

**SACRAMENTO METROPOLITAN  
AIR QUALITY MANAGEMENT DISTRICT**

For Agenda of: October 28, 2004

To: Members, Board of Directors  
Sacramento Metropolitan Air Quality Management District

From: Larry Greene  
Air Pollution Control Officer

Subject: Continuation of January 2004 Board discussion of emission reduction credits (ERCs) from rice straw burning

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**Recommendations**

Staff recommends that the Board authorize the following activities:

- o Direct staff to participate in an industry/regulatory working group to resolve the issues identified as barriers to the use of rice burn-based ERCs in the Sacramento Federal Non-attainment Area (SFNA); and,
  - o Direct staff to return to the Board with appropriate actions as part of the 8-hour ozone attainment plan.
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**Summary**

At the January 2004 meeting, your Board considered requests to make changes that would allow greater generation and use of emission reduction credits from reductions in rice burning. Your Board requested information regarding the amount of emissions involved, implications, past efforts to work with farmers, and future actions to resolve issues.

The overall issue involves two categories of credits: 1) 0.4 tons per summer day of NO<sub>x</sub> rice credits that have been issued to date (banked) and 2) 0.2 tons per summer day of additional NO<sub>x</sub> rice credits that could be issued if either the application window is re-opened or there are future rice credits that are surplus of the 125,000 acre burn cap (potential credits).

In the early 90's, staff and rice farmers interacted at several key points on both the development of the District ERC rules and use of rice ERCs for power plant projects. To date, Sacramento has not issued any credits, but other districts have.

If all acres burned in Sacramento County in 1990 had been issued ERCs, the amount of annual average day credits issued would have been 0.12 ton NO<sub>x</sub> per day, and approximately 1.09 tons NO<sub>x</sub> per day throughout the SFNA. The amount of summer day credits would have been 0.06 tons per day in Sacramento County and 0.57 tons per day throughout the SFNA.

The EPA has determined that the ERCs could be used as offsets for major emission sources under two scenarios, both of which require development of a rice ERC rule and a demonstration that the addition of the emissions will not compromise attainment. It is unlikely this demonstration can be made without mitigating the credits. However, more information is needed to consider this for 8-hour ozone, and is expected to be completed by 2007.

A substantial amount of work remains for air district and EPA staff to work out details, develop a rule for EPA approval that will be used for validating rice straw credits, and amend the State Implementation Plan (SIP), including an attainment demonstration and development of necessary mitigation.

The cost to fully mitigate rice emissions in the SFNA may require an additional \$7 to \$20 million to support incentive programs or require additional regulations are imposed on other businesses depending on whether the 1.09 tons per day requested by the Rice Commission or the 0.4 tons per day of summer banked ERCs are added to the inventory. The potential benefits for Sacramento County rice farmers are approximately \$1.2 million if the credit application deadline is extended and all farmers apply for and sell credits at the current market rates.

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**Previous Hearings** At the Board hearing January 22, 2004, staff reported on a request from the Feather River Air Quality Management District to include rice straw burn emissions in the SIP inventory.

EPA had determined that for ERCs generated from reductions in rice straw burning to be allowed for use at federal 'major' sources, the emissions on which they are based must be included in the SIP inventory. EPA correspondence from October 30, 2003, described ways to include those emissions into the SIP.

At the January hearing, Paul Buttner of the California Rice Commission requested that the estimated 1.5 tons per day of NOx emissions in the SFNA from rice field burning be added to the SIP inventory.

After listening to the staff presentation and participating in the discussion, the Board requested that staff continue the dialogue at the April Board hearing. Specifically, staff was asked to return with information that would address the following:

- Impacts to air quality, including clarification of the request by the California Rice Commission that we use planted rice acreage versus burned field acreage;
- Potential costs to mitigate the NOx emissions increases;
- Rationale for existing deadlines to apply for emission reduction credits; and

- o Outreach to the affected public.

The April Board hearing was cancelled and staff added this item to the June Board hearing. Prior to that hearing Paul Buttner requested a continuance until the August Board hearing so that he could discuss staff's position with the membership of the California Rice Commission. The Board granted the continuance until the August hearing but did authorize Chair Collin to sign the response letters to Mr. McNamara and Ms. Houx regarding the inclusion of rice straw burning in the inventory and the adoption of the BCC model rule. Further discussion of these letters can be found in the Letters section of this Board memo. The signed response letters are attached.

