State of Utah

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DAQ-016-16

M E M O R A N D U M

TO: Air Quality Board

THROUGH: Bryce C. Bird, Executive Secretary

FROM: Division of Air Quality Staff

DATE: February 23, 2016

SUBJECT: Utah Physicians for a Healthy Environment, Western Resource Advocates, and HEAL Utah's Petition for a Rule Change.

On January 15, 2016, Utah Physicians for a Healthy Environment, Western Resource Advocates, and HEAL Utah (collectively Petitioners) submitted three petitions to the Utah Air Quality Board (the Board) requesting changes to the Utah Admin. Code R307-165-1 *et seq*.; $PM_{2.5}$ State Implementation Plan for the Salt Lake City, Utah Nonattainment Area, Section IX.A.21; $PM_{2.5}$ State Implementation Plan for the Provo, Utah Nonattainment Area, Section IX.A.22; $PM_{2.5}$ State Implementation Plan for the Logan, Utah-Idaho Nonattainment Area, Section IX.A.23; $PM_{2.5}$ Emission Limits and Operating Practices, Sections IX.11, 12 and 13; Utah Admin. Code R307-403 *et seq.* and/or the applicable part of Utah Admin. Code Rule 307.

Petitioners propose three new rules that would amend or supplement existing rules and regulations applicable to the Salt Lake City, Provo, and Logan nonattainment areas (Three NAAs). These proposed rules are:

1. A 24-hour averaging period rule that would impose "short-term" emission limits and controls that are averaged over 24 hours or fewer on the stationary sources in the Three NAAs (24-Hour Rule);

2. A monitoring rule that would increase the frequency of the monitoring of emissions from individual sources in the Three NAAs (Monitoring Rule); and

3. An offset rule that would require a larger category of new and modified sources in the Three NAAs that seek to increase emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors to obtain reductions in emissions from existing sources to offset these emission increases (Offset Rule).

Petitioners request that the Board initiate rulemaking under the Utah Administrative Rulemaking Act (the Rulemaking Act).[1]

Staff Recommendation: Utah Division of Air Quality (the Division) has carefully reviewed the proposed rules and recommends, for the reasons explained in this memorandum, that the Board deny the petitions at this time, and that the Division work with the Petitioners to evaluate additional strategies in the context of State Implementation Plan development.

[1] *See* Utah Code Ann. § 63G-3-601(6)(b)(ii) (West).

Board's Responsibility Under the Rulemaking Act

Under the Utah Administrative Rulemaking Act, an interested person or entity may request a board with rulemaking authority to make, amend, or repeal a rule.[2] The board must then either deny the request in writing (explaining reasons for the denial) or initiate rulemaking.[3] The board has 80 days to act on the petition from the date the petition was submitted.[4]

The Utah Air Quality Board (the Board) has rulemaking authority under Section 19-2-104 of the Utah Code. Accordingly, the Board must either deny the petitions or initiate rulemaking by April 4, 2016 (80 days from January 15, 2016).[5] If the Board decides to initiate rulemaking, the rules will be proposed according to the Rulemaking Act.

PM2.5 SIPs Background

Because the proposed rules seek to amend the PM2.5 SIPs, an overview of the PM2.5 SIPs for the Three NAAs is necessary.

On October 17, 2006, EPA revised the 24-hour NAAQS for PM2.5 by lowering the level from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$.[6] Within two years of this revision, EPA had to designate areas throughout the nation as attaining or not attaining the NAAQS.[7] On November 13, 2009, EPA designated the Salt Lake City, Provo, and Logan areas as nonattainment for the 2006 PM2.5 standard under the Clean Air Act (CAA) title I, part D, subpart 1.[8] The designation became effective on December 14, 2009.[9]

Utah was then required to submit an attainment plan for each area no later than three years from the date of the designations, demonstrating attainment of the PM2.5 standard as expeditiously as practicable, but no later than five years from the date of the designations.[10] The development of Utah's PM2.5 SIPs was an extensive undertaking that involved analysis and collection of inventory data, air pollution modeling, stakeholder meetings, public hearings, rule amendments, amendments to the narrative sections of Utah's SIP, and the development of source-specific emissions limits found in Part H of the SIP. A PM2.5 SIP was finalized for the Logan nonattainment area near the end of 2012, and SIPs for the Salt Lake City and Provo nonattainment areas followed in December of 2013. In 2014, the Division was required to address Subpart 4 of part D, Title I of the Clean Air Act and resubmit the SIP with the appropriate changes in light of the decision by the U.S. Court of Appeals for the District of Columbia.[11]

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[2] *See* Utah Code Ann. § 63G-3-601(2).
[3] *Id*. § 63G-3-601(6)(b).
[4] *Id*.
[5] Petitioners submitted all three petitions for rulemaking to the Board members on January 15, 2016 via e-mail. The petitions themselves have earlier dates—24-Hour Rule and Monitoring Rule petitions are dated January 13, 2016; Offset Rule petition is dated January 14, 2016. The statute requires the Board to act on the petition within 80 days "of the submission", which was January 15, 2016. Utah Code Ann. § 63G-3-601(6)(b).
[6] *See* 40 C.F.R. § 50.13.
[7] *See* 42 U.S.C.A. § 7404(d) (West).
[8] 74 Fed. Reg. 58688-01 (Nov. 13, 2009) (to be codified at 40 C.F.R. pt. 81).
[9] *See* 40 C.F.R. 81,345.
[10] *See* 42 U.S.C.A. § 7502(a)(2) and (b).
[11] *See Nat. Res. Def. Council v. E.P.A.*, 706 F.3d 428 (D.C. Cir. 2013). In *Natural Resources Defense Council*, the court held that EPA should have designated the areas under both Subparts 1 and 4 of part D, Title I of the Clean Air Act. *See id*. This decision resulted in EPA issuing a rule in 2014 that classified the non-attainment areas as Moderate

Air monitoring data collected from 2013 through 2015 will show that none of the Three NAAs attained the 24-hour PM2.5 health standard by its attainment date (December 31, 2015). The EPA will therefore be required to re-classify these areas as Serious PM2.5 nonattainment areas. Once reclassification becomes final, Utah will have to submit a Serious PM2.5 SIP for each of the Three NAAs within 18 months of final reclassification.[12]

Upon Utah's request, EPA left open a possibility of extending the attainment date for the Logan NAA for up to two one-year extensions instead of reclassifying the Logan NAA as Serious.[13] Utah may request an extension before EPA's proposal to reclassify is finalized.[14] As of the date of this memorandum, EPA has not finalized this proposed rule and the request for extension is still a possibility. If such extension is granted, no changes will be necessary to the Logan portion of the PM2.5 SIP. If an extension is denied, the Logan NAA will be reclassified as Serious, which would require a Serious SIP preparation.

On March 23, 2015, EPA proposed Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements Rule (PM2.5 Implementation Rule).[15] Utah will be making changes in light of this rule to all the affected PM2.5 SIPs once the rule becomes final.

Additionally, as early as the summer of 2016, Utah will likely be revising Part IX.H of the PM2.5 SIP addressing emission limits and operating practices for large sources in the Moderate Salt Lake and Provo NAAs and looking at implementing and applying 24 hour averaging times.

Recommendation

I. The Petitions Lack Multi-Step Analyses Demonstrating that the Proposed Rules are RACT/RACM or BACT/BACM

Along with each proposed rule, Petitioners submitted an explanation as to why they believe the Board should initiate rulemaking. Among other things, the Petitioners state that each proposed rule meets the requirements of Reasonably Available Control Measures (RACM) or Best Available Control Measures (BACM) and are necessary to attain the PM2.5 standard as expeditiously as practicable. However, the petitions do not include a proper multi-step analysis to support the conclusion that the proposed rules constitute RACM or BACM.

A nonattainment area SIP "shall provide for the implementation of all reasonably available control measures *as expeditiously as practicable* (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology) and shall provide for attainment of the national primary ambient air quality standards.").[16] Therefore, a nonattainment area SIP must include RACM, as well as "enforceable emission limitations, and such other control measures, means or techniques . . . as may be necessary or appropriate to provide for attainment of such standard in such area by the applicable attainment date . . . ."[17] Although the CAA does

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and setting a deadline of December 31, 2014 to submit state implementation plans demonstrating attainment. *See* 79 Fed. Reg. 31,566 (June 2, 2014) (to be codified at 40 C.F.R. ch. I).
[12] *See* 80 Fed. Reg. 69,173-01 (proposed Nov. 9, 2015).
[13] *See id.* at 69,175.
[14] *See id*.
[15] *See* 80 Fed. Reg. 15,340-01 (proposed March 23, 2015).

[16] 42 U.S.C.A. § 7502(c)(1) (emphasis added).
[17] *Id*. § 7502(c)(6).

not define RACM, EPA has published a "General Preamble," explaining the process for determining RACM for inclusion in a Moderate area SIP.[18] This process involves three steps: (1) listing all available control measures; (2) providing a reasoned justification for rejection of a particular RACM; and (3) evaluating remaining control measures "for reasonableness, considering their technological feasibility and the cost of control in the area to which the SIP applies."[19] The control measures that are determined to be reasonable are then considered RACM.

In the proposed PM2.5 Implementation Rule, EPA has further defined RACM as:

> any technologically and economically feasible measure that can be implemented in whole or in part within 4 years after the date of designation of a PM2.5 nonattainment area and that achieves permanent and enforceable reductions in direct PM2.5 emissions and/or PM2.5 precursor emissions from sources in the area. RACM includes reasonably available control technology (RACT).[20]

However, a control measure or control technology for Section 7502 SIP purposes is "reasonably available" only if its imposition would expedite attainment.[21] Conversely, any proposed control measure or technology that does not expedite attainment is not reasonably available.

As for the Serious area SIPs (which Salt Lake City and Provo will be requiring as reclassification becomes final), these plans must include "[p]rovisions to assure that the best available control measures for the control of PM10[22] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area."[23] The EPA sets forth the standards for determining BACM in an Addendum to the General Preamble.[24] The procedures prescribed by the EPA for determining BACM include: (1) develop an inventory of the sources of PM10[25] and PM10 precursor emissions; (2) evaluate, via modeling, the effect of PM10 concentrations of various sources to determine which are significant sources; (3) evaluate the technological and economic feasibility of the potential control measures; and (4) evaluate the costs and energy and environmental impacts of potential BACM.[26] EPA has recently described BACM as "maximum degree of emission reduction achievable from a source or source category which is

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[18] 57 Fed. Reg. 13,498-01, 13,498 (Apr. 16, 1992). This federal regulation defines RACM for PM10 nonattainment area plans. However, the General Preamble extends to all PM2.5 nonattainment areas. *See* 80 Fed. Reg. 15,340-01, 15,348. ("As provided in section 188(a) and reiterated in the General Preamble, all PM10 nonattainment areas and *by extension all PM2.5 nonattainment areas* are initially classified as Moderate by operation of law at the time of designation.").

[19] 57 Fed. Reg. 13,498-01, 13,540-41.

[20] 80 Fed. Reg. 15,340-01, 15,464.

[21] *Nat. Res. Def. Council v. Envtl. Prot. Agency*, 571 F.3d 1245, 1252-53 (D.C. Cir. 2009) ("The EPA's interpretation, construing 'reasonably available' as meaning only control technologies that advance attainment, is reasonable in light of the statute's accompanying text and structure."); ("Because the RACT requirement is located in a parenthetical modifying RACM and because the RACM requirement is described as 'including' the RACT requirement, the RACT requirement is likewise linked to the timely attainment terminology. Given this textual linkage, the EPA may reasonably extend to the RACT requirement its interpretation of RACM as requiring only those control measures that would facilitate expeditious attainment of the NAAQS.").

[22] *See* n.18, *supra*, for explanation of application of this provision to PM2.5.

[23] 42 U.S.C.A. § 7513(b)(1)(B); *see also id.* § 7513a(b)(1)(B).

[24] 59 Fed. Reg. 41,998-01 (Aug. 16, 1994).

[25] *See* n.18, *supra*.

[26] *Id*. at 42,012-13; *see also Latino Issues Forum v. Envtl. Prot. Agency*, 558 F.3d 936, 939 (9th Cir. 2009) (explaining differences between RACM and BACM).

determined on a case-by-case basis, considering energy, economic and environmental impacts and other costs."[27]

The petitions state that each of the proposed measures are legally mandated, but do not contain any of the multi-step analyses EPA prescribes for determining RACM or BACM as explained above. Therefore, there is no basis for saying that the proposed measures constitute RACM or BACM and consequently will meet the standard any more expeditiously than the current measures or future measures developed in the PM2.5 Serious SIP process. Accordingly, the Board does not have a legal obligation to adopt the measures contained in the proposed rules.

Although there is no evidence that the proposed measures would expedite attainment of the NAAQS, they will impose additional administrative responsibilities on the Division. As explained earlier, under the Rulemaking Act, the Board may grant the petitions and initiate the rulemaking process. However, the rules cannot be immediately proposed because they only contain proposed rule language and lack any supporting technical analysis and data. If the Board grants the petitions and initiates rulemaking, the Division's staff will be in the position of performing all the analysis necessary to propose the rules. Consequently, the Division would have to undertake months of research before it could have the agency record and technical data necessary to support a proposal on which the public could comment and EPA could review.

The RACM and BACM analyses that the Division would have to undertake are ordinarily performed as part of the broader SIP process, which will take place as Utah prepares its Serious area SIPs and makes modifications to the Moderate area SIPs. It does not make sense to duplicate the effort by initiating rulemaking on the proposed rules as a stand-alone rulemaking when the same issues could be considered during the SIP amendment, planning, and development process. Consequently, the Division recommends the Board deny the petitions on this basis alone. However, the Division provides additional reasons for recommending denial of each individual proposed rule in the sections that follow.

II. 24-Hour Rule

A. Summary

The proposed 24-Hour Rule would require that for each PM2.5 SIP control technology established through a RACT/RACM or BACT/BACM process, the Division must derive and impose at least one numeric emission limitation or emission standard that includes a corresponding averaging period that is no more than 24 hours. In the alternative, the Division must make a documented finding (after public notice and comment) that an emission limitation or standard is infeasible due to technical or economic limitations , and instead impose an alternative parameter that includes a corresponding averaging period of 24 hours or less. Any limitation or parameter derived under the proposed rule must be included in the 24-hour PM2.5 SIP.

The Petitioners state that the 24-Hour Rule meets both RACM and BACM standards because: (1) the rule meets the requirement that all SIP emission limitations be enforceable and ensure compliance; (2) averaging times in the rule meet the requirement of being necessary or appropriate, as they meet 24-hour NAAQS; (3) the rule will increase the accuracy of emission inventories and facilitate transfer of SIP emission limits to Title V permits; and (4) the rule will resolve factors EPA identified as crucial to ensuring SIP control measures are enforceable, approvable, and provide for attainment of 24-hour PM2.5 standard.[28]

[27] 80 Fed. Reg. 15,340-01, 15,405.
[28] *See* Petition for a Rule Change 24-Hour Averaging Period Rule at 28-33.

B. A More Appropriate Time to Consider Petitioners' Suggested Changes is During the PM2.5 SIP Planning and Development Process

As early as the summer of 2016, the Division will be undertaking a PM2.5 SIP revision process to Part H of the PM2.5 SIP. Additionally, the Division will be planning and developing Serious SIPs, possibly for the Logan NAA (if attainment extension is requested and denied or if attainment extension is not requested) and for the Salt Lake City and Provo NAAs once the reclassification is final. EPA's PM2.5 Implementation Rule will also require PM2.5 SIP revisions. Those would be the times to consider and potentially implement the changes Petitioners suggest in the 24-Hour Rule. Implementing a stand-alone rule at this time is not a preferable course of action because the Division does not have the necessary technical analysis and other information it typically gathers during the SIP process. The SIP development process will involve extensive modeling, analysis of emissions inventory, and numerous stakeholder meetings, resulting in a better outcome for everyone affected by the SIP provisions.

If the rule were adopted as a stand-alone rule, it would also unnecessarily complicate the SIP development process. For example, the 24-Hour Rule requires a comment period for each determination of infeasibility of the 24-Hour standard by the Director made under R307-xxx-2(2). The 24-Hour Rule requires the Director to make the documented finding of infeasibility[29] and then notify the public and consider public comments.[30] It is unclear whether the proposed 24-Hour Rule's comment period for such documented findings would be separate from the regular SIP public comment process. If it is, the 24-Hour Rule adds an undefined review period for the SIP development process.

During a regular SIP process, any discussion of infeasibility of 24-hour standards and alternative parameter monitoring will be included in the technical support documentation (TSD) for the SIP. The TSD will then demonstrate the Division's decisions for each of the identified sources listed in Section IX, Part H of the SIP. During the SIP public comment period, the public may address any issues or concerns it has with the sources that may require alternative parameters.

