Tim Russ

REGIONAL AIR QUALITY COUNCIL

Colorado Department of Public Health and Environment

RECEIVED JUN 16 2003

June 16, 2003

MEMORANDUM

TO: Signatories to the Early Action Compact for Ozone for the Denver Metropolitan Area

Regional Air Quality Council
Jim Scherer, Chairman, and members of the Board

Air Quality Control Commission
Robert E. Brady, Jr., Chairman, and members of the Commission

Colorado Department of Public Health and Environment
Douglas H. Benevento, Executive Director

Colorado Department of Transportation
Thomas Norton, Executive Director

Denver Regional Council of Governments
Melanie Worley, Chairman

U.S. Environmental Protection Agency, Region 8
Robert E. Roberts, Regional Administrator

RE: June 16, 2003 Milestone – Identification and Description of Potential Control Strategies for Further Consideration

In accordance with terms of the Early Action Compact for Ozone for the Denver Metropolitan Area, please find attached a paper that identifies and describes potential control strategies for further consideration during the EAC planning process. This paper meets the June 16, 2003 milestone specified in the Compact.

Ken Lloyd, Executive Director
Regional Air Quality Council

Margie Perkins, Director
Air Pollution Control Division

cc: Doug Lempke, Air Quality Control Commission
Steve Arnold, Air Pollution Control Division
Mike Silverstein, Air Pollution Control Division
George Gerstle, Colorado Department of Transportation
Lizzie Kemp, Colorado Department of Transportation
Bill Vidal, Denver Regional Council of Governments
Jeff May, Denver Regional Council of Governments
Dick Long, EPA Region 8
Larry Svoboda, EPA Region 8
Tim Russ, EPA Region 8

OZONE EARLY ACTION COMPACT

POTENTIAL STRATEGIES FOR CONSIDERATION DURING LOCAL PLANNING PROCESS

June 16, 2003

Background

In December 2002 state and local agencies in the Denver area entered into an Ozone Early Action Compact (EAC) with EPA. The Compact is a Memorandum of Agreement between the Regional Air Quality Council, the Colorado Department of Public Health and Environment, the Air Quality Control Commission, the Denver Regional Council of Governments, the Colorado Department of Transportation, and EPA Region 8.

The Compact entails a commitment to develop and implement an Ozone Action Plan in return for deferring any potential nonattainment designation for the EPA's 8-hour ozone standard. The Compact outlines several planning milestones that must be met, culminating in attainment of the 8-hour standard by December 2007.

- **June 16, 2003 – Planning Milestone – Potential Control Measures**

The first planning milestone contained in the Compact occurs on June 16, 2003 when EAC areas are required to identify and describe potential state and local control measures to be considered during the local planning process for possible inclusion in any required Ozone Action Plan. The June 16 milestone must be met to maintain eligibility in the EAC program.

This list of potential control measures serves as the starting point for further deliberation and analysis of the strategies before they are considered for inclusion in the Ozone Action Plan. All of the evaluations contained herein are tentative and subject to further review. None of the strategies have been evaluated for technical, economic or legal feasibility.

Over the course of the next several months, the strategies will be analyzed to determine their emission reduction potential and impact on ozone concentrations, cost and economic impact, and implementation constraints and feasibility.

None of the strategies included in the initial list should be viewed as endorsed by any of the signatories to the Early Action Compact at this time. The list is non-binding and can be altered throughout the planning process. Based upon new information, or results from modeling studies, strategies under consideration can be discarded or added during the process of developing the Ozone Action Plan. Stakeholder notice and involvement will be important in the consideration of strategies throughout the planning process.

Emissions of both VOCs and NOx react to form ozone, it is generally believed that reducing emissions of VOCs are most important for reducing peak ozone concentrations in the Denver area. As a result, the strategies under consideration focus upon sources of VOCs.

This general belief will be confirmed through the photochemical dispersion modeling analysis performed as part of the Compact. If the analysis shows that NOx emissions may be more important that previously believed, emission reduction strategies for NOx sources may be considered during the planning process.

- **Next Steps and Future Milestones**

The next step in the Early Action Compact process is completion of the base year emissions inventories by the Air Pollution Control Division and the photochemical modeling contractor by the end of July. Photochemical modeling of the 2002 base case is scheduled for completion by the end of August with the 2007 base case following at the end of September. At this point the modeling will determine whether additional control measures will be necessary to demonstrate attainment with the 8-hour standard by the end of 2007.

