



DRAFT Serious Area Ozone State Implementation Plan (SIP) for the 2008 Ozone National Ambient Air Quality Standard (NAAQS) for the Denver Metro/North Front Range Nonattainment Area

- Public Comments Received by July 31, 2020 -

Public Comments Submitted by:

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Public Health

Air Quality and Business Sustainability

July 30, 2020

Regional Air Quality Council
Michael Silverstein, Executive Director
and Regional Air Quality Council Board
1445 Market Street #260
Denver, CO 80202

Comments Submitted by Email: sipcomments@raqc.org

Re: Draft Serious Area State Implementation Plan for Denver Metro and North Front Range Ozone Nonattainment

Dear Colleagues:

Thank you for the opportunity to comment on the July 10, 2020, draft *Serious State Implementation Plan for the Denver Metro and North Front Range Ozone Nonattainment Area*. We appreciate your continued efforts toward clean air in the Denver Metro North Front Range (DMNFR) ozone nonattainment area, and we acknowledge the extreme difficulty in bringing this nonattainment area into compliance with the Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS) under the Clean Air Act. Air quality has always been a critical area of work for Boulder County Public Health (BCPH); it is even more critical now, given the current respiratory health threat due to COVID-19.

The DMNFR was reclassified as Serious nonattainment for the 2008 ozone NAAQS, effective January 27, 2020, with an attainment date of July 20, 2021,¹ based on 2018- 2020 air monitoring data. With this reclassification, the State of Colorado was required to take further measures to reduce emissions of the following ozone precursor pollutants: volatile organic compounds (VOCs) and nitrogen oxides (NO_x). The Serious area nonattainment State Implementation Plan (SIP) due date is August 3, 2020.

BCPH would like to provide the following comments on the draft SIP:

The Recent Ozone NAAQS Violations Negate the Modeled Attainment Demonstration

The draft SIP, in Section ES.5 and Chapter 5, makes the determination that the DMNFR will attain the 2008 ozone NAAQS by 2020 based on the photochemical grid modeling for the attainment demonstration with supplemental analyses performed for the weight of evidence analysis. This is a demonstration of modeled attainment using projections and modeling assumptions. In order to attain the 2008 ozone NAAQS by the deadline, the 3-year average 4th maximum 8-hour concentration for 2018-2020 (the design value) at all monitors in the nonattainment area must be no greater than 75 parts per billion (ppb) throughout 2020. The ozone monitoring data already recorded in 2020 has caused the DMNFR to violate the NAAQS with a design value of 76 ppb at the Chatfield monitoring site and 77 ppb at the NREL site.² This data is the determining factor for the area to be reclassified to Severe



nonattainment. The EPA will need to reclassify the DMNFR from Serious to Severe nonattainment by the end of 2021, which is within six months of missing the July 20, 2021, attainment date.

Section ES.5 of the draft SIP states, “The projected 2020 ozone future year design value (DVf) at all of monitoring sites in the DM/NFR NAA are below the 75 ppb 2008 ozone NAAQS thereby demonstrating attainment. Since the monitored 2020 ozone DV will be based on the average of the 4th highest maximum 8-hour running mean (MDA8) ozone from three years (2018, 2019, and 2020) and 2018 was a high ozone year, some of the observed 2020 ozone DVs may be above the 2008 NAAQS. But the 2020 future modeling suggests that the 2020 4th highest MDA8 ozone will be below the 2008 ozone NAAQS.”³

Section ES.5 concludes by stating, “Based upon this strong and convincing body of evidence the Regional Air Quality Council and the State of Colorado anticipate ozone levels to be at or below 75 ppb at all monitors by the end of the 2020 ozone season.” We recognize that much of this information and the attainment demonstration were developed prior to the start of the 2020 ozone season and the monitoring data that caused this violation, but the SIP needs to acknowledge that the modeled attainment demonstration is not tracking actual monitoring data, which is the only information used for actual attainment. If an area violates the NAAQS, it must be reclassified to a higher level of nonattainment based on the acknowledgement that the current actions are not enough to achieve the standards. We suggest that all language referring to NAAQS attainment be revised in the SIP to reflect the current situation.

We understand that the RAQC and CDPHE have already been planning for the eventuality of the DMNFR being reclassified to Severe nonattainment and that there are plans to combine the Moderate area SIP for the 2015 NAAQS (70 ppb) and the Severe SIP for the 2008 NAAQS (75 ppb) to demonstrate attainment with both standards by 2023. While we recognize that probable reclassification was already being planned for, because this SIP is a public document, it should explain and account for the recent NAAQS violation.

Beyond the language used in the attainment demonstration, the fact that the NAAQS are actually not being met based on monitoring data means that the assumptions made in the modeling analysis are underpredicting impacts and the emissions inventory may not accurately reflect precursor emissions. Our specific comments related to these concerns are addressed below.

Inventory and Modeling Improvements Are Needed; Colorado’s Experts Can Help

This SIP is based on an updated 2017 emissions inventory, but we note that there are still many improvements that need to be made to that inventory. One important point is that the VOC emissions inventory should be much improved after the oil and gas sector reporting data is submitted in 2021, as required under Regulation 7. This is too late for the Serious area SIP for the 2008 ozone standards, but the future Moderate area SIP for the 2015 standards, due in 2023, should use this significantly more comprehensive oil and gas inventory. The 2017 updated emissions inventory in the current draft SIP shows that the oil and gas sector is, by far, the largest single source of VOC emissions in the area, at 163.3 tons per day out of 353.1 tons per day for the entire DMNFR.⁴ Because the updated data for the oil and gas sector is not currently available, the modeling analysis should include a sensitivity run that doubles the oil and gas sector VOC inventory to account for the underrepresentation in the current inventory. This should help bring the modeled attainment demonstration closer to actual monitored data.

In order to improve the accuracy of the SIP inventories and the modeling analysis, we recommend involving the research community in the process. Colorado is home to many air quality researchers who could assist with the inventory and modeling. It was encouraging to learn that the passage of Senate Bill 20-204 will allow for the creation of an enterprise board that will include researchers, industry, and a few Air Quality Control Commissioners. We hope that this work will involve and inform the ozone SIP development process and that the local governments in the nonattainment area can also be involved in this important work.