Finally, the 24-Hour Rule as proposed may contradict EPA's PM2.5 Implementation Rule.[31] The PM2.5 Implementation Rule affects the requirements for nonattainment areas for any PM2.5 NAAQS, including emission inventories, attainment demonstration, provisions demonstrating reasonable further progress, quantitative milestones, contingency measures, and New Source Review nonattainment permitting programs.[32] EPA proposed a PM2.5 Implementation Rule on March 23, 2015 but has not yet finalized it, which means the current version of the rule may change. An imposition of a 24-hour standard as a stand-alone rule prior to EPA finalizing its PM2.5 Implementation Rule may be premature and not prudent at this time. During the SIP planning and development process, the Division will be closely working with EPA to determine how to show attainment and meet all the applicable standards.

C. 24-Hour Rule is Redundant Because 24-Hour (or Stricter) Standards Already Apply to Part H Listed Sources, With a Few Appropriate Exceptions

The proposed 24-Hour Rule is redundant because 19 of the 26 sources identified in the petition already have 24-hour or less averaging periods. These averaging periods resulted from the recent PM10 maintenance plan requirements. EPA expressed concerns regarding 24-hour averaging times on sources listed in Part H of the SIP. In response to EPA's comments, the Division required nearly all the applicable limits in Part H to have averaging periods of no greater than 24 hours. *See* Table 1 attached.

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[29] The requirements for such finding are not specified in the proposed 24-Hour Rule.
[30] The form of the notification and the length of the public comment period are also not specified.
[31] *See* 80 Fed. Reg. 15,340.
[32] *See id*.

A few sources do not have 24-hour averaging times on each piece of equipment due to unique circumstances. For example, individual limitations on certain equipment located at the petroleum refineries[33] were derived from RACT during the development of the existing PM2.5 SIP. They were brought forward into the PM10 SIP for consistency.

Despite not every piece of equipment being assigned a 24-hour averaging period, the sources are still regulated in a way that ensures attainment of the standard. For example, the Division imposed plant-wide 24-hour emission caps on all PM10 and precursor emissions to that end.[34] While there may be some equipment located at the refineries with the potential to cause short- term "spikes" in emissions, those emissions are still included in the refinery-wide cap. This means that the extra emissions from the equipment must be accounted for in order to avoid exceeding the total refinery's emissions cap. The Division uses total contribution from each refinery in its SIP modeling and overall planning strategy.

None of the other individually-identified sources have such "exemptions," (i.e. unique circumstances where individual limitations were derived from RACT as in the example above), but many of them have similar plant-wide emission limitations.

As a result of the Division's conversations with EPA during the development of the PM10 SIP, the Division has already established 24-hour emission standards at major PM2.5 SIP sources. The Petitioners offered examples of SIP sources where these shorter term emission limits were not imposed. Table 1 includes examples provided by the Petitioners and the actions taken by the Division. This table shows that 19 of the 26 sources cited by the Petitioners already have new standards imposed. In some of the examples cited by the Petitioners, stricter standards, such as instantaneous and one-hour standards, are in place. For five of the examples, the emission standard has not been updated, but will be updated during the planned revision to the Moderate PM2.5 SIP, during Serious PM2.5 SIP development, or during the next permit modification. While the PM10 maintenance plan has not yet been formally approved by EPA, EPA has indicated that this is the correct approach.

D. 24-Hour Rule is Infeasible Because it Requires 24-Hour Averaging Times for Alternative Parameters and Each Pollutant Separately

A RACT/RACM or BACT/BACM analysis will sometimes result in something other than a specific emission limitation, which the proposed 24-Hour Rule seems to acknowledge by making an alternative provision in R307-XXX-2(2),where the Director can make a documented finding of infeasibility subject to a public notice and comment process. However, if the Director makes such a finding, the 24-Hour Rule still requires imposition of an alternative parameter with a corresponding averaging period of 24 hours or less:

> . . . the Director shall impose at least one parameter that includes a corresponding averaging period or averaging time of 24-hours or less, separately for each pollutant – PM2.5 (filterable and condensable) and/or any PM2.5 precursor – emitted from the stationary source, installation, facility or emission unit to which the PM2.5 SIP control technology was applied.[35]

Where a specific emission limitation is not required, it does not make sense to impose a 24 hour (or less) alternative parameter to demonstrate proper operation of the control technology. Some examples include

[33] Specifically, those limitations found in the refinery general requirements of SIP subsection IX.H.11.g.
[34] These emission caps can be found in the individual source requirements of SIP subsection IX.H.12.
[35] R307-XXX-2(2).

the control of fugitive dust through application of water or chemical dust suppression, a limitation on coating application, the use of improved mist elimination on cooling towers, the use of enhanced leak detection and repair at the refineries (or similar sources), or intermittent controls – such as VOC controls during tank degassing events. While some of these examples involve VOCs control, others address primary PM2.5, notably the fugitive dust controls and the cooling towers. In all of these cases, no simple 24-hour-based parameter monitoring can be imposed that demonstrates an emission reduction. Yet, the language of the proposed rule requires that at least one parameter be monitored with an averaging period of 24 hours or less. This defeats the purpose of the Division's RACT/RACM or BACT/BACM analysis because the 24-Hour Rule seeks to impose a limit (either through an emission limitation or 24-hour averaging time for an alternative parameter) even where the analysis showed that no limit was justified based on technology or economic concerns.[36]

The 24-Hour Rule also seeks to impose a 24-hour or less emission limitation or emission standard or alternative parameter with the same corresponding averaging period of 24 hours or less separately on **each** pollutant, including PM2.5 (filterable and condensable) and/or any PM2.5 precursor.[37] Again, this is unnecessary where an analysis shows that limits are only appropriate for one of the pollutants emitted. In many cases throughout the PM2.5 SIP, there are examples of sources where limits are imposed only on a single pollutant rather than on the collection of PM2.5 and all precursor pollutants as would be required by the proposed rule. This is an engineering-based decision following the RACT/BACT analysis conducted on that particular source. For sources such as natural gas-fired turbines, the only pollutant of concern may be the precursor pollutant NOx. These turbines have very little in the way of direct PM or SO2 emissions, as was demonstrated in their RACT analyses. Imposing a limit on PM or SO2 emissions is of no value, because no control technology was required to limit those emissions. Imposing an alternate parameter to monitor, such as total fuel combusted, would be superfluous, because this is automatically limited by controlling for and monitoring total NOx emissions. By controlling NOx, both PM and SO2 are automatically limited. Therefore, a 24 hour averaging may be in place for one pollutant being emitted from a source, but an analysis may show it is not necessary for all pollutants emitted from that source.

E. 24-Hour Rule is Infeasible Because it Makes no Allowance for VOC Emissions

EPA will soon reclassify Utah's Salt Lake City and Provo NAAs as Serious nonattainment.[38] The Logan NAA may also be reclassified as Serious, unless Utah asks for an extension.[39] With this expected reclassification, controlling the emissions of VOCs at stationary sources will play an increasing role in the Division's overall SIP strategy, because VOC is one of the PM2.5 precursors. Yet, the 24-Hour Rule makes no allowance for at least two of the larger sources of VOC emissions—coating applications and the refineries.

Coating applicators typically operate in terms of inventory. They determine VOCs emitted based on the VOC content of each product applied multiplied by the total volume of each product used in a given month. While some allowance could be made to attempt to track each product's usage on a daily basis, this becomes a logistical nightmare. Each source would need to track total volume of each coating product checked out, total volume of each coating returned, all solvents used, all waste, etc. on a daily basis; often for dozens if not hundreds of individual materials (e.g. 75 painting operations with over 100 types of

[36] EPA recognized that a one-size-fits-all-rule is not appropriate. *See* 80 Fed. Reg. 15,340, 15,447. In the PM2.5 Implementation Rule, EPA stated that a state has flexibility to determine an appropriate averaging time: "enforceable SIP regulations *may address the elements in different ways depending on the type of source category being regulated*." *Id*. at 15,447 (emphasis added).
[37] *See* R307-XXX-2(1) and (2).
[38] *See* 80 Fed. Reg. 69,173.
[39] *See id*. at 69,175.

coating product at Hill Air Force Base). This proposed rule would need to require an extraordinarily complicated system of tracking to be imposed for these sources on a daily basis.

Similarly, there are at least two areas of VOC emissions at the refineries that the proposed rule has not considered. The enhanced leak detection and repair (LDAR) provisions of SIP subsection IX.H.11.g.iv and the tank degassing requirements found in IX.H.11.g.vi are both RACT/RACM requirements derived during the existing PM2.5 SIP development. Neither provision lends itself to a simple 24-hour emission limitation or to an alternative parameter monitoring requirement with a similar 24-hour averaging period. In the case of LDAR, a refinery makes a commitment to repair leaks based on the severity of the leak, the length of time until the next repair period, and other factors. For tank degassing, the refinery commits to applying VOC controls during those periods when a tank is degassed. This is a process that may last far less than 24-hours, and it is infrequent and irregular. The proposed rule requires that both processes be monitored on some type of 24-hour (or less) basis. For these types of sources, it is impractical to comply with the proposed 24-Hour Rule.

In addition to those larger individual sources, when the nonattainment areas are reclassified as Serious, a number of smaller sources will be added to the mix based solely on their VOC emissions. These sources may have other small emission points emitting pollutants other than VOCs, such as direct PM2.5 or other precursors. For example, the source could operate a small boiler or emergency generator. The rule requires that an emission limit with corresponding 24-hour averaging period be applied to **each** PM2.5 and precursor pollutants **separately** from the "stationary source, installation, facility or emission unit to which the PM2.5 control technology was applied."[40] This language would require an emission limitation and 24-hour averaging period for a small boiler and emergency generator just because BACT was applied based on VOC emissions. It would be unduly burdensome to require that amount of regulatory oversight on those VOC sources. Therefore, the 24-Hour Rule requirement to impose limitations on all PM2.5 and precursor emissions is infeasible.

F. Conclusion/Recommendation

1. As early as the summer of 2016, the Division will be undertaking a PM2.5 SIP revision process to Part H of the PM2.5 SIP. Implementing a stand-alone rule at this time is not a preferable course of action because the Division does not have the necessary technical analysis and other information it typically gathers during the SIP process. If the rule were adopted as a stand-alone rule, it would also unnecessarily complicate the SIP development process. Moreover, the proposed 24-Hour Rule as proposed may contradict EPA's PM2.5 Implementation Rule**.**

2. The proposed 24-Hour Rule is redundant because 19 of the 26 sources identified in the petition already have 24-hour or less averaging periods, and for those that do not, unique circumstances justify an alternative approach to control.

3. A RACT/RACM or BACT/BACM analysis will sometimes result in something other than a specific emission limitation. In certain situations where a specific emission limitation is not required, it does not make sense to impose a 24-hour (or less) alternative parameter to demonstrate proper operation of the control technology.

4. With the expected reclassification to Serious, controlling the emissions of VOCs at stationary sources will play an increasing role in the Division's overall SIP strategy, because VOC is one

[40] R307-XXX-2(1).

of the PM2.5 precursors. Yet, the 24-Hour Rule makes no allowance for at least two of the larger sources of VOC emissions—coating applications and the refineries.

III. Monitoring Rule

A. Summary

The proposed Monitoring Rule would amend the PM2.5 SIP to require use of Continuous Emission Monitoring Systems (CEMS) to monitor compliance with any PM2.5 SIP emission limitation for SO2, NOx, or filterable PM. If the Division demonstrates that use of a CEMS is infeasible to monitor these pollutants, an alternative monitoring method may be employed, as long as the Division demonstrates that the alternative method assures compliance with the corresponding emission limitation. Any demonstration of infeasibility (which would allow use of an alternative to a CEMS) or sufficiency (which would justify use of a selected alternative to a CEMS) must be subject to public notice and comment. All monitoring data must be made available to the public, and the rule must be implemented within the deadlines specified in the proposed rule.

B. CEM Measure Imposes Additional Costs with No Benefit Because There are no Commercially Available PM CEMS That Accurately Measure PM

There are currently no commercially available PM CEMS that reliably measure particulate matter. The Division staff regularly researches CEMS and attends trade shows and presentations on available PM CEM technology and has not been able to find a product that would perform well. EPA has developed a performance standard (Performance Specification 11) that PM CEMS must meet. The purpose of the Performance Specification 11 was "to establish the initial installation and performance procedures that are required for evaluating the acceptability" of the PM CEMS, as opposed to evaluating the ongoing performance of PM CEMS over an extended period of time.[41]

As sources continued to experiment with PM CEMS, this performance standard has proven difficult to meet. In certain situations, EPA has revoked requirements to have PM CEMS because of technical infeasibility. For example, in the National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants rule (Portland Cement Rule), EPA originally proposed a PM CEM requirement, but the PM CEM technology proved unreliable. EPA dropped the PM CEM requirement from the final Portland Cement Rule, explaining that it was "amending the existing and new source PM standards in the NESHAP to require manual stack testing in lieu of PM continuous emission monitoring systems (CEMS) for compliance determinations and requiring that a site-specific parametric operating level be established using a PM continuous parametric monitoring system (CPMS)."[42] In years past, Kennecott Utah Copper experimented with PM CEMS on its main stack, only to be frustrated by the unreliability of the technology.

There are many vendors claiming to have PM CEMS that are Performance Specification 11 capable. However, the Division is not aware of any that can meet these requirements under the variable operational conditions in the real operating environment, and the Petitioners do not identify any.

RMB Consulting came to a similar conclusion regarding the reliability of PM CEMS. Its opinion was presented in a paper at the 1997 Electric Power Research Institute's CEM user group meeting in Denver, Colorado. The findings, which hold true to this day, are summed up in the following paragraph:

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[41] Performance Specification 11, http://www3.epa.gov/ttnemc01/perfspec/ps-11.pdf (last visited February 24, 2016).
[42] 78 Fed. Reg. 10,006-1, 10,007 (Feb. 12, 2013) (to be codified at 40 C.F.R. pts. 60 and 63).

> The fundamental problem with EPA's proposed approach to continuous PM monitoring continues to be the fact that commercially available instruments, especially those that are based on the principal of light scattering, do not provide a direct measure of particulate mass emissions. Of course, by direct measure, we mean that the instrument must measure particulate mass and the volume of flue gas from which that mass of PM was sampled. As EPA observes in its *Federal Register* notice, the characteristics of the emitted particulate matter exhibit significant variability, and "this variability in the particulate properties causes a varied response from the PM CEMS."[43]

The Division would be open to requiring PM CEMS if they accurately and reliably monitored PM. However, the Division is unaware of any PM CEMS that do, and the Petitioners do not identify or suggest any. Therefore, the proposed Monitoring Rule would not serve its purpose of assessing continuous compliance with PM emissions limitations due to unreliable and inaccurate monitoring equipment.

Besides, if PM CEMS were required and installed as proposed, they would not be collecting data necessary to help develop strategies to attain PM2.5 NAAQs. PM CEMS collect data for the entire set of particulate matter without differentiating between PM2.5, PM10, and precursor PM2.5.

C. The Proposed Monitoring Rule Creates Unnecessarily and Burdensome Procedural Requirements

The proposed Monitoring Rule creates new requirements that may contradict the Division's current CEM program[44] or create a two-tiered system with duplicative requirements. The Division's current program applies to all CEMS for any pollutants for which CEMS exist, including PM and opacity.[45] The program establishes "consistent requirements for all sources required to install a continuous monitoring system (CMS) and for sources who opt into the continuous emissions monitoring program."[46] It contains detailed reporting requirements, which are sufficient to ensure proper usage of CEMS. Due to these requirements and procedural safeguards, it is unnecessary to create additional procedures for CEMS monitoring. Besides, the proposed requirement for quarterly CEMS reports in the proposed Monitoring Rule does not specify the format of the report. Under the current CEMS rule, a source must follow a certain prescribed format when submitting CEMS reports to the Division.[47] Even following this format, the report comes in as stream of numbers and codes, which the Division then must interpret to conclude whether the sources are in compliance.

The Division provides data relating to the current CEMS on its website at http://eqedocs.utah.gov/ (a shortcut to this webpage can be found on the DEQ and DAQ websites). There is no need for the public availability requirements and other procedures that the proposed Monitoring Rule suggests because the data is already available to the public, and the sources are bound by extensive procedural requirements found in the current rule.

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[43] Ralph Roberson, Status of EPA's Continuous Particulate Mass (PM) Monitor Demonstrations (May 14-16, 1997), http://www.rmb-consulting.com/denpaper/rlrdenpa.htm (last visited February 24, 2016), citing 62 Fed. Reg. 13,775 (March 21, 1997).
[44] *See* Utah Admin. Code R307-170.
[45] *See id*.
[46] *Id*. R307-170-1.
[47] *Id*. R307-170-9.