To allow for continued discussion between the Air Pollution Control Officers in the Sacramento ozone nonattainment area, this item has been continued to the October Board hearing.

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## **Background**

The Sacramento metropolitan area is designated 'non-attainment' under the federal 1 and 8-hour ozone standards, a label that indicates the local population is exposed to levels of ozone that can compromise their health. Two major components of ozone pollution are VOCs and NOx.

The Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991 (the Connelly bill) required rice farmers to phase down open field burning, which produces VOCs and NOx. While these reductions would not ordinarily be eligible for ERCs, the bill specifically authorized issuance of ERCs if the reduction met the criteria of the State and the district in which they applied.

The air districts adopted rules authorizing rice ERCs either as part of a general ERC rule or as a specific rule. Some farmers applied for and received credits, but others did not apply within the regulatory timeframes. EPA has raised numerous issues that must be addressed before the credits can be used to offset major source emissions. In sum, the emissions must be included in the SIP inventory, and the districts must demonstrate that we will meet the federal attainment goal. As a practical matter, this means demonstrating that we have mitigated the impact of the added measures.

If all regulatory hurdles were crossed and the rice ERCs were granted, they could be used to offset increases in VOC or NOx emissions from new or existing sources in the SFNA. If the District has an inter-district trading agreement, rice field burn credits generated in other SFNA districts could be used in Sacramento County.

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**The Connelly Bill** The Connelly bill required a reduction in rice field burning on an annual basis, beginning in 1992. By 2001, only fields with the certified presence of disease, not to exceed 25 percent of the acres planted, were to be burned. A burn 'cap' of 125,000 acres in the Sacramento Valley Air Basin was established, and growers with 400 acres or less were granted the option to burn their entire acreage once every four years.

Since the rice burning reductions were mandated by state law, they would ordinarily not be 'surplus' and eligible for banking. To ensure that the emission reductions would be eligible for banking, the Connelly bill included a special provision declaring that the reductions qualified for banking if they met the State and local banking rules. In addition, the legislation states that reductions that are banked may not be credited for attainment planning purposes or progress towards attainment.

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#### **Rule 204/Deadlines**

The Board of Directors adopted Rule 204, Emission Reduction Credits, in 1992. Rule 204 governs the generation of ERCs, and with one exception discussed below, applies the same requirements to rice and all other ERC sources.

Rule 204 established, among other things, a generally-applicable 60-day deadline for applying for ERCs. Monterey Bay also uses a 60-day deadline for ERC applications, while the other districts in the SFNA use 180 days.

During the original rule development, in response to the California Rice Commission's request that they be allowed more time to apply for ERCs, the District extended the ERC application deadline for agricultural burning credits to 365 days.

ERC application deadlines are established for two important reasons:

- 1) To ensure availability of data needed to validate actual emission reductions; and
- 2) To ensure that ERCs are properly included, documented, and mitigated in air quality planning.

Rule 204 allows credits to be banked even if the emissions are not in the SIP inventory. However, EPA policies and rules require ERCs used to offset growth in major source emissions to be included in the SIP inventory.

The 1994 SIP inventory included VOC emissions from agricultural burning, including VOCs from rice straw burning, but did not include NOx emissions because NOx emission factors for agricultural burning were not validated by the Air Resources Board until 1996. The current

inventory includes both VOCs and NOx emissions from ongoing rice straw burning.

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## **Outreach**

District staff has been involved in three separate major projects involving multiple meetings with farmers and/or the Rice Commission: the Rule 204 development process, and two separate power plant projects that explored using rice credits to meet mitigation requirements. There were similar efforts undertaken by staff of other air districts in the Sacramento region with similar ERC-generating requirements.

During development of Rule 204, the District contacted affected stakeholders by mail, through public workshops, and newspaper public notices. The California Rice Commission was specifically placed on the District rules mailing list, and was an active participant in the original rule development.

At the same time, staff was discussing rice credits with both farmers and SMUD's representatives as part of the proposed SMUD power projects. Specifically, SMUD proposed a power project proposed for the Rio Linda area (SEPCO), that was to be a combination power plant and ethanol project. The ethanol project would have used rice field crop waste as well as other crop waste to produce ethanol, and the credits from the reduction of open burning by the processing of that field waste would have offset the increased emissions from the power project.

