further specification.*** As the final element of the Task 2 Workshop, BBC and participants reviewed the list of incentive-based alternatives that cleared the environmental benefit hurdle. The seven alternatives (and their associated categories) that the Committees recommended for further specification are listed below.

Alternative	Category
A. Sector Based	Voluntary Programs
B. Targeted Emitter	Voluntary Programs
C. Cost Sharing	Subsidies
D. Sector Tax/Rebate	Taxes/Rebates
E. Cross Sector Tax/Rebate	Taxes/Rebates
F. Cap and Trade	Trading Programs
G. Cross Sector	Trading Programs

BBC agreed to refine the specification of these alternatives before facilitating the Task 3 recommendations.

Task 3

Purposes of Task 3 included further evaluation of the alternatives selected at the end of Task 2, presentation of the alternatives to the SAMI Operations Committee and facilitation of recommendations by the Operations Committee.

Further evaluation of selected alternatives. Following the Task 2 workshop, BBC conducted further research into the seven alternatives selected by the PC/TOC, including telephone interviews with administrators of similar programs and simplified modeling of costs and emission reductions, using SAMI’s existing emissions inventory and cost estimates.

Based upon this research, BBC developed a draft report providing more detailed specification of each alternative, estimates of potential emission reductions and annual costs for participants, administrative costs, implementation requirements and key issues in establishing a program based on the alternative. This draft report was reviewed with the PC/TOC in a January 8, 2002 conference call. The report was modified based on PC/TOC comments and questions, then provided to members of the Operations Committee (via e-mail) in advance of the Task 3 workshop.

The essence of the revised report on selected alternatives is contained in Section III of this report.

Task 3 Workshop. On February 19, 2002, BBC facilitated a workshop with the SAMI Operations Committee in Savannah, Georgia. The PowerPoint materials used to facilitate discussion at this workshop are included as Appendix D.

At the workshop, BBC presented an overview of the study process and the previous discussions with the PC/TOC. Highlights from the specification and evaluation of the seven alternatives selected by the PC/TOC were reviewed with the Operations Committee.

The Operations Committee did not act to endorse, or to reject, any of the seven selected alternatives at the Task 3 workshop. Operations Committee members suggested:

- **New taxes will be difficult to implement in current political climate—** Alternatives D and E involve new taxes, and Alternative C implies an increase in utility rates charged to customers. All of these will be difficult to “sell” with current political attitudes.
- **Incentives may be applicable to other pollutants and other sources**—this study only looked at incentives that might reduce emissions of SO₂ and NO_x and focused on larger industries/emitters. Similar incentives may work to reduce other pollutants, especially ones that have not been so heavily regulated, and/or for other or smaller industries/sources.
- **Now may not be the time**—the SAMI Operations Committee indicated concerns that industry retrenchment during the current economic climate may discourage the success of incentive-based approaches. Individual states may wish, however, to consider developing programs based upon one or more of the seven alternatives at appropriate points in the future.

SECTION III.

Further Specification and Evaluation of Selected Incentive-Based Alternatives

At the second workshop with the PC/TOC, on December 4, 2001, the Committees reviewed BBC's proposed preliminary definitions and evaluations of 12 incentive-based alternatives. The PC/TOC then requested that BBC develop more detailed specifications and further information concerning seven individual alternatives. The PC/TOC and BBC reviewed the initial draft of this information via conference call on January 8, 2002.

Overall Themes

As BBC worked to further specify the seven alternatives discussed in Section II, we noted several overall themes.

No "silver bullet". As noted during the second workshop, the study team did not find a perfect or easy answer to meeting SAMI's objectives through incentive-based approaches. In general, it appears likely to us that the alternatives that promote the largest and most certain emission reductions are also associated with the largest costs (to emitters, taxpayers or administrators). The potential emission reductions from the alternatives with the lowest costs tend to be the most uncertain.

Levels of incentives/disincentives and emission reductions. BBC made initial assumptions concerning the levels of incentives or taxes that might be recommended, target populations for voluntary incentive programs, etc. In many cases, we benchmarked the assumptions to the levels of reductions envisioned in SAMI Strategy B1. Such assumptions help make the descriptions more concrete and may facilitate further evaluation of the alternatives.

Role of incentives relative to SAMI objectives. In the initial workshop with the PC/TOC in November 2001, we posed the question of how SAMI saw incentives in relationship to its overall objectives and, particularly, in relation to the emission control strategies (such as B1, B3, etc.) which have been SAMI's principal focus. The PC/TOC responded that incentives might serve as either an alternative to the strategies or as a means of implementing the strategies.

BBC believes that some alternatives may be particularly suited to serving as alternatives to the strategies, while some may primarily serve as means to implement the strategies. In particular, we propose the following breakdown:

- Alternatives that might work best as means to implement the strategies:
 - Cap and Trade Program
 - Cross-Sector Trading Program

- Alternatives that might work best as an alternative to the strategies:
 - Sector Based Voluntary Incentive Program
 - Targeted Emitter Voluntary Incentive Program
- Alternatives that could be used to implement the strategies or as alternatives to the strategies:
 - Utility Cost Sharing Subsidy Program
 - Sector Tax and Rebate Program
 - Cross-Sector Tax and Rebate Program

State-by-state implementation versus coordinated regional effort. As the study team considered how each of the seven alternatives might be implemented, it appeared to us that while some of the alternatives may be reasonably implemented on a state-by-state basis, most would likely be considerably more effective if they were implemented in a coordinated effort across the eight state region. With SAMI scheduled to sunset in the near future, how such regional cooperation would be implemented is uncertain.

In BBC's view, the following alternatives could be reasonably effective if implemented on a state-by-state basis with modest levels of regional cooperation:

- Targeted Emitter Voluntary Incentive Program
- Utility Cost Sharing Subsidy Program

The following alternatives, which are either sector-based or involve allowance trading or potential revenue sharing amongst the states, would appear likely to be much more effective in a regional framework:

- Sector Based Voluntary Incentive Program
- Sector Tax and Rebate Program
- Cross-Sector Tax and Rebate Program
- Cap and Trade Program
- Cross-Sector Trading Program

Administrative implementation versus legislative implementation. During prior workshops with the PC/TOC, participants noted that alternatives that can be enacted administratively by the State Air Quality Management Agency would likely be easier to implement than alternatives requiring legislative approval.

While BBC did not seek a definitive legal opinion on this matter, we suspect that only the two voluntary incentive alternatives are likely to be implementable without legislative approval. Since states do have authority to levy permit fees to cover administrative expenses, it is possible that the Sector Tax and Rebate Program might be implemented administratively (with the rebate portion termed a program administrative expense to justify the required "fee" levels), but this might well be subject to legal challenge. In the absence of federal authority, we believe that state laws would be required to establish a more restrictive emission cap than the federal requirements in order to facilitate either of the regional trading program alternatives.

While BBC believes it is possible that the voluntary incentive alternatives could be implemented without state legislation, it is worth noting that the review of voluntary emission reduction programs conducted by the Global Environmental Management Initiative concluded that programs backed by legislation were often more successful. Legislation can help ensure program continuity over time and may provide a more definitive signal of intent and support for such programs.

Implementation of individual alternatives versus alternative groups. During our December 4, 2001 presentation to the PC/TOC, and again during our January 8, 2002 conference call, participants raised the notion that some alternatives may complement one another. In other words, it may be most effective for SAMI to recommend the implementation of a group of alternatives.

In BBC's view, this characteristic exists most strongly between the Voluntary Incentive programs and some of the other alternatives. The Cost Recovery (Alternative C), Tax/Rebate (Alternatives D and E) and Trading Programs (Alternatives F and G) represent fundamental differences in approach, and thus should probably be viewed as substitutes for one another. However, the financial incentives available from the tax/rebate alternatives could be combined with either of the voluntary approaches.

Alternatives Selected for Future Specification and Evaluation

The seven alternatives selected by the PC/TOC for further consideration (in no particular order of preference) were:

1. Alternative A: Sector Based Voluntary Incentive Program
2. Alternative B: Targeted Emitter Voluntary Incentive Program
3. Alternative C: Utility Cost Recovery Program
4. Alternative D: Sector Tax and Rebate Program
5. Alternative E: Cross-Sector Tax and Rebate Program
6. Alternative F: Cap and Trade Program
7. Alternative G: Cross-Sector Trading Program

The remainder of this section provides more detailed descriptions of the seven alternatives for review by SAMI. For each of the seven alternatives, BBC sought to provide the following types of information:

- ***Alternative description***—a draft description of the key elements of the alternative;
- ***Potential benefits and costs***—an estimate of the potential effects of the alternative on emissions, and costs for emitters and administrators;
- ***Implementation requirements***—a discussion of the role of participants and regulators, as well as key requirements, in implementing and administering the alternative; and
- ***Key challenges***—identification of some of the principal obstacles or potential concerns associated with the alternative.

Alternative A: Sector Based Voluntary Incentive Program

Alternative Description

Under this voluntary program, firms in selected, high emitting industrial sectors within the SAMI region would be invited to work together and form sector-specific groups to identify and implement economically efficient means of reducing emissions. Sector groups would work with regulators to identify a list of sector-specific best management practices (BMPs) that participating firms agree to abide by, as long as it is cost effective for them to do so. BMPs might range from emissions avoidance (through changes in fuels or production processes) to emissions abatement (through the installation of pipe end emissions control equipment). The study team assumed that sector groups would be requested to seek to identify plans to reduce the NO_x and SO₂ emissions of participating firms by 20 percent by 2010. A primary incentive for firms to participate is the opportunity to work with and share information with other firms in their sector in order to develop specific BMPs. Regulators would further encourage this effort by offering a variety of incentives, including public recognition and regulatory relief, in exchange for successful development and implementation of mutually agreed upon sector plans. The sector group would work with the regulators to identify the most valuable incentives for participating firms in their particular industry.

This program is intended to be very flexible. To operationalize the plans and BMPs developed by the sector group, participating firms would prepare an implementation plan and submit annual reports to the regulating authority. Firms could terminate their participation at any time with no penalties or negative publicity. Continued participation, however, would be rewarded with a variety of incentives including public recognition, regulatory relief and potentially improved relationships with regulatory agencies. This alternative could also be structured so that participants get the added benefit of a state corporate income tax credit. That option has been included in the analysis below.

The 20 percent emissions reduction target should be seen as incremental to all other existing programs. Thus, sectors that have already made significant emissions reductions (e.g., Utilities) might only be able to accomplish lesser reductions cost effectively. For the purposes of this analysis, however, we assumed a 20 percent emission reduction target across all sectors.

Potential Benefits and Costs

Emissions. Emission reductions will depend on the extent of participation in the program. EPA's Natural Gas Star precedent program was able to achieve a 40 percent participation rate among natural gas production companies and 47 percent of distribution connections. For purposes of considering this alternative, we assumed SAMI (or its successor) would seek to establish sector groups for both regional utilities and for the ten largest emitting non-utility point source industries within the SAMI region. Though we included both within the analysis, it must be recognized that important differences exist between utilities and other industries. Because utilities are operating within a regulated environment, they face a different competitive environment than firms in other sectors. Exhibit III-1, below, details A2 (or "On the Way") annual aggregate emissions of NO_x and SO₂ for these industries.

Exhibit III-1.
**Sector Based Voluntary
Incentives Alternative:
Largest Emissions Sectors
in the SAMI Region**

*Standard Industrial Classification.

Source:
Pechan Data.

<i>Industry</i>	<i>2-Digit SIC* Code</i>	<i>Baseline Emissions (000 tons)</i>
Electric Utilities	49	4,233
Paper Products	26	360
Chemical Products	28	255
Stone, Clay, Glass	32	138
Natural Gas	49	128
Primary Metals	33	114
Textiles	22	53
Petroleum Refining	29	32
Food Products	20	22
Fabricated Metals	34	15
Oil and Gas Extraction	13	10
Total, Non Utilities		1,127
Grand Total		5,360

While participation may vary significantly by sector, it seems reasonable to assume an average 25 percent initial participation rate. At this participation level, and assuming each participating firm reduces aggregate NO_x and SO₂ emissions by an average of 20 percent, regional NO_x and SO₂ emissions would fall by 212,000 tons annually from utility reductions and by 55,000 tons annually from reductions by the ten point source industries by 2010.

Cost. Presumably, participating sectors and individual firms would identify the most cost effective means to reduce emissions and would not implement any modifications whose costs were not perceived to be balanced by corresponding benefits to the firms in terms of public recognition (and potential corresponding increase in market share), regulatory relief or other incentives.

Administrative cost. Significant administrative costs associated with this alternative would likely be the time and effort required of both participating firms/sectors and regulators in working together to identify and implement both emission-reducing BMPs and incentive-creating modifications to the regulatory process. There would be additional direct costs associated with advertising and media

campaigns to publicize the accomplishments of participants. EPA's Natural Gas Star program has an operating budget that ranges between \$800,000 and \$1 million annually. Since SAMI's potential Sector Based Voluntary Incentive Program would be working with 11 different industries, but with a much smaller universe of companies, it is probably reasonable to estimate administrative costs at around \$3 million annually.

Corporate income tax credits. As discussed above, corporate income tax credits represent another potential incentive that could be used to encourage participation in this alternative. Exhibit III-2, below, presents potential annual aggregate tax credit amounts, by state, for SAMI region utilities and the ten other point source industries. Credits were estimated assuming B1 annualized strategy costs as the basis for the credit, and a 25 percent participation rate among firms. This provides an upper bound estimate of potential state-level income tax credits; actual tax credits might be less. Since Tennessee Valley Authority (TVA) is not subject to corporate income taxes, their plants were not included in the utility totals.