D. More Frequent Testing in the Monitoring Rule Imposes a Burden Without Providing a Corresponding Benefit of Improving the Air Quality

The proposed Monitoring Rule requires, "Absent a demonstration of infeasibility, no monitoring method or stack testing used to establish compliance with a PM2.5 SIP emission limitation may occur less frequently than once per year."[48] If the Board ultimately adopts this requirement, it will impose additional administrative burdens on both the sources and the Division without the corresponding benefits. The Division's current testing schedules and procedures are very effective in ensuring compliance. The Division's data from 2012 through 2014 shows compliance rates for major and minor sources ranging from 96.1% in 2014 to 97.1% in 2013. Many sources are also already currently tested more frequently than once in five years. *See* attached PM2.5 SIP Source Monitoring Requirements (last updated Oct. 2, 2015) (i.e. Tesoro West Coast's Cogeneration Units #1 and #2 (Turbine & HRSG) NOx are tested every two years; Crude unit - every three years; DDU F-681 Furnace NOx - every three years; ESP (FCCU Boiler Stack) PM10 - annually; Ultraformer Furnace Stack (F1) NOx - annually).

In any event, monitoring methods at existing sources and frequency of testing is a case-by-case analysis, accounting for the specific emission unit, controls, emission rate, and other relevant considerations at a particular facility. Furthermore, source monitoring is typically established when the Division issues an Approval Order or a Title V permit for a given source. Enhanced monitoring is required for larger emission units under R307-415-6a(3)(a)(i) and Section 114(a)(3) of the CAA.[49] Rule 307-415-4(6) imposes similar requirements for non-Title V sources.

Current testing and monitoring requirements also establish more than just compliance or non-compliance—they establish operating parameters, including temperature, feed rate, etc. These parameters are then observed by the Division during the interim between the required testing as surrogates to determine compliance or non-compliance with the emission limitations. Changes in certain parameters indicate changes in emission rates. Thus, the Division continuously oversees the sources in the interim between the required tests.

E. Conclusion/Recommendation

1. There are currently no commercially available PM CEMS that reliably measure particulate matter, and despite the fact that vendors claim to have PM CEMS that are Performance Specification 11 capable, the Division is not aware of any that can meet these requirements under the variable operational conditions in the real operating environment, and the Petitioners do not identify any. Therefore, the proposed Monitoring Rule would not serve its purpose of assessing continuous compliance with PM emissions limitations due to unreliable and inaccurate monitoring equipment. In any event, if PM CEMS are required and installed as proposed, they would not be collecting data necessary to help develop strategies to attain PM2.5 NAAQs. PM CEMS collect data for the entire set of particulate matter without differentiating between PM2.5, PM10, and precursor PM2.5.

2. The proposed Monitoring Rule creates new requirements that may contradict the Division's current CEM program, and creates a two-tiered system with duplicative requirements.

3. If ultimately adopted by the Board, the proposed Monitoring Rule will impose additional administrative burdens on both the sources and the Division without the corresponding

[48] R307-XXX-3(4).
[49] 42 U.S.C.A. § 7414(a)(3).

benefits. The Division's current testing schedules and procedures are very effective in ensuring compliance.

IV. Offset Rule

A. Summary

The intended purpose of the proposed Offset Rule is to require that reductions in emissions from existing sources be obtained to offset emission increases from specified new and modified sources of PM2.5 and PM2.5 precursors located in the Salt Lake City, Provo and Logan nonattainment areas.

B. The Proposed Offset Rule is not a SIP Requirement

Petitioners incorrectly state that "under current federal law" offsets are required in a Serious nonattainment area.[50] This is not true. For an area designated as a Serious nonattainment, the Part 4 draft PM2.5 Implementation Rule requires two changes in SIP development that impact major point sources.[51] First, the threshold for a major point source is lowered from 100 tons per year (tpy) to 70 tpy for sources that emit PM2.5 or PM2.5 precursors.[52] The second change is that a BACT analysis is required for major point sources rather than a RACT analysis.[53] A BACT analysis is expected to require better pollution control. Because Utah already requires BACT for all new and modified sources, an updated BACT is less likely to impose tighter controls.

The draft PM2.5 Implementation Rule does not impose offsetting in addition to the offsetting already required by 40 C.F.R. 51, Appendix S. As the Division constructs the SIP, the SIP will need to show attainment by December 2019. As the SIP develops, the need for an offsetting program may be necessary, but it should not be required by a rule. The proposed Offset Rule removes the Division's option to develop appropriate and reasonable controls for achieving attainment.

C. The Proposed Rule Results in a Construction Ban to Important Growth in the Nonattainment Areas

The proposed Offset Rule will greatly limit the ability of major and medium-sized sources to expand their operations, or construct new operations in a nonattainment area. It is important to note that some sources in the nonattainment areas are sources that provide public services (hospitals, schools, etc.) and need the ability to grow as the population expands. The purpose of the NSR permitting program is to provide for growth, while at the same time requiring new and modified sources to implement the best available pollution controls and to operate more efficiently.

The proposed Offset Rule will lower by half the threshold for requiring a major source to obtain emission reduction credits (ERCs) to offset emission increases due to the planned modification. This proposed rule will also lower the quantity of criteria pollutants, in tons per year, triggering when a non-major source becomes subject to offsetting requirements. The result is that sources emitting just 25 tpy of PM2.5, 40 tpy of SO2, NOx, VOC, or 50 tpy of a combination of the pollutants may be required to obtain offsets. With these reduced thresholds, many sources not currently required to offset emissions increases, will be required to obtain ERCs to modify.

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[50] Petition for Rule Change Offset Rule at 18.
[51] *See* 80 Fed. Reg. 15,340.
[52] *See id*. at 15,432.
[53] *See id*. at 15,355.

The added problem with requiring offsetting for additional sources and at lower threshold is that there are currently no ERCs available for offsetting direct PM2.5 or PM2.5 precursors. No ERCs have been registered for PM2.5 nonattainment offsetting since the initial PM2.5 SIP was approved by the Board in December of 2013. Moreover, the lower thresholds in the proposed rule are unaccompanied by any analysis, and appear to be arbitrary.[54]

The Division believes it will be difficult for sources in the nonattainment areas to generate ERCs.[55] The sources along the Wasatch Front are already well-controlled. The Division permitting rules require BACT for all sources applying for an air quality permit. The major sources have been subject to a RACT evaluation multiple times as a result of various nonattainment designations. There is very little room for sources along the Wasatch Front to find voluntary reductions. As a result, future PM2.5 ERCs will likely only be derived from sources shutting down or from the potential development of new control technology that is not yet required by federal standards or by BACT as a result of a permit modification.

D. The Proposed Rule Has Problematic Language

During review of the proposed rule, some issues were identified that will require further evaluation. The first issues are two definitions in R307-XXX-1. Proposed definitions for "Modify, Modified or Modification" and "Stationary Source" that are not consistent with definitions in other sections of R307. These two definitions, found in R307-101, are essential components in the framework of the NSR program and should not be redefined.

In the proposed rule R307-XXX-2(3), the Petitioners include fugitive emissions of PM2.5, SO2, NOx and VOCs as being applicable to the offsetting requirements. In the past, the Division has not included fugitives in the offsetting program because, by definition, fugitive emissions cannot be measured. In accordance with Appendix S, ERCs must be permanent, enforceable and quantifiable. There are ways, however, to estimate fugitive emissions using emission factors. Should the Board decide to propose this rule, additional analysis with input from EPA will be required regarding the creation and use of "fugitive derived" ERCs.

Another condition in the proposed rule that will require additional analysis is found in R307-XXX-3(1), "Requirement to obtain Emission Offsets." In accordance with provisions of Appendix S, ERCs are created and used within the boundaries of a nonattainment area. The proposed rule indicates that ERCs be obtained "from other sources located within that part of the same county encompassed by the PM2.5 nonattainment area." The rule would require the Division to designate ERC creation and use boundaries within areas and within counties. This would add a level of complexity that needs to be addressed. Both the Division and EPA have determined that this approach is infeasible because extensive computer modeling will be

[54] The CAA's obligation to require offsets as part of a permitting program is separate from the RACT/RACM process, and this obligation only extends to new major sources and major modifications in nonattainment areas. *See* 42 U.S.C.A. § 7503(a)(1) (requiring offsets for new or modified major sources). The CAA specifies offset thresholds depending on the severity of the nonattainment problem in an airshed. For example, the CAA sets the major source threshold at 70 tpy for PM10 nonattainment areas, 42 U.S.C.A. § 7513a(b)(3), and the major source threshold can be as low as 10 tpy for Extreme ozone nonattainment areas. 42 U.S.C.A. § 7511a(e). With such specific thresholds established by statute, it is highly unlikely that lower offset thresholds are mandated by the CAA, as the Petitioners argue.

[55] Additionally, if these lower thresholds are ultimately adopted by the Board, the Division and the sources would have to go back and identify ERCs that may have been generated by the smaller sources (which have historically neither generated nor consumed ERCs) after the SIP development process is concluded. The ERC bank would become very complicated and require analysis of historic emission levels and determination of what was included in the SIP.

required to design the "impact areas." Due to the chemical reactions over an extended period of time for the development of the majority of PM2.5 along the Wasatch Front, such a limitation is unnecessary.

The last problematic requirement of the proposed rule is found in R307-XXX-4(1), Baseline for crediting Emission Reductions to be used as offsets. For a source to obtain ERCs from reductions, the baseline emissions must be (1) in the inventory of an EPA-approved SIP, in the inventory of a state approved SIP, or (2) "the actual emissions for the source, based on an average of emissions over the two years prior to the application to provide or bank emissions offsets." The problem with this language is that small sources are not part of a SIP and the Division typically does not have "actual emissions" data from minor sources. To understand what is being proposed by the Petitioners, the Division needs to know if the proposal does not allow minor sources to create ERCs or to modify the proposal to allow the Division to use the "potential to emit" for calculating ERCs from minor sources.

E. Conclusion/Recommendation

The Division recommends that the Board deny the petition for the proposed Offset Rule for the following reasons:

1. The federal rules do not require the Division to develop an offsetting rule. This rule restricts the ability of the Division to develop a SIP that is customized to meet the State's needs. Using EPA regulation, the SIP planners use all tools that are required by EPA, and allowed by EPA, to develop a SIP that has the best and most reasonable requirements to show attainment. By adopting this rule, the Division is forced to use a tool (offsetting) that may be overly burdensome and unnecessary for achieving attainment.

2. This rule will result in a decreased ability for sources to obtain or modify permits to allow for growth. The NSR permitting rules are designed to provide for growth, while at the same time requiring new and modified sources to implement the best available pollution controls and to operate more efficiently. The growth will be greatly hindered because no ERCs are currently available for offsetting and the sources will find it difficult to generate ERCs, as they are already well-controlled. Public service sources that need to grow as the population grows may not be able to expand operations.

3. Portions of the proposed rule conflict with existing definitions.

Conclusion

For these reasons, the Division recommends that the Board deny the petitions for rule change at this time, and the Division work with the Petitioners to evaluate additional strategies in the context of State Implementation Plan development.

Table 1

TABLE 1

Source	Petition Reference	Current Requirement	Comment	Action Required
$PM_{2.5}$ SIP emission limitations often have averaging times considerably longer than 24 hours				
General requirements petroleum refineries	FCCU 365 and 7-day rolling averages for SO_2	The overall **daily** SIP Caps control total SO2 emissions from each refinery.	These secondary limits identified in the petition serve to keep SO2 emissions down over the long run.	None, SIP caps are determined on a 24-hour average basis
General requirements petroleum refineries	H_2S content 365-day rolling average	The overall **daily** SIP Caps control total SO2 emissions from each refinery.	These secondary limits identified in the petition serve to keep SO2 emissions down over the long run.	None, SIP caps are determined on a 24-hour average basis
Exelon Generation	30-day average for NO_X	Total emissions of NOx from all five (5) turbines combined shall be no greater than 1050 lb of NOx on a daily basis.	Now called West Valley Power Plant, the source has a new requirement imposed as of the PM10 Maintenance Plan (SIP) that limits total NOx on a daily (24-hour) basis.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Hill Air Force Base	Daily average shall be determined monthly for VOCs	The PM2.5 SIP has a daily average determined monthly	It is unreasonable to track paint throughput and VOC content of the paint with 65 active paint booths and +100 paint types on a daily basis.	None. An alternative limit is the "best fit" for this source.
Kennecott BCM	Source-wide 12-month rolling average, combined for SO_2, NO_X and $PM_{2.5}$	Maximum total mileage per calendar day for ore and waste haul trucks shall not exceed 30,000 miles	The daily mileage limit provides a protection for the 24-hour standard.	None. An alternative limit is the "best fit" for this source.
Kennecott Smelter	Holman Boiler, 30-day average for NO_X	The PM10 Maint Plan has a calendar day average	The limit was changed to daily limit in the PM10 Maintenance Plan	Bring the limit forward into the Serious PM2.5 SIP

Nucor Steel	Electric Arc Furnace Baghouse, 12-month rolling average for NOx and VOCs	Electric Arc Furnace Baghouse, 12-month rolling average for NOx and VOCs	The source's limit will be evaluated and adjusted, if applicable, when the PM2.5 is modified. The VOC limit is an hourly limit and is not a 12-month average.	Limit to be addressed in a modified PM2.5 SIP.
PacifiCorp Energy	Natural Gas-fired Simple Cycle Turbine Units, 30-day average for NOx	Total emissions of NOx from all three turbines combined shall be no greater than 600 lb of NOx on a daily basis.	The source has a new requirement imposed as of the PM10 Maintenance Plan (SIP) that limits total NOx on a daily (24-hour) basis.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Vulcraft/Nucor,	12- month rolling average for VOCs	12- month rolling average for VOCs	The source's limit will be evaluated and adjusted, if applicable, when the PM2.5 is modified.	Limit to be addressed in a modified PM2.5 SIP.
Pacific States	12-month rolling average for VOCs	12-month rolling average for VOCs	The source's limit will be evaluated and adjusted, if applicable, when the PM2.5 is modified.	Limit to be addressed in a modified PM2.5 SIP.
$PM_{2.5}$ SIPs fail to impose any averaging period				
Bountiful City Power	for NOx	Limits in PM10 Maintenance Plan: A. GT #1 (5.3 MW Turbine) Exhaust Stack: 0.6 g NOx / kW-hr B. GT #2 and GT #3 (each TITAN Turbine) Exhaust Stack: 7.5 lb NOx / hr	These are instantaneous limits, meaning that the source must meet the limits at all times – not over any average period.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.

Central Valley Water	for NOx	NOx emissions from the operation of all engines at the plant shall not exceed 0.648 tons per day.	The limit was modified from the original PM2.5 SIP as the limits were 24-hr standards and these updated limits align with those standards.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Chemical Lime Company	for PM and NOx	The PM limit is 0.12 pounds per ton (lb/ton) of stone feed The NOx limit is SNCR technology shall be installed on the lime production kiln upon start-up of the facility. Compliance testing will determine the effective emission limitation.	No later than January 1, 2019, or upon source start-up, whichever comes later, SNCR technology will be installed on the lime production kiln for reduction of NOx emissions. Additionally no later than January 1, 2019, or upon source start-up, whichever comes later, a baghouse control technology will be installed and operating on the lime production kiln for reduction of PM emissions. Initial compliance testing for PM and NOx is required no later than January 1, 2019 or within 180 days of source start-up. The facility is currently in temporary care and maintenance mode.	The limit for VOC is mass based and no averaging period is needed. The limit for NOx will be addressed in a modified PM2.5 SIP.

Kennecott BCM	Road dust suppression, ore conveyor use and opacity	The PM2.5 and PM10 SIP limits are the same.	This is a fugitive dust concern and no averaging period is required. The daily mileage limit ensures that the conveyors are used as the primary means for transport of crushed ore from the mine to the concentrator. Opacity limits and monitoring are addressed in the general requirements, Section IX, Part H.1.	None. An alternative limit is the "best fit" for this source.
Kennecott Power Plant	Boiler #5 for NO_X, VOC, $PM_{2.5}$	PM10 18.8 lbs/hr NOx 2.0 ppmdv	The NOx limit is an instantaneous concentration limit. The PM is an hourly limit. The source must meet the limits at all times – not over any average period.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Kennecott Power Plant	Boiler #4 for $PM_{2.5}$ and NO_X	PM 0.03 grains/dscf NOx 336 ppmdv	The NOx and PM limits are instantaneous concentration limits. The source must meet the limits at all times – not over any average period.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Kennecott Smelter	Stack 11 for $PM_{2.5}$	PM 439 lbs/hr	The PM is an hourly limit.	The limit established for the PM10 Maintenance Plan will be brought forward to the

				PM2.5 SIP.
Kennecott Refinery	Tankhouse Boilers and Combined Heat Plant for NO_X	Boiler NOx 9.5 lbs/hr CHP NOx 5.96 lbs/hr	The NOx has an hourly limit. Averaging period not allowed	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Kennecott MAP	Natural Gas Turbine combined with Duct Burner and TEG firing – Combined Heat Plant for NO_X	CHP NOx 5.01 lbs/hr	The NOx has an hourly limit. Averaging period not allowed	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP.
Nucor Steel	Electric Arc Furnace Baghouse for VOC	VOC 22.20 lbs/hr PM2.5 29.53 lbs/hr SO2 89.0 lbs/hr 24-hour NOx 59.75 lbs/hr 12-month	Averaging period not allowed for VOC and PM2.5 Averaging period for SO2 & NOx	None. Limit is already in the PM2.5 SIP. The limit for NOx will be addressed in a modified PM2.5 SIP.
Nucor Steel	Reheat Furnace #1 and #2 for NO_X	#1 NOx 15.0 lbs/hr #2 NOx 8.0 lbs/hr	The NOx has an hourly limit. Averaging period not allowed	None. Limit is already in the PM2.5 SIP.