Coordination With Greenhouse Gas Reduction Efforts Can Also Reduce Ozone Precursors

Colorado is undergoing extensive work to reduce greenhouse gas (GHG) emissions from all sectors, and these efforts – particularly in the transportation sector – should be coordinated with the ozone SIP efforts to the extent they can since there is a lot of overlap with emission reduction strategies. For example, electrification efforts in various sectors will also decrease VOC and NO_x emissions. This type of work is a win-win scenario and the control measures in the SIP should account for any plans that are already underway. More importantly, Colorado can capitalize on the need for additional ozone precursor emissions reductions as an added push to GHG reduction programs.

Additional Transportation Measures Are Necessary to Attain the Ozone NAAQS

The transportation sector is also a significant source of both VOC and NO_x emissions. According to the updated draft SIP 2017 inventory, on-road mobile sources account for 57.6 tons per day (out of 353.1 tons per day for the entire DMNFR) of VOC and 68.4 tons per day of NO_x (out of 187.1 tons per day for the entire DMNFR).⁵ Additional transportation control measures need to be included in the SIP to achieve attainment with the NAAQS. One great candidate for an additional measure is that the employer-based trip reduction program being considered by the RAQC as a voluntary strategy. We encourage the requirement of this program as a control measure. Under EPA's Guidance on Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans, only 3% of the total projected future year emissions reductions required to attain the NAAQS can be taken for voluntary measures.⁶ But if this program is mandatory and can achieve higher than 3% reductions in the SIP, this would not only help with modeled attainment, it would lead to real air quality improvements.

And as noted above, Colorado is already focused on GHG reduction efforts; expansion of specific transportation sector efforts, such as increasing the percentage of electric vehicles and transit electrification, will also help to reduce ozone levels.

One innovative strategy Colorado should pursue is to analyze the transportation conformity program and determine how the motor vehicle emissions budgets set under this program could lead to actual emissions reductions. Acknowledging that transportation conformity is part of a federal program, this is one area where Colorado could strive to improve upon the requirements and adopt transportation emissions budgets that ratchet down in future years.

Lastly, we note that project specific transportation National Environmental Policy Act (NEPA) analyses are not required for ozone because ozone is a regional pollutant, and localized impacts do not occur from any one transportation project. But we do know that, taken together, all the transportation projects in the entire DMNFR could potentially lead to increased emissions and ozone impacts. While we recognize that this is outside of the SIP planning process, a successful program that reduced emissions would bring benefits. If CDPHE, the Air Quality Control Commission, the RAQC, and the Transportation Commission could work together to develop a state-run program that considered ozone in individual transportation plans, this would benefit the overall efforts to reduce ozone precursors from the transportation sector.

We are grateful for the work that you and your staff are doing to coordinate these many efforts towards improving air quality conditions in the DMNFR, and we look forward to continuing our work with you. If you have any questions about our comments, please contact Boulder County Public Health Air & Climate Policy Specialist Cindy Copeland at ccopeland@bouldercounty.org.

Sincerely,



Bill Hayes
Air Quality Program Coordinator

¹ 84 FR 70897 (December 26, 2019).

² APCD, CDPHE, Ozone Summary Table, https://www.colorado.gov/airquality/html_resources/ozone_summary_table.pdf.

³ RAQC, Draft *Serious State Implementation Plan for the Denver Metro and North Front Range Ozone Nonattainment Area*, July 10, 2020 at ES-4.

⁴ CDPHE and RAQC, *Serious State Implementation Plan for the Denver Metro and North Front Range Ozone Nonattainment Area*, July 10, 2020 draft, Table 14 at 3-3. https://raqc.egnyte.com/dl/cg3lb3lpmc/draft_SeriousOzoneSIP2008NAAQS_MergedDoc_2020-07-09_ab.pdf.

⁵ *Id* CDPHE and RAQC

⁶ Environmental Protection Agency, *Guidance on Voluntary Mobile Source Emission Reduction Programs in State Implementation Plans (SIPs)*, 10/24/97, at 5, <https://www.epa.gov/sites/production/files/2016-05/documents/vmep-gud.pdf>.

FROM:

Boulder Transportation Connections

1905 15th St, #464
Boulder, CO 80306

TO:

Colorado Air Quality Control Commission

Air Pollution Control Division

4300 Cherry Creek Drive South
Denver, CO 80246

Regional Air Quality Council

1445 Market Street, Suite 260
Denver, CO 80202

To Whom it May Concern:

This comment is written in response to the Draft Ozone State Implementation Plan/Serious State Implementation Plan (SIP) for the Denver Metro and North Front Range Ozone Nonattainment Area released on July 10, 2020.

Boulder Transportation Connections (BTC) is the Transportation Management Organization (TMO) for the City of Boulder. BTC works closely with local businesses, area residents, and regional transportation partners to reduce congestion, vehicle miles traveled, and emission levels in the Denver Metro region. BTC staff has also been actively involved in the Employer-based Trip Reduction Program (ETRP) Working Group led by the Regional Air Quality Council (RAQC). As such, BTC is deeply invested in ensuring the final draft of the SIP is both impactful and attainable for the region.

The draft SIP indicates that the following voluntary efforts are not considered reasonably attainable control measures (RACM) for the 2020 Ozone season, 8-hour standard, and that both are currently being considered by RAQC. BTC supports the adjustment and inclusion of these measures:

Commuter Trip Reduction/Employee Trip Reduction Program

The draft SIP states that a mandatory Commuter Trip Reduction (CTR) program would need to meet the requirements of CAA§ ((d)(1)(B) which would require “employers of 100 or more employees within the NAA to implement programs to increase average vehicle occupancy of commuting trips by at least 25% compared to a baseline,” (p. 7-30; PDF p. 187). While this strategy is still being evaluated by the RAQC, BTC suggests an adjustment to this requirement to make sure the goals of the program are attainable.