Concurrent with the photochemical modeling exercise, further analysis and refinement of the potential strategies for further consideration will be performed. If the photochemical modeling indicates additional measures are necessary to demonstrate attainment, control strategy packages will be developed and considered through stakeholder meetings in the fall.

The next mandatory EAC planning milestone occurs on March 31, 2004 when the Regional Air Quality Council must submit a proposed Ozone Action Plan to the Air Quality Control Commission. The RAQC will consider input from the stakeholder deliberations when formulating the proposed plan.

The AQCC will then consider the RAQC's proposed plan over the next several months, with a state-approved State Implementation Plan (SIP) revision due to EPA by December 31, 2004.

Stakeholder Process

To develop the list of potential strategies, the Regional Air Quality Council (RAQC) convened a stakeholder process to assist with the effort. The stakeholder group included representatives from each of the EAC signatories as well as representatives and interested persons from industry, local governments, and environmental organizations.

Two stakeholder meetings to address potential EAC ozone strategies were held, the first at the end of April and the second at the end of May. During the first meeting, participants considered categories of sources of ozone precursors and projections of future emission trends. They also reviewed the list of recommendations from a fall 2002 report on ozone strategies developed by earlier stakeholder processes and identified measures that were particularly applicable for the EAC process. The group also identified additional measures that could be considered.

At the second meeting, the stakeholder participants reviewed the list of measures and descriptions of each. The participants agreed upon a list of nine potential measures for further consideration.

In a joint meeting on June 5, 2003, the RAQC and AQCC members discussed the proposed list of potential strategies for consideration. This report incorporates the comments and recommendations made during this discussion. A tenth strategy was added at the June 5th meeting that addresses fire and fire emissions.

This paper describing the list of potential strategies will be distributed to the EAC signatories and the list of ozone stakeholders on June 16. The paper was also posted on the RAQC Early Action Compact web page.

Strategy Evaluation Considerations

Since the strategies ultimately included in the Ozone Action Plan will become part of the federally-enforceable State Implementation Plan, they must meet the requirements for SIP strategies. If included in a State Implementation Plan Revision, the emission reduction strategies must be specific, quantifiable, permanent and enforceable. Any strategies determined to be necessary to maintain compliance with the 8-hour standard must be adopted through an enforceable regulation or ordinance. They must also include specific implementation dates and detailed documentation and reporting processes.

Voluntary strategies are permitted in a SIP, but the emission reduction credit that can be granted for such strategies is extremely limited. The implementation requirements and credit allowed are governed by EPA policies regarding voluntary strategies.

The strategies eventually selected for the EAC Ozone Action Plan must be implemented as soon as practical, preferably before the 2005 ozone season, but no later than December 31, 2005. Otherwise, failure to implement the strategies by this date will result in immediate reversion to the traditional nonattainment designation process. Therefore, most of the strategies considered will need to have short-term and immediate benefits.

The strategies under consideration in the local planning process are measures beyond currently enacted state and Federal emission reduction strategies, which are contained in current state and Federal regulations and will have emission reduction impacts well into the future.

Potential Strategies under Consideration

The strategies summarized below are recommended for further consideration during the Early Action Compact local planning process. Additional analysis on the technical, economic and implementation feasibility will be conducted over the next several months.

1. Implement high emitter identification, repair and enforcement program

2. Improve effectiveness of I/M program

3. Reid vapor pressure reduction program – 8.5, 8.2, 7.8 psi

4. Early introduction of low sulfur fuel

5. Require Best Available Control Technology (BACT) for existing or new/modified major and/or minor point sources

6. Oil and gas industry – flash emissions control

7. Other natural gas industry emission reductions

8. Currently planned, enforceable reductions at point sources (not otherwise required by regulation)

9. Implement voluntary emission reduction programs as part of expanded ozone public awareness and education effort:
    - ◊ Increase media coverage and advertising
    - ◊ Create partnerships with other public agencies, local governments, businesses, and industry associations
    - ◊ Conduct promotional events to target specific sources and increase public education
    - ◊ Replace faulty gas caps
    - ◊ Replace gas cans with non-permeable containers and non-spill nozzles
    - ◊ Encourage limits on use of 2-stroke engines on high ozone days
    - ◊ Limit availability of high-VOC solvents, paints and consumer products in June & July
    - ◊ Identify and repair vehicles with leaking gas tanks
    - ◊ Promote vehicle maintenance as part of Rapid Screen, Smart Sign, car care clinics and other public information efforts

10. Mitigate the impacts of fire, specifically prescribed fire, on ambient ozone concentrations and further evaluate emissions control strategies to reduce the impact of prescribed fires on ozone levels.