$PM_{2.5}$ SIP emission limitations are expressed in pounds per hour or concentrations with no averaging periods and with monitoring that is so infrequent – once every three to five years – that the emission limits do not serve to limit short-term spikes in air pollution.				
Great Salt Lake Minerals	NO_X and PM_{10} concentration, stack testing once every three to five years	All pollutants have hourly rates with no averaging periods.	Now called Compass Minerals Ogden, Inc. Emission rates were updated through the permit modification process.	The limit established through the permit modification will be brought forward to the PM2.5 SIP.
Proctor and Gamble	PM_{10} and NO_X pounds/hour, stack testing every five years	NOx 3.3 lbs/hr PM 6.65 lbs/hr	The NOx and PM have hourly limits. Averaging period not allowed	None. Limit is already in the PM2.5 SIP.
University of Utah	NO_X concentration, stack testing once every one to three years	NOx All units have an instantaneous limit.	This is an instantaneous limit, meaning that the source must meet the limits at all times – not over any average period.	The limit established for the PM10 Maintenance Plan will be brought forward to the PM2.5 SIP. A. hourly rate will be established.

BYU	NO_X concentration, stack testing once every three years	All pollutants have hourly rates for NOx with no averaging periods.	Emission rates were updated through the permit modification process.	The limit established through the permit modification will be brought forward to the PM2.5 SIP.

PM2.5 SIP Source Monitoring Requirements (Oct. 2, 2015)

PM2.5 SIP Source Monitoring Requirements:

ATK - Promontory – daily parametric monitoring.

Bountiful City Light and Power – daily parametric monitoring using emission factors from annual NOX and CO turbine stack tests and NOX and CO testing of Engine 8 every 8,760 hours, but no later than 2 years.

Brigham Young University – daily parametric monitoring and NOX testing of Boilers #1, #4, #5 and #6 every 3 years, PM10 testing of the baghouse every 3 years, and a COMS.

Central Valley Water Reclamation – daily parametric monitoring using NOX emission factors from Engine 1-5 stack tests performed every 5 years. In addition, CO stack testing performed every 5 years.

Chemical Lime (Lhoist): Grantsville – parametric monitoring, 3 year PM and NOX stack testing of the Lime Kiln and 3 year PM stack testing of the Hydrator – currently not operating.

Chevron: Salt Lake Refinery – daily parametric monitoring - FCC Regenerator and SRU PM2.5 emission factors determined by stack testing every three years. FCC Regenerator NOX and SO2 emission factors are determined by CEM. Boilers 5 and 6 NOX emission factors are determined by stack testing every 3 years. Plant gas SO2 emission factor is determined by CEM. In addition, there is a COM on the FCC Regenerator, H2S CEMS on Flares 1-3 and the Fuel Gas Mix Point, SO2 CEMS on the SRU Tail Gas Incinerator, and a Loading Rack VOC CEM.

Flying J/Big West Oil – daily parametric monitoring - CRS PM2.5 emission factor determined by stack test every 5 years. CRS NOX and SO2 emission factors determined by CEM. In addition, there is a COM on the CRS, an SO2 CEMS on the SRU, and VOC CEMS on the VRU.

Geneva Nitrogen – daily parametric monitoring of PM2.5 using emission factors from 3 year stack tests of the Prill Tower. NOX testing of the Weatherly every 3 years and Montecatini Plants every 2 years and daily monitoring with a NOX CEM (shared analyzer).

Geneva Rock – Orem – daily parametric monitoring using PM10, NOX, and SOX emission factors from Asphalt Plant stack tests every 3 years.

Geneva Rock - Point of the Mountain – daily parametric monitoring using PM10 emission factors from stack testing performed every 3 years (recycle asphalt) or 5 years (virgin materials).

Great Salt Lake Minerals (Compass Minerals): Ogden – There are NOX CEMS on Boilers 1 and 2 and stack testing as follows:

PM2.5 testing of the following sources every 3 years:
SOP Plant Compaction/Loadout
Salt Plant Screening
SOP Plant Dryer D-001
SOP Plant Dryer D-002
SOP Plant Dryer D-003
SOP Plant Dryer D-004
SOP Plant Heater D-005
Salt Plant Dryer D-501

PM2.5 testing of the following sources every 5 years:
SOP Loadout
SOP Silo Dust Collection
SOP Plant Compaction
SOP Plant Dust Collection
Bulk Truck Salt Loadout
Mag Chloride Plant

Hexel Corporation: Salt Lake Operations – daily parametric monitoring.

HAFB – daily parametric monitoring of VOC emissions. In addition, the following stack tests are required:

Boiler #1 NOX – every three years
Boiler #2 NOX – every three years
Boiler #3 NOX – every three years
Boiler #8 NOX – every three years
Boiler #9 NOX – every three years
Landfill Gas Engine #1 NOX/CO every five years
Landfill Gas Engine #2 NOX/CO every five years
Landfill Gas Engine #3 NOX/CO every five years

Holly Refining and Marketing – daily parametric monitoring of PM2.5, NOX, and SO2. Stack testing for emission factors used is as follows:

Boiler #10 NOX – every five years
Boiler 12H1 NOX – every five years
Boiler #5 NOX – every five years
Heater 19H1 – PM10 – every five years
Heater 20H1 – PM10 – every five years
Heater 20H2 – PM10 – every five years
Heater 8H1 – PM10 – every five years

The following CEMS are also in use:

LOD – VOC
Amine Plant – H2S
FCCU – CO, NOX, and PM2.5
Tail Gas Incinerator – SO2

Interstate Brick – Daily parametric monitoring using emission factors from the following stack tests:

Line 3 Baghouse PM10 - every five years
Line 4 Baghouse PM10 – every five years
North End Kiln #3 Scrubber PM10 - every five years
Primary Crusher Baghouse Vent PM10 – every five years
Tunnel Kiln #4 SO2 – annually
Tunnel Kiln #4 NOX and Fluorides – every five years
Tunnel Kiln #4 PM10/PM2.5 – every three years

Kennecott - Mine and Concentrator – daily parametric monitoring and the following stack tests:

C6/C7 transfer points – PM10 - every three years
C7/C8 transfer points – PM10 – every three years
In-Pit Crusher Baghouse – PM10 – every three years

Kennecott - Power Plant and Tailings Impoundment – daily parametric monitoring, COMS on Units 1-4, stack tests of Unit 5 PM2.5, NOX, and VOC every 3 years, and stack tests of Units 1-4 PM2.5 and NOX emissions annually. Units 1-3 will be shut down January 1, 2018.

Kennecott - Smelter and Refinery – parametric monitoring, Main Stack and Concentrator Dryer COMS, Main Stack NOX and SO2 CEMS, Holman Boiler NOX CEM, and Acid Plant COM and SO2 CEM, and the following stack tests:

Main Stack Pb/PM - daily
Acid Plant Tail Gas SME 011b – acid mist – every three years
Anode Scrap REF 005 – acid mist – every three years
Cathode Wash with Demister Pads – H2S04 and acid mist – every three years
Combined Heat Plant – NOX and CO – annually
Dry Matte Bin Baghouse SME 013 – PM10 – every three years
Feed Storage Belt Baghouse SME 001 – PM10 - every five years
Feed Storage Building BH SME 002 – PM10 - every three years
Feed Transfer Belt Baghouse SME 003 – PM10 – every three years
Gold/Silver Recovery Baghouse REF 010 – PM10 – every three years
Liberator REF 001 – acid mist – every three years
Main Stack SME 011 – PM2.5 – annually
REF 006 – acid mist/SOX/Pb/HCl – every five years
REF 007 Hydrometallurigical Silver – H2S04/NH3 – every three years
Tankhouse Boilers (2) – NOX and CO – every three years
SME 010b Slag Granulation Scrubber – PM10/SOX – every five years
Wet Feed Bin SME 004 – PM10 – every 5 years
FSF Dry Feed Bin SME 005 – PM10 – every 5 years
Rotary Dryer SME 011e – PM – every 5 years
Limestone Flux Bin – PM10 – every 5 years
Matte Granulator Scrubbers SME 010a – PM10 – every 5 years
Slag Granulator Scrubber SME 010b – PM10 and SO2 – every 5 years
SME 011a and 011c Vacuum Cleaning System – PM10 – every 5 years

Nucor Bar Mill Group Plymouth Division – Electric Arc Furnace Baghouse CO, SO2 and NOX CEMS, and the following stack tests:

Electric Arc Furnace PM2.5 – annually
Electric Arc Furnace VOC – every 5 years
Reheat Furnaces #1 and #2 NOX – every three years

Olympia Sales – daily parametric monitoring.

Pacific States Cast Iron Pipe (McWane Ductile) – daily parametric monitoring of VOC and stack testing of Cupola Stack SO2, CO, and NOX – every two years.

Pacificorp - Gadsby – NOX and CO CEMS on Units 1-6.

Pacificorp – Lake Side – NOX and CO CEMS on the Units 1-4. Stack testing of the Auxillary Boiler for PM10/CO/NOX/VOC – every five years. Annual PM10 testing of the HRSGs.

Payson City Power – daily parametric monitoring using emission factors from stack tests of Engines 1-4 NOX and CO every three years.

Procter & Gamble – Boiler NOX and CO and Paper Machine PM2.5 and NOX stack tests every 5 years.

Provo City Power – daily parametric monitoring using NOX emission factors from stack tests of Engines 1-4 every 8,760 hours of operation, but no later than every 5 years.

Springville City Power – NOX and CO CEMS on Units 1-4.

Tesoro West Coast – daily parametric monitoring using emissions factors from FCCU NOX and SO2 CEMS, COM, and the following stack tests:

Cogeneration Units #1 and #2 (Turbine & HRSG) NOX – every two years
Crude Unit Furnace H101 NOX and CO – every three years
DDU F-681 Furnace NOX – every three years
ESP (FCCU Boiler Stack) PM10 – annually
Ultraformer Furnace Stack (F1) NOX – annually

University of Utah – NOX testing of Boilers #3, #4a, #4b, #5a, and #5b every 3 years. NOX testing of the turbine annually.

Vulcraft – daily parametric monitoring of VOCs.

Wasatch Integrated Waste Management – NOX, SO2, and CO CEMS, parametric monitoring, COMS, and the following stack tests of Units A & B:

HCl, fluorides, mercury, lead, cadmium – annually
Dioxin/furan – every other year
PM – every two years

West Valley Power Plant (CER/Excelon Generation) – NOX and CO CEMS on Units 1-5.

Petitioners proposed new rules:

a) 24-Hour Averaging Period Rule
b) Monitoring Rule
c) Offset Rule

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BEFORE THE UTAH AIR QUALITY BOARD

PETITION FOR A RULE CHANGE
24-HOUR AVERAGING PERIOD RULE

Submitted by
Utah Physicians for a Healthy Environment,
WESTERN RESOURCE ADVOCATES and HEAL Utah
January 13, 2015

Pursuant to Utah Code Ann. § 63G-3-601(2) and Utah Admin. Code R15-2-1 *et seq*., Utah Physicians for a Healthy Environment, Western Resource Advocates and HEAL Utah respectfully submit to the Utah Air Quality Board this Petition for a Rule Change. Attached to this Petition is the text of a proposed rule that would amend or supplement Utah regulations Utah Admin. Code R307-165-1 *et seq*.; $PM_{2.5}$ State Implementation Plan for the Salt Lake City, Utah Nonattainment Area, Section IX.A.21; $PM_{2.5}$ State Implementation Plan for the Provo, Utah Nonattainment Area, Section IX.A.22; $PM_{2.5}$ State Implementation Plan for the Logan, Utah-Idaho Nonattainment Area, Section IX.A.23; $PM_{2.5}$ Emission Limits and Operating Practices, Sections IX.11, 12 and 13; Utah Admin. Code R307-403 *et seq*. and/or the applicable part of Utah Admin. Code Rule 307. Exhibit "1" attached. Utah Physicians for a Healthy Environment, Western Resource Advocates and HEAL Utah ask the Air Quality Board, as authorized by Utah

Code Ann. § 63G-3-601(6)(b)(ii), to initiate rulemaking proceedings relative to the proposed rule as specified by Utah Code Ann. § 63G-3-301 and ultimately to adopt the proposed rule.

I. Purpose of the Rule

The "24-Hour Averaging Period Rule" prevents short-term spikes in emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors from the individual stationary sources identified in the $PM_{2.5}$ State Implementation Plans (SIPs) for the Salt Lake City, Provo and Logan nonattainment areas (the "Three NAAs"). The rule requires that, in addition to other emission limitations, "short-term" emission limits and controls be imposed that are averaged over 24 hours or fewer. This means that the source or emission unit will be prohibited from emitting $PM_{2.5}$ or $PM_{2.5}$ precursors at a rate higher than that established by the applicable limit or control when averaged over the short-term – a period of 24 hours or less.

The 24-Hour Rule reflects the fact that the Three NAAs are failing to attain the 24-hour $PM_{2.5}$ National Ambient Air Quality Standard. This "short-term" standard is intended, by law, to protect "against health effects associated with short-term $PM_{2.5}$ exposures, especially in areas with high peak $PM_{2.5}$ concentrations." 80 Fed. Reg. 15340, 15347 (March 23, 2015). EPA determined that the 24-hour $PM_{2.5}$ NAAQS are necessary to "provide[] increased public health protection, including the health of at-risk populations which include children, older adults, persons with pre-existing health and lung disease and persons of lower socioeconomic status, against a broad range of $PM_{2.5}$-related effects that include premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease." *Id.*

The Three NAAs are indeed "areas with high peak $PM_{2.5}$ concentrations." 80 Fed. Reg. at 15347. As detailed below, air quality along the Wasatch Front during 2013 exceeded the 24-

hour $PM_{2.5}$ standard on at least **43 days** – often by alarming levels. In January of that year, the monitor at the playground of Salt Lake City's Hawthorne Elementary School recorded 17 violations of the NAAQS, with a high reading of 62 $\mu g/m^3$, almost double the 24-hour standard of 35 $\mu g/m^3$.[1] In Lindon, January also brought 17 exceedances with a high reading of 123 $\mu g/m^3$ – 350% of the standard. *Id.* In Logan, the standard was violated on 18 days in January 2013, topping out at 97 $\mu g/m^3$. *Id.* In January of 2014, the Hawthorne monitor recorded that the 24-hour $PM_{2.5}$ standard was exceeded on 13 days and the Logan monitor determined violations on 11 days. The highest reading that month – 68 $\mu g/m^3$ – was in Ogden.[2]

More specifically, the purpose of the 24-Hour Rule is to address the "high peak $PM_{2.5}$ concentrations" that afflict the Three NAAs. The rule ensures that limitations placed on emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors by the State Implementation Plans (SIPs) for the Three NAAs will prevent short-term spikes in air pollution. To do this, the proposed rule imposes, in addition to other longer-term emission limitations, limits that are averaged over periods of 24 hours or less. The rule is necessary because limitations averaged over periods longer than 24 hours – such as 7 days, 30 days or 365 days – do not prevent sharp increases in emissions over the short-term. As EPA explained when it commented on the $PM_{2.5}$ SIPs, "[u]nder a long-term limit, emissions from a source can spike during a short-term period." EPA Region 8 Comments on Utah's Proposed $PM_{2.5}$ State Implementation Plans and Technical Support Documents at 8 (Oct. 30, 2014). The agency expounded that, for example, "[a]n emission limit expressed as a 30-day average allows significantly higher short-term emissions that can impact a short-term standard such as the 24-hour $PM_{2.5}$ NAAQS." *Id.* at 24.

[1] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN13.pdf
[2] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN14.pdf

II. Jurisdiction

The Air Quality Board has jurisdiction to consider, analyze and adopt this proposed rule pursuant to Utah Code Ann. § 19-2-104(1)(a) (Board may make rules "regarding the control, abatement, and prevention of air pollution from all sources and the establishment of the maximum quantity of air pollutants that may be emitted by an air pollutant source"); Utah Code Ann. § 19-2-104(1)(c)(i) (Board may make rules "requiring persons engaged in operations that result in air pollution to…install, maintain, and use emission monitoring devices, as the board finds necessary"); and, Utah Code Ann. § 19-2-109(2)(a) ("The [B]oard may establish emission control requirements by rule that in its judgment may be necessary to prevent, abate, or control air pollution that may be statewide or may vary from area to area, taking into account varying local conditions."); *See also* Utah State Implementation Plan, Section I (Legal Authority); 42 U.S.C. § 7513-7513b; 42 U.S.C. § 7501-7509a.