BTC suggests a more business-friendly CTR program similar to that of Washington State with a trip reduction goal of 15% compared with the baseline (to replace the previously mentioned 25% trip reduction goal). After discussions with members of the ETRP Working Group, it is clear that a 15% trip reduction goal is attainable within a three-year timeframe while the 25% trip reduction goal would require more disincentives

BTC also suggests a staggered three-year approach to the CTR program that will initially target sites with 250+ employees within the first year and sites with 100+ employees in the third year. This staggered approach will allow companies with more abundant resources and the highest number of commuters to lead the charge to reduce commuter trips, improve air quality, and determine best practices for the region.

VMT Reduction Strategies/Expanded Commuter Trip Reduction Programs

The draft SIP states that this program would “expand current commuter mitigation programs to further work with local employers, typically those with 100+ employees, to implement programs that would reduce the number of individuals commuting to work in single occupancy vehicles,” (p. 7-32; PDF p. 189) and goes on to list some examples of such programs. While this strategy cannot be considered RACM for the 2020 Ozone season and is still under evaluation by the RAQC for the SIP, BTC supports its inclusion as a voluntary measure due to its potential (though unmeasured) impact in reducing commuter trips and associated emissions. Additionally, this measure would support a mandatory CTR program and can be implemented to meet the individual needs of each community.

Both the CRT/ETRP and the VMT Reduction Strategies would be able to be implemented in the 2021-2024 timeframe for which the SIP is being developed. Additionally, by supporting these two measures, CACC and RAQC will be furthering the purpose of the SIP to improve air quality through the reduction of vehicle miles traveled and VOC emissions. With this in mind, why are these measures still under evaluation by the RAQC rather than approved? With their potential impact, BTC suggests that both measures be included in the final draft of the SIP.

On behalf of the Denver Metro area, BTC thanks CACC and RAQC for their consideration of this comment.

Sincerely,

Boulder Transportation Connections

1905 15th St, #464
Boulder, CO 80306
info@bouldertc.org

July 31, 2020

Denver's Regional Air Quality Council (RAQC)
1445 Market Street
Denver, CO 80202

RE: Serious State Implementation Plan for the Denver Metro and North Front Range Ozone Nonattainment Area

On behalf of the Urban Air Initiative (UAI), we appreciate the opportunity to comment on the draft State Implementation Plan (SIP) for the Denver Metro area. Urban Air Initiative Inc. (UAI) is a registered 501 (c) (4) non-profit technical and educational social welfare organization with significant technical expertise in the fields of fuels, emissions, auto technology, and air pollution.

We are also submitting these comments in conjunction with Front Range Fuels, a Colorado Ethanol producer currently providing clean fuels to the Denver Metro region.

UAI has participated in past RAQC meetings as well as providing oral comments to EPA's September 13, 2019 meeting regarding the reclassification of the Denver area for the 2008 Ozone National Ambient Air Quality Standard. This re-classification to the serious category has significant implications for the region's future. Failing to come into compliance impacts every sector of the economy and the options and choices discussed in this draft plan warrant careful consideration.

With mobile sources and transportation fuels comprising a large component of the emissions inventory, we feel it is critically important to adopt policies based on real world fuels that can provide multiple benefits. We believe a key flaw in this draft SIP regarding mobile source emissions from gasoline powered vehicles is the reliance on EPA's Motor Vehicle Emissions Simulator model, often referred to as MOVES. In short, as we have previously testified and commented to both the US EPA and various Colorado air quality officials, this model is flawed in its assumptions and subsequent projections with respect to reductions of criteria pollutants. The failures being detected in the MOVES model will not provide the citizens of Denver accurate information that allows best recommendations to improve air quality.

Clearly this draft SIP identifies a comprehensive list of transportation related measures, all of which may contribute to the goal of healthier air for your citizens. Our expertise in the area of gasoline is based on years of studying fuel composition and real world blending and usage. The discussions to date with respect to changes that can be made to gasoline have included what we believe to be a misguided focus on simply reducing vapor pressure, i.e., RVP. While evaporative emissions of course are significant contributors to ozone formation, suggesting an elimination of the one-pound RVP allowance for ethanol blends may result in increased petroleum

consumption and likely eliminate the positive contributions of ethanol as an oxygenate. Increasing ethanol reduces tailpipe emissions and has been proven, in real world applications of Federal Reformulated Gasoline (RFG), to reduce ozone. The reality is that ethanol has been proven to provide a wide range of benefits, and improves gasoline quality through the replacement and dilution of harmful aromatic hydrocarbons used by oil refineries to increase octane. Ethanol not only reduces CO and toxic emissions such as benzene and Polycyclic Aromatic Hydrocarbons (PAH) emissions, but also reduces the precursors to Secondary Organic Aerosols (SOA), PM2.5 and ozone. Responsible modeling methods should not just focus on reduced ozone emissions but should also address precursors such as aromatics, PAH's, and Ultra-Fine Particulates (UFP's) that are scientifically proven to have a real world negative impact on human health.

Moreover, the various fuel options noted in Section 7 of the Draft Report of July 10, 2020 include a low carbon fuel strategy to which ethanol would be a significant contributor. Taking 10% ethanol out of gasoline results in 10% replacement by petroleum in order to maintain current octane of gasoline. In this case the petroleum used to replace ethanol is the most toxic, carbon intensive component of petroleum. The petroleum replacement, aromatic compounds, are not only classified as air toxics and benzene based carcinogens, but are also energy and carbon intensive to produce. .

The MOVES model, used for both on and off-road vehicle emissions, was developed using test fuels that do not represent real world fuels. The fuel blending used in the construction of the MOVES Model for both tailpipe and evaporative emissions is not based on real world fuel properties. In fact, blending of the test fuels was done in a manner completely opposite of what oil refineries actually do when formulating gasoline. Consequently, the embedded defaults in the Model do not represent real world fuels, and inaccurately blame the presence of ethanol for various emission increases.

While this is a problem everywhere the MOVES model is used to predict emissions, it is particularly relevant to the Denver and Front Range ozone situation. This is due to the fact that the model primarily used higher octane, premium gasoline in its testing. Because of outdated fuel regulation, sub-octane gasoline is still being sold in the Denver region. This allows a lower octane gasoline, which is less than 87 octane regular grade as required in the vehicles owners-manual. Therefore, the data used in the model is not an accurate representation of the emissions that come from these lower octane fuels used in the region when vehicles are affected by too low of octane fuels which can cause emission increases.