In reality, credits could be applied to the one-time capital cost incurred by firms during the year of purchase of emission control equipment. In addition, uncertainty exists regarding the timing of these costs and corresponding credits. Finally, these order of magnitude estimates of potential credits may be overstated since existing depreciation allowances on capital purchases have not been netted out, and the magnitude of individual firms' credits would be effectively capped by their state income tax liability.

**Exhibit III-2.
Sector Based
Voluntary
Incentives
Alternative:
Estimated Annual
Corporate Income
Tax Credits by
State**

Source:
Pechan Data.

<i>State</i>	<i>Estimated Potential Corporate Income Tax Credit (Utilities) (\$ Millions)</i>	<i>Estimated Potential Corporate Income Tax Credit (Non-Utility Point Sources) (\$ Millions)</i>
Alabama	\$27.6	\$21.0
Georgia	\$47.6	\$52.8
Kentucky	\$23.0	\$6.1
North Carolina	\$41.2	\$46.2
South Carolina	\$7.3	\$26.6
Tennessee	\$0.4	\$42.0
Virginia	\$7.0	\$47.8
West Virginia	<u>\$51.0</u>	<u>\$20.2</u>
SAMI Total	\$205.1	\$262.6

Exhibit III-2, above, suggests that SAMI utilities have the potential of earning nearly 80 percent the amount of aggregate corporate income tax credits as the ten point source industries. Nearly one-quarter of the utility credit total goes to West Virginia utilities, while the Tennessee utility tax credit estimate is minimal because the TVA dominates the State's electricity generation.

Implementation Requirements

While this program could be implemented on a state-by-state basis, it would likely be most effective if developed on a regional basis to allow more comprehensive coverage of the key sectors and provide a more level playing field within the region. Assuming such a framework, the following steps might be utilized to establish this alternative:

- ***Establishment of regional agency.*** The eight SAMI states would establish a regional agency to coordinate this program through an interstate compact. This agency would identify targeted sectors with the potential for large emission savings. The agency, perhaps working through existing industry trade associations and sector groups (in a similar fashion to the Industries of the Future program with DOE's Office of Industrial Technologies), would then invite firms from these key sectors to work together to identify the most feasible emission reduction or control approaches. The agency would also be responsible for coordinating with the eight states' individual regulatory agencies and with USEPA. The state regulatory agencies would have to agree upon and implement any incentives related to regulatory or permitting relief. The regional agency would also be responsible for developing a public relations program to encourage industry participation and reward successful participants with public recognition of their achievements.
- ***Sector group planning.*** Since they have the most familiarity with their sector, the industry sector groups would play the lead role in defining the BMPs and establishing emission reduction targets. They would also work together (and consult with regulators) to identify which combinations of permitting or compliance relief (e.g., extended permitting, expedited permitting, reduced inspections, etc.) are of most value.
- ***State regulatory agencies.*** Individual state regulatory agencies would likely be responsible for implementing the permitting and regulatory incentives to be provided to participating sectors/firms. These agencies would also insure compliance with individual firms' implementation plans.

Key Challenges

Implementation of this program will be subject to a variety of critiques. Some of the key criticisms which program designers must respond to are the following:

Alternative compliance approaches. This alternative envisions that participating firms/sectors will be willing to reduce their emissions below legal requirements through innovative approaches in exchange for greater flexibility in the regulatory process. Such an approach will also require flexibility and innovation on the part of regulators.

Industry-regulator cooperation. One of the most difficult challenges with this type of program is the development of a cooperative spirit between participating firms and regulatory authorities, especially if their historical relationship has been difficult. The extent that such cooperation can be fostered, however, provides a potentially significant non-monetary benefit for program participants.

Participants in other voluntary programs have reported that improved relationships with regulatory authorities has been one of the most important benefits they have received.¹

Alternative B: Targeted Emitter Voluntary Incentive Program

Alternative Description

Large emitters of NO_x and SO₂ in the SAMI region would be invited to participate in voluntary, state-level programs with the goal of achieving a designated percentage reduction in aggregate emissions for these firms by 2010. (The study team assumed a goal roughly comparable to projected reduction levels for industrial point sources under SAMI's B1 Strategy). In exchange for their participation, extensive efforts will be made by program administrators to generate positive publicity about their company, and participants will be allowed to use a designated label (such as "Friend of the Southern Appalachians," or something similar) in their marketing and correspondence. Further, participating companies would be eligible for a menu of other potential benefits, including extended permit deadlines and expedited permitting procedures. (State corporate income tax credits could be offered under this alternative, as under Alternative A. The study team has not, however, included that incentive in this draft specification.)

The study team assumed that targeted participants for this program would be chosen from the top 50 emitting electric utilities and the top 50 emitting firms in other point source industries. While these 100 targeted firms would be first invited to participate in this program, the program could later be expanded depending on the success initially achieved. In addition, this analysis assumes that firms would be targeted solely based on estimated emissions levels. It is also possible to structure the program so that firms would be targeted both on the basis of emissions levels and proximity to SAMI Class 1 areas. A review of the SAMI Geographic Sensitivities analysis indicates that air quality at individual SAMI Class 1 sites may be most impacted by emissions reductions within that state and from adjacent states. If SAMI were to further prioritize among Class 1 sites, it would be possible to further refine the list of targeted emitters for this program from a geographical perspective. According to SAMI PC/TOC members, some firms have, in fact, already begun to incorporate proximity to Class 1 sites in their emissions abatement decisions.

The Targeted Emitter Program is intended to be highly flexible. Participating companies would design and submit their own plans for pollution control, as well as the amount of reductions achieved to the organizational contact. No regulatory inspection or monitoring takes place. Additionally, if this program were structured to closely follow the example set by the EPA 33/50 program, a baseline level of public recognition would be provided to firms for simply agreeing to participate and developing a pollution control plan, while a higher level of recognition would be provided to firms that successfully achieve the targeted reduction level.

As with the Sector Based Voluntary Incentives Program, calculated emissions reductions would be incremental to other existing abatement programs. Firms that have already achieved significant reductions (e.g., Utilities) might only be able to accomplish lesser reductions. For this analysis, however, we assumed a 20 percent emissions reduction for each of the target firms that choose to participate.

¹ Zatz, Michael and Shana Harbour. "The United States Environmental Protection Agency's 33/50 Program: the Anatomy of a Successful Voluntary Pollution Reduction Program." *Journal of Cleaner Production*, 1999. 7:17-26.

Potential Benefits and Costs

Emissions. Because compliance is voluntary and levels of reduction are simply recommended, predicting emissions reductions is difficult. EPA's 33/50 program was able to achieve a 60 percent participation rate among targeted emitters. It seems fairly conservative to assume that this program will be half as successful and 30 percent of targeted firms might elect to participate.

Due to data constraints, the study team used the 100 largest abaters under the SAMI B1 strategy as a proxy for the 100 largest emitters overall. If 30 percent of these firms in the SAMI region elect to participate in the program, and each firm reduced emissions to B1 strategy levels, aggregate annual NO_x and SO₂ emissions would fall by just over 530,000 tons per year. Exhibit III-3, below, gives a state level breakdown of these emissions reductions, for both utilities and other point sources, assuming firms are targeted strictly on an emissions basis and that participation is random among targeted firms. Under this scenario for the program's design, utility sources account for the majority of these projected reductions.

Exhibit III-3.
**Targeted Emitter
Voluntary Incentive
Program: State Level
Distribution of Predicted
Emissions Reductions**

Note:
Emissions Reductions are measured in thousands of tons.

Source:
Pechan Data.

State	Utilities	Non Utility Point Sources
Alabama	58	7
Georgia	115	7
Kentucky	54	0
North Carolina	98	4
South Carolina	21	3
Tennessee	21	13
Virginia	13	6
West Virginia	<u>110</u>	<u>3</u>
SAMI Total	489	44

Cost. Presumably, targeted firms that chose to participate would determine the cost effective means to achieve desired emissions reductions. These firms would not implement any modifications whose costs were not perceived to be balanced by corresponding benefits to the firms in terms of public recognition, regulatory relief or other incentives.

Administrative cost. Administration and media costs of the program would be incurred in each participating state by the agency administering the program. Staff time would need to be allocated to the program for recruitment and to serve as a contact for participating organizations. Additionally, media space would need to be purchased in business journals, newspapers and other appropriate sources.

Administration costs are somewhat uncertain because of the difficulties in estimating how many respondents would actually enroll in the program and voluntarily reduce emissions for positive public recognition. In the EPA's 33/50 program, enrollment levels peaked at 1,300 participants, and administration costs were \$500,000 annually. It is probably reasonable to think that administration costs for a similar, but more narrowly targeted program in the SAMI region might be comparable or lower.

Participating companies would incur the full costs of abatement. They could choose to abate NO_x and/or SO₂ in any manner; therefore, the costs will vary according to the methods chosen.

Implementation Requirements

The management of the Targeted Emitter Program will need to be established before companies can be recruited to participate. While the most likely scenario is the establishment of similar programs in each individual SAMI state, the highest success rate might be achieved if these programs were coordinated regionally, possibly through some sort of interstate compact. Such coordination, for example, would be necessary to ensure comparable media exposure for all program participants across the SAMI region.

State government. Individual state regulatory agencies will need to establish the permitting, regulatory and compliance incentive options to be offered to targeted emitters in their state. Again, general consistency among the states in the incentives offered could enhance program success. An appointed contact would have to coordinate recruitment and public recognition of the Targeted Emitter Program. Recruitment would involve letters, phone calls and follow up measures that would increase the number of participating companies. The contact would also have to coordinate with regional media sources in order for the participants to be publicly recognized for their efforts to reduce pollution.

Media. Coordination with regional media sources, including business journals, newspapers and chambers of commerce will be crucial to the success of the Targeted Emitter Program. A media contact could be established for each of the SAMI states.

Key Challenges

- This program involves a high degree of uncertainty regarding participation and ultimate emissions reduction. Although the precedent EPA 33/50 program exceeded expectations, it had the benefit of novelty, as it was one of the first voluntary pollution control programs. This program may also have more difficulty attracting participants due to the relatively high cost of abating NO_x and SO₂ emissions.
- The study team recognizes that SAMI encountered difficulties with an earlier effort to encourage voluntary reductions among regional industries because of concerns that making voluntary reductions would raise the cost of subsequent mandatory reductions to meet forthcoming federal requirements. Similar issues could arise with new SAMI voluntary programs.
- Extensive media coverage and the development of significant peer pressure among targeted emitters will be necessary for program success. Unless participation is perceived to make a substantial, positive contribution to a firm's public image, participation will likely be low.
- Since participants receive a baseline level of public recognition simply for submitting their pollution reduction plan, there may be less incentive to actually follow through with their planned pollution reduction measures. In addition, even if further reductions are possible, there is no incentive for companies to exceed the specified program abatement goals.

Alternative C: Utility Cost Recovery Program

Alternative Description

This alternative assumes that each of the SAMI states mandate a specified cap in aggregate NO_x and SO₂ emissions for all coal-fired electricity plants in that state that are subject to Public Utility Commission (PUC) regulation. For purposes of describing the alternative, the study team assumed a cap in aggregate annual NO_x emissions of 365,000 tons and a cap in aggregate annual SO₂ emissions of 1.8 million tons, levels based on those projected under the SAMI B1 Strategy in 2010. State legislation would specify that rate increases to cover all just, reasonable and prudently incurred environmental compliance costs would be automatically approved by the PUC of each state in order to pass on these costs to utility customers. Affected utilities would need to be in compliance with these emissions caps by the year 2010.

The legislative provision would apply to all coal-fired plants within the SAMI region above a specified capacity level. If the North Carolina Clean Smokestacks Bill example is followed literally, the emissions from all investor-owned coal-fired utility plants producing at least 25 megawatts annually that have not previously installed control devices would be subject to these caps. Although no eligible plants within the SAMI region would be exempted from these provisions, the established caps would apply to aggregate emissions, thus enabling affected plants to trade emissions allowances with each other.

Potential Benefits and Costs

Emissions. Specified aggregate emissions caps were based on emissions estimates under the SAMI B1 strategy in 2010, and the study team assumed that none of the affected sources had previously installed pollution control devices. According to Pechan emissions data, and assuming full compliance by investor-owned sources with at least 25 megawatt capacity, a 365,000 ton cap in regional NO_x emissions and a 1.8 million ton cap in regional SO₂ emissions would result in the abatement of roughly 456,000 tons of NO_x and 1.11 million tons of SO₂ within the SAMI region annually, assuming a baseline emissions level comparable to the SAMI A2 strategy in 2010. Plants operated by TVA have been excluded from the calculation of these reductions since TVA is not an investor-owned utility and would not be affected by this alternative.

Exhibit III-4, below, displays these estimated emission reductions on a state-by-state basis.

Exhibit III-4.
Utility Cost Recovery Alternative: Geographic Distribution of Estimated Emissions Reductions from Investor-owned Utilities

Source:
Pechan Emissions Estimates.

