# EXECUTIVE SUMMARY

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The draft 1997 Air Quality Management Plan (AQMP or Plan) has been prepared to meet the challenge of achieving healthful air quality in the South Coast Air Basin (Basin) and Antelope and Coachella valleys. A healthy economy depends on clean air. This report accompanies the AQMP and presents the potential socioeconomic impacts resulting from this Plan. The information contained herein is considered by the South Coast Air Quality Management District (District) Governing Board when determining whether or not to approve the Plan.

The draft Plan contains several short-, intermediate-, and long-term strategies designed to achieve ambient air quality standards and state and federal air quality planning requirements. These strategies will be implemented by the District, local and regional governments, the California Air Resources Board (ARB), and the U.S. Environmental Protection Agency (EPA). Implementation of these control strategies will affect the region's economy.

The District relies on a number of methods and tools to determine the impact of proposed control strategies on the economy. These tools include the following: air quality models and dose-response relationships to estimate the benefits of clean air; cost-effectiveness and emission reductions to calculate the efficiency of the draft Plan; the REMI (Regional Economic Models, Inc.) model to assess any potential employment impacts; the 1990 census data and the Current Population Survey to assess how employment impacts affect ethnic groups; and the consumer expenditure survey and changes in product prices to examine the impact on consumer price indexes by income group.

Based on the methods and tools described above, the socioeconomic assessment answers the following important questions.

## What Are the Benefits of the 1997 AQMP?

In recent years, there have been significant improvements in air quality in the Basin. Additional control is still needed in order to bring the Basin into compliance with the federal air quality standards. The benefits of better air quality through implementation of the 1997 AQMP include increases in crop yields, visibility improvements, a reduction in morbidity, higher survival rates, reduced expenditures on refurbishing building surfaces, and reduced traffic congestion.

Compliance with the federal PM10 and ozone standards and the state visibility standard is projected to result in an average annual benefit of $1.84 to $1.93 billion from 1997 to 2010. The $1.84 to $1.93 billion includes roughly $774 to $860 million for averted illness and higher survival rates, $473 million for visibility improvements, $156 million for reduced damage to materials, $33 million for increased crop yields, and $404 million for congestion relief.

Implementation of the 1997 AQMP is projected to lower PM10 and ozone concentrations even below the federal standards in certain areas of the Basin, providing even greater air quality benefits in those areas. When those additional improvements are accounted for, the total mortality benefit of the 1997 AQMP rises to approximately $4.5 billion annually, on average.

Not all of the benefits associated with the implementation of the draft Plan can be quantified. The health benefits do not include benefits resulting from reduced emissions of pollutants other than PM10 and ozone. Neither have reductions in vehicle hours traveled and damages to plants, livestock, and forests been quantified. Further research is needed before the benefits of these effects of the 1997 AQMP can be quantified.

**What Is the Total Implementation Cost of the Draft 1997 AQMP?**

The projected annual implementation cost of the draft Plan is $1.71 billion annually, on average, from 1997 to 2010. The cost estimate is divided into quantifiable and unquantifiable measures.

The projected cost for 28 short- and intermediate-term quantifiable measures is approximately $1.63 billion. Control measure TCM-01 (Transportation Improvements) alone contributes to 84 percent of the total quantifiable cost. The cost of unquantifiable measures is projected to be approximately $78 million. The cost of unquantified measures was derived from the average cost and emission reductions of quantifiable measures.

Additional tools are still needed to compare the cost differences between command-and-control regulations and market-based strategies. Additional efforts will be made to quantify the costs associated with all control measures before the next AQMP revision.

**What Is the Cost of the Draft 1997 AQMP as Compared to the Benefits?**

The cost of the Plan is measured by the prices of equipment and materials that would be required for its implementation. The measurement of clean air benefits is performed indirectly since clean air is not a commodity purchased or sold in a market. This often results in incomplete and underestimated benefits. Information on both quantifiable and unquantifiable benefits must be considered together against the draft Plan's full costs.

The benefits of clean air for which a monetary figure can be applied are $1.84 to 1.93 billion as compared to the costs of $1.71 billion on an average annual basis. There are, however, many benefits which are still unaccounted for, such as a reduction in chronic illness and lung function impairment in human beings, as well as reduced damage to livestock and plant life, erosion of building materials, and vehicle hours traveled. When all these are considered, the estimated benefits will further outweigh the costs.

**What Effect Will the Plan Have on Employment?**

The four-county region is projected to have 10.3 million jobs in 2010 without the draft 1997 AQMP. The draft Plan is projected to result in 17,282 jobs created annually, on average, between 1997 and 2010 which is approximately 0.17 percent of the total jobs expected to exist in the region in 2010 without the draft 1997 AQMP. The quantified measures and benefits are projected to result in 19,546 jobs created and the unquantified measures are estimated to result in 2,264 jobs forgone. The projection of jobs created from the draft 1997 Plan is a result of quantifying a much larger portion of the 1997 AQMP measures and lower costs per ton of pollutant reduced from quantified measures than was the case with the 1994 and earlier Plans.