III. Petitioning Organizations

HEAL Utah is an environmental non-profit that promotes renewable energy and protects Utah's public health and environment from air pollution and nuclear, toxic, and dirty energy threats. Beginning in 2012, HEAL began working to urge state officials to do more to clean the air, creating online actions sending strong messages to policymakers, organizing historic rallies on the steps of the Capitol, and packing hearings where key air quality decisions are made.

Members of **Utah Physicians for a Healthy Environment**, the largest community service organization of its kind in Utah, include health professionals, toxicologists, biologists, chemists and engineers. The organization is dedicated to protecting the health and well-being of the citizens of Utah by promoting science-based health education and interventions that result in progressive, measurable improvements to air quality and the environment.

Western Resource Advocates (WRA) is a regional non-profit conservation organization with programs and staff spanning the Intermountain West, including Utah. Our mission is to protect the land, air and water of our region, using law, science, economics, advocacy, education, and action. To this end, we work to improve air quality, curb climate change and achieve environmentally sustainable management of energy, land, and water resources. WRA represented intervenor Utah Physicians for a Healthy Environment before the D.C. Circuit Court of Appeals, successfully defending an EPA decision to include the most populous portions of Tooele and Box Elder County in the Salt Lake City Nonattainment Area. *ATK Launch Systems v. EPA*, 669 F.3d 330 (D.C. Cir. 2012).

In carrying out their missions, these organizations have met with former Governor John Huntsman Jr., Governor Gary Herbert, members of the Utah Public Service Commission, staff of the Utah Division of Air Quality and the Environmental Protection Agency, several local mayors, Utah business leaders, media and concerned citizens to advocate for clean air and to advance efforts to reduce air pollution. We have repeatedly submitted comments to state and federal regulators and decision makers relative to specific projects and rulemaking processes that impact and influence the condition of Utah's air quality, environment and the health of the people living here.

The organizations have a strong legal interest in the promotion and ultimate adoption of the proposed rule. The Clean Air Act, which largely governs the content of Utah's State Implementation Plan (SIP), and Utah Air Conservation Act, have as goals the protection of public health and the environment. *E.g.* 42 U.S.C. § 7401(b)(1); Utah Code Ann. § 19-2-101(2). These statutes also guarantee the public a significant role in the government actions impacting air quality, including the drafting and review of SIPs. *E.g.* 42 U.S.C. § 7410(a)(1), (a)(2) &

(a)(3)(B); 42 U.S.C. § 7410(l); *see also,* 42 U.S.C. § 7427; Utah Code Ann. § 63G-3-601(2); Utah Admin. Code R15-2-1 *et seq*. The organizations' staff and members, their families and their patients, who live, work, and recreate in the nonattainment areas, are harmed by air pollution, particularly concentrations of $PM_{2.5}$ that exceed the NAAQS, and are entitled, by the Clean Air Act and Utah Air Conservation Act, to air quality that meets the NAAQS. 42 U.S.C. § 7513-7513b; 42 U.S.C. § 7501-7509a; Utah Code Ann. § 19-2-107(2)(xii).

Where air quality exceeds the health-based standards, such as in the Salt Lake City, Provo and Logan nonattainment areas, the law requires that measures be taken immediately to bring air quality into compliance with NAAQS as expeditiously as practicable. *E.g.* 42 U.S.C. § 7502(a)(2)(A) & (a)(2)(B); 42 U.S.C. § 7513(c)(1) & (c)(2). Poor air quality and a failure to attain the NAAQS harm the organizations' staff and members, their families and patients because air pollution adversely affects their health, quality of life, recreational pursuits and aesthetic sense. Therefore, the organizations have a protectable legal interest in ensuring that rules promulgated under the Utah Air Conservation Act comply with the Clean Air Act, 42 U.S.C. § 7410; 42 U.S.C. § 7502; 42 U.S.C. § 7513a, and include the measures necessary to attain, *inter alia,* the 24-hour NAAQS as expeditiously as practicable. 42 U.S.C. § 7502(a)(2)(A), (a)(2)(B) &(c)(1); 42 U.S.C. § 7513(c)(1) & (c)(2).

IV. Adverse Health Impacts of Particulate Matter Pollution

Anyone living along the Wasatch Front has experienced our air pollution crisis, particularly wintertime "inversions" that settle on Salt Lake Valley for extended periods, causing concentrations of fine particulate matter ($PM_{2.5}$) to skyrocket and giving Utah the dubious distinction of having the nation's worst air quality. We have felt our eyes and lungs burn, fretted over whether to let our children outside to play, agonized about parents and grandparents with

heart problems – even taken them to the emergency room as their symptoms worsened – and watched those with asthma struggle to breathe.

The health consequences of our dirty air are significant. The findings of 3,000 published research papers underscore key concepts now accepted by the medical community worldwide. First, there is no safe level of exposure to particulate pollution and no threshold below which negative health effects disappear. *Health Impacts of Particulate Air Pollution* at 1-4, attached as Exhibit "2." People literally die from exposure. For every 10 $\mu g/m^3$ increase in $PM_{2.5}$ concentrations, community mortality rates rise 14%. *Id*. at 1. Therefore, Utah Physicians estimates that 1,400 to 2,000 premature deaths occur every year in Utah from $PM_{2.5}$. *Id*. at 2. Air pollution has the same extensive, broad-based health consequences as cigarette smoke because the signature physiologic response is the same – low-grade arterial inflammation, narrowing of blood vessels and increased propensity for clot formation, resulting in immediate increases in blood pressure, followed within hours by higher rates of heart attacks and strokes. *Id*. at 2-4.

The inflammation caused by $PM_{2.5}$ affects other organs. Particulate pollution penetrates every cell in the body, but is particularly well-documented in the brain. There, air pollution is linked to poor neurologic outcomes across the age spectrum, including loss of intelligence in children, higher rates of autism, and attention deficit disorders, as well as multiple sclerosis, Alzheimer's, and accelerated cognitive decline in the elderly. *Id*. at 5-6. Virtually every lung disease is caused or exacerbated, and growth of lung function during childhood can be irreversibly stunted by air pollution exposure. *Id*. at 6-7. Cancers, including childhood leukemia, lung, breast, prostate, cervical, brain and stomach cancer, occur at higher rates among people exposed to more air pollution, while cancer survival rates are reduced. *Id*.

The blood vessel inflammation caused by air pollution also affects the placenta, arguably representing the most significant public health impact of air pollution. Women who breathe more air pollution have higher rates of adverse pregnancy outcomes, their newborn babies showing increased birth defects, genetic damage, and a life-long disease burden that includes higher rates of metabolic disorders, reactive airway disease, cardiovascular disease, cancer, Alzheimer's and all diseases consequent to immuno-suppression. *Id*. at 8-9. The alteration of genetic material triggered by pollution can be seen within minutes, underscoring that short-term spikes in air pollution harm developing fetuses. *Id.*

V. Air Quality in the Nonattainment Areas

In 2015, the American Lung Association (ALA) designated the metropolitan area of Salt Lake City, Provo and Orem as having the 7th worst short-term $PM_{2.5}$ air pollution in the nation – the most polluted location outside of California.[3] Logan was ranked as the 8th worst area in the nation. *Id.* The ALA estimated that, in the Salt Lake City metropolitan area, there are 734,560 children under the age of 18; 214,000 adults over the age of 65; 45,600 children with asthma; 148,700 adults with asthma; 64,000 adults with chronic obstructive pulmonary disease; 99,000 adults with cardiovascular disease; 113,350 adults with diabetes; and, 284,260 individuals living in poverty, all of whom are particularly at risk for heart attacks, strokes, emergency room visits for asthma, cardiovascular disease, and an early death brought on by $PM_{2.5}$. *Id.* Based on this analysis, the ALA gave Cache, Davis, Salt Lake City, Utah and Weber counties "F" grades for their high particulate air pollution days in 2011-2013. *Id.* at 156. Over the same time frame, Salt Lake County was given an "F" for its high ozone pollution days, while Utah and Weber counties received "D" grades. *Id.*

[3] http://www.stateoftheair.org/2015/assets/ALA_State_of_the_Air_2015.pdf at 11

Monitors quantify this public health emergency. Since 2009, Salt Lake, Davis, Weber, Utah, Cache counties and the most populous areas of Tooele and Box Elder counties have been formally designated as failing to attain the nation's 24-hour $PM_{2.5}$ NAAQS. 74 Fed. Reg. 58688, 58768-70 (November 13, 2009). These counties are included in the Salt Lake City, Provo and Logan nonattainment areas. *Id.* Salt Lake County, Utah County and Ogden City are also designated as nonattainment areas for the 24-hour PM_{10} NAAQS, and Salt Lake and Toole counties as nonattainment areas for the SO_2 NAAQS.[4]

Our air pollution is serious. In 2013, air quality along the Wasatch Front exceeded the 24-hour $PM_{2.5}$ standard on at least **43 days** – often by alarming levels. In January of that year, the monitor at the playground of Hawthorne Elementary School recorded 17 violations of the NAAQS, with a high reading of 62 $\mu g/m^3$, almost double the 24-hour standard of 35 $\mu g/m^3$.[5] In Lindon, January also brought 17 exceedances with a high reading of 123 $\mu g/m^3$ – 350% of the standard – while in Logan the standard was violated on 18 days, topping out at 97 $\mu g/m^3$. *Id.* Over the entire year, monitored values in Logan exceeded the standard on 39 days and values in Salt Lake City on 37 days.[6] This means that for more than a month, our community – including its most vulnerable populations, the young and the old – were subjected to levels of air pollution

[4] http://www3.epa.gov/airquality/greenbk/ancl.html. The 24-hour $PM_{2.5}$ standard is met at an ambient air quality monitoring site when the 3-year average of the annual 98th percentile 24-hour average $PM_{2.5}$ concentration is less than or equal to 35 $\mu g/m^3$. As EPA explains, the standard is "defined as an integer (zero decimal places) as determined by rounding. For example, a 3-year average 98th percentile concentration of 35.49 $\mu g/m^3$ would round to 35 $\mu g/m^3$ and thus meet the 24-hour standard and a 3-year average of 35.50 $\mu g/m^3$would round to 36 and, hence, violate the 24-hour standard."
http://www3.epa.gov/ttn/naaqs/standards/pm/s_pm_history.html.

[5] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN13.pdf

[6] http://www.airmonitoring.utah.gov/dataarchive/archpm25.htm

considerably higher than concentrations deemed unsafe and unhealthy at exposures lasting only 24 hours. 71 Fed. Reg. 61144, 61150-77 (Oct. 17, 2006).

In January of 2014, the Hawthorne monitor recorded that the 24-hour $PM_{2.5}$ standard was exceeded on 13 days and the Logan monitor determined violations on 11 days. The highest reading that month – 68 $\mu g/m^3$ – was in Ogden.[7] The winter of 2014 to 2015 was an outlier – the warmest Utah winter on record.[8] The average temperature over the months December 2014 to February 2015 was 6.8º F higher than the 20th Century average temperature. *Id.* The average minimum temperature for that period was also the warmest ever and the average maximum temperature the second warmest on record and the warmest since 1981. *Id.* As a result, air quality in the nonattainment areas generally met the standard. In January 2015, the Hawthorne monitor logged 4 readings over the standard, the highest at 53 $\mu g/m^3$, while the Rose Park monitor documented 5 exceedances, the highest at 56 $\mu g/m^3$.[9]

Periods of high ozone concentrations are increasingly plaguing the Wasatch Front. In 1978, Davis and Salt Lake counties were designated as not meeting the then applicable 1-hour ozone NAAQS.[10] EPA revised the ozone NAAQS, first in 1997, by replacing the 1-hour standard with an 8-hour standard and then by lowering the standard in 2008.[11] Initially, Utah was deemed in compliance with the 1997 and 2008 8-hour ozone NAAQS.[12] However, now significant portions of the Wasatch Front are failing to comply with the 2008 8-hour ozone

[7] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN14.pdf
[8] http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php?periods%5B%5D=3&parameter=tavg&state=42&div=0&month=2&year=2015#ranks-form
[9] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf
[10] http://www3.epa.gov/airquality/greenbook/phistory_ut.html
[11] http://www3.epa.gov/ttn/naaqs/standards/ozone/s_o3_history.html
[12] http://www3.epa.gov/ozonedesignations/

standard. For example, in 2012, there were 13 days in the Salt Lake City-Ogden-Clearfield airshed that exceeded the **2008** 8-hour ozone standard (.075 ppm) and 5 days in the Provo-Orem airshed.[13] The greater Salt Lake City area recorded 11 days that exceeded the 2008 standard in 2013 and Provo-Orem 5 days. In 2014, air quality in both the Salt Lake City and Provo areas exceeded the 2008 ozone standard on 4 days. Preliminary 2015 data show 11 days where readings in the Salt Lake City-Ogden-Clearfield airshed surpassed the 8-hour ozone standard.[14]

On October 1, 2015, EPA strengthened the 8-hour NAAQS for ground-level ozone to 70 parts per billion (ppb), based on extensive scientific evidence about ozone's adverse effects on public health and welfare.[15] EPA determined, based on existing monitored data for ozone concentrations in Utah, that Salt Lake, Utah, Weber, Tooele, Duchesne and Uintah counties are not attaining the 2015 ozone standard.[16] Utah will be required to develop, secure EPA approval of and implement an ozone SIP for any nonattainment area that is not in compliance with the 2015 ozone standard. *See* 42 U.S.C. §§ 7501-7509 & 7511-7511f.

Examination of predicted and monitored "design values," representing the 3-year average of the annual 98th percentile 24-hour $PM_{2.5}$ concentrations and the manner in which compliance with the 24-hour $PM_{2.5}$ NAAQS is determined, confirm that the Three NAAs will be plagued by dangerous air quality for years to come. For example, the Director's air quality models concluded that the Salt Lake City and Provo nonattainment areas would not meet the 24-hour $PM_{2.5}$ NAAQS until December 14, 2019, and then only by the slimmest margin. Utah SIP, Section IX. Part A.21 at 40 (December 3, 2013) ("[T]his plan identifies an attainment date of

[13] http://www.airmonitoring.utah.gov/dataarchive/archo3.htm (Violation Days (CSV))
[14] http://www3.epa.gov/airdata/ad_rep_mon.html
[15] http://www3.epa.gov/ozonepollution/actions.html
[16] http://www3.epa.gov/ozonepollution/maps.html

December 14, 2019, and requests that the Administrator extend the attainment date the full 5 years permissible under Section 172(a)(2) of the Act."); Utah SIP, Section IX. Part A.22 at 40 (Provo Nonattainment Area); Utah SIP, Section IX. Part A.21 (December 3, 2014) at 58, fn. 1 ("The SIP revision adopted by the Utah Air Quality Board on December 4, 2013 had demonstrated attainment by December 14, 2019. This SIP revision includes a demonstration under CAA Section 189(a)(1)(B) that it is impracticable to attain the NAAQS in 2015.")

Moreover, in the 2014 $PM_{2.5}$ SIP, the Director estimated that, after accounting for emission reductions from the SIP measures, the 2013-2015 "design value" – the 3-year average of the annual 98th percentile 24-hour $PM_{2.5}$ concentrations – at the Hawthorne, Salt Lake City monitoring station would be 37 $\mu g/m^3$. Utah SIP, Section IX. Part A.21 at 43 (December 3, 2014) (2015 design value based on the "combination of SIP reductions on point sources and new rules to be implemented that will affect smaller commercial and industrial businesses"). Likewise, the Director anticipated a 2015 design value for the Lindon, Utah County monitoring station of 36 $\mu g/m^3$. Utah SIP, Section IX. Part A.22 at 43 (December 3, 2014) Given that Utah is having extreme difficulty securing the emission reductions necessary to attain the NAAQS and is failing to show attainment before December 2019, the difference between these 2015 design values and attainment constitutes a considerable barrier to compliance. Thus, when the effects of the 2014 SIP measures and emission reductions were **modeled**, the 2015 design values for the Salt Lake City and Provo nonattainment areas were predicted to exceed the NAAQS by a considerable margin.

Moreover, 2015 design values based on **monitored** 24-hour $PM_{2.5}$ concentrations confirm that the nonattainment areas are not close to attaining the NAAQS. The 3-year averages of the annual 98th percentile monitored $PM_{2.5}$ concentrations for the Salt Lake City and Provo

nonattainment areas, calculated by averaging the 98th percentile monitored 24-hour $PM_{2.5}$ concentrations for 2013 and 2014 with the 98th percentile monitored January 2015 concentrations, are 43.8 $\mu g/m^3$ and 42.8 $\mu g/m^3$, respectively.[17, 18] These design values are substantially higher than the NAAQS and significantly higher than the **modeled** values of 37 $\mu g/m^3$ and 36 $\mu g/m^3$.