<i>State</i>	<i>NO_x Reductions (000 tons)</i>	<i>SO₂ Reductions (000 tons)</i>
Alabama	43	139
Georgia	85	305
Kentucky	77	66
North Carolina	69	270
South Carolina	31	51
Tennessee	6	0
Virginia	24	26
West Virginia	<u>120</u>	<u>254</u>
Total	456	1,110

Cost recovery. The costs of controlling NO_x and SO₂ are recovered by allowing investor-owned utilities to automatically pass along these costs to their customers. Based on Pechan's cost estimates for individual utility plants under strategy B1, BBC estimates that aggregate abatement costs incurred by affected SAMI utilities (again, excluding TVA operated plants) to comply with a 365,000 ton cap in aggregate annual NO_x emissions and a 1.8 million ton cap in SO₂ aggregate annual emissions would total \$0.6 billion and \$1.1 billion, respectively. Note, however, that these costs were estimated specifically for SAMI strategy purposes and may differ under this incentive-based approach.

Exhibit III-5, below, provides abatement cost estimates for these utilities on a state level basis.

Exhibit III-5.
Utility Cost Recovery Alternative: Geographic Distribution of Estimated Abatement Costs for Investor-Owned Utilities

Source:
Pechan Abatement Cost Estimates.

State	NO _x Abatement Cost (\$Millions)	SO ₂ Abatement Cost (\$Millions)
Alabama	44	180
Georgia	77	309
Kentucky	123	91
North Carolina	105	242
South Carolina	52	20
Tennessee	5	0
Virginia	43	24
West Virginia	<u>179</u>	<u>266</u>
Total	628	1,133

Implementation Requirements

Enabling legislation would be required in each participating state. Utility companies would need to be aware of the timetable for emissions abatement, as well as the proper procedures for documenting capital costs incurred due to this abatement. Careful consultation with the utilities and state regulatory commissions would likely be required to minimize the complexity arising from overlaps between the cost pass-through under this alternative and ongoing rate cases related to other financial requirements.

Key Challenges

Implementation of this program will be subject to a variety of challenges. Some of the key issues which program designers must respond to are the following:

Starting point problem. This program could be perceived as rewarding utilities that have not yet made substantial investments in smokestack controls, and penalizing those who have previously so invested.

PUC challenges. Isolating expenditures that are eligible for pass-through under this program from the existing rate base for each utility, as well as any ongoing rate cases, may be complex. Further, this alternative clearly represents an incursion into the authority traditionally vested in the state regulatory commissions.

Uncertain rate increases. The EPA estimates that a similar plan currently undergoing review in North Carolina would increase customer utility rates by five percent. However, some estimates anticipate much higher rate increases from the proposed North Carolina legislation (up to five times greater). Survey results indicate that residential customers are willing to pay increased bills to improve air quality (the North Carolina Clean Smokestacks Plan estimated that residential bills in North Carolina would increase an average of \$4 per month). Industrial and commercial customers, however, may not be as willing to accept a rate increase.

Alternative D: Sector Tax and Rebate Program

Alternative Description

This alternative envisions that a new tax is established on NO_x and SO₂ emissions by major point sources in the SAMI region, in order to achieve a desired level of emission reduction. Proceeds from the tax are rebated to firms based upon any emissions reductions they achieve relative to a specified baseline. (To work with readily available data, this alternative description assumes an emissions baseline comparable to the SAMI A2 strategy and a target emissions level comparable to the SAMI B1 strategy.) Thus, this alternative creates a dual incentive—firms are encouraged to reduce emissions both due to the cost of the tax and because of the availability of rebate funds to offset abatement costs.

In response to the emissions tax, individual firms assess their own abatement cost structure and reduce their emissions to a cost effective level. Firms with relatively low abatement costs will likely choose significant abatement to avoid tax assessments, while firms with higher abatement costs will likely choose to abate little and pay the tax assessment. Tax rates are initially assessed as a flat fee per ton of emissions. These rates could ultimately be refined to reflect firm proximity to SAMI Class 1 areas, if desired.

Because emissions taxes involve significant monitoring costs, the sector based tax-rebate program will initially target only larger emitters within the SAMI region (e.g., those point sources included in the SAMI emissions inventory). All tax revenue collected by the regional authority will be rebated to firms in proportion to the level of abatement they achieve. Therefore, the program will be revenue neutral with the caveat that tax revenues will also cover the administrative costs of the regional authority. Affected firms are free to choose whichever abatement option they wish. All rebate claims would be verified through detailed monitoring data.

Taxes and rebates levied as part of this program would be independent of and incremental to permit fees levied under Title V of the 1990 Clean Air Act Amendments.

Potential Benefits and Costs

Emissions. Estimation of emissions reduction at the firm level is difficult since no detailed data exists on the abatement costs of individual firms or plants across the full spectrum of potential abatement levels. Pechan data, however, provides abatement levels and estimated associated costs for the SAMI B1 strategy. Assuming this strategy represents the target emissions level, the study team estimated tax and rebate levels necessary to achieve the corresponding reduction of 2 million tons of NO_x and SO₂ for SAMI region utilities and the five other point source case study industries (which were case studies in the SAMI competitiveness analysis).

Tax and rebate levels. Tax and rebate levels necessary to achieve a level of emissions reduction corresponding to the SAMI B1 strategy can be estimated based on a combination of several assumptions.

First, the study team assumed that individual firms would choose to reduce their emissions to the point where the combination of the available per-unit rebate and taxes avoided is greater than or equal to the per-unit cost of abatement:

$$1) \text{ Rebate/ton} + \text{Tax/ton} \geq \text{Abatement cost/ton}$$

The assumption that all tax revenues, net of program administrative costs, will be rebated yields the second assumption:

$$2) \text{ Rebate/ton} = (\text{Total Tax Revenue} - \text{Program Admin Costs}) / \text{Total tons abated}$$

Substituting equation 2) into equation 1) and simplifying yields the following third assumption:

$$3) \text{ Aggregate Tax Revenue} = \text{Aggregate Abatement Cost} + \text{Admin Cost} - \text{Aggregate Avoided Tax Revenue.}$$

Combining terms and rearranging allows us to estimate the requisite tax rate:

$$4) \text{ Tax Revenue/ton} = (\text{Total Abatement Cost} + \text{Admin Cost}) / \text{Total Baseline Emissions}$$

Finally, substituting this tax rate into condition 2 above provides an estimate for the per ton rebate rate.

Based upon Pechan's cost and emission estimates for the B1 strategy, relative to the A2 strategy, Exhibit III-6, below, presents estimated tax and rebate levels required to achieve comparable, pollutant-specific emissions reductions if all utilities and firms from the five industrial point source industries used as case studies in the competitiveness analysis (upon which the study team had firm level data) were included:

Exhibit III-6.
Sector Based Tax/Rebate Alternative: Estimated Initial Tax and Rebate Levels, by Pollutant

Source:
Pechan Data.

<i>Incentive Instrument</i>	<i>Utilities (\$)</i>	<i>Non Utility Point Sources (\$)</i>
NO _x		
Tax	\$750	\$440
Rebate	\$580	\$1,310
SO ₂		
Tax	\$370	\$2,730
Rebate	\$680	\$2,460

It should be remembered that these estimates were calculated in order to achieve a fixed abatement level. In reality, individual firm's response to initial tax and rebate levels will be uncertain. If firms, in aggregate, abate less than the target level, the program will have a revenue surplus; if they abate

more, it will have a revenue shortfall. Tax and rebate levels will likely have to be iteratively adjusted in order to both maintain the revenue neutrality of the program and achieve the desired level of emissions reductions.

The tax and rebate estimates for utilities presented above include Pechan estimates of Title V permitting fees, while those for the five other point source industries do not. In reality, because this program's taxes and rebates are independent of, and incremental to, the permit fees collected under Title V, the levels of those fees will need to be considered when establishing tax and rebate levels for those industries under this program. Because the financial incentives are additive from the firm's perspective, failure to do so could result in larger costs per ton for firms and imply greater emissions reductions than the targeted level.

Administrative costs. Estimation of administration costs is difficult because no programmatic precedent exists in this country. An estimate is necessary, however, in order to calculate the tax and rebate rates above. Administrative costs for the Swedish NO_x trading program, administered through the Swedish Environmental Protection Agency, are estimated to be about \$250,000 annually, or roughly 0.3 percent of total tax revenue (Blackman and Harrington, 1999). Given the lack of precedent and the difficulties associated with administering a tax/rebate program over a multi-state region, it may be reasonable to assume significantly higher administrative costs (the study team assumed costs of \$10 million per year). Costs will probably be even higher during the first few years of the program.

Implementation Requirements

Program implementation will be extremely challenging. The first substantial issue to address will be the establishment of an emissions baseline for all potential participants. As with the Utility Cost Recovery alternative, this involves significant equity issues, depending on whether or not firms have previously invested in pollution control equipment.

A second crucial issue will be the establishment of a regional authority to manage and distribute tax revenue. While some precedent does exist for the creation of regional entities through interstate compacts, the establishment of such an authority is likely to face substantial challenge due to the distributional issues associated with the interstate distribution of collected tax revenue.

Finally, the costs associated with the requisite monitoring represent another important issue to be addressed. The viability of such a program requires that all participating plants claiming abatement be continuously monitored. While continuous emissions monitoring is becoming more commonplace, associated costs are prohibitive for many smaller firms. Thus, this program might be designed to include only utilities and/or larger firms from other industries within the SAMI region.

Key Challenges

Implementation of this program will be subject to a variety of critiques. Some of the key criticisms which program designers must respond to are the following:

Lack of program precedent. While emissions charges set at a level high enough to influence firm behavior have been widely experimented with in Europe and even some third world countries, little precedent exists for these types of charges within the United States. Significant resistance from industries would likely have to be overcome.

Starting point problem. As noted earlier, this program might be perceived as unfair to firms that have already invested in pollution reduction capital (without receiving monies to cover these abatement costs).

Interstate distributional issues. Given the regional, sector-wide focus of this alternative, some states would likely collect more money than they would rebate, while others would rebate more than they collect. The program is subject to the critique that some states are subsidizing others, as well as practical challenges involved in transferring state tax revenues across state borders.

Alternative E: Cross-Sector Tax and Rebate Program

Alternative Description

This alternative envisions that states within the SAMI region levy a new tax on all gasoline sales within the region. Resulting tax revenue is then distributed to utilities and other point sources based on abatement of NO_x and SO₂ emissions. (To work with readily available data, the remainder of this alternative description focuses only on utilities and the five other case study point source industries from the SAMI competitiveness analysis.) Eligible firms are free to choose whichever abatement option they wish. Rebates will initially be given on a flat per-ton basis to all point sources, although the program could be revised to focus on abatement at sources proximate to Class 1 areas. All rebate claims would be verified through detailed monitoring data.

Potential Benefits and Costs

Emissions. Pechan data provides emissions reduction levels and associated costs for abatement from the SAMI B1 baseline emissions level relative to the SAMI A2 emissions level. According to this data, abatement by plants in the five industrial point source industries that were case studies in the competitiveness assessment of roughly 180,000 tons of NO_x and SO₂ would cost roughly \$550 million. Abatement by electricity generation plants within the SAMI region of 1.7 million tons of NO_x and SO₂ would cost \$1.9 billion.

Revenue available from a 5 cent per gallon gasoline tax would cover all of the abatement from the five point source industries and, assuming utilities have constant abatement costs, leave enough funds left over to cover roughly 30 percent of utility abatement. Under similar assumptions, revenue available from a 10 cent per gallon gasoline tax could cover all of the abatement from the five point source industries and roughly 90 percent of utility abatement.

The foregoing implies that revenue from a 5 cent gasoline tax could pay for an emissions reduction of 700,000 tons of NO_x and SO₂ emissions, while revenue from a 10 cent gasoline tax could cover an emissions reduction of 1.7 million tons of NO_x and SO₂ emissions within the SAMI region. These emission reduction totals may be somewhat overstated, to the extent that the Pechan cost estimates are reduced by the assumption of cost savings under a regional trading program.

Gasoline tax revenue. Data published by the Energy Information Administration estimates gasoline sales within the SAMI region for the year 2000 to be almost 23 billion gallons. Exhibit III-7, on the following page, presents state level estimated annual revenue totals generated by a 5 and 10 cent tax on gasoline within the SAMI region given year 2000 gasoline sales levels.

Exhibit III-7.
Cross-Sector Tax/Rebate Alternative: Geographic Distribution of Estimated Gasoline Tax Revenues

Source:

BBC Estimates based on state level petroleum product sales data from the Energy Information Administration

<i>State</i>	<i>Revenue (5 cents per gallon) (\$Millions)</i>	<i>Revenue (10 cents per gallon) (\$Millions)</i>
Alabama	\$111	\$223
Georgia	\$228	\$456
Kentucky	\$107	\$214
North Carolina	\$203	\$405
South Carolina	\$113	\$225
Tennessee	\$174	\$349
Virginia	\$181	\$361
West Virginia	<u>\$28</u>	<u>\$55</u>
SAMI Total	\$1,145	\$2,288

Studies have shown that demand for gasoline is relatively unresponsive to changes in price; a 1 percent increase in the price of gasoline may induce approximately a 0.1 to 0.2 percent reduction in the quantity of gasoline purchased, on average. Such adjustments, however, are likely to be swamped by the annual increases that occur in gasoline consumption. Accordingly, while the study team recognizes that the implementation of new taxes implies consumption adjustments, the above totals reflect only underlying 2000 consumption levels.

Administrative costs. Estimation of administration costs is difficult because no programmatic precedent exists for the Cross-Sector Tax/Rebate Program. Relative to Alternative D, the Sector Tax and Rebate Program, this alternative would have similar administrative requirements in terms of the rebate component. The revenue-raising component, from gasoline taxes, would likely be much simpler to administer, given that all states already have mechanisms in place to tax gasoline sales. The study team estimates that annual administrative costs might be in the \$5 million to \$10 million range.