As Denver's RAQC has used the MOVES model under the requirements set by EPA, RAQC will also be significantly limited in determining best fuel changes to not only lower ozone emissions, but also lower toxic and Secondary Organic Aerosol (SOA's)

While UAI notes that RAQC is not implementing lower vapor pressure (RVP) gasoline controls at this time due to time limitations noted by oil refineries, UAI believes that are other short term changes to gasoline requirements currently available for RAQC's consideration.

UAI's recommendation to RAQC is to re-evaluate emission contributions from mobile sources with the focus to not only lower ozone precursors but also precursors to PM2.5, related to the aforementioned toxic aromatic compounds. Focusing only on ozone ignores the greatest factors impacting human health and much of this from mobile sources can be traced back to aromatics in gasoline, as well as diesel fuel.

A reevaluation of mobile source emissions needs to start with quality data. Reviewing and modeling of vehicle emission data needs to be based on vehicle studies that include real world fuel blending in order to achieve the greatest accuracy in modeling ambient air quality changes.

A review of the following studies will shed light on the need for using real world vehicle test fuels in order to model real world emission impacts. Based on these studies, along with real world fuel surveys, UAI can show multiple errors and contradiction in EPA's MOVES model. A model RAQC is relying on for guidance to improving Denver's air quality.

1. Anderson. J.E., 2014 ¹ Issues with T50 and T90 Match Criteria for Ethanol-Gasoline Blends
2. Future Fuel Strategies, 2018 ² Effects of Ethanol Blends on Light-Duty Vehicle Emissions: A Critical Review
3. Clark. N., 2019 ³ Emissions from Low-and Mid-Level Blends of Anhydrous Ethanol in Gasoline
4. Clark. N., 2020 ⁴ Quantification of Gasoline-Ethanol Blend Emissions Effects

We would appreciate any opportunity to work with RAQC staff and present our findings as the agency continues to develop its long term strategy. Please feel free to contact me directly and we look forward to helping the Denver region address the ozone problem and provide its citizens the healthiest option in motor fuel.

Sincerely,



Steven Vander Griend
Urban Air Initiative, Technical Director

¹ <https://www.sae.org/publications/technical-papers/content/2014-01-9080/>

² <https://fixourfuel.com/wp-content/uploads/2019/01/Meta-Analysis-Executive-Summary-Release.pdf>

³ <https://www.sae.org/publications/technical-papers/content/2019-01-0997/>

⁴ <https://pubmed.ncbi.nlm.nih.gov/32315258/>

From: [Misty Howell](#)
To: [RAQC SIP Comments](#)
Cc: [Amanda Brimmer](#); [Jessica Ferko](#)
Subject: FW: comments on implementation plan for Serious Non Attainment
Date: Friday, July 31, 2020 5:42:50 PM

This came directly to me.

In an effort to help mitigate the spread of COVID-19, I will be working remotely for the foreseeable future. During this time email will be the best way to reach me. Thank you.

Misty L. Howell

Operations Manager | Board Secretary
Regional Air Quality Council
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303-629-5450, x200 | mhowell@raqc.org
RAQC.org | CleanAirFleets.org | SimpleStepsBetterAir.org



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From: Joel Strohecker [mailto:joelstrohecker2@gmail.com]
Sent: Friday, July 31, 2020 5:40 PM
To: Misty Howell <mhowell@raqc.org>
Subject: comments on implementation plan for Serious Non Attainment

Hello

I wanted to write my comments on your implementation plan for attaining the 2008 NAAQS 8 hour ozone standard. I appreciate the opportunity.

As a co-founder of a new organization DeSmog Denver and a physician, I am very interested in the work you are doing and what we all can do to improve the air quality of our state.

After reading the state implementation plan I had many thoughts but will limit my points to 3:

1) I am pleased that we will likely meet the 2008 ozone standards for the 2018-2020 years. This does reflect a lot of hard work by the state, the AQCC, RAQC and others in lowering VOCs released from the oil and gas industry who in the report showed dramatic improvement in oil tank VOC release from 2017 to 2020. Federal fuel efficiency standards clearly have helped lower on road car pollution (VOC and NOx) over this time as well. It appears these two things are the biggest players in our likely meeting these 2008 standards.

2) In the future, more stringent ozone standards will most certainly be implemented. Of course the 2015 EPA level of 70ppb could be implemented and enforced with a new administration. And over time, if we follow medical literature, our goal should be getting ozone down closer to the 30-40ppb level if we want to really protect our citizen's health (see New England

Journal of Medicine article 6/29/17 "Air Pollution and Mortality in the Medicare Population"). With this in mind, I encourage the AQCC and RAQC to continue working on the "Mow Down Pollution" program and the "Electrify Colorado" programs especially. Myself as well as the members of DeSmog Denver feel very strongly about a gradual, phased transition away from gas powered lawn equipment both in Denver and the Front Range. Indeed, as your inventory charts showed, lawn equipment is actually modeled to have a continued increase in VOCs from '17 to '20. The electric motor and battery technology is rapidly improving and soon, if not already, it will make no sense to buy gas powered equipment for yard work. This includes commercial businesses who emit the majority of VOCs. Larger, riding mowers are now coming onto the market. Additionally myself as well as our organization encourage RAQC to consider a leaf blower and weed trimmer electric exchange program or have an aggressive phase out of these devices in the front range. These devices with their 4 stroke engines emit an especially dangerous mix of particulate matter in addition to precursors for ozone.

3)With forward thinking in mind given #2, I would ask that AQCC and RAQC consider reimplementing a CFFP program for the future. Again, with Tier 2 and Tier 3 as well as heavy duty emission standards in place, we have made progress with some on road VOCs, NOx. But knowing future ozone goals will be more stringent, we should initiate a CFFP with an electric vehicle minimum. I realize this will be complicated and will involve new electric truck technologies that are just coming to the market. However as Colorado has demonstrated, we are right with California in thinking progressively on these issues.

Thank you RAQC for your hard work on these issues. And thank you for the opportunity to submit comments.