These strategies are described in more detail in the following section. Additional refinement and analysis will be necessary before any of these strategies are recommended for inclusion in the Ozone Action Plan.

Description of Strategies under Consideration

1. Implement High Emitter Identification, Repair and Enforcement Program

BRIEF DESCRIPTION OF STRATEGY: A high emitter (HE) identification program requires appropriate Remote Sensing (RSD 4000) equipment. The RSD 4000 equipment can identify vehicles currently operating in a high HC emitting mode. The vehicle owner can be notified to bring this vehicle in for a confirmatory test. The confirmatory test will also check the vehicles for evaporative emissions. A failing vehicle would be required to be repaired before returning to use on the region's roadways.

This strategy identifies HE vehicles from 0-24 months prior to the next scheduled state required test.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: Evaporative and exhaust emissions from on-road vehicles are approximately 24% (93 tons per day) of the current (2002) total

anthropogenic (man made) VOC emissions inventory (383 tons per day). The RAQC and CDPHE are currently implementing a pilot program in summer 2003 to establish potential emissions reduction. Data will be analyzed at the end of the summer.

IMPLEMENTATION APPROACH & SCHEDULE: Strategy evaluation related to the current I/M program including an RSD component will be addressed during the remainder of 2003 by the RAQC and APCD. Currently, the contractor for the state's emissions testing program has a RSD Clean Screen element aimed at carbon monoxide, which relieves remotely sensed clean vehicles of the state's emissions testing requirement, which will begin during summer 2003. A similar element focusing on identification of high emitting HC vehicles and a notification to the owner to bring the vehicle in early for an emissions test would need to be negotiated with the contractor. An enforcement mechanism would need to be developed to require the owner to bring the identified vehicle in for a confirmatory test. A high emitter identification program could be implemented by 12/31/05.

GEOGRAPHIC AREA OF APPLICATION: Region-wide. Denver metro area.

2. Improve Effectiveness of Inspection/Maintenance Program

BRIEF DESCRIPTION OF STRATEGY: The region's current inspection/maintenance program was originally designed to reduce carbon monoxide emissions and therefore the program is not as effective at reducing hydrocarbon emissions. Hydrocarbon cut-points could be reduced, thereby requiring more vehicles to receive hydrocarbon-related repairs. In addition, vehicles failing the biennial test or a high emitter identified confirmatory test could be placed on a more frequent testing schedule. An RSD component, being implemented summer 2003, could identify improperly registered vehicles (out of the AIR Program Area) owned and operated in the Area or properly registered vehicles (out of the AIR Program Area) routinely operated in the Area, but which are avoiding the I/M program.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: Mobile source emissions (evaporative and exhaust) from gasoline vehicles are approximately 24% of the current total anthropogenic VOC emissions inventory. Data is being collected this summer (2003), which will help estimate emissions benefits from additional testing and decreasing avoidance of the I/M program. MOBILE6 can be used to quantify emissions benefits from adjustment of cut-points and other possible refinements to the I/M program.

IMPLEMENTATION APPROACH & SCHEDULE: An enforcement mechanism is needed to require a vehicle to be tested more frequently. Cost/payment for the additional testing would have to be negotiated with the current emissions testing contractor. State regulation currently requires vehicles owned or operated for 90 days in the AIR Program Area to be tested in the I/M program. The Air Quality Control Commission establishes cut-points in the Air Quality Regulations. These strategies could be implemented by 12/31/05.

GEOGRAPHIC AREA OF APPLICATION: Denver metro area

3. Reid Vapor Pressure Reduction Program – 8.5, 8.2, 7.8 psi

BRIEF DESCRIPTION OF STRATEGY: RVP is a measure of the volatility of gasoline. Lowering the RVP reduces the HC emissions. Depending on the refinery process used to lower the RVP, a change in fuel reactivity may also occur. The current summer RVP limit in Denver is 9.0 (10.0 for ethanol blends) pounds per square inch (psi). Since the summer of 1999 the RAQC has secured each summer, through a partnership with the petroleum refining industry, a voluntary reduction of 0.5 psi below the required limit. In practice this reduction has typically been approximately 0.8 psi.

As a potential creditable strategy in the SIP, the Denver area could consider lowering the regulatory RVP limit to 8.5, 8.2 or 7.8 psi.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: A MOBILE6 analysis by the APCD will be used to estimate the benefit from the current voluntary RVP program, which achieved approximately 8.2 psi in 2002. A mandatory 8.5 psi limit and a regulatory limit of 7.8 psi can also be analyzed using MOBILE6.