Additionally, control measure TCM-01 (SCAG), by itself, is projected to result in 11,492 jobs created from constructing and maintaining highway and transit infrastructure. It was assumed that the federal and state governments would finance 8 to 26 percent of the required expenditures under TCM-01. The remaining expenditures would be funded through local revenue sources, amounting to approximately $1.374 billion per year from 1997 to 2010. The proposed infrastructure projects under TCM-01 together with the out-of-area funding sources (from the federal and state governments) help stimulate the local economy, thereby resulting in job creation. However, it should be noted that the costs of these infrastructure projects will continue to be paid for long after these projects are completed.

The region's job market is projected to grow at an annual rate of 2.05 percent with implementation of the draft AQMP. The projected growth rate would be 0.015 percent lower or 2.035 percent if the draft AQMP were not implemented.

The employment impacts associated with unquantified measures will be examined further as the costs of these measures are estimated in more detail. In addition, as measures are developed into rules, their potential employment impacts will be specifically assessed.

**What Are the Potential Impacts on Socioeconomic Groups and Ethnic Communities?**

Implementation of the draft 1997 AQMP is projected to result in air quality improvements sufficient to attain the air quality standards by 2010 throughout the Basin. The modeling has shown the greatest relative improvements and air quality benefit, however, in the eastern portion of the Basin. A demographic analysis has identified a high concentration of Hispanic residents expected in that area by 2010. The Hispanic population is consequently expected to benefit extensively from the draft Plan. In terms of the cost of the Plan, the eastern and northern portions of Los Angeles County are projected to have a relatively higher share of the costs than the rest of the communities.

Based on the analysis of quantified measures and benefits, all ethnic groups are expected to have a net job gain. No significant differences were identified in impacts on high- versus low-paying jobs, or on the price of consumption goods from one income group to another.

Of the 19,546 average annual jobs created between 1997 and 2010, Los Angeles and Orange counties are projected to have a 56 percent share of the total jobs created. The share of jobs created in each county in 2010 relative to the total projected employment in that county ranges from 0.1 percent for Los Angeles County to 1.03 percent for Riverside County.

**What Effect Will the Plan Have on Industrial Competitiveness?**

The draft socioeconomic report examines industrial competitiveness in three areas: the Basin's share of national jobs, product prices and profits, and exports and imports. The quantified measures and benefits of the draft Plan are projected to have minor impacts on these three areas, especially when the size of the four-county region is considered. For the majority of sectors, the impact on product prices is projected to be less than one percent of the baseline index of product prices and the impact on profits is projected to be less than one-half of one percent of the baseline index of profits. In 2010, exports are projected to fall by less than 0.2 percent of the baseline exports and imports are expected to rise by less than 0.3 percent of the baseline imports.

The competitiveness analysis of the draft Plan focuses on its impact on various sectors of the local economy. Individual control measures could result in impacts on individual companies. Competitiveness at the company level will be analyzed during individual rule adoption proceedings.

Competing regions tend to follow the South Coast Basin and adopt similar control measures, thereby reducing potential imbalances. The costs of the unquantified measures may affect competitiveness if they are implemented solely in the South Coast region. At the same time, the socioeconomic analysis underestimates the benefits from clean air that would increase regional attractiveness.

Future research is required to assess the impact of innovation on competitiveness. In addition, the District will examine the impact of proposed air quality regulations on competitiveness during the rulemaking process for each proposed rule.

**Does This Analysis Affect the Selection of Possible Alternatives to the Draft 1997 AQMP?**

Yes. The Socioeconomic Impact Report can affect the selection of possible alternatives to the proposed Plan as identified in the draft EIR. In considering whether to adopt the draft Plan or one of the alternatives the District Governing Board will evaluate which alternative presents the best balance of greatest socioeconomic and environmental benefits and least adverse environmental and socioeconomic impacts. However, the alternatives to the draft 1997 AQMP show very similar socioeconomic impacts/outcomes to that estimated for the draft Plan.

**What are the Key Areas of Uncertainty in This Assessment?**

It is not possible at this time to quantify the costs associated with every control measure and all of the benefits associated with clean air. Of the 45 control measures identified as having specific emission reductions, 28 have quantifiable costs. Costs for the other measures are not available at this time because control methods, control efficiencies, emission reductions, or the costs of control technologies are not presently known. In addition, it is also not possible at this time to quantify every beneficial effect of clean air.

The REMI model, which was used to analyze the impacts of the draft 1997 AQMP, projects possible impacts on jobs, the distribution of jobs, income, product prices, profits, exports, and imports based upon the input of cost data for each control measure and the quantifiable benefit

data for each effect of clean air. The reliability of such projections is dependent upon the validity of the input.