Point source rebate levels. Exhibit III-8, on the following page, presents the potential distribution of emissions reductions and rebate amounts among SAMI states for both utilities and the five point source industries that were case studies for the competitiveness assessment, assuming revenue from a 5 cent per gallon gasoline tax is available. It should be remembered that, because the trading program assumptions utilized by Pechan tend to understate abatement costs, the rebate levels shown are probably also understated.

Exhibit III-8.**Cross-Sector Tax/Rebate Alternative: Geographic Distribution of Estimated Emission Reductions and Abatement Costs for Utilities and Point Source Industries**

<i>State</i>	<i>Emission Reduction (5 Industries) (000 tons)</i>	<i>Rebate Level (5 Industries) (\$Millions)</i>	<i>Emissions Reduction (Utilities) (000 tons)</i>	<i>Rebate Level (Utilities) (\$Millions)</i>
Alabama	29	58	59	113
Georgia	29	146	117	183
Kentucky	1	2	59	178
North Carolina	15	82	102	161
South Carolina	11	39	25	53
Tennessee	51	106	22	64
Virginia	21	73	15	41
West Virginia	<u>18</u>	<u>35</u>	<u>112</u>	<u>236</u>
SAMI Total	175	542	511	1,028

Note: Emissions Reductions are measured in thousand of tons. Abatement costs are measured in millions of dollars.

Source: Pechan Data.

Implementation Requirements

Implementation of this alternative would be challenging, given the lack of any programmatic precedent. This alternative would face many of the same challenges outlined above for the Sector Based Tax Rebate alternative. In addition, this alternative would need to overcome political difficulties associated with increasing gasoline taxes.

Key Challenges

Implementation of this program will be subject to a variety of critiques. Some of the key criticisms which program designers must respond to are the following:

Lack of program precedent. While sector-specific emissions charges, set at a level high enough to influence firm behavior, have been widely experimented with in other parts of the world, little precedent exists anywhere for this type of cross-sector tax rebate program. Program designers will therefore not be able to take advantage of implementation lessons learned in other areas.

Consumer and fuel industry opposition. There could be significant opposition from gasoline consumers, the liquid fuel industry and driving associations.

Starting point problem. This program might be perceived as unfair to firms that have already invested in reducing pollution (without receiving a subsidy to deflect their abatement costs).

Interstate distributional issues. Program implementation must address important interstate distributional issues. Tax revenues would flow from states with high gasoline purchases (Georgia, North Carolina) to states with a high number of coal fired power plants (Kentucky, West Virginia).

Income distributional issues. Program implementation would require overcoming the politically controversial issue of the direct subsidization of industry with money from individual gasoline purchases.

Alternative F: Cap and Trade Program

Alternative Description

Essentially, this alternative reflects the trading assumptions already built into SAMI's strategies. In essence, the following elements would comprise this alternative:

- a regional cap is established on NO_x and SO₂ emissions (this cap could be set at the levels envisioned in the SAMI B1 or B3 strategies, for example); and
- regional trading markets are established for NO_x and for SO₂ emission allowances.

In developing the cost analyses for SAMI, trading programs for utilities were modeled separately from other industrial point sources. In practice, however, there might be substantial savings in compliance costs by allowing trades between sectors. Input from members of the PC/TOC and industry representatives indicates that other important features could include intertemporal credits (banking) and the initial starting allocation.

Potential Benefits and Costs

Emissions. Because it would be backed by a mandatory emissions limit (or cap), a cap and trade program offers more certainty regarding total emissions reductions than other incentive-based alternatives. If successfully implemented in the SAMI region, a cap and trade program should be able to achieve the level of emission reductions envisioned in the SAMI B1 strategy. Larger reductions might also be achieved through this mechanism, though industry sources (particularly utilities) have questioned the technical feasibility of achieving the emission reduction levels envisioned in the B3 strategy by 2010. The mandatory nature of the cap, however, implies that this alternative may be better characterized as a flexible compliance option than a purely incentive-based means of reducing emissions.

Cost. If the SAMI region were successful in establishing such emissions limitations, the cap and trade program should help achieve the levels of reduction described in the SAMI strategies—such as B1 or B3—at a lower cost than a pure command and control approach.

The extent of the projected cost savings from the regional trading programs is not entirely clear from the strategy cost analyses performed for SAMI. Analyses of EPA's Title IV Acid Rain Trading Program and South Coast Air Quality Management District's (AQMD) regional RECLAIM trading program have indicated estimated cost savings from trading on the order of 40 percent relative to a pure command and control approach.

Administrative costs. The largest component of the administrative cost associated with trading programs relates to the cost of purchasing, installing and maintaining continuous emission monitoring systems (CEMS). This cost has been built into Pechan's cost estimates. Additional costs include record keeping and compliance monitoring by both participating firms and regulators. Based

upon the federal grants to fund the Interstate Ozone Transport Commission, annual regulatory administrative costs for a cap and trade program in the SAMI region are estimated at approximately \$1 million, or less.

Implementation Requirements

Perhaps the closest parallel to a regional cap and trade program in the SAMI region is the NO_x trading program recently established in the Ozone Transport Region (OTR). One significant difference, however, is that the NO_x trading program is backed by federal EPA requirements, and EPA plays a significant role in tracking emissions and allowance trading within the OTR.

Implementation of a regional cap and trade program would likely require agreement amongst the SAMI states on the following parameters:

- Establishment of a regional cap for NO_x and SO₂ emissions;
- Initial allowance levels by state and future caps by state;
- Generally consistent rules governing allowance trading; and
- Authority for tracking emissions and allowance trades.

Within the OTR, such an interstate agreement was largely accomplished through a memorandum of understanding signed by the state participants. Under that trading program, individual states remain responsible for compliance and enforcement.

A number of complexities would need to be worked out to implement a successful cap and trade program, as described below.

Key Challenges

- ***Authority to establish a more stringent cap than required by federal law.*** While the Ozone Transport Commission was established by a memorandum of understanding between the participating states, the ultimate authority for the cap and trade program was established in the 1990 Clean Air Act Amendments. In the absence of federal requirements, a regional cap and trade program might require legislative approval in each of the SAMI states.
- ***Geographic relationship between location of reductions and Class 1 areas.*** A potential concern regarding trading programs is that while they can provide certainty regarding the total amount of emissions within the trading area, market forces will determine where the actual emission reductions take place. Whether the spatial pattern of these reductions will be optimal from the standpoint of SAMI's objective of improving air quality at the Class 1 sites is unknown. One possibility is that states may be able to restrict certain trades in order to protect the air quality of local areas. Such restrictions, however, may have interstate commerce implications and would need to be investigated further. Another theoretical possibility is that allowances could be weighted by location in order to tie more specifically to SAMI's objective. Such

weighting, however, would substantially complicate the trading program and might inhibit the performance of the market. It should also be noted that this spatial or geographic concern regarding trading programs also applies to most of the other incentive-based alternatives.

- ***Overlapping trading programs.*** A SAMI regional trading program would likely overlap with both the national SO₂ allowance trading program and the NO_x trading program, after the NO_x SIP call is extended throughout the region. State regulatory representatives on the PC/TOC have noted the complexities involved in administering overlapping trading programs.

Alternative G: Cross-Sector Trading Program

Alternative Description

This alternative essentially extends Alternative F (Regional Cap and Trade Program) to incorporate allowances generated by reducing emissions in other sectors—particularly mobile source emissions. Essentially, this alternative would allow stationary sources included in the regional cap and trade program to generate NO_x and SO₂ emission reduction credits by creating emission reductions in the mobile source sector. The closest precedent to this alternative is the proposal by South Coast AQMD in Los Angeles to extend the RECLAIM trading program in a similar fashion. In that case, proposed pilot programs include: early scrapping of high emitting vehicles, replacement of diesel fueled heavy duty vehicles with clean technology vehicles, repowering of marine vessels, etc.

Potential Benefits and Costs

Emissions. This alternative would require an existing cap and trade program for stationary sources, such as envisioned in Alternative F. The cross-sector trading element would not necessarily result in additional emission reductions, but could shift some reductions from stationary sources to mobile sources.

Cost. Given that South Coast AQMD has yet to attain EPA approval for its proposal to establish a similar trading program, there is no specific precedent to indicate the magnitude of potential compliance cost savings. Given that cross-sector trades would be voluntary, however, such trades would only occur if they presented cost saving opportunities to the stationary sources in the trading program.

There would almost certainly be some additional administrative cost involved in establishing, tracking and monitoring compliance with the cross-sector trading provisions. Again, this cost cannot be quantified given the lack of full precedent for this alternative.

Implementation Requirements

This alternative would involve all of the implementation requirements described for Alternative F. In addition, consistent rules for setting allowance values for mobile source reductions would need to be established across the region. For example, the amount of credit allowed per scrapped vehicle would need to be established on a consistent basis.

Key Challenges

In addition to the challenges identified for Alternative F, the following concerns would need to be addressed for a cross-sector trading program:

- Lack of precedent; and
- Evaluation of mobile source reductions. At least initially, establishing the amount of allowances generated from specific proposals to reduce mobile source emissions may be quite challenging as each proposal might be specific and unique. Once specific precedents were established, this challenge may ease. Again, consistent interpretation across the SAMI region would be important for this alternative to be successful.

APPENDIX A.

Initial Workshop, November 1, 2001

AIR EMISSION REDUCTION INCENTIVES PROGRAM DEVELOPMENT

Initial Workshop: November 1, 2001

Prepared for:

SAMI Policy and Technical Committee

Prepared by:

Doug Jeavons, Managing Director

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OVERVIEW OF STUDY PLAN

Milestone/Work Product	Content	Due Date
<i>Workshop One</i>	Today's material/discussion	November 1, 2001
<i>Stakeholder Interest List</i>	Analysis of Stakeholder Survey	November 15, 2001
<i>Workshop Two</i>	Effectiveness estimates and preliminary alternatives ranking	December 4 or 5, 2001
<i>Workshop Three</i>	Develop recommendations, implementation mechanisms	February 19 or 20, 2002
<i>Recommendations</i>	Written report	February 28, 2002
<i>Draft Final Report</i>		March 13, 2002
<i>Final Report</i>		April 10, 2002

OUTLINE OF TODAY'S MATERIALS AND DISCUSSION

General Discussion About Incentives

- Pros and cons of incentives
- Alternative definitions
- Incentive categories
- How does SAMI see incentives?

More Detail on Selected Incentives Categories

- Voluntary approaches
- Subsidies
- Charges/taxes
- Trading systems

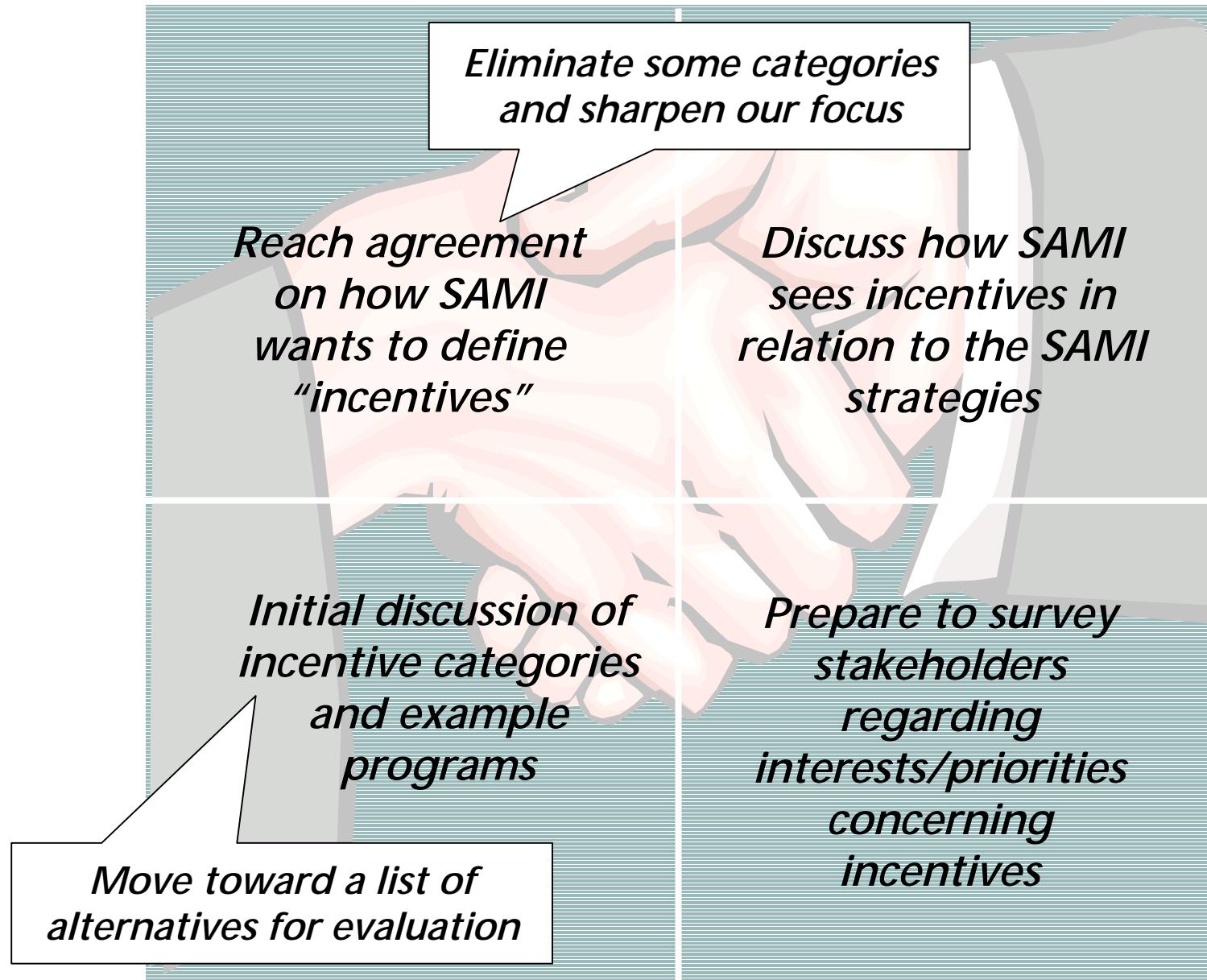
Stakeholder Interests and Priorities

- Potential criteria
- Plan for distribution/responses

Wrap Up

- Next Steps

WHAT DO WE HOPE TO ACCOMPLISH TODAY?