Lowering of RVP primarily impacts evaporative emissions, which are approximately 10% (40 tons per day) of the current total anthropogenic VOC inventory. The change in reactivity of the resulting fuel will be evaluated in the photochemical modeling effort and weighed against the lower emissions for total effect on ozone.

IMPLEMENTATION APPROACH & SCHEDULE: The current voluntary program can most likely continue, if needed. RVP reductions to 8.5 or 8.2 psi can be achieved through supplier blending practices. Additional reduction to 7.8 psi would require local facilities to redesign and rework processing facilities, requiring-capital expenditures at both facilities. Gasoline piped in to the region generally comes from facilities of more recent design, which can accommodate a lower RVP, but at a higher cost.

To take credit for a lower RVP limit of 8.5, 8.2 or 7.8 psi would require a state and/or federal regulatory change or possibly an enforceable agreement with gasoline suppliers to the Denver metro area.

GEOGRAPHIC AREA OF APPLICATION: Northern Front Range

4. Early Introduction of Low Sulfur Fuel

BRIEF DESCRIPTION OF STRATEGY: By 2007 low sulfur gasoline (30 ppm) will be required in the Rocky Mountain region. BP America currently provides a premium grade low sulfur fuel in Denver market. Work with refiners and gasoline marketers servicing the metro area to encourage them to provide the low sulfur fuel sooner than 2007

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: During summer 2003 the APCD is implementing testing to determine the sulfur content of the fuel in the region. The 2002 baseline modeling effort will reflect the fuel in use at the time. Additionally, current levels and near future levels are possibly constrained by the federal geographical phase-in requirements for the Rocky Mountain area. With an understanding of the current and near future sulfur content in fuel, a MOBILE6 analysis can be run to determine the potential benefit to this strategy. The expected

reductions come from exhaust emissions, which are approximately 14% (53 tons per day) of the current total anthropogenic VOC emissions inventory.

IMPLEMENTATION APPROACH & SCHEDULE: The RAQC and the AQCC work with refiners and gasoline marketers to understand the required current and near future sulfur content of fuel in the region and encourage introduction of lower sulfur fuel by 2004 or 2005 summer season.

GEOGRAPHIC AREA OF APPLICATION: Northern Front Range

5. Require Best Available Control Technology (BACT) for Existing or New/Modified Major and/or Minor Point Sources

BRIEF DESCRIPTION OF STRATEGY: Currently, many of the region's stationary sources are regulated for VOC under Air Quality Regulation No. 7, which generally requires RACT. This strategy would apply BACT to sources determined to contribute to ozone formation in the greater Denver metropolitan area and counties along the northern Rocky Mountain Front Range. BACT could be applied to existing uncontrolled or under-controlled (e.g., <50% current control level) major and minor point sources (numbering approximately 2000 sources), or just new/modified major and/or minor point sources of volatile organic compounds (VOC).

Strategy could incorporate considerations for: reactivity of VOCs emitted (i.e., importance of VOCs to ozone formation); a codified performance standard for the affected source category (i.e., NSPS or NESHAPS in the Code of Federal Regulations); limits on costs of control (e.g., $/ton); the potential for offsetting control costs through product recovery (i.e., ability to reuse or sell captured product); equity of controls among all potential VOC-contributing sources (point, area, mobile) in the area, etc.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: Approximately or 5% (19 tpd) of the current total anthropogenic VOC inventory come from less than 30 major (greater than 100 tpy) sources that include oil and gas extraction facilities, refineries, chemical storage, beer manufacturing and surface coating. Another approximate 5% (21 tpd) of the total current total anthropogenic VOC inventory comes from approximately 1000 minor (less than 100 tpy) sources. At this time, it is not known how much could be practically reduced within either category of emission sources. These estimates do not reflect the flash emissions discussed in the next strategy category.

IMPLEMENTATION APPROACH & SCHEDULE: Review Colorado APENs files for affected sources' emissions and current control levels. Request additional source information, as necessary, with source owner/operator proposed control technologies and control efficiencies. To include and take credit for projected reductions in the Ozone Action Plan would require a regulatory change.

