7.0 REASONABLY AVAILABLE CONTROL MEASURE (RACM) ANALYSIS

7.1 RACM Analysis

Section 172(c)(1) of the Clean Air Act requires state implementation plans (SIPs) to include an analysis of reasonably available control measures (RACM). This analysis is designed to ensure that the Washington region is implementing all reasonably available control measures in order to demonstrate attainment with the 1-hour ozone standard on the earliest date possible. This chapter presents a summary of analyses conducted to determine whether the SIP includes all reasonably available control measures. Full details of the analysis are included in Appendix I. The Metropolitan Washington Council of Governments (MWCOG) conducted this RACM evaluation in coordination with the District of Columbia Department of Health (DC-DOH), Maryland Department of the Environment (MDE) and the Virginia Department of Environmental Quality (VA DEQ).

7.1.1 Analysis Overview and Criteria

The RACM requirement is rooted in Section 172(c)(1) of the Clean Air Act, which directs states to "provide for implementation of all reasonably available control measures as expeditiously as practicable". In its 1992 General Preamble for implementation of the 1990 Clean Air Act Amendments (57 FR 13498) EPA explains that it interprets Section 172(c)(1) as a requirement that states incorporate in a SIP all reasonably available control measures that would advance a region's attainment date. However, regions are obligated to adopt only those measures that are reasonably available for implementation in light of local circumstances. In the Preamble, EPA laid out guidelines to help states determine which measures should be considered reasonably available:

If it can be shown that one or more measures are unreasonable because emissions from the sources affected are insignificant (i.e. de minimis), those measures may be excluded from further consideration…the resulting available control measures should then be evaluated for reasonableness, considering their technological feasibility and the cost of control in the area to which the SIP applies…In the case of public sector sources and control measures, this evaluation should consider the impact of the reasonableness of the measures on the municipal or other government entity that must bear the responsibility for their implementation.

In its opinion on *Sierra Club v. EPA*, decided July 2, 2002, the U.S. Court of Appeals for the DC Circuit upheld EPA's definition of RACM, including the consideration of economic and technological feasibility, ability to cause substantial widespread and long-term adverse impacts, collective ability of the measures to advance a region's attainment date, and whether an intensive or costly effort will be required to implement the measures. Consistent with EPA guidance and the U.S. District Court's opinion, the region has developed specific criteria for evaluation of potential RACM measures. Individual measures must meet the following criteria:

- Will reduce emissions by the beginning of the Washington region's 2008 ozone season (May 1, 2008) [1]
- Enforceable
- Technically feasible
- Economically feasible (proposed as a cost of $3,500-$5,000 per ton or less)
- Would not create substantial or widespread adverse impacts within the region
- Emissions from the source being controlled exceed a *de minimis* threshold, proposed as 0.1 tons per day

An explanation of these criteria is given in succeeding sections.

7.1.2 Implementation Date

EPA has traditionally instructed regions to evaluate RACM measures on their ability to advance the region's attainment date. This means that implementation of a measure or a group of measures must enable the region to reduce ozone levels to the 84 ppb required to attain the eight-hour ozone standard at least one year earlier than expected. As the Washington region currently expects to reduce ozone levels to 84 ppb during the 2009 ozone season, any RACM measures must enable the region to meet the 84 ppb standard by May 1, 2008, the beginning of the 2008 ozone season.

7.1.3 Enforceability

When a control measure is added to a SIP, the measure becomes legally binding, as are any specific performance targets associated with the measure. If the state or local government does not have the authority necessary to implement or enforce a measure, the measure is not creditable in the SIP and therefore cannot be declared a RACM. A measure is considered enforceable when all state or local government agencies responsible for funding, implementation and enforcement of the measure have committed in writing to its implementation and enforcement.

In addition to theoretical enforceability, a measure must also be practically enforceable. If a measure cannot practically be enforced because the sources are unidentifiable or cannot be located, or because it is otherwise impossible to ensure that the sources will implement the control measure, the measure cannot be declared a RACM. One exception is voluntary measures, such as those implemented under EPA's Voluntary Measures Guidance.

7.1.4 Technological Feasibility

All technology-based control measures must include technologies that have been verified by EPA. The region cannot take SIP credit for technologies that do not produce EPA-verified reductions.

7.1.5 Economic Feasibility and Cost Effectiveness

EPA guidance states that regions should consider both economic feasibility and cost of control when evaluating potential RACM measures. Therefore, the Washington region has specified a cost-effectiveness threshold for all possible RACM measures. Measures for which the cost of compliance exceeds this threshold will not be considered RACM.

In setting this threshold, the region took into consideration two major factors. First, EPA has issued guidance regarding the relationship between RACT and RACM. In its RACM analysis for the Dallas/Forth Worth nonattainment area, EPA states:

"RACT is defined by EPA as the lowest emission rate achievable considering economic and technical feasibility. RACT level control is generally considered RACM for major sources."