Joel Strohecker, DO

From: dking49326@aol.com
To: [RAQC SIP Comments](#)
Subject: Public Comment Regarding the Draft Serious Ozone SIP
Date: Friday, July 31, 2020 8:12:36 PM

Regional Air Quality Council:

My comments are in regard to missing and non-transparent information which I believe should be noted, even if not required:

1. By not including the Biogenic Source Emissions for VOC's and NOx, you eliminate providing knowledge of the total emissions which create ozone. I do know the amount of Biogenic VOCs is a somewhat large percentage of the total. Including the Biogenic Sources would then reduce all other Source percentages, providing a complete picture of VOC Sources. These could be presented as transparency for completeness of data, and not replace other charts. The same should be done for NOx, although the Biogenic Sources are much smaller than for VOC's.
2. There is no discussion of interstate and intrastate transport of pollutants, which appear to be another source of fairly large concern; however, no data is provided to show understanding of pollutant transport in the total ozone picture.
3. There does not appear to be any analysis of reductions in NOx and how much the reductions might actually increase ozone, as NOx is explained to "eat" ozone. Might this neglect provide a possible reason why the models don't match with actual data?
4. Weather is stated as the determining factor in ozone creation, and I question just how much is understood about the weather. We receive Ozone Alerts on many days when ozone standard violations don't occur. Why isn't the impact of weather explained in the creation of ozone beyond just NOx and VOCs heated by the sun?
5. Indoor Air Quality is never addressed, which is suggested to have a much larger health impact because of the containment of pollutants within a home. This impact appears to be similar to the COVID-19 impact in nursing homes where residents are contained inside and many died real deaths, not computer modeled "premature" deaths as ascribed to Ozone. Is it possible that poor Indoor Air Quality causes actual deaths at a younger age, rather than ascribing "premature" deaths to Ozone, where the outside air changes most all the time? Our Health Department says "premature" deaths are mostly caused by opioid and drug use by our young people, and those are of greatest concern.

Thank You,
Evelyn King
6321 14th Street SW
Loveland, CO 80537
970-667-5687

From: [K Artell](#)
To: [RAQC SIP Comments](#)
Subject: Fwd: Comment State Implementation Plan for the 2008 8-Hour Ozone National Ambient Air Quality Standard
Date: Friday, July 31, 2020 11:10:21 AM

Please see comments below which were not sent to the correct email address. Thanks.

----- Forwarded message -----

From: **K Artell** <artellme2@gmail.com>
Date: Thu, Jul 30, 2020 at 12:13 PM
Subject: Comment State Implementation Plan for the 2008 8-Hour Ozone National Ambient Air Quality Standard
To: <BoardMtgComments@raqc.org>, Jessica Ferko <jferko@raqc.org>

Could the RACQ provide more information about the difference between modeling emissions and actual emissions?

And what type of air emissions monitoring technology/equipment industry used for updated emissions data?

"3.3.2

Oil and Gas Sources The emissions inventory for the oil and gas sector includes three segments: point sources, condensate/oiltanks, and area sources. In consideration of the technological advancements and emission controls taking place in the oil and gas sector, the RAQC and the Colorado APCD engaged industry to develop the 2017 and 2020 future year emissions inventory. In May 2015, the APCD and RAQC held several meetings with representatives from the top six oil and gas producers in the Denver–Julesburg (DJ) basin, representing around 80% of production in the DM/NFR area, which resulted in detailed information which was used to develop the Moderate area SIP. As part of the Serious area SIP, this group was reconvened to update emissions for 2017 based on actual emissions data wherein 11 producers submitted facility and equipment-specific data for 2017, with 8 of them having facilities that operate within the DM/NFR area."

From: [Barney Strobel](#)
To: [RAQC SIP Comments](#)
Subject: Comments on the Serious State Implementation Plan
Date: Friday, July 31, 2020 9:35:19 PM
Attachments: [Comments on 2020 SIP.docx](#)

I have attached my comments as a Word file so that the links actually work. If you would prefer a different format, please let me know.

FYI, I have also sent this to various media and legislators.

Barney Strobel
720-810-3836

Comments on the Serious State Implementation Plan

Based on this document, it appears that the Polis administration is treating the issue of ground-level ozone the same way that the Trump administration is treating the COVID-19 issue: ignore the science, misrepresent the data, claim that you are doing a great job, and pretend that you do not have to do anything more because the problem will go away by itself. Just like Trump.

It is disappointing that three Democratic administrations in a row now have chosen to use ground-level ozone for political purposes rather than doing what is necessary to fix the problem. I am not a Republican, but I hate how the Democrats are screwing the people of Colorado.

We were declared non-attainment for the 80 ppb standard in 2007. Now, thirteen years later, the air quality agencies still cannot state with absolute certainty what is causing high ozone levels. Thirteen years later, the air quality agencies do not even know whether the ozone at each monitor is limited by VOC or NOx emissions. It is really hard to fix a problem without knowing what the problem is.

For thirteen years, the air quality agencies have refused to install monitors to determine what is really causing the ozone, and the inference is that three Democratic administrations in a row have not wanted to have the ozone problem fixed. Instead, Democratic politicians have used high ozone levels as the excuse to force increasingly stringent controls on the oil and gas industry, even though it is absolutely certain that emissions from oil and gas are not causing all of the problems.

Even the CDPHE has stated that oil and gas emissions are not causing high ozone levels at Chatfield, but to date, there has been no effort whatsoever to reduce ozone levels at Chatfield. We can never achieve attainment status until we achieve attainment at every monitor, and that includes Chatfield. We need for our politicians to stop bashing oil and gas and start focusing on the real issue.

As for this SIP, it is extraordinary that in a 232-page document presented as the Colorado plan for achieving the ozone standard, the document does not include even one program to reduce ozone. This SIP document is a joke. Unfortunately, there are 400,000 Coloradans with asthma who cannot live with the RAQC's joke.

The ozone problem in Colorado will never be fixed until an agency comprised of only engineers and scientists is established to establish a solution outside of the realm of political influence. The "enterprise" envisioned by Senate Bill SB20-204 is not a solution. There is no reason whatsoever to establish yet another agency controlled by a Board that is appointed by a governor who does not want the ozone problem fixed.