GEOGRAPHIC AREA OF APPLICATION: Northern Front Range

6. Oil and Gas Industry – Flash Emissions Control

BRIEF DESCRIPTION OF STRATEGY: Flash emissions from oil and gas development (at the well head) are a newly identified source of VOC emissions and are not reflected in the estimates discussed in the previous category, but have been included in the current (2002) anthropogenic

VOC inventory. The current estimate of flash emissions of 65 tpd, which is 17% of the current total anthropogenic VOC inventory, is based on basin specific emissions factors developed by a recent study sponsored by Colorado Oil & Gas Association (COGA) and general reporting of production activity in barrels. The APCD permit program is refining the estimate through their APEN reporting process. A better estimate of the magnitude of the emissions and size of individual facilities is expected by this summer. The effectiveness of control options (flaring, pressurized vessels) needs to be researched more fully.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: Some control equipment has been installed on similar facilities in the state. Information from the operation of these facilities could be helpful in establishing emissions reduction benefits and addressing some concerns for an increase in NOx emissions due to flaring. Although more analysis needs to be done, based on the APEN reporting, facilities greater than 30-40 tpy apparently represent about 90% of the emission from these sources

IMPLEMENTATION APPROACH & SCHEDULE: If a regulatory approach is needed, work with the industry representatives should start summer 2003 and preliminary recommendations are needed by fall 2003 for inclusion in an EAC Ozone SIP. Specific changes are required by adoption of the SIP in December 2004. Implementation by December 31, 2005 is possible.

GEOGRAPHIC AREA OF APPLICATION: The existing Denver attainment maintenance boundaries as well as other areas where emissions are considered to influence ozone concentrations in the Denver area.

7. Other Natural Gas Industry Emission Reductions

BRIEF DESCRIPTION OF STRATEGY: All natural gas categories could initiate or improve leak detection and repair programs. The current NSPS detection limit is 10,000 p.p.m., which could be reduced to 500 p.p.m. based on the Conoco settlement. Uncontrolled glycol dehydrators at well heads, compressor stations and gas plants can be controlled by 90+% through the use of condensers, flares, or thermal oxidizers. Truck loading and unloading of product at loading racks could also be improved. During truck loading/unloading at well heads and compressor stations, the venting of overhead vapors occurs and vapor recovery would significantly reduce emissions. Finally, there is a loss of liquids using loading hoses at well heads, gas plants, and compressor stations. Dry break hoses would reduce the loss of liquids by 85-90%.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: This category of emissions are included in the oil and gas extraction facilities in the existing Denver attainment maintenance boundaries discussed in Strategy 5 – BACT for Point Sources and represents approximately 2% (8 tpd) of the current total anthropogenic VOC inventory.

For a voluntary program, up to 3% of the needed emission reductions for attainment demonstration purposes can be achieved from all of the voluntary point source strategies. An estimate of current emissions for these emission points must first be made, and then the emission control effectiveness determined. For a mandatory program, emission reduction benefits have not been determined. For significant reductions from this strategy, a mandatory approach is required.

IMPLEMENTATION APPROACH & SCHEDULE: The implementation of some or all of these measures can fall under EPA's "Incorporating Voluntary Stationary Source Emission Reduction Programs into State Implementation Plans" policy. This could be a voluntary outreach program

targeted at the small area sources in the natural gas industry, encouraging sources to reduce emissions from their activities. The implementation can be seasonal or continuous.

The effectiveness of implementing the measures must be evaluated within 18 months and any corrections to any shortfalls between predicted and actual emission reductions must occur within two years of the evaluation.

Implementation of controls at larger facilities could also occur, though they would likely fall outside of the voluntary policy. A regulatory approach would be necessary in order to take SIP-credit for such measures, and the measures would have to be implemented by December 31, 2005.

GEOGRAPHIC AREA OF APPLICATION: The voluntary program would be conducted in the existing Denver attainment maintenance boundaries as well as other areas where emissions are considered to influence ozone concentrations in the Denver area. A mandatory program could be applied in the same area.

8. Currently Planned, Enforceable Reductions at Point Sources (not otherwise required by regulation)

BRIEF DESCRIPTION OF STRATEGY: Determine those facilities currently required through agreement with the state and/or federal government to achieve specific, scheduled emissions reductions and apply those reductions to the modeling effort in the appropriate timeframe. An example of such a planned reduction is the recent enforcement settlement agreement at the ConocoPhillips refinery.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: To be determined

IMPLEMENTATION APPROACH & SCHEDULE: Schedule to be determined. No regulatory changes are anticipated, since by definition these are enforceable reductions.