There were numerous discussions during the permitting and licensing of that project with affected stakeholders, including farmers. However, the District did not receive any applications from the farmers. The power plant project was subsequently withdrawn prior to development of a full mitigation package.

During the early 2000's, when pressure for new power plants again created a hot market for ERCs, Florida Power and Light (FPL) discussed agricultural burn credits as a potential offset for its power plant proposed in Rio Linda. FPL helped some farmers apply for credits. When the FPL project was withdrawn, the farmers withdrew their ERC applications because they did not want to pay District processing fees for the ERC applications.

Yolo-Solano and Placer Air Districts have done periodic noticing of the ERC program to the farmers in their areas. Additionally, SFNA air districts also discussed rice credit procedures with farmers at a local Air and Waste Management Association conference held in cooperation with the Rice Commission in West Sacramento in November 2001.

**Issued Credits**

To date, no credits have been issued in Sacramento County for reductions in rice burning. One request for credits was denied for failure to demonstrate that rice had been planted or burned within the last five years. Another application, filed in November 2001, was withdrawn in August 2004.

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**Other Districts**

The other eight air districts in the Sacramento Valley Air Basin adopted their credit rules beginning in 1993, following development of the Sacramento Valley Basin Control Council's (BCC's) model banking rule. The model rule established an application deadline of 1996. However, in response to the increased interest in agriculture burn credits due to the power crisis, on April 13, 2001, the BCC removed the application deadline in the model rule.

The Connelly bill does not require districts to extend the application deadlines. Feather River AQMD nonetheless later extended, and in 2001 eliminated, the application deadline for rice burning. Although other districts in northern Sacramento Valley have granted application deadline extensions, no SFNA district besides Feather River AQMD has agreed to eliminate the 1996 deadline or adopt additional extensions.

Feather River, Yolo-Solano, and Placer County AQMDs have all issued agriculture burning ERCs, but the EPA has not validated their use by major sources because of the issues discussed below. ERCs from districts in the SFNA can be traded throughout the SFNA, and the rice burn-generated ERCs proposed to be used in Sacramento County must meet the same requirements that any other ERCs must meet (they must be consistent with District Rule 204, Emission Reduction Credits).

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**EPA Guidance**

The absence of NOx emissions in the 1994 SIP inventory was one of several reasons previously given by EPA for not validating the eligibility and use of rice burn credits. Responding to stakeholder interest in July 2001, District staff submitted a proposal to EPA to ensure that agricultural burn credits would receive required EPA approvals.

On October 30, 2003, the EPA wrote a letter to the air districts describing in general terms how the SIP could be amended to allow for the use of rice field burn ERCs in the SFNA. At a meeting on March 29, 2004, the EPA provided further guidance to the SFNA districts on the methods that can be used to validate the use of rice burn-based ERCs. In addition, they agreed to participate in a working group to further define the specifics.

EPA has identified two prerequisites to the use of ERCs to offset 'major' federal sources. First, a specific rule for rice burn ERCs must be approved by EPA and included into the SIP. A working group has been formed to discuss the specifics. Second, ERC emissions must be included in the SIP inventory, and EPA provided two scenarios under which the ERCs may be included in the SIP:

- 1) Through an 'attainment demonstration' that shows, through modeling, that attainment of the air quality standards can still be reached with the addition of the rice straw burning NOx emissions which occurred before the Connelly bill phase down. This option could include addressing both banked credits and potential credits.
- 2) Through a commitment to submit an attainment demonstration in the future that shows, through modeling, that attainment of the air quality standards can still be reached if ERCs are issued that are surplus of current Connelly bill requirements for not burning more than 125,000 acres in the Sacramento Valley Air Basin (SVAB). The Connelly bill placed a 125,000 acre cap on yearly rice field burn emissions from the SVAB. This option could include addressing banked and potential credits that meet this surplus requirement.