PROS AND CONS OF INCENTIVE-BASED APPROACHES

PROS

- Lower cost to achieve a given level of emission reduction
- Encourage/reward those who can do more to do more
- Recognize that business may better understand opportunities/methods than regulators
- May be better supported by business

CONS

- Effectiveness can be difficult to predict
- Costs can be difficult to predict
- Monitoring/measuring and other information/administration requirements
- Possible marginal effect relative to magnitude of SAMI strategies

INCENTIVES FOR ENVIRONMENTAL IMPROVEMENT

TWO DEFINITIONS

...instruments that use financial means to motivate polluters to reduce the health and environmental risks posed by their facilities, processes or products.

—USEPA, January 2001

(The United States Experience with Economic
Incentives to Protecting the Environment)

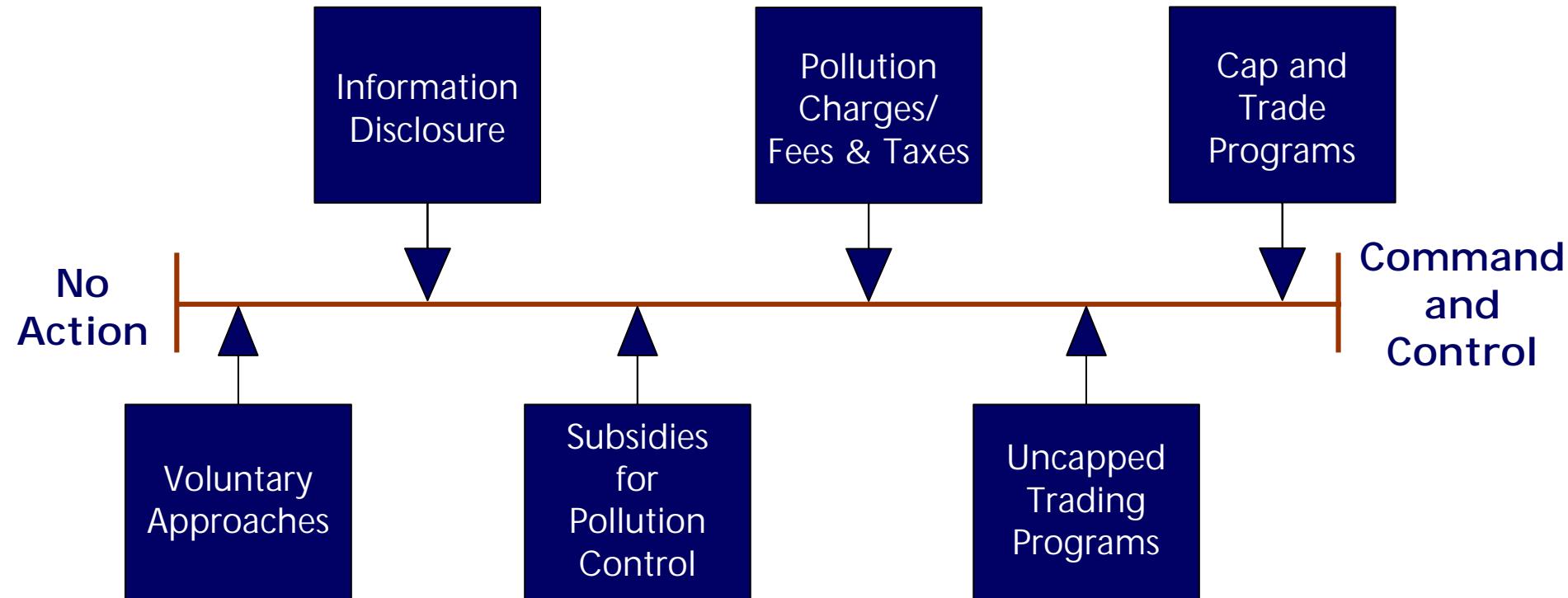
...any domestic or foreign government program or policy that rewards a company (or other entity) for making a voluntary environmental improvement.

—Global Environmental Management Initiative, March 1999
(Environmental Improvement Through Business Incentives)

CATEGORIZING INCENTIVE-BASED APPROACHES

CATEGORY	DESCRIPTION	CATEGORY	DESCRIPTION
<i>Voluntary Approaches</i>	Non-financial incentives	<i>Information Disclosure</i>	Disseminating information on environmental performance
<i>Subsidies for Pollution Control</i>	Financial assistance/rewards	<i>Liability Approaches</i>	Legal liability for harm to the environment
<i>Pollution Charges/Fees/Taxes</i>	Financial penalties for pollution	<i>Deposit/Refund Systems</i>	Product-based approach to limiting waste streams
<i>Trading Programs</i>	Market-based approaches allowing flexible compliance		

A CONTINUUM OF INCENTIVE-BASED APPROACHES



DISCUSSION: HOW DOES SAMI SEE INCENTIVES FITTING INTO ITS STRATEGY?



VOLUNTARY APPROACHES

Definition

- Efforts to promote improvements in environmental performance beyond legal requirements through non-financial incentives

Key Variations

- Permit relief
- Reporting/compliance relief
- Public recognition
- Technical assistance

VOLUNTARY APPROACHES

Examples

- Federal Programs
 - EPH 33/50
 - EPA Project XL
 - EPA Common Sense Initiative
 - EPA Green Lights/Energy Star Programs
- State Programs
 - Colorado Environmental Leadership Program
 - New Jersey Pollution Prevention Act
- European Programs
 - Netherlands, UK, Sweden, etc.

VOLUNTARY APPROACHES

Sources of Further Information

- Beardsley, Daniel P. *Incentives for Environmental Improvement: An Assessment of Selected Innovative Programs in the States and Europe.* GEMI Report, August 1996.
- US EPA, Office of Air and Radiation. *The Climate is Right for Action: Voluntary Programs to Prevent Atmospheric Pollution.* August 1994.
- Zatz, Michael and Shana Harbour. "The United States Environmental Protection Agency's 33/50 Program: the Anatomy of a Successful Voluntary Pollution Reduction Program." *Journal of Cleaner Production*, 1999. 7:17-26.
- US EPA, Office of Policy, Economics and Innovation. *The United States Experience with Economic Incentives for Protecting the Environment.* EPA-240-R-01-001. January 2001.

SUBSIDIES

Definition

- Financial rewards for pollution control or prevention

Key Variations

- Tax credits
- Financing Incentives
- Credits against future regulatory costs

SUBSIDIES

Examples

- Tax Credits
 - Corporate Income Tax Credits – Delaware TRI, Minnesota
 - Sales Tax Waivers – Kentucky, Virginia and Other
 - Property Tax Abatements – Tennessee, North Carolina, etc.
- Financing Incentives
 - Low interest loans for small business
 - California capital access program
- Credits Against Future Regulatory Costs
 - Colorado Environmental Leadership Program

SUBSIDIES

Sources of Further Information

- Global Environmental Management Initiative (GEMI). *Environmental Improvement Through Business Incentives*. First Edition, March 1999.
- US EPA, Office of Policy, Economics and Innovation. *The United States Experience with Economic Incentives for Protecting the Environment*. EPA-240-R-01-001. January 2001.

CHARGES/TAXES

Definition

- Financial charges for pollution

Key Variations

- Emission fees
- Direct emission taxes
- Indirect (input/product) taxes

CHARGES/TAXES

Examples

- Air Pollution
 - South Coast Air Quality Management Direct Fees
 - Ozone Non-attainment Area Fees (prospective)
- Direct Emission Taxes
 - European Taxes (e.g., CO₂)
- Indirect (input/product) Taxes
 - Fuel and Energy Taxes

CHARGES/TAXES

Sources of Further Information

- Morganstern, Richard. *Environmental Taxes: Dead or Alive?* Resources for the Future Discussion Paper 96-03, October 1995.
- US EPA, Office of Policy, Economics and Innovation. *The United States Experience with Economic Incentives for Protecting the Environment.* EPA-240-R-01-001. January 2001.
- Congressional Research Service. Environment and Natural Resources Policy Division. *Market-Based Environmental Management: Issues in Implementation.* Washington, D.C.: Penny Hill Press, 7 March 1994.

TRADING SYSTEMS

Definition

- Market-based systems allowing credits or allowances to be traded within and/or among firms

Key Variations

- Capped versus uncapped systems
- Allowance for banking
- Initial allocation of permits
- Trading ratio

TRADING SYSTEMS

Examples

- EPA Title IV Acid Rain SO₂ Trading Program
- South Coast AQMD RECLAIM Program
- Ozone Transport Commission NO_x Trading Program
- Georgia Emission Reduction Credit Banking System (NO_x and VOC)
- Mobile Source Programs
 - Lead credit trading
 - Corporate average fuel economy standards
 - Heavy-duty truck engine emission averaging

TRADING SYSTEMS

Sources of Further Information

- Krupnick, Alan and Virginia McConnell with Matt Cannon, Terrell Stoessell and Michael Batz. *Cost-Effective NO_x Control in the Eastern United States*. Resources for the Future Discussion Paper 00-18, April 2000.
- South Coast Air Quality Management District. *RECLAIM Program Three-Year Audit and Progress Report*. 8 May 1998.
- US EPA, Office of Air and Radiation, Clean Air Markets Division. *1999 OTC, NO_x Budget Program Compliance Report*. 27 March 2000.

PLAN FOR DISTRIBUTION OF SURVEY AND GATHERING RESPONSES

Purpose of Survey

Who Should be Surveyed?

- Survey balance considerations
- Schedule considerations

Logistics of Survey

- Conduct via email?

SURVEY INSTRUMENT DISCUSSION

General Questions

1. What would you hope SAMI could achieve by incorporating incentive-based approaches in its recommendations?

2. What, if anything, concerns you most about incentive-based approaches?

3. Are there particular examples of incentive-based approaches/programs you think SAMI should especially consider? Why?

SURVEY INSTRUMENT DISCUSSION

Seek Criteria Ranking

Potential Criteria

- Magnitude of reductions
- Certainty of reduction
- Cost of businesses/institutions
- Direct cost to regulators/government
- Administrative cost/burden on regulators/government
- Ease of acceptance/implementation
- Applicability to specific sources/pollutants
(please specify _____)
- Other (please specify _____)

WRAP UP AND LOOK FORWARD TO NEXT STEPS

- November 15: Stakeholder Interest List
- December 4th or 5th: Workshop Two

APPENDIX B.

Stakeholder Survey



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MEMORANDUM

To: SAMI
From: Doug Jeavons
Re: Analysis of Stakeholder Survey
Date: November 21, 2001

The following analysis summarizes the findings of the stakeholder survey conducted as part of Task 1 of the SAMI Incentives project. A copy of the survey instrument is attached to this memo.

Purpose

In order to better understand the incentive related interests priorities of SAMI stakeholders in industry, environmental organizations and government, stakeholders were asked to rank the importance of different criteria relating to industry incentives from most to least important. Additionally, stakeholders gave their open-ended input on potential incentive-based approaches SAMI might consider.

Response

SAMI staff sent the survey by email to all members of the Policy and Technical Operations Committees, as well as to their broader e-mail distribution list. Thirteen SAMI stakeholders returned the survey to BBC. Respondents included: six industry representatives, two environmental organization representatives, and five government representatives. The surveys were collected electronically from November 5th through November 19th of 2001.

Criteria Ranking

The rankings of incentive criteria revealed different priorities for industry, environmental organizations and government. However, all three groups placed "Environmental benefit" near the top of their lists. The government representatives prioritized this highest of all criteria, while industry and environmental organizations ranked it second highest overall.

An overall ranking by stakeholder category is made possible by averaging the rankings across the respondents. The following is a breakdown of the different stakeholders' average rankings, by category, of all criteria.

Ranking	Industry (6 responses)	Environmental (2 responses)	Government (5 responses)
1	Low cost to affected companies	Magnitude of emissions reductions	Environmental benefit
2	Environmental benefit	Environmental benefit	High certainty of emission reductions
3	Relatively easy to implement	Low direct financial cost to regulators/government	Low cost to affected companies
4	High certainty of emission reductions	Relatively easy to implement	Relatively easy to implement
5	Minimal additional administrative cost or burden	High certainty of emission reductions (tied with below)	High likelihood of political acceptability
6	Equity across source types and within source categories	High likelihood of political acceptability (tied with above)	Magnitude of emissions reductions
7	Magnitude of emissions reductions	Minimal additional administrative cost or burden	Minimal additional administrative cost or burden
8	Low direct financial cost to regulators/government	Low cost to affected companies	Low direct financial cost to regulators/government
9	High likelihood of political acceptability	Equity across source types and within source categories	Equity across source types and within source categories
Other	"Incentives should be provided to those that have mandatory emission control requirements." (Ranked #6 by respondent)	"Allows for individuals to make personally responsible decisions to benefit air quality." (Ranked #3 by respondent)	

Ranking Summary

Industry places a higher priority on cost effectiveness and environmental benefit, while environmental organizations prioritize a large magnitude of reductions in emissions. Government organizations have priorities more like industry than environmental, but place a higher priority on political acceptability.