GEOGRAPHIC AREA OF APPLICATION: Region wide

9. Implement Voluntary Emission Reduction Programs as part of Expanded Ozone Public Awareness and Education Effort

BRIEF DESCRIPTION OF STRATEGY: Voluntary measures can fall under three EPA policies as follows:

- Incorporating Voluntary Mobile Source Emission Reduction Programs into State Implementation Plans
- Incorporating Voluntary Stationary Source Emission Reduction Programs into State Implementation Plans
- Incorporating Public Education Emission Reduction Programs into State Implementation Plans

The control measures can be episodic, seasonal or continuous. The effectiveness of implementing the measures must be evaluated within 18 months and any corrections to any shortfalls between predicted and actual emission reductions must occur within two years of the evaluation.

In the area of Voluntary Mobile Sources Emission Reduction, recommended for further consideration are programs to continue replacement of faulty gas caps, promote vehicle maintenance, and identify and repair vehicles with leaking gas tanks. Transportation control measures would also fall under this category.

Voluntary Stationary Source Emission Reduction Programs recommended for further consideration are leak detection and other natural gas industry emissions reductions. Additionally, voluntary area source emissions reduction program such as limiting the use of consumer products, high solvent paints and two stroke engines and promoting the use of non-permeable portable gas containers with non-spill nozzles have been suggested.

In terms of Voluntary Public Education Emissions Reduction Programs, the region currently has an Ozone Alert/Public Education Program initiated in 1999 by the RAQC. Current elements of the program include Ozone Alerts on days of anticipated high ozone levels, and public outreach/education for summertime activity addressing vehicle maintenance and refueling, lawn and garden equipment, paints, solvent and consumer products and transportation control measures. In 2003 the RAQC developed "Citizens Choose Clean Air", increased outreach to public information staff from local governments, increased media advertising and public information through CDOT resources.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: EPA policies allow areas to claim a maximum credit amounting to 3% of the required reduction needed for attainment/maintenance for voluntary programs in each of the following three areas: Mobile Sources, Stationary Sources and Public Education Programs.

IMPLEMENTATION APPROACH & SCHEDULE: Continue and expand current public outreach programs and add additional voluntary efforts in the areas of mobile, area and stationary sources as needed to ensure attainment/maintenance.

GEOGRAPHIC AREA OF APPLICATION: Area, mobile source and public education programs are Region-wide, while stationary source programs could be in specific locations within the region.

10. Mitigate the Impacts of Fire, specifically Prescribed Fire, on Ambient Ozone Concentrations and further Evaluate Emissions Control Strategies to Reduce the Impact of Prescribed Fires on Ozone Levels.

BRIEF DESCRIPTION OF STRATEGY: Prescribed fires can occur on an ongoing basis during the summer ozone season and peak times for most fires are in the early and late part of the season. While the average summer day does not reflect emissions from fires as being a contributor to the Denver emission picture, variations of this source from day to day may need to be considered. From an annual or seasonal perspective these emissions may be small but from an event related situation they can be appreciable when compared to many other sources. Current State regulations require obtaining permits for prescribed fires and strict burn parameters are placed on the permit. Burns can only occur under certain restricted meteorological conditions, many times spelled out in the permit or sometimes governed by the general "burn" forecast from the APCD.

ESTIMATE OF POTENTIAL EMISSIONS REDUCTION: Since this source can vary from day to day, a specific case by case analysis would be warranted when looking at the reduction potential from this strategy. While the total tons of emissions may not change from this strategy, a cessation of high ozone forecast day emissions could be acquired by issuing no-burn parameters on the permit.

IMPLEMENTATION APPROACH & SCHEDULE: Current State regulations already govern prescribed burning but restrictions for burning on high ozone pollution potential days is not part of the permit consideration. Implementation of this strategy would be accompanied by a restriction to not allow burning on forecasted "high ozone" days. The cost of implementation is negligible as the program already exists and delaying a burn by a day or two may not create any significant excess costs if the forecast can be made sufficiently in advance of the event to avoid logistical problems.

An additional consideration for fire is the potential of distant fires to add primary and secondary pollutants to the urban background that may exacerbate local ozone. This phenomenon has been demonstrated in other areas of the country and it is likely to be a factor in selected ozone events. As an element of this control strategy, each high ozone event would be required to undergo an analysis of the positive or negative impacts fire may have had in the event. If the event can be demonstrated to be related to fire related emissions, either prescribed or wildfire related, then the event will be analyzed by a standard protocol developed by the Division and a declaration will be made if the event was unduly impacted by fire emissions. In such cases the overall strategy would be to seek a "natural events" exclusion.

GEOGRAPHIC AREA OF APPLICATION: State of Colorado and other states for exceptional event analysis