More importantly, the **monitored** design values (3-year average of the annual 98th percentile) for the Hawthorne monitor – 38.2 $\mu g/m^3$ (2010-2012), 41.1 $\mu g/m^3$ (2011-2013), 43.7 $\mu g/m^3$ (2012-2014),[19] and 43.8 $\mu g/m^3$ (2013-January 2015) – show a steady trend **away** from attainment and certainly do **not** show linear progress toward attainment of the 24-hour $PM_{2.5}$ standard. Similarly, the **monitored** design values for the Lindon monitor – 32.4 $\mu g/m^3$ (2010-2012), 44.3 $\mu g/m^3$ (2011-2013), 41.8 $\mu g/m^3$ (2012-2014),[20] and 42.8 $\mu g/m^3$ (2013-January 2015) and the Logan monitor – 37.3 $\mu g/m^3$ (2010-2012), 45.8 $\mu g/m^3$ (2011-2013), 45 $\mu g/m^3$ (2012-

[17] If the January 2015 98th percentile concentration monitored at Hawthorne (29.3 $\mu g/m^3$) is averaged with the 98th percentile monitored values from 2013 and 2014, 58.8 $\mu g/m^3$ and 43.3 $\mu g/m^3$ respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **43.8 $\mu g/m^3$**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[18] If the January 2015 98th percentile concentration monitored at Lindon to date (26.9 $\mu g/m^3$) is averaged with the 98th percentile monitored values from 2013 and 2014, 72.4 $\mu g/m^3$ and 29.1 $\mu g/m^3$ respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **42.8 $\mu g/m^3$**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[19] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[20] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

2014),[21] and 43.2 µg/m^3 (2013-January 2015)[22] – fail to establish consistent progress toward attainment of the NAAQS.[23]

VI. Air Quality Is of Overwhelming Concern to Utahns.

Addressing Utah's poor air quality is increasingly a top concern of Utah's urban dwellers. A *Salt Lake Tribune* poll released on January 20, 2014 found that 57% of Utahns reported being more concerned about air quality than they were five years ago. Those polled also favored, by a 3 to 1 margin, tougher emission standards for industry.

On January 25, 2014, more than 5,000 Utahns stood on the steps of the Capitol to advocate for state government intervention in the fight against air pollution. Protesters wore surgical and gas masks to demonstrate their understanding that Wasatch Front air quality threatens their health. A child bore a sign stating simply that "I want to play outside." Another common slogan read "Clean Air Now, No Excuses." Dr. Moench, founder of Utah Physicians for a Healthy Environment, told the crowd, "The most fundamental right there is is the right to breathe clean air. Air pollution tarnishes our community reputation, erodes our quality of life and stifles our economy much as it does our lungs."[24]

A survey released by Envision Utah on January 15, 2015 revealed that Utahns rank poor air quality as detracting from their quality of life more than any other aspect of living in the state

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[21] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[22] If the January 2015 98th percentile concentration monitored at the Logan monitor (21.8 µg/m^3) is averaged with the 98th percentile monitored values from 2013 and 2014, 68 µg/m^3 and 39.9 µg/m^3 respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **43.2 µg/m^3**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[23] December 2015 monitored values for the Three NAAs have been high enough that the annual 98th percentile of the 24-hour $PM_{2.5}$ concentration will ultimately be greater than the numbers used to make these calculations. Thus, the design values for 2013-2015 will increase.

[24] http://www.sltrib.com/sltrib/news/57447995-78/capitol-clean-industry-lake.html.csp

– more than Utah's lack of diversity, education constraints and scarcity of water combined.[25] Survey authors noted that "poor air quality threatens core values identified in the survey, attacking the health of families and impairing the ability to get out and enjoy that scenic beauty."[26] The study concluded while Utahns rank air quality as one of the most important issues in the state, they also believe that Utah is performing worse on air quality than on any other issue. *Id.* "The concern about air quality relates primarily to the impacts to health, the inability to enjoy the outdoors during poor air quality episodes, and the legacy we leave for future generations," Envision Utah stated. "Utahns want the air to improve."[27]

In April and May, 2015, 52,845 Utahns participated in a more detailed Envision Utah survey. These participants also "ranked air quality as one of the state's most important issues, and a resounding three out of four Utahns voted to reduce emissions by 40% from [today's levels], even as Utah's population nearly doubles."[28] This 75% of survey participants indicated that they wanted air quality that was well within national health-based standards. *Id.*

[25] http://www.deseretnews.com/article/865620440/Utah-residents-rank-air-pollution-as-No-1-threat-to-quality-of-life.html?pg=all.
[26] http://www.deseretnews.com/article/865620440/Utah-residents-rank-air-pollution-as-No-1-threat-to-quality-of-life.html?pg=all
[27] http://www.sltrib.com/news/2063029-155/utahns-rank-poor-air-quality-the
[28] http://yourutahyourfuture.org/topics/air-quality/item/48-your-utah-your-future-survey-results

VII. Regulatory Background

On October 17, 2006, EPA revised the 24-hour NAAQS for $PM_{2.5}$ to provide increased protection of public health by lowering its level to 35 $\mu g/m^3$. 71 FR 61224 (October 17, 2006). Effective on December 14, 2009, EPA designated the Three NAAs as nonattainment for the 2006 $PM_{2.5}$ standard. 74 Fed. Reg. 58688, (Nov. 13, 2009).[29] On June 2, 2014, EPA classified all the areas that were designated in 2009 – including the Three NAAs – as "Moderate" nonattainment areas and required those areas to submit Moderate SIPs to EPA by December 31, 2014. 42 U.S.C. § 7513(a); 79 Fed. Reg. 31566 (June 2, 2014).[30] Among other requirements, the Moderate SIPs for the Three NAAs must provide for the implementation of all reasonably available control measures [RACM] for the control of $PM_{2.5}$ as expeditiously as practicable, but no later than December 14, 2013. 42 U.S.C. § 7502(c)(1); 42 U.S.C. § 7513a(a)(1)(C). The plans must also either demonstrate that the plan will provide for attainment by the Moderate attainment date – December 31, 2015 – or demonstrate that attainment by that date is impracticable. 42 U.S.C. § 7513a(a)(1)(B). As explained above, Utah submitted SIPs for the Three NAAs that demonstrated attainment of the 24-Hour $PM_{2.5}$ NAAQS by December 31, 2015 was impracticable.

That demonstration has proven to be accurate. Despite fairly good air quality in 2015 to date, none of the nonattainment areas will attain the 24-hour $PM_{2.5}$ standard by December 31, 2015 – the Moderate attainment date.[31] Because the 24-hour $PM_{2.5}$ standard is based on the 3-

[29] EPA originally designated these areas under Clean Air Act title I, part D, subpart 1. Subsequently, on January 4, 2013, the D.C. Circuit held that EPA should have implemented the 2006 $PM_{2.5}$ 24-hour standard based on both CAA title I, part D, subpart 1 and subpart 4.
[30] The rule did not affect the Moderate area attainment date of December 31, 2015.
[31] 42 U.S.C. § 7513(c)(1) (the moderate "attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as

year average of the annual 98th percentile, and annual values for 2013 and 2014 were so high, the relevant 3-year average (2013-2015) for each nonattainment area will be considerably greater than 35 μg/m^3.[32] Based on January 2015 monitored data, the 2013-2015 design values are 43.8 μg/m^3 for the Hawthorne monitor, 42.8 μg/m^3 for the Lindon monitor, and 43.2 μg/m^3 for the Logan monitor. These values exceed the 24-hour standard by a substantial amount.

On November 9, 2015, acknowledging that the Three NAAs could not attain the 24-hour $PM_{2.5}$ standard by December 31, 2015, EPA proposed to "bump up" the designation of the Salt Lake City, Provo and Logan nonattainment areas to "Serious" areas prior to the Moderate attainment date pursuant to its purported 42 U.S.C. § 7513(b)(1), Clean Air Act § 188(b)(1), authority. 80 Fed. Reg. 69173, 69178 (Nov. 9, 2015); 80 Fed. Reg. 69172 (Nov. 9, 2015). Alternatively, after the Moderate attainment date, EPA is required to designate the Three NAAs as "Serious" areas by operation of the law pursuant to 42 U.S.C. § 7513(b)(2), Clean Air Act § 188(b)(2).

Regardless of the route the Three NAAs take to designation as Serious areas, the Director must, no later than "18 months after reclassification of the area as a Serious Area," 42 U.S.C. § 7513a(b)(2),[33] submit "provisions to assure that the best available control measures for the control of [$PM_{2.5}$] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area." 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. § 7513a(b)(2) (referencing paragraph (1)(B)). In other words, by June 2017 or shortly thereafter, the Director

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nonattainment"); 74 Fed. Reg. 58688, 58768-70 (November 13, 2009) (designating Salt Lake City, Provo and Logan nonattainment areas as of December 14, 2009).

[32] Footnotes 17, 18 and 22, *supra*. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[33] Reclassification dates to the failure of the area to attain the NAAQS – December 31, 2015. *See* 42 U.S.C. § 7513(b)(2)(A) ("[T]he area shall be reclassified by operation of law as a Serious Area.").

must, at minimum, present a "Serious" SIP identifying all best available control measures (BACM) and establishing that these measures will be implemented in the nonattainment areas no later than 2019.

The designation of the Three NAAs as "Serious" underscores the need for the immediate implementation of the effective and potent measures necessary to bring these areas into attainment as soon as possible. Because of the significant threat to public health and the environment posed by air pollution that exceeds the national standards, the Clean Air Act demands that air quality in nonattainment areas be brought into compliance with the NAAQS as soon as possible. Specifically, where air quality exceeds the health-based standards, such as in the Three NAAs, the Clean Air Act requires that measures be taken immediately to attain NAAQS as "expeditiously as practicable." *E.g.* 42 U.S.C. § 7502(a)(2)(A) & (a)(2)(B); 42 U.S.C. § 7513(c)(1) ("For a Moderate Area, the attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as nonattainment") & (c)(2) ("For a Serious Area, the attainment date shall be as expeditiously as practicable but no later than the end of the tenth calendar year beginning after the area's designation as nonattainment."). Thus, the law guarantees Utah's citizens air that meets the national standards as promptly as feasible.

VIII. The Proposed Rule Is Legally Mandated and Represents a Sound Strategy for Attaining the 24-Hour $PM_{2.5}$ NAAQS as Expeditiously as Possible.

A. The 24-Hour Rule Addresses the Short-Term Spikes in $PM_{2.5}$ that Afflict the Three NAAs.

By imposing emission limitations on $PM_{2.5}$ or $PM_{2.5}$ precursors that are averaged over a period no longer than 24 hours, the proposed rule prevents short-term spikes in emissions from individual stationary sources identified in the $PM_{2.5}$ SIPs. The 24-Hour Rule further mandates

that, given that the limit will be averaged over a period of 24 hours or less, the emission limitation shall be derived by RACT and/or BACT analysis and ultimately represent RACT and/or BACT.[34] In other words, if implemented as part of a Moderate SIP, the emission limitation, as averaged over a period of 24 hours or less, will be "the lowest emission limit that a source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility[.]" 80 Fed. Reg. at 15369. If implemented pursuant to a Serious SIP, the emission limitation, as averaged over a period of 24 hours or less, shall represent "the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts and other costs." 80 Fed. Reg. at 15405; *see also id.* at 15405, fn. 170 ("EPA will interpret PSD BACT and [$PM_{2.5}$] BACM as generally similar[.]" However "[t]he difference in policy goals, arguably, suggests that the [$PM_{2.5}$] BACM control standard should be more stringent than that for PSD BACT."). Finally, the 24-Hour Rule requires that these RACT and BACT-based emission limitations with the corresponding averaging periods be specifically stated in the $PM_{2.5}$ SIPs.[35]

[34] References to RACT and BACT are also references to RACM and BACM, which encompass the foregoing. "Section 189(b)(1)(B) refers only to BACM, but the EPA has long interpreted this term to include BACT, just as the analogous term for RACM includes RACT for Moderate areas. The legislative history for the 1990 Amendments to the CAA supports this interpretation, as the EPA has explained in past guidance." 80 Fed. Reg. at 15404.

[35] The 24-Hour Rule is triggered when RACT and/or BACT applies to a stationary source, facility, installation or emission unit. The rule specifies that when RACT and/or BACT is derived for a stationary source, facility, installation or emission unit, the result must include at least one short-term emission limitation for each relevant air pollutant – $PM_{2.5}$ or any $PM_{2.5}$ precursor. The goal of the rule is not to require that every $PM_{2.5}$ SIP emission limitation be a short-term emission limitation. In many instances, it may be appropriate to impose both short-term and long-term emission limitations. Rather, the 24-Hour Rule requires that, where RACT and/or BACT is applied, at least one emission limitation for each pollutant be a short-term emission limit.

The 24-Hour Rule reflects the fact that the Three NAAs are failing to attain the "short-term" 24-hour $PM_{2.5}$ National Ambient Air Quality Standard. The 24-hour $PM_{2.5}$ NAAQS are necessary to protect "against health effects associated with short-term $PM_{2.5}$ exposures, especially in areas with high peak $PM_{2.5}$ concentrations." 80 Fed. Reg. at 15347. In other words, EPA determined exposure to acute spikes in $PM_{2.5}$ air pollution is just as damaging to public health and the environment as is chronic exposure to lower levels of $PM_{2.5}$. *Id.* EPA therefore concluded that the 24-hour $PM_{2.5}$ NAAQS are necessary to "provide[] increased public health protection, including the health of at-risk populations which include children, older adults, persons with pre-existing health and lung disease and persons of lower socioeconomic status, against a broad range of $PM_{2.5}$-related effects that include premature mortality, increased hospital admissions and emergency department visits, and development of chronic respiratory disease." *Id.*

As set forth in detail above, the Three NAAs are repeatedly afflicted "with high peak $PM_{2.5}$ concentrations" that threaten the health and well-being of all Utahns living along the Wasatch Front. *See* 80 Fed. Reg. at 15347. Inversions, which signal high concentrations of $PM_{2.5}$, settle on the Three NAAs for days and weeks at a time and can raise the levels of $PM_{2.5}$ to alarming concentrations ranging from double to more than three times the standard. The 24-Hour Rule addresses these "high peak $PM_{2.5}$ concentrations" by ensuring that limitations placed on emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors by the SIP will prohibit short-term spikes in air pollution. To do this, the proposed rule imposes, in addition to other longer-term emission limitations, limits that are averaged over periods of 24 hours or less. These short-term emission limits are required where emission limitations on SIP sources have been derived to represent RACM or BACM.

1. In Many Instances, the $PM_{2.5}$ SIPs Lack Short-Term Emission Limitations.

The 24-Hour Rule is warranted because the $PM_{2.5}$ SIPs fail to establish short-term emission limitations and therefore fail to prohibit short-term spikes in emissions from $PM_{2.5}$ and $PM_{2.5}$ precursors. First, important $PM_{2.5}$ SIP emission limitations often have averaging times considerably longer than 24 hours. *E.g.* $PM_{2.5}$ Emission Limits and Operating Practices, Sections IX.H.11, 12, & 13[36] at 42 (general requirements petroleum refineries – FCCU 365 and 7-day rolling averages for SO_2); *id.* at 43 (general requirements petroleum refineries – H_2S content 365-day rolling average); *id.* at 52 (Exelon Generation 30-day average for NO_X); *id.* at 60 (Hill Air Force Base, "daily average shall be determined monthly" for VOCs); *id.* at 65 (Kennecott BCM – source-wide 12-month rolling average, combined for SO_2, NO_X and $PM_{2.5}$); *id.* at 69 (Kennecott Smelter Stack 11, annual average for NO_X); *id.* at 69 (Kennecott Smelter, Holman Boiler, 30-day average for NO_X); *id.* at 72 (Nucor Steel – Electric Arc Furnace Baghouse, 12-month rolling average for NO_X and VOCs); *id.* at 75 (PacifiCorp Energy, Natural Gas-fired Simple Cycle Turbine Units, 30-day average for NO_X); *id.* at 82 (Vulcraft/Nucor, 12-month rolling average for VOCs); *id.* at 91 (Pacific States, 12-month rolling average for VOCs).