To meet EPA's requirement in the second option, farmers would need to voluntarily lower the SVAB 125,000 acre cap. A voluntary cap of 120,000 acres, for example, would allow 5,000 acres of ERCs to be eligible for banking. The voluntary cap would apply to the entire Sacramento Valley, not just the SFNA. This would essentially require other rice farmers to be subject to restricted burning when any farmer banked ERCs. This would require a cooperative effort between SFNA and non-SFNA SVAB districts and rice farmers to develop a mechanism for distributing allowable burning and ERCs fairly.

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### **8-hour Standard**

As reported at the Board meeting June 24, 2004, the EPA has recently published final rules for phasing-out the 1-hour ozone standard and replacing it with the 8-hour ozone standard. Although the Region intended to submit a revised 1-hour attainment demonstration plan in 2004 to address a transportation conformity problem, and which may have addressed this rice burn credit issue, the EPA rules will likely delay submittal of an attainment demonstration plan until 2007.

The 8-hour ozone standard is a more difficult standard to meet than the 1 hour standard. Staff is working with ARB, BAAQMD and others to address the difficult technical issues and identify sufficient controls to meet the 8-hour attainment deadline.

## Letters

In response to EPA's October 30, 2003 letter, Feather River AQMD<sup>1</sup> formally requested that the SMAQMD take specific steps regarding rice burn ERCs. These steps included:

- Quantify historic rice straw burn emission levels of NO<sub>x</sub> and ROG from 1988 through 1992;
- Include these emissions in the planning inventory for the upcoming SIP revision;
- Finalize a SIP revision that includes an attainment demonstration; and
- Adopt, if necessary, a rice straw-specific ERC rule.

Butte County AQMD<sup>2</sup> subsequently requested that the District adopt the BCC model rule so that there is valley-wide consistency in the application of rice field burn-based ERCs. John Sulpizio, Director of the Port of Sacramento<sup>3</sup>, also wrote in support of the efforts of the rice industry, and encouraged the Board to enable existing and future ERCs to be used for District permitting actions. Mark Morse, Environmental Coordinator for the City of Roseville, asked<sup>4</sup> that the SIP update include reauthorization of agriculture burning credits. Copies of the letters from the FRAQMD, the BCAQMD, the Port of Sacramento, and the City of Roseville accompany this document.

At the April 2, 2004, BCC meeting, members:

- Voiced support for the use of rice straw burning ERCs in the federal non-attainment areas;
- Committed to form a subcommittee to work with the EPA on the necessary rules and protocols to ensure EPA approval of the use of rice straw burn-based ERCs; and
- Requested a meeting with the EPA Region 9 Administrator, Wayne Natri, to discuss the issues further.

On July 12<sup>th</sup>, 2004, the California Rice Commission<sup>5</sup> responded to the web-posted June Board letter with a conceptual proposal to address the rice ERC issue in the SFNA. The proposal outlined the California Rice Commission's plan to pursue a memorandum of agreement with

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<sup>1</sup> In their December 05, 2003, letter to the SMAQMD Board of Directors, Paul McNamara of Feather River AQMD Board of Directors requested District cooperation in developing "...a revised clean air plan that accommodates the full use of rice straw burning ERCs..." Chair McNamara also asked that the districts in the SFNA cooperate to address rice straw ERCs in the SIP revision for the region.

<sup>2</sup> In their February 26, 2004, letter to the SMAQMD Board of Directors, Mary Anne Houx of Butte County AQMD Board of Directors offered support for the Feather River letter, and stated that rice straw burning ERCs were "...needed for continued economic growth in the valley." Chair Houx also encouraged the District to consider the BCC model rule to ensure valley-wide consistency in dealing with rice straw burn-based ERCs.

<sup>3</sup> In his May 06, 2004, letter to the SMAQMD Board of Directors, John G. Sulpizio of the Port of Sacramento encouraged the Board's "...support of the rice industry's opportunity to exercise its trading provisions."

<sup>4</sup> In his May 28, 2004, letter to Greg Tholen of the SMAQMD, Mark Morse of the City of Roseville requests that the "...SIP update include reauthorizing Ag burning credits and that related CEQA analysis be included in the draft EIR."

