

## Attachment

### **8.0 REASONABLY AVAILABLE CONTROL MEASURE (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 Volume II of the Appendix. 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).

#### **8.1 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. [See Reference 1]*

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 2004 ozone season (May 1, 2004)<sup>1</sup>
- Enforceable
- Technically feasible
- Economically feasible (defined as a cost of \$10,000-\$20,000 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, defined as 0.1 tons per day

In addition, any RACM measures, as a group, must meet the following criteria:

- Measures will enable the region to reduce ozone levels to 124 ppb during the 2004 ozone season
- Measures can be implemented without an intensive or costly effort

An explanation of these criteria is given in succeeding sections.

### **8.1.1 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 124 ppb required to attain the one-hour ozone standard at least one year earlier than expected. As the Washington region currently expects to reduce ozone levels to 124 ppb during the 2005 ozone season, any RACM measures must enable the region to meet the 124 ppb standard by May 1, 2004, the beginning of the 2004 ozone season.

### **8.1.2 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 Mobile Emission Reduction Program (VMEP).

### **8.1.3 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.

### **8.1.4 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 (see Reference 4), 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 approximately \$8,000 to \$10,000 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.<sup>2</sup>

In order to avoid excluding otherwise worthy measures that slightly exceed the cost effectiveness threshold, the region has specified a threshold of \$10,000-\$20,000 for cost effectiveness. All measures costing under \$20,000 per ton NO<sub>x</sub> or VOC reduced will be evaluated against the remaining criteria to determine whether they meet the requirements for a RACM measure.

### **8.1.5 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.

### **8.1.6 *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 (see Section 8.1.7). Under severe area RACT requirements, the 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 (see Reference 5), the region will not consider control measures affecting source categories that produce less than 0.1 tpd NO<sub>x</sub> or VOC emissions.

### **8.1.7 Advancing Achievement of 124 ppb Standard**

In order for measures to be collectively declared RACM, implementation of the measures must enable the region to demonstrate one or fewer exceedances of the 124 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 one or fewer exceedances in 2005. Therefore, any RACM measures would need to enable the region to meet the 124 ppb standard during the 2004 ozone season.

The attainment modeling described in Chapter 12, which was conditionally approved by EPA on April 17, 2003 as part of a new severe area SIP, shows that the region would not be able to attain the one-hour ozone standard without reduced transport of ozone and ozone precursors from upwind sources.

The problem of regional NO<sub>x</sub> controls will be addressed when the NO<sub>x</sub> SIP Call is fully implemented on May 31, 2004. Because there is a variable operating cost associated with operating of many types of pollution control equipment, it is possible that many plants may choose not to operate such equipment outside of the ozone season. Furthermore, because the SIP Call requires plants to meet a seasonal average emission rate rather than a daily average, it is possible that many plants will not have control equipment operating by May 31.

The Washington region has historically experienced exceedances early in the ozone season, including the month of May. The most recent May exceedance took place in 2001. Because it is unclear to what extent the SIP Call will actually be implemented by the beginning of the Washington region's 2004 ozone season, it is impossible to determine how many additional tons the region would need to reduce in order to ensure that exceedances are not registered. Therefore, the region is taking a conservative approach and estimating that any group of measures that would collectively reduce ozone by 1 ppb or more could enable the region to meet the 124 ppb standard one year earlier.

Photochemical modeling performed as part of the Washington region's attainment demonstration concludes that reducing one ton of low-level NO<sub>x</sub> results in a maximum ozone response of 0.1141 ppb, while reducing one ton of low-level VOC results in a maximum response of 0.0294 ppb. See Chapter 11 for details. Therefore in order to

reduce 1 ppb of ozone, any RACM measures would need to collectively reduce 8.8 tpd NOx or 34.0 tpd VOC.

### **8.1.8 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.

### **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.

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<sup>1</sup> 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).

<sup>2</sup> 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.