Senate bill SB20-204 is yet another transparent example of the Democrats bashing oil and gas instead of addressing the real problem. If we need to know what the emissions levels are from existing, known emissions sources, then we need to tell the engineers at the APCD to get off of

their butts and go out and measure the emissions levels. There is no compelling reason to install monitors downwind of known emissions sources, and there is no justification for forcing industry to pay for meaningless monitors.

The question that the General Assembly has chosen not to address is whether the high ozone levels are always caused by known sources. Clearly, the General Assembly does not care what is causing the ozone as long as they can force oil and gas to spend money on yet more meaningless programs.

The purpose of the RAQC was supposed to be to develop programs to reduce ozone levels. It is clear that the current RAQC is incapable of that task. Ideally, the Executive Director of the RAQC Board would be able to direct the RAQC, but Governor Polis chose to appoint an Executive Director who proved for 13 years at CDPHE that she can make absolutely certain that nothing is done to reduce ozone levels.

The people of Colorado deserve to have a RAQC that actually has the capability to establish a program to reduce ozone. The people of Colorado deserve to have an Executive Director of the RAQC Board that actually has the qualifications to direct the RAQC.

Given that Governor Polis has chosen to appoint an Executive Director to the RAQC Board who has no qualifications to direct the RAQC staff, it appears that the people of Colorado will be forced to wait for two years to elect a new governor who actually cares about the health of the people in Colorado, and we can only hope that the new governor will choose a far more appropriate Executive Director than Governor Polis did.

The ozone problem in Colorado is exactly like the COVID problem nationally. We were stupid enough to put people in charge who have more to gain if ozone levels are not reduced than if they are.

RAQC Ignoring the Science

The characterization in this SIP that 2018 was an abnormal season for ozone is wrong. In a “normal” ozone season, we have periods of high pressure covering Colorado with very little wind, high levels of sunlight, and temperatures in the high 80’s to mid 90’s. Those conditions create the characteristic upslope/downslope conditions that lead to high ozone levels. We had “normal” ozone seasons in 2008, 2010-2013, 2015, 2016, and 2018. The abnormal ozone seasons were in 2009, 2014, 2017, and 2019.

In 2017, we had an unusually rainy August, and in 2019 we had an unusually rainy June. This year, we have had unusually high wind over extended periods, and there have been very few days that could be called “normal” summer weather. It may be the case that climate change has permanently altered our summer weather patterns. If not, then we can expect the RAQC to take

advantage of the fact that three out of four years from 2017 to 2020 had unusual weather patterns, and they will claim that ozone is trending downward regardless of how intellectually dishonest that concept is. As a precedent, Ken Lloyd claimed that his RAQC had achieved a significant reduction in ozone following the low ozone season in 2017. Fortunately for Ken, he was not around to have to explain the ozone levels in 2018. It would be refreshing to hire honest people to run our government agencies.

Page ES-3 of the SIP discusses “Reasonable Further Progress.” While the EPA may accept that the SIP achieves the demonstration of “Reasonable Further Progress” by projecting a reduction of VOC by at least 9%, there is no evidence that the projected reduction will have any effect on reducing ozone. Page ES-4 shows that we reduced VOC by 32%, or 165.7 tpd, from 2011 through 2017, but after such a significant reduction, ozone levels were unchanged from 2011 to 2018.

	4 th max 8-hr Ozone, ppb	
	2011	2018
Chatfield	82	82
Renew. Energy Lab	83	80
Rocky Flats North	81	81
Ft. Collins West	80	80

If the RAQC claims that we reduced VOC by 32% and NOx by 27%, why was there no reduction in ozone?

If ozone levels did not drop at all after reducing VOC by 32% and also reducing NOx by 27%, how much is it going to reduce ozone if we reduce VOC by another 60.9 tpd? Is this “progress?”

Back in 2008, the only action item in the [Ozone Action Plan](#) was to force oil and gas companies to reduce emissions from condensate tanks by 49 tpd. In a blatantly political move, the action plan was accepted by the RAQC Board, the Air Quality Control Commission, and the EPA. The Plan was accepted in spite of the fact that two engineering companies did a [Sensitivity Analysis](#) that showed that reducing VOC emissions from oil and gas by 48 tpd would have no meaningful effect on reducing ozone. In fact, the study showed that reducing VOC emission from oil and gas by 96 tpd would have no meaningful effect.

Page 4-22 shows that oil and gas actually reduced VOC emissions by 116.4 tpd from 2011 through 2017, and that still had no effect on reducing ozone levels.

Given that a 42% reduction in VOC from oil and gas had no effect on reducing ozone, how can the RAQC claim that VOC emissions from oil and gas are a major cause of ozone levels?

There is not a single molecule called VOC. Conceivably there are thousands of organic compounds that could be in the air, but from a practical standpoint, there are relatively few. According to a 2017 study by CDPHE, there are only eight compounds that make up more than 95% of emissions from oil and gas, and the most abundant compound by weight and volume is propane.

According to a RAQC [document](#), oil and gas contributes on average about 30% of the ozone at Rocky Flats, but biogenics contribute maybe only 2-3%. Page 4-22 of the SIP shows O&G VOC emissions levels at 163 tpd, and it shows on page 4-21 biogenic VOC emissions levels at 178 tpd. Given that there is at least as much isoprene as propane in the air, and given that isoprene is 25 times as reactive as propane in forming ozone, how is it possible that the RAQC can claim that O&G VOC emissions can cause ten times as much ozone at Rocky Flats as biogenic VOC emissions?

Can the RAQC prove that biogenic VOC emissions are not the primary cause of ozone in the non-attainment area?

The RAQC has done no analysis of the existing ozone conditions in the field. It is simply not possible to reduce ozone levels by using averages based on models while ignoring actual ozone events. Until the RAQC can explain actual events in the field, all of the projections in the SIP are meaningless. Some examples of field events that are not explained by the RAQC's simplistic emissions inventory model follow.

In a normal ozone season, Chatfield shows ozone levels about 10 ppb higher than both Highland and Welch. How can Chatfield be higher than both Highland and Welch? Where does the extra ozone at Chatfield come from?