<sup>5</sup> Preliminary Draft Proposal: Conceptual Proposal to Address the Rice Straw Burning Emission Reduction Credit Issue in the Federal Ozone Nonattainment Area, July 12, 2004. Provided by Paul Buttner of the California Rice Commission.

the BCC that would establish a SVAB-wide policy for the issuance and use of rice straw burn ERCs. The basic elements of the proposed agreement include the following:

- The California Rice Commission would no longer pursue modifications to air district rules that would enable future applications for rice straw burn ERCs;
- The air districts in the SFNA would agree to add 0.73 tons per day of NO<sub>x</sub> and the corresponding value of VOCs to the baseline and attainment year emissions inventories;
- The BCC would agree that rice growers would have at least 180 days to apply for rice straw burn ERCs, based on acres burned during 1988 through 1992;
- Each air district would provide the total number of rice acres burned during 1988 through 1992 and the corresponding criteria pollutant emission estimates; and,
- The BCC, the California Rice Commission, and air districts in the SFNA would jointly petition the EPA to recognize the developed rice straw burn ERCs in the air districts' plans, and request immediate recognition of these ERCs for the permitting of Title V sources in the SFNA.

On October 8<sup>th</sup>, 2004, the California Rice Commission sent a letter updating the Board on issues related to the rice straw burning emission reduction credit issue. The letter withdraws the Commission's modified plan from July 12<sup>th</sup>, 2004 and returns to their original position presented at the January Board hearing. They are requesting the Board to take the following three actions:

- Direct District staff to modify its rice burning ERC program to be consistent with U.S. EPA's October 30, 2003 guidance letter.
- Direct District staff to include 1.09 tons per day of NO<sub>x</sub> (and corresponding VOC emissions) for rice straw burning ERCs in the emissions inventory budgets of all future ozone clean air plans.
- Direct District staff to re-open the application process to enable growers to have a chance to apply for the ERC program.

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**Emission Impacts** This section will explore the impacts of extending the application deadline and allowing all 1990 rice burning emissions, prior to the Connelly Bill phase-down, to be banked as credits or ERCs.

In January, the California Rice Commission<sup>6</sup> estimated that 1.5 tons NO<sub>x</sub> were emitted per day from burning approximately 70,193 acres<sup>7</sup> of rice fields in the SFNA during 1990. The California Rice

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<sup>6</sup> Paul Buttner of the California Rice Commission, at the January 2004 Board of Directors Hearing.

<sup>7</sup> Acreage back-calculated by District staff from the California Rice Commission's 1.5 tons NO<sub>x</sub> per day estimate.

Commission's NOx emissions estimates were based on the assumption that all rice acreage in the SFNA had been burned during 1990.

BCC-reported historical burn data for 1990 indicates 57 to 89 percent (depending on the district) of the rice acreage was burned in 1990. District staff-calculated SFNA NOx emissions from rice straw burning would have been an annual average of 1.09 tons NOx per day in 1990. The October 8, 2004 Rice Commission letter accepts the new staff estimates.

Rice field burn emissions are reported in 'tons per day' for modeling purposes. However, ERCs may be used only during the calendar quarter in which the emissions occurred. Actual emissions from field burning are periodic, and a significant portion of the burning can occur during the late ozone season or in the winter.

A comparison of District-estimated rice field burning annual average NOx emissions for counties in the SFNA, and the collective SFNA are presented in the table below, as compared to the summer day ERCs issued in the SFNA.

County	Planted Rice Acres from 1990 US Ag Census Data <sup>8</sup>	1990 NOx Annual Average Day Emissions from Rice Burning <sup>9</sup> tons per day	1990 NOx Summer Day Emissions from Rice Burning tons per day	Amount of Banked Summer Day NOx Rice Burning ERCs tons per day
El Dorado	0	0.00	0.00	0
Placer	11,500	0.22	0.12	0.007
South Sutter	23,333	0.34	0.18	0.211
Yolo-Solano	21,500	0.41	0.21	0.189
Sacramento	10,000	0.12	0.06	0
SFNA	66,333	1.09	0.57	0.407

**Mitigation**

To give the Board a sense of what actions would be required to fully mitigate the 1.09 tons NOx per day increase in emissions from including rice field burning emissions in the region's SIP inventory, staff made some comparative calculations on the costs to mitigate the 1.09 tons NOx per day:

- o 108,780 new cars and trucks must be removed from the road;
- or

<sup>8</sup> United States Department of Agriculture, National Agricultural Statistics Service, Crops County Data Files by Year (1970-2002). [www.nass.usda.gov/indexcounty.htm](http://www.nass.usda.gov/indexcounty.htm)

<sup>9</sup> Burn fractions derived from data developed by Les Fife, burning coordinator for the Sacramento Valley Basinwide Air Pollution Control Council, provided to SMAQMD March 15, 2004 by Paul Buttner of the California Rice Commission: Placer County burned 89% of their rice acreage, South Sutter burned 69%, Yolo-Solano burned 89%, and Sacramento burned 57%.