In the Washington region, installation of Reasonably Available Control Technology (RACT) costs are as low as approximately $3,500 per ton of emissions reduced. Therefore, it seems reasonable to adopt this cost effectiveness for area, nonroad and mobile sources in addition to stationary. Secondly, the National Capital Region Transportation Planning Board (TPB) frequently adopts Transportation Emissions Reduction Measures (TERMs) to offset mobile emissions for the purpose of conformity. The majority of TERMs adopted by TPB in the past ten years for the express purpose of reducing mobile emissions have cost less than $10,000 per ton.[1]

The region proposes a threshold of $3,500-$5,000 for cost effectiveness. All measures costing under $5,000 per ton NOx or VOC reduced will be evaluated against the remaining criteria to determine whether they meet the requirements for a RACM measure.

7.1.6 Substantial and Widespread Adverse Impacts

Some candidate RACM measures have the potential to cause substantial and widespread adverse impacts to a particular social group or sector of the economy. Due to environmental justice concerns, measures that cause substantial or widespread adverse impacts will not be considered RACM.

7.1.7 *De Minimis* Threshold

In the General Preamble, EPA allows regions to exclude from the RACM analysis measures that control emissions from insignificant sources and measures that would impose an undue administrative burden. Under moderate area RACT requirements, the

[1] Though several expensive TERMS have been adopted in recent years, these measures were designed for congestion mitigation or other transportation purposes. Emission reductions were credited as an ancillary benefit, and the projects would have proceeded even if no emission credits were generated.

smallest major source subject to RACT emits 25 tpy, or approximately 0.1 tpd. Following these requirements and the precedent set by the San Francisco RACM analysis, the region will not consider control measures affecting source categories that produce less that 0.1 tpd NOx or VOC emissions.

7.1.8 Advancing Achievement of 84 ppb Standard

In order for measures to be collectively declared RACM, implementation of the measures must enable the region to demonstrate attainment of the 84 ppb ozone standard one full ozone season earlier than currently expected. As discussed in Section 8.1.1, the Washington region currently expects to demonstrate attainment in 2009. Therefore, any RACM measures would need to enable the region to meet the 84 ppb standard during the 2008 ozone season.

Photochemical modeling performed as part of the Washington region's attainment demonstration has not yet been completed. It is impossible to determine how many additional tons the region would need to reduce in order to ensure that attainment is met in 2008. Preliminary modeling results indicate that any RACM measures would need to collectively reduce more than 20-40 tons per day of NOx and/or VOC emission in order to advance the attainment date by one year.

7.1.9 Intensive and Costly Effort

When considered together, the implementation requirements of any RACM measures cannot be so great as to preclude effective implementation and administration given the budget and staff resources available to the Washington region.

7.2 RACM Measure Analysis

7.2.1 Analysis Methodology

Over the last decade, the Metropolitan Washington Air Quality Committee (MWAQC) has compiled an extensive list of potential control measures. MWCOG has also researched measures used as air quality control strategies in other metropolitan regions. These lists of control measures were compiled into a master list of candidate measures for the RACM analysis. The sources of strategies analyzed for the Metropolitan Washington region include the following:

- Clean Air Act Section 108(f) measures (Transportation Control Measures)
- Transportation Emissions Reduction Measures (TERMs) listed in recent Transportation Improvement Programs (TIPs) for the Metropolitan Washington region
- Measures identified in 1993 and 2003 MWAQC review of Air Pollution Control Measures
- Measures considered in Baltimore, Atlanta and Houston RACM analyses

These measures were then evaluated against the criteria discussed in Section 8.1 as documented in Appendix I.

7.2.2 Analysis Results

Tables 8-1 through 8-4 provide lists, organized by source sector, of potential measures evaluated against the RACM criteria. The tables show which measures were determined to meet the individual measure criteria described in Sections 8.1.1 through 8.1.6. For each measure, the table lists whether the measure is considered RACM, and provides a rationale for each individual determination.

7.3 RACM Determination

If implemented collectively, any group of potential RACM measures would need to provide reductions of 20-40 tons per day of NOx and/or VOC by the 2008 ozone season. The region has reviewed all of the potential control measures to determine if collectively they could meet these criteria. Several mandatory programs are available that can provide moderate levels of emission reductions, however, none of these measures can provide benefits by the 2008 ozone season, and the total overall reduction that could be provided by these measures is below 20-40 tons per day. While there are potential voluntary measures that can be implemented before 2008, together these voluntary measures will not provide sufficient creditable emission reductions to advance the attainment date by one year. Therefore, there are no reasonably available control measures (RACM) appropriate for the Washington region's moderate area SIP.

Though the measures listed in Tables 8-1 did not meet the criteria for RACM, many of the measures are worthwhile measures that reduce emissions. These measures will be considered potential control measures for future SIPs prepared for the Washington region.

Table 7-1: Potential RACM Measures for the Metropolitan Washington Region

[SEE SPREADSHEET TABLE ATTACHED]

References

US EPA, "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990", (57 FR 13498), April 16, 1992.

US EPA Region VI, "Reasonably Available Control Measures (RACM) Analysis for the Dallas/Fort Worth Ozone Nonattainment Area", December 2000.

Bay Area Air Quality Management District, Metropolitan Transportation Commission and Association of Bay Area Governments, "Bay Area 2001 Ozone Attainment Plan," October 24, 2001, Appendix C.

[1] See discussion in "Approval and Promulgation of Air Quality Implementation Plans; District of Columbia, Maryland, Virginia; Post 1996 Rate-of-Progress Plans and One-Hour Ozone Attainment Demonstrations; Final Rule (April 17, 2003, 68 FR 19106).