In general, three themes emerge from the rankings: cost efficiency, environmental benefit and ease of implementation/administration. These themes will be explored further in the Task 2 discussion and ranking of incentive alternatives.

Stakeholder Perspectives

Stakeholders were asked for their thoughts on potential SAMI approaches to incentives. They were asked to respond to four questions on SAMI's objectives, their own concerns, and recommendations or warnings about potential incentive-based programs.

Potential SAMI achievements through incentives. Many respondents were most hopeful that SAMI could recommend a system that provided a cost effective means to emission reduction, while improving air quality. One respondent said she hoped for a "win-win situation" between industry and the environment. Another respondent hoped that the SAMI incentive-based recommendations could reduce emissions that would otherwise never be reduced.

Industry representatives frequently mentioned cost effective means to emission reduction as their hope for SAMI incentives. Increased flexibility and "clear, certain cost reductions" were also valuable to industry respondents, as well as potential improvement through incentives in the relationships between industry and regulators.

Stakeholder concerns. Many respondents (from all categories) were concerned the recommended incentives would not benefit Class I areas. Another respondent specified that any recommendations would be "for reductions sake, not supported by environmental improvements."

Others were concerned with the implementation and administration of incentives. One respondent was concerned they would be underutilized or would lead to unintended consequences. Another respondent was concerned the incentives would not be user friendly enough for companies to be encouraged to participate.

Finally, one industry representative was worried that the public would see incentives as "letting industry off the hook." This resonated with another respondent (from an environmental organization) who was worried that incentives were only a weak substitute for more substantial legislation. Survey differences may illustrate more fundamental differences in perspective on property rights and emissions—the perceived right to pollute up to legal limits versus the perception that industry profits from pollution.

Recommendations for SAMI incentives. Stakeholders were asked which programs they would and would not suggest for SAMI. Several suggestions were made on the direction SAMI should take or avoid with their own recommendations.

Sector based incentives. One respondent detailed the differences between the sectors in terms of their access to capital, decision-making structure, type and extent of air emissions and penetration rates of new technology. This respondent felt any incentive program that did not address these differences would be ineffective.

Flexible control versus "true" incentives. Several respondents noted the difference between flexible control options and incentive programs that were truly voluntary. One respondent noted that any cap and trade program is not actually an incentive, because the cap is mandatory. When speaking of "true" incentives, respondents suggested special tax treatment as desirable. One respondent suggested tax credits, sales tax avoidance, property tax avoidance and accelerated depreciation of pollution control equipment.

Consumers. Several respondents, from all categories, recommended consumer based incentive programs aimed at reducing vehicle miles traveled (VMT). One respondent suggested that gas be taxed at closer proximity to Class I areas, with the money earmarked for pollution control at the Class I site. Another respondent recommended incentives be given for public transportation in the SAMI region. However, one respondent recommended that SAMI refrain from having any consumer based incentives because of the difficulty in administration.

Summary

Not surprisingly, SAMI stakeholder perspectives on, and criteria for evaluating, incentives differ depending on their affiliation. There is common ground in placing environmental benefit to the Class I areas at or near the top of everyone's list. Perhaps the greatest divergence is in the degree of concern for the cost burden placed upon industry. While all parties have reservations and concerns about incentives, there appears to be common interest in further considering one or more incentive based approaches if they appear likely to be both feasible and effective.

APPENDIX C.
Second Workshop, December 4, 2001

AIR EMISSION REDUCTION INCENTIVES PROGRAM DEVELOPMENT

Second Workshop: December 4, 2001

Prepared for:

SAMI Policy and Technical Committee

Prepared by:

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REVIEW OF STUDY PLAN

Milestone/ Work Product	Content	Due Date
<i>Workshop One</i>	Introduction and discussion of incentives	November 1, 2001
<i>Stakeholder Interest List</i>	Analysis of stakeholder survey	November 15, 2001
<i>Workshop Two</i>	Effectiveness estimates and preliminary alternatives ranking	December 4, 2001
<i>Workshop Three</i>	Recommendations and implementation mechanisms	February 19 or 20, 2002
<i>Recommendations</i>	Written report	February 28, 2002
<i>Draft Final Report</i>		March 13, 2002
<i>Final Report</i>		April 10, 2002

RECAP OF FIRST WORKSHOP

Definition of “Incentives”

How Incentives Fit Into SAMI Objectives

Incentive Categories/Mechanisms/Example Programs

Focus on Four Categories

- Voluntary Incentives
- Subsidies
- Taxes and Fees
- Trading Programs

Planning for Stakeholder Survey

BBC ACTIVITY SINCE FIRST WORKSHOP

SAMI Stakeholder Survey

Compilation of Industry Input

Preliminary Definition of Alternatives

Research Into Relevant Experience

Preliminary Evaluation

- Environmental Benefit
- Cost to Industry
- Implementation/Administration

Preliminary Ranking of Alternatives

STAKEHOLDER SURVEY

Background

- 90 surveys distributed by e-mail on November 5
- Follow-up e-mail sent by SAMI on November 14
- Focus on hopes/concerns/suggestions regarding incentives and ranking criteria for evaluation of alternatives

Response

- 15 surveys returned via e-mail
 - 6 from industry representatives
 - 2 from environmental representatives
 - 7 from regulatory representatives

STAKEHOLDER SURVEY—OPEN ENDED INPUT

Hopes

- Identify cost effective means to emission reductions
- Reduce emissions that would otherwise occur
- Increase flexibility
- Improve relationships between industry and regulators

Concerns

- Might not benefit Class 1 areas
- Could be underutilized or lead to unintended consequences
- Weak substitute for more binding methods
- Could be viewed as letting industry off the hook

STAKEHOLDER SURVEY—CRITERIA RANKING

Rank	Industry	Environmental	Government
1	Low cost to companies	Magnitude of reductions	Environmental benefit
2	Environmental benefit	Environmental benefit	Political acceptability
3	Easy to implement	Low cost to regulators	Certainty of reductions
4	Certainty of reductions	Easy to implement	Easy to implement
5	Minimal admin burden	Certainty of reductions	Magnitude of reductions
6	Equity across sources	Political acceptability	Low cost to companies
7	Magnitude of reductions	Minimal admin burden	Low cost to regulators
8	Low cost to regulators	Low cost to companies	Minimal admin burden
9	Political acceptability	Equity across sources	Equity across sources

INPUT FROM INDUSTRY INTERVIEWS

General Observations

Pros

- Let companies figure out how to solve the problem.
- Incentives can put control in hands of people that know their own industry, keeping efficiency high and costs low.
- If voluntary programs can head off standards, then everybody wins.
- Always prefer a carrot to a stick.

Cons

- Least government interference = best performance.
- Downside is lack of specific control (e.g., control over where emissions take place). Monitoring requirements and costs will also be greater.

INPUT FROM INDUSTRY INTERVIEWS

Voluntary Incentives

Pros

- Greatest possible incentive is regulatory relief/flexibility in compliance. Flexibility cannot come at the expense of greater stringency, however.
- EPA industry partnership programs and awards can benefit the environment and be good for the company.
- EPA Natural Gas STAR program has worked for us.
- Voluntary approaches must have a real “carrot.” Expedited permitting can be an example.
- Responsible Care has been a major driver for improvements in the chemical industry.

Cons

- Frustrated with EPA voluntary efforts that have sought company led solutions, which have involved considerable company effort, and then have been ignored (in favor of command and control).
- Voluntary programs uncertain, no set standard and no easy way to enforce.
- Voluntary approaches have a hard time getting participation and obtaining tangible results—though some industry initiated programs have been successful.

INPUT FROM INDUSTRY INTERVIEWS

Subsidies/Taxes and Fees

Pros

- Would like to see subsidies for pollution control innovations.
- Believes pollution charges (e.g., permit fees) remove incentives to pollute and helps company balance fees vs. control costs.
- If add on controls are needed, improving access to capital and cost of financing will be essential for our industry.
- Companies respond to subsidies—encourage marginal investment.

Cons

- We believe in markets, not subsidies. Our industry won't make investments due to subsidies since the government can always take them away again.
- Pollution charge programs have no impact because charges are too low relative to compliance costs.
- Pollution charges would place the SAMI coal industry at a major competitive disadvantage.

INPUT FROM INDUSTRY INTERVIEWS

Trading Programs

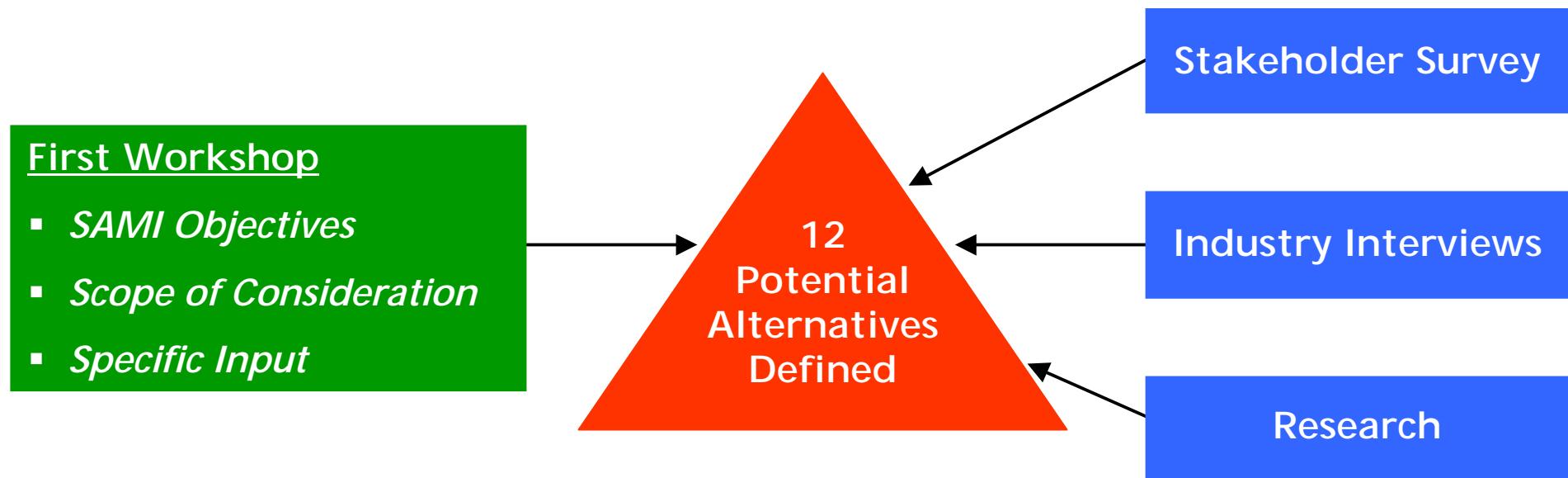
Pros

- Trading programs can work and add flexibility, but government must be willing to give up some control.
- With trading programs we'll reduce emissions in one sector in order to save more costly reductions in another sector.
- Trading programs allow offsetting reductions which can lower costs.

Cons

- Trading programs are a flexible compliance measure, not an incentive. They are very beneficial, however, in meeting legally mandated emission reductions.
- SE regional market might be too thin for successful trading programs and prices might skyrocket (Atlanta program an example).

HOW ALTERNATIVES WERE DEFINED



DEFINITION OF ALTERNATIVES

Voluntary Incentives

Composite Program

Menu of incentives (e.g., streamlined permitting and reporting requirements, public recognition, technical assistance and financial incentives) offered to high performing companies.

Sector-Based Program

Voluntary incentives that seek to achieve a defined objective, targeted toward specific industry sectors.

Targeted Emitter Program

Voluntary programs targeted toward companies or institutions with the greatest amount of emissions, or whose emissions have the greatest impact on Class 1 sites.

DEFINITION OF ALTERNATIVES

Subsidies

Abatement Cost Reduction

Tax relief to encourage industry use or purchase of pollution control equipment.

Capital Access Assistance

Industry is eligible for soft or low-interest loans that aid in financing pollution control equipment or lower emitting methods of production.

Energy Source Subsidy

Fuel cost differential subsidy to encourage switching to cleaner fuels (e.g., coal to gas).

Cost Sharing

Utility pollution control cost automatically passed forward to customers.

DEFINITION OF ALTERNATIVES

Taxes and Fees

Incremental

Increasing permit fees to send a somewhat stronger price signal.

Source/Sector Tax-Refund

Taxes are collected on emissions within an economic sector, revenues are refunded to reward/subsidize sources that reduce emissions in the same sector.

Cross Sector Tax-Refund

Taxes collected on emissions from sources in one sector, revenues are provided to sources in other sectors to help defray abatement costs.
Assumed example: gasoline tax used to subsidize point source emission reductions.

DEFINITION OF ALTERNATIVES

Trading Programs

Cap and Trade

Declining utility and industrial point source cap set to ultimately reach SAMI strategy emission levels.