For many other core emission limitations, the $PM_{2.5}$ SIPs fail to impose any averaging period at all. *E.g. id.* at 51 (Bountiful City Light for NO_X); *id.* at 53 (Central Valley Water for NO_X); *id.* at 53-54 (Chemical Lime Company for PM and NO_X); *id.* at 65 (Kennecott BCM – road dust suppression, ore conveyor use and opacity); *id.* at 66 (Kennecott Boiler #5 for NO_X, VOC, $PM_{2.5}$); *id.* at 67 (Boiler #4 for $PM_{2.5}$ and NO_X); *id.* at 69 (Kennecott Smelter Stack 11 for $PM_{2.5}$); *id.* at 70 (Kennecott, Tankhouse Boilers and Combined Heat Plant for NO_X); *id.* at 71 (Kennecott Natural Gas

[36] http://www.deq.utah.gov/Laws_Rules/daq/sip/docs/2014/12Dec/PartH_Final_Adopted_12-3-14_ALL_Part%20H.pdf

Turbine combined with Duct Burner and TEG firing – Combined Heat Plant for NO_X); *id.* at 72 (Nucor Steel – Electric Arc Furnace Baghouse for VOC, Reheat Furnace #1 and #2 for NO_X).

Finally, in several cases, the $PM_{2.5}$ SIP emission limitations are expressed in pounds per hour or concentrations with no averaging periods and with monitoring that is so infrequent – once every three to five years – that the emission limits do not serve to limit short-term spikes in air pollution. *E.g. id.* at 57-58 (Great Salt Lake Minerals, NO_X and PM_{10} concentration, stack testing once every three to five years); *id.* at 79 (Proctor and Gamble, PM_{10} and NO_X pounds/hour, stack testing every five years); *id.* at 80 (University of Utah, NO_X concentration, stack testing once every one to three years); *id.*at 85 (BYU, NO_X concentration, stack testing once every three years).[37]

2. EPA Commented Extensively on the Failure of the SIPs to Control Short-Term Spikes in $PM_{2.5}$ and $PM_{2.5}$ Precursors.

In commenting on the 2014 $PM_{2.5}$ SIPs, EPA repeatedly "questioned whether long-term periods…for a RACT emission limit adequately address the short-term 24-hour $PM_{2.5}$ standard." EPA Region 8 Comments at 8. EPA stated that "RACT limits in some cases need revisions to make the limits practically enforceable…and to align the limit's averaging period to be appropriate to the 24-hour $PM_{2.5}$" NAAQS. *Id.* at 2. EPA's assessment of the SIPs focused on two interconnected issues. First, SIP emission limits must represent RACT – generally, the lowest emission limit a source can meet by the application of reasonably available control technology[38] – and short-term emissions should and do represent RACT. *Id. at* 10 (regarding

[37] As these examples and the many others in the Petition for a Rule Change for the "Monitoring Rule" submitted with this Petition show, frequent monitoring and short-term emission limits are necessarily two sides of the same coin. 24-hour averaging periods without adequate monitoring to establish compliance are ineffective at preventing short-term spikes in air pollution. More frequent monitoring of a long-term emission limitation will likewise not prevent sharp increases in emissions over the short-term.

[38] EPA has historically defined RACT as ''the lowest emission limit that a source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility[.]" 80 Fed. Reg. at 15369. Section 172(c)(6) requires that

general SIP provisions applying to petroleum refineries: "UDAQ has not explained why the 7-day rolling average emissions limit is RACT" [or] "why a 24-hour limit is not RACT, taking into account technological and economic feasibility."); *id.* at 14 (concerning PacifiCorp: "[A] short-term limit to address the 24-hour standard seems feasible and should be considered as RACT."); *id.* at 14 (pertaining to Exelon Generation: "a short-term limit to address the 24-hour standard seems feasible and should be considered as RACT."); *id.* at 20 (regarding ATK: "This provision specifies limits…per rolling 12-month period. Please explain how these limits are appropriate as RACT for the 24-hour $PM_{2.5}$ standard."); *id.* at 21 (re: Valcraft/Nucor: "Please explain how a rolling 12-month emission limit can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 21 (addressing Kennecott BCM: "Please explain how rolling 12-month limits can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 24 (pertaining to Kennecott Smelter: "Please explain how an annual average can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 24 (re: Kennecott Holman Boiler – "Please explain how 30-day averages can represent RACT in a plan that is intended to attain a 24-hour NAAQS.").

Second, EPA continually underscored that short-term emission limitations are necessary to prevent spikes in emissions and therefore to attain the 24-hour $PM_{2.5}$ standard. *Id.* at 8 ("[u]nder a long-term limit, emissions from a source can spike during a short-term period."); *id.* at 24 ("An emission limit expressed as a 30-day average allows significantly higher short-term emissions that can impact a short-term standard such as the 24-hour $PM_{2.5}$ NAAQS."); *id.* at 7 (asking "how and why averaging…(i.e, 30-day, annual, etc. for averaging…) are applied and are considered valid to support modeling and attainment"); *id.* at 14 (concerning PacifiCorp:

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a state's attainment plan for a nonattainment area "include enforceable emission limitations." 42 U.S.C. § 7502(c)(6).

"UDAQ's previous response states that this average is appropriate because the emissions do not vary over the short-term. In that case, a short-term limit to address the 24-hour standard seems feasible and should be considered as RACT."); *id.* at 14 (pertaining to Exelon Generation: "a short-term limit to address the 24-hour standard seems feasible and should be considered as RACT."); *id.* at 20 (regarding ATK: "This provision specifies limits…per rolling 12-month period. Please explain how these limits are appropriate as RACT for the 24-hour $PM_{2.5}$ standard."); *id.*at 21 (relative to Nucor Steel: "This is not an adequate explanation for how the 12-month rolling average is protective of the 24-hour $PM_{2.5}$ standard."); *id.* at 21(re: Valcraft/Nucor: "Please explain how a rolling 12-month emission limit can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 21 (re: Valcraft/Nucor: UDAQ indicated that it "considered a shorter-term limit to be unreasonably burdensome because industry typically only records inventory usage on a monthly basis. However, this response does nothing to address the possibility that the source will use higher amounts of paints during short-term periods."); *id.* at 21 (addressing Kennecott BCM: "Please explain how rolling 12-month limits can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 24 (pertaining to Kennecott Smelter: "Please explain how an annual average can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 24 (re: Kennecott Holman Boiler – "Please explain how 30-day averages can represent RACT in a plan that is intended to attain a 24-hour NAAQS.").

Thus, RACT and short-term emission limitations are necessarily intertwined where the goal is to attain the short-term 24-hour $PM_{2.5}$ standard. RACT achieves permanent and enforceable reductions in direct $PM_{2.5}$ emissions and/or $PM_{2.5}$ precursor emissions for the purposes of expeditious attainment. For these reductions "to provide for attainment" of the 24-hour standard effectively, they must prohibit short-term spikes in emissions. *See* 42 U.S.C. § 7502(c)(6) ("[P]lan provisions shall include enforceable emission limitations, and such other control measures, means or techniques…as

well as schedules and timetables for compliance, as may be necessary or appropriate to provide for attainment of such standard in such area by the applicable attainment date[.]"). "[T]he issue is whether the RACT limit[s] [are] adequate to attain and protect the 24-hour standard," *id.* at 8, and repeatedly EPA maintained that only short-term emission limits are up to the task.

B. The Proposed Rule Is a Necessary Component of Both a Moderate and Serious SIP.

1. Utah Must Implement All Reasonably Available Control Measures and Additional Reasonable Measures.

A nonattainment SIP shall provide for the implementation of all reasonably available control measures (RACM), including reasonably available control technology (RACT), as expeditiously as practicable. 42 U.S.C. § 7502(c)(1); 80 Fed. Reg. at 15369.[39] For particulate matter nonattainment areas, Congress mandated that Moderate area attainment plans contain provisions to assure that RACM and RACT are implemented no later than four years after designation, 42 U.S.C. § 7513a(a)(1)(C), or in the case of the Utah nonattainment areas, no later than December 2013. 74 Fed. Reg. at 58768-70 (November 13, 2009) (designating the Three NAAs on December 14, 2009). Thus, Utah's Moderate SIP must provide for the implementation of RACM and RACT for existing sources of $PM_{2.5}$ and $PM_{2.5}$ precursors as expeditiously as practicable, but no later than December 2013. This is true even though the Three NAAs cannot practicably attain by the statutory attainment date and therefore will be designated as "Serious" areas. 80 Fed. Reg. at 15369.

Beyond RACM and RACT, nonattainment SIPs must "include enforceable emission limitations, and such other control measures, means or techniques. . . as may be necessary or

[39] *Id.* at 15464 (RACM "is any technologically and economically feasible measure that can be implemented in whole or in part within 4 years after the date of designation of a $PM_{2.5}$ nonattainment area and that achieves permanent and enforceable reductions in direct $PM_{2.5}$ emissions and/or $PM_{2.5}$ precursor emissions from sources in the area. RACM includes reasonably available control technology (RACT)").

appropriate to provide for attainment." 42 U.S.C. § 7502(c)(6). This requires states to implement any technologically and economically feasible control measures, including control technologies, for all sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors, that can only be implemented **after** the 4 year deadline for RACM and RACT has passed, but **before** six years after the designation date. 80 Fed. Reg. at 15368.[40] In the case of the Three NAAs, Utah must have imposed these additional reasonable measures that are capable of being implemented before December 31, 2015. In Moderate areas that cannot practicably comply with the standard by the statutory attainment date, states must still implement all RACM and RACT, together with any additional reasonable measures, on sources in the nonattainment area. 80 Fed. Reg. at 15369.

2. Utah Must Implement All Best Available Control Measures.

As they will fail to attain the 24-hour $PM_{2.5}$ standard by December 31, 2015, the Three NAAs will be designated "Serious" area by EPA as an operation of law. 42 U.S.C. § 7513(b)(2)(A). Alternatively, EPA has proposed to acknowledge that the Three NAAs cannot practicably attain the standard and, prior to the Moderate attainment date, designate the areas as "Serious" nonattainment areas. 42 U.S.C. § 7513(b)(1). In either case, the Director must, no later than "18 months after reclassification of the area as a Serious Area," 42 U.S.C. § 7513a(b)(2),[41] submit "provisions to assure that the best available control measures for the control of PM_{10} [including $PM_{2.5}$] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area." 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. §

[40] *Id.* at 15464 ("Additional reasonable measure is any control measure that otherwise meets the definition of [RACM] but can only be implemented in whole or in part during the period beginning 4 years after the date of designation of a nonattainment area and no later than the end of the sixth calendar year following the date of designation of the area.").
[41] Reclassification dates to the failure of the area to attain the NAAQS – December 15, 2015. *See* 42 U.S.C. § 7513(2)(A) ("[T]he area shall be reclassified by operation of law as a Serious Area.").

7513a(b)(2) (referencing paragraph (1)(B)). Thus, by June 14, 2017, the Director is required to present a "Serious" SIP identifying all best available control measures (BACM) and establishing that these measures will be implemented in the nonattainment areas no later than December 2019.

BACM is "the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts and other costs." 80 Fed. Reg. at 15405; *id.* at 15464 (BACM "is any technologically and economically feasible control measure that can be implemented in whole or in part within 4 years after the date of reclassification of a $PM_{2.5}$ nonattainment area and that generally can achieve greater permanent and enforceable emissions reductions in direct $PM_{2.5}$ emissions and/or emissions of $PM_{2.5}$ precursors from sources in the area than can be achieved through the implementation of RACM on the same source(s). BACM includes best available control technology (BACT).").[42]

3. The 24-Hour Rule Is a Necessary Element of RACM and BACM and Required to Ensure that the Three NAAs Will Attain the 24-Hour $PM_{2.5}$ NAAQS Expeditiously.

Utah is currently under significant obligation to impose reasonable and best control measures on and secure substantial reduce emissions from industrial sources in the nonattainment areas. The Clean Air Act requires Utah to have implemented all RACM and other additional reasonable measures by December 31, 2015. Starting December 31, 2015, the State is also required to begin implementing any BACM as expeditiously as practicable. Ultimately, the

[42] Under 42 U.S.C. § 7502(c)(6), states addressing Serious nonattainment areas must also implement "additional feasible measures" as well as BACM. 80 Fed. Reg. at 15406. An "additional feasible measure" is "any control measure that otherwise meets the definition of [BACM] but can only be implemented in whole or in part beginning 4 years after the date of reclassification of an area as Serious and no later than the statutory attainment date for the area." *Id*. at 15464.

Clean Air Act mandates attainment of the 24-hour $PM_{2.5}$ standard as soon as is feasible. There is real urgency in the mandate that Utah immediately take the steps necessary to bring the Three NAAs into attainment with the standard.

As the 24-Hour Rule is a necessary component of both RACM and BACM and a legally adequate SIP, adoption of the rule is warranted. First, the 24-Hour Rule will meet the requirement that all SIP emission limitations be enforceable and ensure compliance. Section 172(c)(6) of the Clean Air Act requires nonattainment SIPs to "include enforceable emission limitations, and such other control measures, means or techniques . . . as well as schedules and timetables for compliance, as may be necessary or appropriate to provide for attainment." 42 U.S.C. § 7502(c)(6). EPA interpreted Section 172(c)(6) to require, as a component of enforceability, that an adequate SIP will "ensure compliance with an applicable emissions limit" by including "requirements for both performance testing of emissions and ongoing monitoring of the compliance performance of control measures[.]" 80 Fed. Reg. at 15447. The agency determined, therefore, that to be "complete with regard to compliance monitoring provisions" the "SIP must include the following critical element[];"

> Averaging time – the period over which to average data to verify compliance with the emissions limitation or standard or proper operation of the pollution control measure. Examples of averaging time include a 3-hour average in units of the emissions limitation, a 30-day rolling average emissions value, a daily average of a control device operational parametric range, periodic (*e.g*, monthly, annual) average of raw materials or fuel pollutant content, and an instantaneous alarm[.]

Id. at 15448. Thus, the Clean Air Act mandates that all SIP emission limitations include appropriate averaging times or periods. *Id.*; *see also* EPA Region 8 Comments at 21 (regarding Nucor Steel: The SIP "does not specify an averaging time or a stack test method for the proposed NO_X emission limits at Reheat Furnaces #1 and #2, nor for the proposed VOC emission limit at the EAF Baghouse.")

By requiring, at a minimum, that emissions be controlled by limits averaged over periods of 24 hours or less, the 24-Hour Rule imposes "averaging times." The rule therefore provides a "critical element" of enforceable emission limitations and a necessary component of the "compliance monitoring provisions" of a legally adequate SIP. *See id.* at 15448 ("EPA continues to believe that approval of regulations adopted into SIPs would have to ensure that these critical elements," including averaging times, "are present and clearly defined to be approvable."); EPA Region 8 Comments at 21 (referencing Nucor Steel: The SIP "does not specify an averaging time or a stack test method for the proposed NOx emission limits at Reheat Furnaces #1 and #2, nor for the proposed VOC emission limit at the EAF Baghouse.").

Second, as mandated by Section 172(c)(6), averaging times must be imposed "as may be necessary or appropriate to provide for attainment." 42 U.S.C. § 7502(c)(6). In the case of attaining the 24-hour NAAQS, this means that SIP emission limitations must be averaged over periods of 24 hours or less. These short-term emission limitations are necessary to prevent short-term spikes in $PM_{2.5}$ and $PM_{2.5}$ precursors. "[T]he issue is whether the RACT limit is adequate to attain and protect the 24-hour standard." EPA Region 8 Comments at 8; *id.* ("In several instances, EPA has previously questioned whether long-term periods…for a RACT emission limit adequately address the short-term 24-hour $PM_{2.5}$ standard. Under a long-term limit, emissions from a source can spike during a short-term period."); *id.* at 21 ("Please explain how a rolling 12-month emission limit can represent RACT in a plan that is intended to attain a 24-hour NAAQS."); *id.* at 24 ("Please explain how 30-day averages can represent RACT in a plan that is intended to attain a 24-hour NAAQS…. An emission limit expressed as a 30-day average allows significantly higher short term emissions that can impact a short-term standard such as the 24-hour $PM_{2.5}$ NAAQS.").

This is true whether the rates at which air pollutants are emitted from a source to be controlled are variable or are typically steady. As EPA explains, where emissions from a source are erratic, short-term emission limitations are required to prevent sharp increases in emissions and to protect the 24-hour NAAQS. *E.g.* EPA Region 8 Comments at 8 ("An emission limit expressed as a 30-day average allows significantly higher short-term emissions that can impact a short-term standard such as the 24-hour $PM_{2.5}$ NAAQS."); *id.* ("Under a long-term limit, emissions from a source can spike during a short-term period."); *id.* at 24 ("An emission limit expressed as a 30-day average allows significantly higher short-term emissions that can impact a short-term standard such as the 24-hour $PM_{2.5}$ NAAQS."). The more prone a source is to emission spikes, the more critical it is to attainment of the 24-hour $PM_{2.5}$ standard to impose short-term emission limitations on that source. *See id.*

Alternatively, where emissions from a source are fairly consistent, the imposition of a emission limitation averaged over a period of 24 hours or less is technologically and economically feasible and therefore represents RACT or BACT. *E.g.* EPA Region 8 Comments at 8 ("[I]f it is correct that the source does not have significant variation in its daily emissions, then it should be technologically and economically feasible to set a short term limit as RACT."); *id.* at 14 (concerning PacifiCorp: "UDAQ's previous response states that this average is appropriate because the emissions do not vary over the short-term. In that case, a short-term limit to address the 24-hour standard seems feasible and should be considered as RACT."); *id.* at 14 (pertaining to Exelon Generation: "a short-term limit to address the 24-hour standard seems feasible and should be considered as RACT."); *id.* at 21 ("Since UDAQ states that there is very little variation in operation of the EAF, a short-term limit appears feasible and should constitute RACT.").