For purposes of fully defining the potential cost and employment impacts of the draft Plan, the District projects the overall cost and employment impacts of the Plan based on emission reductions of all control measures and the cost and job impacts of quantified measures. The District staff believes that the limited databases currently available do not lend themselves to carry forward such projections for unquantified measures in order to address impacts relative to income, ethnic groups, or competitiveness. To determine these potential impacts, therefore, only the quantified measures and benefits are utilized.

**What Efforts Will Be Taken to Refine the District's Socioeconomic Analyses?**

Several powerful tools have been developed to determine the socioeconomic impacts of the draft 1997 AQMP. As indicated above, however, additional data and research are required. Table ES-1 shows the enhancements achieved since the 1994 AQMP socioeconomic analysis and future research efforts that the District plans to take before the next AQMP.

**How Do the Draft 1997 and 1994 AQMP Socioeconomic Analyses Differ?**

The 1994 AQMP had 106 control measures of all types. In term of costs, control measures were classified as quantified and unquantified. More than two-thirds of the implementation cost of the 1994 AQMP came from unquantified measures. Out of the 106 control measures, three measures with cost impacts have been adopted into rules. Compared to the 1994 AQMP, the modified draft 1997 AQMP has used refined emission factors, removed indirect source control measures, dropped less cost effective measures, and delayed other measures for future evaluations. Refinements to the emission inventory in the development of the modifications to the draft 1997 AQMP have resulted in lower carrying capacities (which are the amount of emissions that the Basin can sustain without violating the air quality standards) than the draft 1997 AQMP, but higher carrying capacities than the 1994 AQMP. As such, the modified draft 1997 AQMP shows that fewer emission reductions than originally anticipated in the 1994 AQMP are necessary to attain the federal air quality standards.

The socioeconomic analysis of the draft 1997 AQMP includes a number of refinements. To begin with, more of the measures are quantified. Except for the control measures in the Regional Mobility Element, the costs of nearly all the quantified control measures have been re-assessed. The costs of quantified measures are distributed to specific emission reduction sources. The assessment of health benefits are directly linked with the results from the air quality models to provide benefit estimates at the sub-county level. To avoid double counting, the visibility benefit is limited to visibility aesthetics only.

The air quality in the Basin is cleaner today than it was when the 1994 Plan was prepared and analyzed. As a result of all the above factors, the benefits ($1.8 to $1.9 billion) associated with the draft 1997 AQMP are smaller than those ($6.9 to $7.6 billion, adjusted to 1993 dollars) estimated from the 1994 AQMP. The dropping of several control measures with high costs and little benefit has served to reduce the overall cost of the Plan. The elimination of those measures has also brought down the average cost effectiveness number used to estimate costs for those

unquantified measures. Only 5 percent of the total implementation cost of the draft 1997 AQMP is attributed to the unquantified measures, compared to more than 60 percent in the 1994 AQMP. The drop in the cost of unquantified measures then leads to another significant decline in the jobs forgone from unquantified measures. In the 1994 AQMP, an estimated 63,049 jobs forgone were projected as a result of quantified and unquantified measures. The draft 1997 AQMP analysis projects increased jobs. It should be noted that both the 1994 and draft 1997 AQMPs project job creation from quantified measures and benefits.

The job creation from quantified measures and benefits more than compensates for the smaller jobs forgone from unquantified measures in the draft 1997 AQMP, thereby leading to an overall net job gain. In contrast, the jobs forgone from unquantified measures in the 1994 AQMP more than offset the job creation from quantified measures and benefits, thereby leading to an overall projection of jobs forgone.

**TABLE ES-1**

Enhancements Achieved and Proposed for Future Action

| Topic | Achieved | Proposed for Future |
|---|---|---|
| Benefit<br>**Quantitative & Qualitative Benefit Assessments** | • Quantify the known effects of clean air in dollars.<br>• Develop non-monetary descriptors such as chronic illness and improved visibility.<br>• Update the visibility benefit estimate. | • Estimate changes in life expectancy.<br>• Separate multiple pollutant effects.<br>• Examine at-risk population. |
| Cost<br>**Evaluation of Costs of Advanced Technology and Flexible Regulatory Approaches** | • Quantify the costs associated with additional control measures.<br>• Compare the projected costs of rules versus the actual costs. | • Examine the differences between command-and-control regulations and pricing or subsidies. (1994)[1] |
| Distributional Impacts<br>**Geographic Information System** | • Develop additional tools to examine impacts on small versus large businesses.<br>• Survey affected sources and communities. | • Develop automated tools to present socioeconomic and air quality data geographically. (1994) |
| Competitiveness<br>**Impact of Regional Regulations on Competitiveness** | • Develop additional tools to refine the District's assessment of impacts of both plans and rules on competitiveness. | • Assess the impact of innovation on competitiveness. (1994)<br>• Assess the impact of local air quality regulations on competitiveness. (1994) |

[1]Orginally proposed in the 1994 AQMP socioeconomic analysis.