Cross Sector

Other sectors of the economy, such as mobile sources, are included in the trading market (e.g., credits created by early vehicle retirement, purchase of ZEVs, etc.).

BENCHMARKS FOR EVALUATION

Combined SO₂ and NO_x From SAMI 2010 BWC Strategy

Emission Source Type	Reduction	Percent Reduced
<i>Utility</i>	<i>1.7 million tons</i>	<i>40%</i>
<i>Industry</i>	<i>265,000 tons</i>	<i>22%</i>
<i>Mobile/Area</i>	<i>491,000 tons</i>	<i>20%</i>
<i>Total</i>	<i>2.5 million tons</i>	<i>31%</i>

Emission Source Type	Estimated Cost/Ton
<i>Utility</i>	<i>\$1,200/ton</i>
<i>Industry</i>	<i>\$3,100/ton</i>
<i>Mobile/Area</i>	<i>\$6,500/ton (low range)</i>
<i>Total</i>	<i>\$2,400/ton</i>

EVALUATION CRITERIA DEFINITION

Category	Best	Medium	Worst
Environmental Benefit	Reductions magnitude approaching strategy estimates	Moderate reductions possible	Marginal reductions anticipated
Cost to Industry	Much less than strategy cost estimates	Marginal savings from strategy cost estimates	Similar to strategy cost estimates
Implementation/ Administration	Precedent and relatively low labor intensity	Little precedent or high labor intensity	No precedent, very high labor intensity or strong opposition

EVALUATION/RATING OF ALTERNATIVES

Voluntary Incentives

Preliminary evaluations based on experience of CO Environmental Leadership Program, MN Pollution Prevention and Sustainability Program, NJ Pollution Prevention Act, WI Green Tier program, Natural Gas STAR program, Responsible Care, and EPA 33/50 program.

Preliminary Evaluation

	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Composite	<i>Worst</i>	<i>Middle</i>	<i>Worst</i>
Sector Based	<i>Middle</i>	<i>Middle</i>	<i>Best</i>
Targeted Emitter	<i>Middle</i>	<i>Middle</i>	<i>Best</i>

EVALUATION/RATING OF ALTERNATIVES

Subsidies

Evaluations based on experience of federal tax credits on depreciation of pollution control equipment, equipment sales tax waiver, LA property tax waiver, CA's Capital Access Program, ZEV mandates, NC Clean Smokestacks Bill, and the Texas Emissions Reduction Plan.

Preliminary Evaluation

	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Abatement Cost Reduction	<i>Worst</i>	<i>Best</i>	<i>Best</i>
Capital Access Assistance	<i>Worst</i>	<i>Best</i>	<i>Best</i>
Energy Source Subsidy	<i>Middle</i>	<i>Best</i>	<i>Worst</i>
Cost Sharing	<i>Best</i>	<i>Middle</i>	<i>Middle</i>

EVALUATION/RATING OF ALTERNATIVES

Taxes and Fees

Programs evaluated include: 1990 CAA state level operating permit fees, South Coast Air Quality Management District Fees, the Swedish NO_x emissions charge, the Swedish Sulfur tax, and various European Carbon taxes.

Preliminary Evaluation

	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Incremental	<i>Worst</i>	<i>Middle</i>	<i>Best</i>
Source/Sector Tax-Refund	<i>Best</i>	<i>Worst</i>	<i>Worst</i>
Cross Sector Tax-Refund	<i>Best</i>	<i>Best</i>	<i>Worst</i>

EVALUATION/RATING OF ALTERNATIVES

Trading Programs

Considered EPA's Acid Rain Trading Program and NO_x SIP Call, as well as Los Angeles' RECLAIM program.

Preliminary Evaluation

	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Cap and Trade	<i>Best</i>	<i>Worst</i>	<i>Middle</i>
Cross Sector	<i>Best</i>	<i>Middle</i>	<i>Worst</i>

SUMMARY

	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
<i>Voluntary</i>			
Composite	W	M	W
Sector Based	M	M	B
Targeted Emitter	M	M	B
<i>Subsidies</i>			
Abatement Cost Reduction	W	B	B
Capital Access Assistance	W	B	B
Energy Source Subsidy	M	B	W
Cost Sharing	B	M	M
<i>Taxes and Fees</i>			
Incremental	W	M	B
Source/Sector Tax-Refund	B	W	W
Cross Sector Tax-Refund	B	B	W
<i>Trading Programs</i>			
Cap and Trade	B	W	M
Cross Sector	B	W	W

ENVIRONMENTAL SORT

<u>Alternative</u>	<u>Category</u>	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Cost Sharing	Subsidies	B	M	M
Sector Tax/Rebate	Taxes/Fees	B	W	W
Cross Sector Tax/Rebate	Taxes/Fees	B	B	W
Cap and Trade	Trading Programs	B	W	M
Cross Sector	Trading Programs	B	W	W
Sector Based	Voluntary Incentives	M	M	B
Targeted Emitter	Voluntary Incentives	M	M	B
Energy Source Subsidy	Subsidies	M	B	W
Composite	Voluntary Incentives	W	M	W
Abatement Cost Reduction	Subsidies	W	B	B
Capital Access Assistance	Subsidies	W	B	B
Incremental Taxes	Taxes/Fees	W	M	B

COST TO INDUSTRY SORT

<u>Alternative</u>	<u>Category</u>	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Abatement Cost Reduction	Subsidies	W	B	B
Capital Access Assistance	Subsidies	W	B	B
Energy Source Subsidy	Subsidies	M	B	W
Cross Sector Tax/Rebate	Taxes/Fees	B	B	W
Sector Based	Voluntary Incentives	M	M	B
Targeted Emitter	Voluntary Incentives	M	M	B
Composite	Voluntary Incentives	W	M	W
Cost Sharing	Subsidies	B	M	M
Incremental Taxes	Taxes/Fees	W	M	B
Cross Sector	Trading Programs	B	M	W
Sector Tax/Rebate	Taxes/Fees	B	W	W
Cap and Trade	Trading Programs	B	W	M

IMPLEMENTATION/ADMINISTRATION SORT

<u>Alternative</u>	<u>Category</u>	<u>Environmental Benefit</u>	<u>Cost to Industry</u>	<u>Implementation/Administration</u>
Sector Based	Voluntary Incentives	M	M	B
Targeted Emitter	Voluntary Incentives	M	M	B
Abatement Cost Reduction	Subsidies	W	B	B
Capital Access Assistance	Subsidies	W	B	B
Incremental Taxes	Taxes/Fees	W	M	B
Cost Sharing	Subsidies	B	M	M
Cap and Trade	Trading Programs	B	W	M
Composite	Voluntary Incentives	W	M	W
Energy Source Subsidy	Subsidies	M	B	W
Cross Sector Tax/Rebate	Taxes/Fees	B	B	W
Sector Tax/Rebate	Taxes/Fees	B	W	W
Cross Sector	Trading Programs	B	W	W

APPENDIX D.
Third Workshop, February 19, 2002

AIR EMISSION REDUCTION INCENTIVES PROGRAM DEVELOPMENT

Third Workshop: February 19, 2002

Prepared for:

SAMI Operations Committee

Prepared by:

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OVERVIEW OF STUDY PLAN

Milestone/Work Product	Content	Due Date
<i>Workshop One</i>	Definition and categories of incentives	November 1, 2001
<i>Stakeholder Interest List</i>	Analysis of Stakeholder Survey	November 15, 2001
<i>Workshop Two</i>	Effectiveness estimates and preliminary alternatives ranking	December 4, 2001
<i>Conference Call</i>	Detailed specification of selected alternatives	January 8, 2002
<i>Workshop Three</i>	Develop recommendations, implementation mechanisms	February 19, 2002
<i>Recommendations</i>	Written report	February 28, 2002
<i>Draft Final Report</i>		March 13, 2002
<i>Final Report</i>		April 10, 2002

WORKSHOP ONE — NOVEMBER 1, 2001

OUTLINE OF WORKSHOP ONE MATERIALS AND DISCUSSION

General Discussion About Incentives

- Pros and cons of incentives
- Alternative definitions
- Incentive categories
- How does SAMI see incentives?

More Detail on Selected Incentives Categories

- Voluntary approaches
- Subsidies
- Charges/taxes
- Trading systems

Stakeholder Interests and Priorities

- Potential criteria
- Plan for distribution/responses

Wrap Up

- Next Steps

PROS AND CONS OF INCENTIVE-BASED APPROACHES

PROS

- Lower cost to achieve a given level of emission reduction
- Encourage/reward those who can do more to do more
- Recognize that business may better understand opportunities/methods than regulators
- May be better supported by business

CONS

- Effectiveness can be difficult to predict
- Costs can be difficult to predict
- Monitoring/measuring and other information/administration requirements
- Possible marginal effect relative to magnitude of SAMI strategies

INCENTIVES FOR ENVIRONMENTAL IMPROVEMENT

TWO DEFINITIONS

...instruments that use financial means to motivate polluters to reduce the health and environmental risks posed by their facilities, processes or products.

—USEPA, January 2001

(The United States Experience with Economic
Incentives to Protecting the Environment)

...any domestic or foreign government program or policy that rewards a company (or other entity) for making a voluntary environmental improvement.

—Global Environmental Management Initiative, March 1999
(Environmental Improvement Through Business Incentives)

CATEGORIZING INCENTIVE-BASED APPROACHES

CATEGORY	DESCRIPTION	CATEGORY	DESCRIPTION
<i>Voluntary Approaches</i>	Non-financial incentives	<i>Information Disclosure</i>	Disseminating information on environmental performance
<i>Subsidies for Pollution Control</i>	Financial assistance/rewards	<i>Liability Approaches</i>	Legal liability for harm to the environment
<i>Pollution Charges/Fees/Taxes</i>	Financial penalties for pollution	<i>Deposit/Refund Systems</i>	Product-based approach to limiting waste streams
<i>Trading Programs</i>	Market-based approaches allowing flexible compliance		

WORKSHOP Two — DECEMBER 4, 2001

BBC ACTIVITY BETWEEN FIRST AND SECOND WORKSHOPS

SAMI Stakeholder Survey

Compilation of Industry Input

Preliminary Definition of Alternatives

Research Into Relevant Experience

Preliminary Evaluation

- Environmental Benefit
- Cost to Industry
- Implementation/Administration

Preliminary Ranking of Alternatives

STAKEHOLDER SURVEY—OPEN ENDED INPUT

Hopes

- Identify cost effective means to emission reductions
- Reduce emissions that would otherwise occur
- Increase flexibility
- Improve relationships between industry and regulators

Concerns

- Might not benefit Class 1 areas
- Could be underutilized or lead to unintended consequences
- Weak substitute for more binding methods
- Could be viewed as letting industry off the hook

STAKEHOLDER SURVEY—CRITERIA RANKING

Rank	Industry	Environmental	Government
1	Low cost to companies	Magnitude of reductions	Environmental benefit
2	Environmental benefit	Environmental benefit	Political acceptability
3	Easy to implement	Low cost to regulators	Certainty of reductions
4	Certainty of reductions	Easy to implement	Easy to implement
5	Minimal admin burden	Certainty of reductions	Magnitude of reductions
6	Equity across sources	Political acceptability	Low cost to companies
7	Magnitude of reductions	Minimal admin burden	Low cost to regulators
8	Low cost to regulators	Low cost to companies	Minimal admin burden
9	Political acceptability	Equity across sources	Equity across sources

INPUT FROM INDUSTRY INTERVIEWS

General Observations

Pros

- Let companies figure out how to solve the problem.
- Incentives can put control in hands of people that know their own industry, keeping efficiency high and costs low.
- If voluntary programs can head off standards, then everybody wins.
- Always prefer a carrot to a stick.

Cons

- Least government interference = best performance.
- Downside is lack of specific control (e.g., control over where emissions take place). Monitoring requirements and costs will also be greater.

INPUT FROM INDUSTRY INTERVIEWS

Voluntary Incentives

Pros

- Greatest possible incentive is regulatory relief/flexibility in compliance. Flexibility cannot come at the expense of greater stringency, however.
- EPA industry partnership programs and awards can benefit the environment and be good for the company.
- EPA Natural Gas STAR program has worked for us.
- Voluntary approaches must have a real “carrot.” Expedited permitting can be an example.
- Responsible Care has been a major driver for improvements in the chemical industry.

Cons

- Frustrated with EPA voluntary efforts that have sought company led solutions, which have involved considerable company effort, and then have been ignored (in favor of command and control).
- Voluntary programs uncertain, no set standard and no easy way to enforce.
- Voluntary approaches have a hard time getting participation and obtaining tangible results—though some industry initiated programs have been successful.

INPUT FROM INDUSTRY INTERVIEWS

Subsidies/Taxes and Fees

Pros

- Would like to see subsidies for pollution control innovations.
- Believes pollution charges (e.g., permit fees) remove incentives to pollute and helps company balance fees vs. control costs.
- If add on controls are needed, improving access to capital and cost of financing will be essential for our industry.
- Companies respond to subsidies—encourage marginal investment.

Cons

- We believe in markets, not subsidies. Our industry won't make investments due to subsidies since the government can always take them away again.
- Pollution charge programs have no impact because charges are too low relative to compliance costs.
- Pollution charges would place the SAMI coal industry at a major competitive disadvantage.