In a normal ozone season, Chatfield and NREL both have higher ozone levels than Welch. How can the ozone at Welch be lower?

In 2018, there were 23 days when the 8-hr ozone levels at Ft. Collins West were 71 ppb or higher. On 15 days, the ozone levels were in the mid 70's, and the ozone never exceeded 77 ppb. On 8 days, the 8-hr ozone was 76 ppb or higher, and the ozone hit 85 ppb or higher. Since the emissions inventory model assumes that emissions levels are more or less constant day to day, what causes the ozone to spike on some days, but not others? How can the RAQC expect to reduce ozone levels without knowing where the spikes come from?

On three consecutive days in 2018, July 9, 10, and 11, the weather was identical at the Ft. Collins West monitor. Temperatures, wind speeds, and wind direction were the same, and overnight ozone levels were the same. On July 9 and 11, the 8-hr ozone was 72 and 71, and the ozone never exceeded 75 ppb. On July 10, with identical conditions, the 8-hr ozone was 83 ppb, and the ozone peaked at 96 ppb. Where did the extra ozone come from on July 10, and where did it disappear to?

At the Ft. Collins West monitor in 2018, there were also 11 days when weather conditions would normally be expected to cause high ozone, but for those 11 days, the 8-hr ozone levels were below 71 ppb. Why was ozone lower on those 11 days?

RAQC Misrepresenting the Data

Unless the EPA has changed the rules, achieving attainment requires that the actual 4th max ozone level at every monitor is below 76 ppb.

For the purpose of presenting the ozone trends in the SIP, the RAQC has decided that the actual data points are not accurate, and the RAQC has elected to “correct” the data.

The representation has been made that our ozone levels are higher when we have periods of higher atmospheric pressure. Of course it is. But there is no justification for the RAQC’s concept that the ozone levels on days of high pressure are not accurate. Either the monitors are accurate or they need to be fixed.

If there is a legitimate methodology for “correcting” ozone readings, the RAQC should present it and defend it. The idea that the ozone levels would not have been so high if only the atmospheric pressure had been lower, if only the temperature had been lower, or if only we had had less sunlight sounds a lot more like whining than scientific rigor.

Since the RAQC has not presented a methodology for “correcting” ozone levels for weather conditions, it is certainly interesting to see how the RAQC has chosen to “correct” the data. For every monitor, the RAQC decided that the ozone levels in 2008, 2009, and 2010 had to be adjusted upward to account for weather conditions, and the ozone levels from 2015 to 2019 had to be adjusted downward. By raising the ozone levels in the earlier years and lowering the ozone levels in the later years, the RAQC has been able to create graphs that show ozone levels dropping over time.

While there is certainly a high level of creativity shown by the RAQC in “correcting” the data, falsifying data still amounts to fraud in the scientific community. The RAQC needs to correct the fraud in the SIP.

For the trends graphs, the RAQC has shown raw data, including flagged events, weather-corrected data including flagged events, and weather-corrected data excluding flagged events. There is nothing to show what the data points excluding the flagged events were before being weather-corrected. This is a bad omission and should be corrected.

These are the data points taken from the graphs for Chatfield on page 5-31.

	Raw Not Correctd Incl Flagged	Graph Weath Correctd Incl Flagged	Graph Weath Correctd Excl Flagged	RAQC 4th Max Excl Exceptional	Standard
2006	86	82	83	86	
2007	82	80	80	82	
2008	80	83	82	80	75
2009	71	75	74	71	75
2010	79	80	78	79	75
2011	82	82	81	82	75
2012	86	82	76	86	75
2013	83	80	81	83	75
2014	74	77	76	74	75
2015	81	80	80	81	75
2016	78	74	72	78	75
2017	74	72	72	74	75
2018	83	79	75	82	75
2019	78	77	78	78	75

There are several points to note here. First, it is not clear why the RAQC included 2006 and 2007 to make these graphs, except that because the ozone levels were so high in those years, it gives the RAQC an opportunity to show a downward trend in ozone. We were first declared non-attainment at the end of 2007. That suggests that the clock should start in 2008, not 2006.

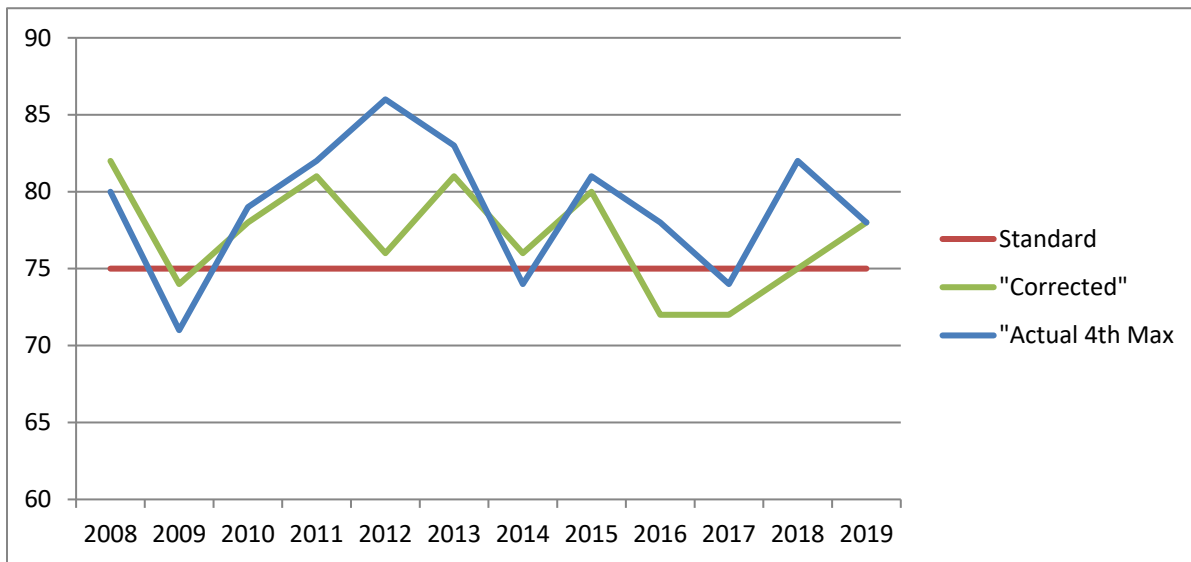
Note in the two left columns that ozone levels were adjusted upward to be “weather corrected” for 2008 to 2010, even though the ozone levels in 2008 and 2010 had to have been the result of higher atmospheric pressure. Then note that the ozone levels were adjusted downward to be “weather corrected” for 2015 to 2019. Even though raising the earlier years and lowering the later years for no good reason certainly helps show a downward trend, there is nothing legitimate about it.