- 54 switcher locomotives operating all day must be shut down;  
or
- \$20 million must be added to the SECAT program.

To mitigate the summer day 0.4 tons per day of NO<sub>x</sub> emissions, the comparisons would be:

- 39,161 new cars and trucks must be removed from the road; or
- 19 switcher locomotives operating all day must be shut down;  
or
- \$7.2 million must be added to the SECAT program.

The currently banked farmers' rice burn credits would be worth approximately \$4.0 million at current market rates for credits. If they were able to bank the 1.09 tons per day, the value is approximately \$11 million. The value of the 0.12 tons per day potential credits to rice farmers in Sacramento County would be approximately \$1.2 million.

The cost to mitigate just the 0.12 ton per annual average day for Sacramento County would be:

- 11,975 new cars and trucks must be removed from the road; or
- 6 switcher locomotives operating all day must be shut down; or
- \$2.2 million must be added to the SECAT program.

Although the air quality impact on Sacramento County from the estimated annual average 0.12 ton per day of rice field burn NO<sub>x</sub> is small, relative to the burden on the rest of the SFNA, it is important to remember that if the SMAQMD and other districts repeal the rice ERC deadline, the District must also accept any 1990 rice credits generated in the other SFNA districts for use as offsets in Sacramento County.

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## **Conclusion**

A working group has been formed to resolve inventory issues and rule and protocol issues with EPA. The working group is made up of members from Butte County Air Pollution Control District, Feather River Air Quality Management District, Placer County Air Pollution Control District, Yolo/Solano Air Quality Management District and Sacramento. While not guaranteeing a particular outcome, EPA has committed to work with the BCC in this effort. The results must then be incorporated into a rice burn credit rule and be approved by EPA. Both the BCC and EPA agreed that this issue needs to be resolved in the context of the 8-hour ozone SIPs which are due in 2007 for both the Sacramento nonattainment area and Butte. A two year time frame is expected for this process.

The actual emissions from ongoing rice burning will be included in the 8-hour Rate of Progress (ROP) plan. Once a specific rule has been developed to implement the requirements identified in EPA's letter,

emission reduction credits for reductions below the actual emissions in the inventory would be usable by major stationary sources, as long as there is a commitment to include these reductions in the 8-hour ozone attainment demonstration. Staff is proposing to reassess the inclusion of the banked and potential 1990 credits as part of the 8-hour ozone attainment demonstration plan expected to be completed in 2007. Credits included in the plan may require full mitigation, either by imposing additional regulations on local businesses or with incentives at a cost of \$20 million dollars. To reduce that cost, staff expects to recommend limiting credits to the amount already banked, 0.4 tons per summer day. That would limit the cost to \$7 million dollars. In addition, staff recommends that the Board not re-open the window now for applying for emissions reduction credits.

Staff recommends that the Board direct staff to participate in the working group and District/BCC meetings. Staff also recommends that the Board direct staff to return to the Board with appropriate actions as part of the 8-hour ozone attainment plan, and to provide the Board with status reports if desired.

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Respectfully submitted,

Larry Greene  
Air Pollution Control Officer

Attachments

- 1) Letter from Donald Bransford to Illa Collin, October 8, 2004
- 2) Letter from Illa Collin to Mary Ann Houx, June 24, 2004
- 3) Letter from Illa Collin to Paul McNamara, June 24, 2004
- 4) Letter from Paul Buttner to Illa Collin, June 21, 2004
- 5) Letter from Mark Morse to Greg Tholen, SMAQMD, May 28, 2004
- 6) Letter from John G. Sulpizio to Illa Collin, May 06, 2004
- 7) Letter from Mary Ann Houx to Illa Collin, February 26, 2004
- 8) Letter from Paul McNamara to Illa Collin, December 5, 2003
- 9) Letter from Jack Broadbent to Steven Speckert, October 30, 2003