INPUT FROM INDUSTRY INTERVIEWS

Trading Programs

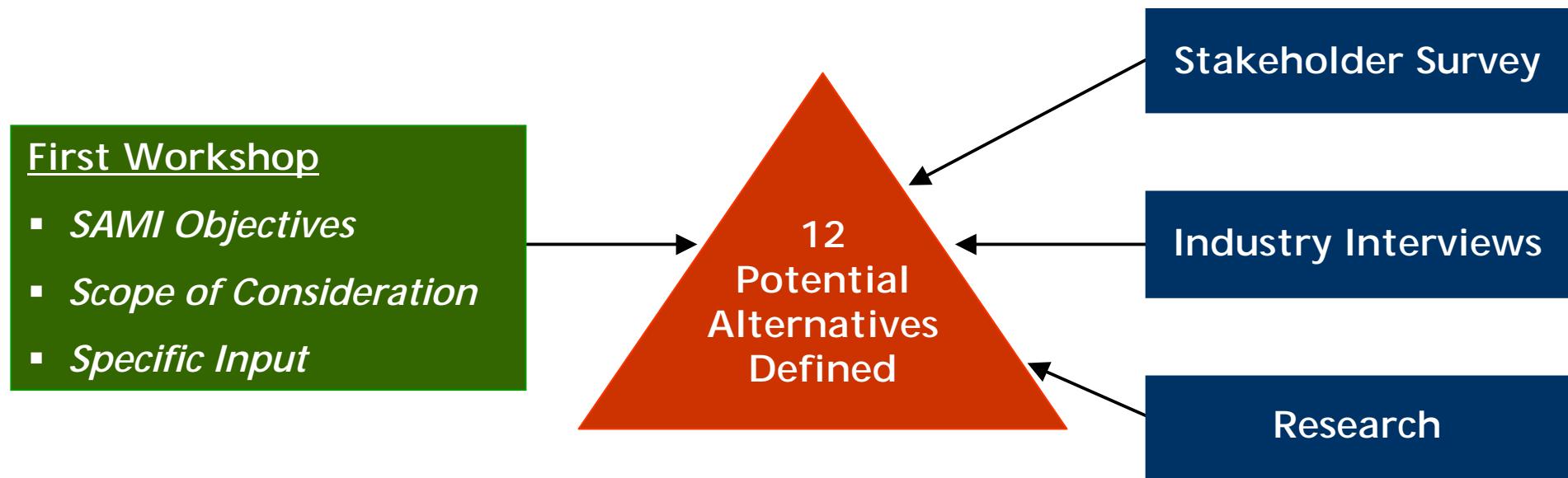
Pros

- Trading programs can work and add flexibility, but government must be willing to give up some control.
- With trading programs we'll reduce emissions in one sector in order to save more costly reductions in another sector.
- Trading programs allow offsetting reductions which can lower costs.

Cons

- Trading programs are a flexible compliance measure, not an incentive. They are very beneficial, however, in meeting legally mandated emission reductions.
- SE regional market might be too thin for successful trading programs and prices might skyrocket (Atlanta program an example).

HOW ALTERNATIVES WERE DEFINED



EVALUATION CRITERIA DEFINITION

Category	Best	Medium	Worst
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ENVIRONMENTAL SORT

<u>Alternative</u>	<u>Category</u>	<i>Environmental Benefit</i>	<i>Cost to Industry</i>	<i>Implementation/Administration</i>
Cost Sharing	Subsidies	B	M	M
Sector Tax/Rebate	Taxes/Fees	B	W	W
Cross Sector Tax/Rebate	Taxes/Fees	B	B	W
Cap and Trade	Trading Programs	B	W	M
Cross Sector	Trading Programs	B	W	W
Sector Based	Voluntary Incentives	M	M	B
Targeted Emitter	Voluntary Incentives	M	M	B
Energy Source Subsidy	Subsidies	M	B	W
Composite	Voluntary Incentives	W	M	W
Abatement Cost Reduction	Subsidies	W	B	B
Capital Access Assistance	Subsidies	W	B	B
Incremental Taxes	Taxes/Fees	W	M	B

FURTHER DESCRIPTION OF SELECTED ALTERNATIVES

OVERALL THEMES

THEME	DESCRIPTION
<i>No “Silver Bullet”</i>	No perfect or easy answer—tradeoffs and uncertainty.
<i>Levels of Incentives/Disincentives and Emission Reduction</i>	A policy choice, assumptions for purposes of analysis often tied to B1 reductions.
<i>Role of Incentives Relative to SAMI Objectives</i>	Some alternatives particularly suited to serving as alternatives to the strategies, some primarily as means to implement the strategies.
<i>State by State Implementation vs. Coordinated Regional Effort</i>	Some alternatives may be implemented on a state by state basis, most likely more effective if implemented across the SAMI region.
<i>Administrative vs. Legislative Implementation</i>	Administrative enactment easier, but legislation may be required for most alternatives.

ALTERNATIVE A: SECTOR BASED VOLUNTARY INCENTIVE PROGRAM

Description

Firms in high emitting industrial sectors invited to work together to identify and implement economically efficient methods of reducing emissions. Sector groups identify BMP's that participating firms abide by. Groups work with regulators to identify specific regulatory incentives.

Incentives Offered:

- Opportunity to work and share information with other firms, by sector.
- Public recognition from and improved relationships with regulatory agencies.
- Regulatory relief (extended or expedited permitting, etc.)
- Corporate income tax credits.

Benefits & Costs

Emissions Reductions: (Assumes 25% participation, 20% reduction)	(SO ₂ + NO _x)
▪ Utilities	212k tons/year
▪ Top 10 Point Source Sectors	55k tons/year
Costs: (Assumes only cost effective practices undertaken)	N/A
Administrative Costs:	\$3 million/year
Potential Annual Corporate Income Tax Credits (Assumes B1 Control Cost Estimates)	
▪ Utilities	\$205.1 million/year
▪ Top 10 Point Source Sectors	\$262.6 million/year

ALTERNATIVE A: SECTOR BASED VOLUNTARY INCENTIVE PROGRAM

IMPLEMENTATION REQUIREMENTS

- Establishment of regional agency
- Sector group planning
- State regulatory agencies
 - Implementation
 - Recruitment

KEY CHALLENGES

- Alternative compliance approaches
- Firm-to-firm cooperation
- Industry/regulator cooperation
- Concerns about future mandatory reductions

ALTERNATIVE B: TARGETED Emitter VOLUNTARY INCENTIVE PROGRAM

Description	<p>Large emitters invited to participate in voluntary, state-level programs seeking a designated percentage reduction in emissions. Participating firms design and submit plans for pollution control to regulatory agencies.</p> <p>Incentives Offered:</p> <ul style="list-style-type: none">▪ Public recognition (low level – participation; high level – achievement)▪ Extended permit deadlines▪ Expedited permitting procedures
Benefits & Costs	<p>Emissions Reductions: (Assumes 30% participation) (SO₂ + NO_x)</p> <ul style="list-style-type: none">▪ Top 50 utilities 490k tons/year▪ Top 50 Point Source Firms 45k tons/year <p>Costs: (Assumes only cost effective practices undertaken) N/A</p> <p>Administrative Costs: \$500 k/year</p>

ALTERNATIVE B: TARGETED Emitter VOLUNTARY INCENTIVE PROGRAM

IMPLEMENTATION REQUIREMENTS

- State government involvement
 - Establish incentive options
 - Inter-state consistency
 - Program recruitment
- Intensive media coordination

KEY CHALLENGES

- Participation uncertainty
- Media coverage
- Positive or negative public perception?
- Concerns about future mandatory reductions

ALTERNATIVE C: UTILITY COST SHARING SUBSIDY PROGRAM

Description

Each SAMI state establishes a cap on total emissions for coal fired power plants operated by IOUs. State pass legislation mandating automatic approval of rate increases to cover compliance costs.

Incentives Offered:

- Automatic approval of rate increases related to compliance
- Trading potential to further reduce costs

Benefits & Costs

Emissions Reductions: (Assumes only IOU plants with 25 MW capacity are affected)

- | | |
|-------------------|------------------|
| ▪ No _x | 456k tons/year |
| ▪ SO ₂ | 1,110k tons/year |

Costs: (Assumes cost passed on to customers)

- | | |
|-------------------|----------------------|
| ▪ No _x | \$0.6 Billion |
| ▪ SO ₂ | <u>\$1.1 Billion</u> |
| ▪ Total Cost | \$1.7 Billion |

ALTERNATIVE C: UTILITY COST SHARING SUBSIDY PROGRAM

IMPLEMENTATION REQUIREMENTS

- State legislation required
- Specific guidelines regarding allowable costs

KEY CHALLENGES

- Starting point problem
- PUC challenges
 - Complexity
 - Authority
- Rate increases
 - High uncertainty
 - Political viability

ALTERNATIVE D: SECTOR TAX AND REBATE PROGRAM

Description

New taxes established on NO_x and SO₂ emissions by major point sources in the SAMI region. Tax revenue is rebated to firms based on emission reductions relative to baseline.

Incentives Offered:

- Tax on emissions
- Rebate for abatement

Benefits & Costs

Emissions Reductions: (Assumes firms abate from SAMI A2 to SAMI B1 levels)

- | | |
|-------------------------------------|-----------------------|
| ▪ Utilities | 1.7 million tons/year |
| ▪ 5 Case Study Point Source Sectors | 175k tons/year |

Tax/Rebate Levels (Combined)

- | | | |
|-------------------------------------|-----------------|-----------------|
| ▪ Utilities | NO _x | SO ₂ |
| ▪ 5 Case Study Point Source Sectors | \$1,330 | \$1,050 |
| | \$1,750 | \$5,190 |

Administrative Costs:

\$10 Million/year

ALTERNATIVE D: SECTOR TAX AND REBATE PROGRAM

IMPLEMENTATION REQUIREMENTS

- Establishing firm-level emissions baseline
- Regional distribution authority
- Monitoring capability

KEY CHALLENGES

- Lack of U.S. program precedent
- Starting point problem
- Interstate tax distributional issues

ALTERNATIVE E: CROSS SECTOR TAX AND REBATE PROGRAM

Description

States levy tax on gasoline sales in the region. Revenue rebated to utilities and other point sources based on reduction of NO_x and SO₂ emissions.

Incentives Offered:

- Rebate for documented point source abatement costs

Benefits & Costs

Emissions Reductions: (Assumes point source rebate from SAMI A2 to B1 levels and utilities from SAMI A2 to levels covered by tax revenue)

- 5 cent gas tax 700k tons/year
- 10 cent gas tax 1,700k tons/year

Gas Tax Revenue: (Assumes 2000 gasoline consumption levels)

- 5 cent gas tax \$1.1 billion/year
- 10 cent gas tax \$2.3 billion/year

Administrative Costs: \$5-10 million/year

ALTERNATIVE E: CROSS SECTOR TAX AND REBATE PROGRAM

IMPLEMENTATION REQUIREMENTS

- Similar requirements to Alternative D
 - Emissions baseline
 - Regional distribution authority
 - Monitoring

KEY CHALLENGES

- Lack of program precedent
- Consumer and fuel industry opposition
- Starting point problem
- Interstate tax distributional issues

ALTERNATIVE F: CAP AND TRADE PROGRAM

Description

Reflects assumptions already incorporated into SAMI's strategies. A regional cap is established on NO_X and SO₂ emissions. A regional trading market is established for NO_X and SO₂ allowances. Might also include intertemporal credits.

Incentives Offered:

- Reductions in compliance costs relative to C&C
- Compliance flexibility

Benefits & Costs

Costs: (Assuming trading occurs per strategy B1 assumptions)

- | | |
|---------------------------|--------------------|
| ▪ Utilities | \$1.9 billion/year |
| ▪ Point Source Industries | \$550 million/year |

Administrative Costs:

\$1 million/year

ALTERNATIVE F: CAP AND TRADE PROGRAM

IMPLEMENTATION REQUIREMENTS

- Establishment of regional emission cap
- Allocation of initial allowances
- Establishment of trading rules
- Monitoring emissions and trades

KEY CHALLENGES

- Tighter cap than federal requirements
- Geographic correlation between reductions and Class 1 areas
- Overlapping trading programs

ALTERNATIVE G: CROSS SECTOR TRADING PROGRAM

Description	<p>Allows point sources included in the cap and trade program to generate allowances by sponsoring mobile source reductions.</p> <p>Incentives Offered:</p> <ul style="list-style-type: none">▪ Reductions in compliance costs▪ Compliance flexibility
Benefits & Costs	<p>Costs: (Assuming trading occurs per strategy B1 assumptions)</p> <ul style="list-style-type: none">▪ Likely to be similar to Alternative F, though mobile sources could present some additional costs savings <p>Administrative Costs:</p> <ul style="list-style-type: none">▪ Likely higher than Alternative F due to added mobile source complexity

ALTERNATIVE G: CROSS SECTOR TRADING PROGRAM

IMPLEMENTATION REQUIREMENTS

- Same requirements as Alternative F
 - Regional emissions cap
 - Initial allowance allocation
 - Trading rules
 - Monitoring emissions and trading
- Rules establishing credits from mobile source emissions reduction

KEY CHALLENGES

- Lack of successful program precedent
- Evaluation of mobile source reductions
- Other challenges associated with Alternative F.

RECOMMENDATIONS AND NEXT STEPS

RECOMMENDATIONS AND NEXT STEPS

Recommendations?

- Can the OC envision recommending any of the six alternatives?
 - How specific, or general, should recommendations be?
 - Regional coordinated effort versus state by state?

Next Steps

- Written Recommendations Contract Date: February 28
 - Draft Final Report Contract Date: March 13
 - Final Report Contract Date: April 10