Note that when flagged items were excluded, the ozone levels actually went up in 2013 and 2019. That either means that there is a mistake or that when the 5th or 6th max had to be picked, the weather correction was significantly different than for the 4th max. This is why the RAQC should show the data points for excluded events before being weather corrected.

Note especially the dramatic difference between the actual data points and the “weather corrected” data points 2012, 2016, and 2018. The RAQC needs to explain the science involved here and also why the EPA would accept “corrected” numbers instead of real numbers.

The RAQC shows what they claim is a real regression for “weather corrected” data with flagged events excluded. The graph shows a step downward trend from 2008 to 2019.

Following is a graph showing the actual data points for Chatfield from 2008 to 2019. It includes the “corrected” graph for comparison. There does not seem to be any way to draw any sort of downward sloping line with the actual data. Perhaps that is why the RAQC chose not to use the real data. In fact, it would take a certain amount of creativity to draw a downward sloping line using the “corrected” data.



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These are the data points taken from the graphs for NREL on page 5-32.

	Raw Not Correctd Incl Flagged	Graph Weath Correctd Incl Flagged	Graph Weath Correctd Excl Flagged	RAQC 4th Max Excl Exceptional	Standard
2006	83	80	80	83	
2007	85	83	83	85	
2008	76	79	78	76	75
2009	68	72	71	68	75
2010	74	74	74	74	75
2011	83	83	83	83	75
2012	81	77	74	81	75
2013	84	82	80	84	75
2014	76	79	78	76	75
2015	81	80	80	81	75
2016	83	80	76	83	75
2017	76	74	72	74	75
2018	80	76	72	80	75
2019	75	74	74	75	75

Note again in the two left columns that the ozone levels were adjusted upward in 2008-2010 and downward in 2015-2019.

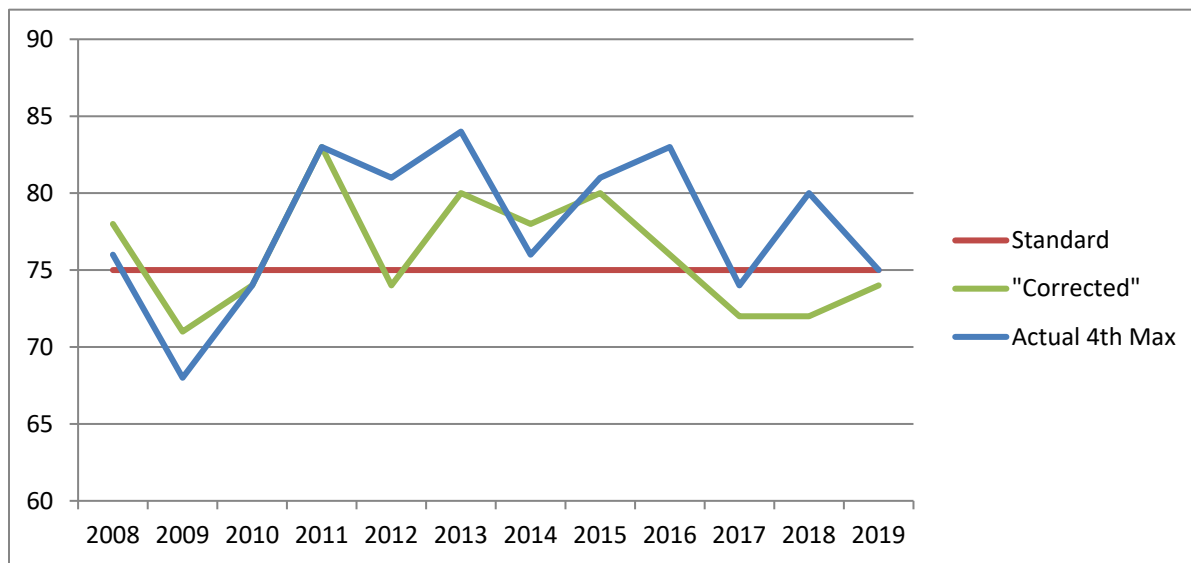
Note the dramatic difference between the real data and “weather-corrected” data in the right two columns for 2012, 2016, and 2018.

If the RAQC is going to falsify the data to show ozone levels dropping, why not just “correct” the data to show that ozone levels are below 76 ppb now?

The following graph shows the actual data for NREL.

Again, it is not obvious that the graph of actual data is trending downward. The fact that there were two years with unusually low ozone due to weather patterns in 2017 and 2019 makes the later years of the graph appear lower. Instead of weather-correcting these years downward, as the RAQC did, it would represent reality better if the ozone levels for these two abnormal years could be adjusted upward.

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RAQC Claiming a Job Well Done

In section 5.5.3 the RAQC has shown creative ozone trend lines that show all four of the problem monitors dropping to attainment levels by 2017. Obviously, the lines are wrong.

The suggestion that we have already achieved attainment is extraordinary. Even during a low ozone year like 2019, we did not achieve attainment. So far this year, ozone levels have been very low at all of the monitors. It is likely that lower industrial activity, lower oil and gas activity, and certainly lower on-road activity have contributed to lower ozone levels, and unusual weather patterns have also contributed. Even so, NREL has already had 5 days of 8-hr ozone of 76 ppb or higher, although one day appears to have been a result of wildfire activity.

The suggestion implicit in the SIP is that we do not need to do anything more, because our trend lines show attainment. Perhaps the RAQC can explain the discrepancy between reality and the trend lines.

The RAQC also needs to explain why the EPA would be willing to accept whatever numbers the RAQC chooses to use for "weather-corrected" data.