In any case, a legally sufficient RACT must culminate in the lowest emission limit that a source is capable of meeting using reasonably available control technology[43] and must be shown sufficient to attain and protect the 24-hour $PM_{2.5}$ NAAQS. As EPA explained, Utah's SIP must include the provisions necessary to "make the [RACT] limits practically enforceable, to include monitoring, recordkeeping, and reporting requirements, and to align the limit's averaging period to be appropriate to the 24-hour $PM_{2.5}$" standards. EPA Region 8 Comments at 2; *id.* at 8 ("[T]he issue is whether the RACT limit is adequate to attain and protect the 24-hour standard."); *id.* at 10 ("[P]lease explain why a 24-hour limit is not RACT, taking into account technological and economic feasibility."); *id.* at 11 ("[W]hy is the additional margin the best that can be achieved, taking into account technological and economic feasibility?"). This process and outcome is exactly what the 24-Hour Rule entails.

Third, the 24-Hour Rule serves to increase the accuracy of emission inventories and Utah's eventual attainment demonstration and, where applicable, facilitates the transfer of SIP emission limitations to title V operating permits. 80 Fed. Reg. at 15448. Conversely, adequate "compliance obligations, including emissions limits and other applicable requirements," such as explicit and sufficient averaging periods "need to be representative of and accountable to the assumptions used in a state's attainment demonstration." *Id.* ("This accountability would include the ability to transfer the applicable regulatory requirements to a title V operating permit subject to the EPA and public review.").[44] Valid modeling that can be relied on to demonstrate

[43] RACT is ''the lowest emission limit that a source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility[.]" 80 Fed. Reg. at 15369.

[44] Unless the SIP imposes a short-term emission limitation on a source, Utah may not merely postulate, for the purposes of modeling, that emissions will not spike over the short-term. Rather, as EPA suggested, modeling assumptions must reflect specific emission limitations and therefore what emission limits allow. EPA Region 8 Comments at 7 ("[W]e suggest that the

attainment must reflect SIP emission limitations, including short-term averaging periods. In the absence of these controls on emissions, the resulting modeling will necessarily be making unsupported assumptions about short-term emissions that are not enforced by the corresponding SIP emission limitations. The 24-Hour Rule avoids this outcome by imposing short-term emission limitations and thereby serving to make modeling that seeks to characterize compliance with the short-term NAAQS representative of the SIP control measures actually imposed.

Finally, the 24-Hour Rule resolves factors EPA identified as crucial to ensuring SIP control measures are enforceable, approvable and provide for attainment of the 24-hour $PM_{2.5}$ standard. *See* 42 U.S.C. § 7502(c)(6). The 24-Hour Rule establishes the link between control measures and averaging periods. Averaging periods are "critical elements" of enforceable SIP measures, necessary to "verify compliance with the emissions limitation or standard or proper operation of the pollution control measure." 80 Fed. Reg. at 15448; *see also* 42 U.S.C. § 7502(c)(6).

By imposing averaging periods of 24 hours or less on RACT and BACT emission limitations, the proposed rule ensures that a BACT or "RACT limit is adequate to attain and protect the 24-hour standard," EPA Region 8 Comments at 8, and that an emission "limit's averaging period [is] appropriate to the 24-hour $PM_{2.5}$" standards. *Id.* at 2; *id.* at 8 "[T]he issue is whether the RACT limit is adequate to attain and protect the 24-hour standard."); *see also* 42 U.S.C. § 7502(c)(6) ("plan provisions shall include enforceable emission limitations, and such other control measures, means or techniques…as well as schedules and timetables for compliance, as may

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UDAQ…explain …why the state chose to use the projected actual emissions of point sources in its attainment modeling…how and why averaging and frequency of monitoring/testing (i.e, 30-day, annual, etc…) are applied and are considered valid to support modeling and attainment[.]"); *id.* at 8 ("[T]he issue is whether the RACT limit is adequate to attain and protect the 24-hour standard.").

be necessary or appropriate to provide for attainment of such standard in such area by the applicable attainment date[.]"). The 24-Hour Rule likewise addresses EPA's repeated contention that short-term emission limitations are necessary to prevent spikes in emissions and therefore to attain the 24-hour $PM_{2.5}$ standard. *E.g.* EPA Region 8 Comments at 8 ("Under a long-term limit, emissions from a source can spike during a short-term period."); *id.* at 24 ("An emission limit expressed as a 30-day average allows significantly higher short term emissions that can impact a short term standard such as the 24-hour PM2.s NAAQS."); *id.* at 21 ("[T]his response does nothing to address the possibility that the source will use higher amounts of paints during short-term periods.").

Thus, whether looked at through the lens of RACM or BACM, the 24-Hour Rule is a critical element of a Moderate or Serious SIP and a reasonable measure that will make Utah's SIP control measures enforceable and establish the basis for compliance. The proposed rule will prohibit spikes in emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors in order to attain and protect the 24-hour standard and so, as the Clean Air Act requires, constitutes an important step in expeditious attainment of the short-term $PM_{2.5}$ NAAQS. *See e.g.* 42 U.S.C. § 7513(c)(1) & (c)(2).[45]

C. The Proposed Rule Furthers Other Legal and Policy Goals.

State and local officials in Utah have sought for years to identify appropriate measures to help reduce dangerous emissions of air pollution and bring Utah into compliance with the 24-hour NAAQS for $PM_{2.5}$. Those efforts have borne fruit, but additional steps – including this proposed rule – are necessary to ensure expeditious and long-term compliance with the standard. First, given that all projections agree that Utah's population and economy will continue to grow

[45] The 24-Hour Rule will also promote continued maintenance of the 24-Hour PM_{10} NAAQS. *See* 42 U.S.C. § 7505a(a).

significantly in the coming decades, our air quality policies will need to keep pace by enacting controls to address expanding mobile, area and point sources. Census data released earlier this year[46] show familiar statistics: a five-year population growth rate that ranks fourth in the nation; the second highest growth in new homes over the past year; and, the third highest over the previous five. The state's population recently surpassed three million residents – and is projected to hit four million in as few as 16 years.[47]

According to a detailed report from the Utah Foundation,[48] which examined a wide array of research, much of that growth is expected not just in our non-attainment areas, but in more far-flung suburban areas, raising the specter of a significant increase in commutes and vehicle miles travelled (VMTs). Predictions of Utah's future emissions inventory offer some significant reasons for hope – particularly due to a slow but steady reduction from the mobile sector. Our cars and trucks will pollute less both because of the EPA's Tier 3 program and also from increased Corporate Average Fuel Economy (CAFE) standards. But much of those gains will be eaten away by increases in population, the number of homes and in overall VMTs, due to more cars on the road and the expansion of the suburbs. These trends mean that Utah will need to continue to find additional emission reductions and bolster its regulatory oversight for decades to come – twin goals that our proposed rule will accomplish.

Secondly, Utah faces serious repercussions if it does not meet the 24-hour $PM_{2.5}$ NAAQS by 2019. While the precise penalties are not certain, the Clean Air Act gives a clear idea of what

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[46] *Another Piece to the Puzzle: Census Reveals Utah's Growth Among Top In Nation*, Deseret News, 2015-05-20, http://www.deseretnews.com/article/865629128/Another-piece-to-the-puzzle-Census-reveals-Utahs-growth-among-top-in-nation.html?pg=all

[47] *Herbert Says there Are Three Million People Living in Utah*," The Salt Lake Tribune, 2015-10-26, http://www.sltrib.com/home/3103221-155/utahs-population-surpasses-3-million.

[48] *A Snapshot of 2050: An Analysis of Projected Population Change in Utah*, the Utah Foundation, April 2014, http://www.utahfoundation.org/uploads/rr720.pdf

might come. Sanctions include: 1) being required to adopt the most stringent measures being implemented in any other states, 42 U.S.C. § 7513(e); and, 2) having to identify an additional 5 percent emission cuts across the board every year until the standard has been attained. 42 U.S.C. § 7513a(d). Each of these requirements serves to take discretion out of the state's hands, forcing the state to implement measures that would be not be tailored to Utah's particular situation and that would likely be unpopular.

Third, as it reviews Utah's Moderate SIP, Serious SIP and any request for an extension of the attainment date for a Serious area, EPA has authority to approve or disapprove aspects of the plans and, if necessary, assume authority to develop and implement a SIP. *See* 42 U.S.C. § 7502(b), (c) & (d); 42 U.S.C. § 7410(k); 42 U.S.C. § 7513(e); 42 U.S.C. § 7509. Thus, we believe, it is important for state officials to demonstrate that Utah is willing to make difficult decisions and embrace policies that will reduce emissions from all polluting sectors, including large stationary sources. More colloquially, it is urgent to look under every rock for emissions cuts and it is important that Utah exhibit a willingness to impose these available measures with the goal of achieving the national standard as soon as possible.

Fourth, there are significant advantages to having the Division and the Board carefully consider this rule on its own merits, rather than as an element of a Moderate SIP or the Serious SIP that Utah will be required to develop and implement in the next two years. Utah's SIPs have been and will continue to be highly technical and expansive documents, covering a wide range of control measures. The 2014 SIP, for example, included 23 new rules on area sources alone. Due to the sheer volume of these plans and the documents that support them, it is very difficult for the Board and the public to debate any particular SIP provision or to offer revisions to the SIP in the short comment period that has typically attended these rulemaking efforts.

The rule presented here, on the other hand, offers opportunity for individual scrutiny. The Division, public and regulated community will have the chance to provide meaningful and detailed feedback, while the Board will have the chance to carefully review these comments one rule at a time, which is very difficult to do when it is faced with approving or disapproving of an entire nonattainment SIP as a single rule.

Lastly, we maintain that it is valuable to focus rulemaking on stationary sources, even though inventories suggest that emissions from this sector are less than emissions from either mobile or area sources. Various estimates, which misleadingly give equal weight to direct $PM_{2.5}$ and $PM_{2.5}$ precursors, indicate that about 12 percent of total emissions in the Salt Lake City nonattainment area come from stationary sources and the 2013 SIP anticipates that by 2019, these sources will account for 28 percent of direct $PM_{2.5}$ emissions in the area. It is true that mobile and area sources contribute significantly to our failure to attain the NAAQS. That is why we have pushed hard for rules, programs and funds to address these sources of $PM_{2.5}$ emissions, such as the Tier 3 program, electric vehicle incentives, expansion of transit funding, updates to building codes, and low NO_X hot water heater requirements.

We are confident that rules addressing large industrial sources have merit as one important piece of an overall strategy intended to bring the nonattainment areas into compliance with the 24-hour $PM_{2.5}$ NAAQS as expeditiously as practicable. Cleaning up Utah's air is not about adopting a few measures or addressing only those sectors that contribute the most emissions. Rather, the severity of our air pollution problem requires that we implement every effective measure and strategy to reduce emissions of $PM_{2.5}$ and its precursors. Because the proposed rule, backed by the EPA, will minimize emission increases and strengthen the state's overall oversight of stationary sources, is not only worth debating, but also worth adding to our

SIP as an appropriate and necessary addition to a legally robust plan designed to attain and maintain the NAAQS.

IX. Conclusion

The 24-Hour Rule is a critical component of an adequate $PM_{2.5}$ SIP and necessary to expeditious attainment of the 24-hour $PM_{2.5}$ standard. By requiring that RACT and BACT be implemented, at a minimum, by emission limitations that are averaged over periods of 24 hours or less, the rule imposes enforceability and provisions to ensure compliance. As mandated by Section 172(c)(6), the 24-Hour Rule ensures that SIP control technologies are derived and implemented as "necessary" to "provide for attainment" of the 24-hour $PM_{2.5}$ standard. The rule mandates the short-term emission limitations needed to prevent spikes in emissions and therefore to attain and protect the 24-hour $PM_{2.5}$ standard. Based on these considerations and the analysis detailed above, Utah Physicians for a Healthy Environment, HEAL Utah and Western Resource Advocates respectfully ask the Air Quality Board to initiate Utah Code Ann. § 63G-3-301 rulemaking proceedings relative to the 24-Hour Rule as authorized by Utah Code Ann. § 63G-3-601(6)(b)(ii) and ultimately to adopt the proposed rule.

Respectfully submitted this 13th day of January, 2016.

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Exhibit List

Exhibit “1”	24-Hour Averaging Rule – Proposed Text
Exhibit “2”	Health Impacts of Particulate Air Pollution

EXHIBIT “1”

The "24-Hour Averaging Rule"

R307-XXX. $PM_{2.5}$ Nonattainment Areas: Minimum Averaging Period.

R307-XXX-1. Definitions.

The following definitions apply to R307-XXX:

(1) *$PM_{2.5}$ SIP* means any Utah state implementation plan required by subpart 1 or subpart 4, part D of title I of the Clean Air Act and relating to the 24-hour $PM_{2.5}$ National Ambient Air Quality Standard(s).

(2) *$PM_{2.5}$ SIP Control Technology* means any control technology or control measure that is applied to, adopted for or imposed on any stationary source, installation, facility or emission unit and that is or has been:

(a) identified as reasonably available control technology (RACT), reasonably available control measure (RACM), best available control technology (BACT) or best available control measure (BACM) pursuant to section 189(a)(1)(C) or section 189(b)(1)(B) of the Clean Air Act and that has been adopted or implemented in the form of an emissions limitation, emissions standard or parameter demonstrating proper operation of a pollution control measure;

(b) referenced in, applied to, adopted for or imposed on any stationary source, installation, facility or emission unit included in the Utah $PM_{2.5}$ SIP Subsections IX.H.11, 12, or 13 ($PM_{2.5}$ Emissions Limits and Operating Practices);

(c) adopted or implemented in the form of an emissions limitation, emissions standard or parameter demonstrating proper operation of a pollution control measure at a stationary source, installation, facility or emission unit located in a 24-hour $PM_{2.5}$ nonattainment area; or,

(d) adopted or implemented in the form of an emissions limitation, emissions standard or parameter demonstrating proper operation of a pollution control measure at a stationary source, installation, facility or emission unit located outside of a $PM_{2.5}$ nonattainment area where application of the control technology or control measure has been determined to be necessary to provide for attainment of the $PM_{2.5}$ NAAQS by the Director.

(3) *Averaging time* or *averaging period* means the period over which to average data to verify compliance with an emissions limitation or emissions standard or the proper operation of the pollution control measure.

R307-XXX-2. Minimum Averaging Times.

(1) For each $PM_{2.5}$ SIP control technology, the Director shall derive and impose at least one emissions limitation or emissions standard that includes a corresponding averaging period or averaging time of 24 hours or less, separately for each pollutant – $PM_{2.5}$ (filterable and condensable) and/or any $PM_{2.5}$

precursor – emitted from the stationary source, installation, facility or emission unit to which the $PM_{2.5}$ SIP control technology was applied.

(2) Only where the Director makes a documented finding, after notifying the pubic and considering any public comment, that an emissions limitation or emissions standard is infeasible because of technological or economic limitations on the application of measurement methodology to a particular emissions unit, may the Director impose an alternative parameter demonstrating proper operation of a pollution control measure. Upon such a finding, the Director shall impose at least one parameter that includes a corresponding averaging period or averaging time of 24-hours or less, separately for each pollutant – $PM_{2.5}$ (filterable and condensable) and/or any $PM_{2.5}$ precursor – emitted from the stationary source, installation, facility or emission unit to which the $PM_{2.5}$ SIP control technology was applied.

(3) Any emission limitation referred to in R307-XXX-2(1) and the corresponding averaging period or averaging time shall comply with and reflect and be derived from and imposed as RACT, RACM, BACT and/or BACM.

(4) Any emission limitation, emissions standard or parameter referred to in R307-XXX-2(1) and the corresponding averaging period or averaging time shall be included in the Utah 24-Hour $PM_{2.5}$ SIP subsection IX.H.11, 12, or 13.

EXHIBIT “2”

Health Impacts of Particulate Air Pollution

Medical research in the last ten years clearly indicates that, certainly for fine particulate matter ($PM_{2.5}$), and likely also for ozone, there is no "safe level" of exposure. Even levels previously thought to be benign we now know are not. There is no threshold below which there are no health effects and all persons are adversely affected by air pollution, regardless of age or overall state of health. 77 Fed. Reg. 38890, 38903 (June 29, 2012). Most Utahns are exposed to high levels of ozone in the summer and $PM_{2.5}$ in the winter, as well as PM_{10} and SO_2 year-round, meaning that a large percentage of Utah's population is exposed repeatedly to unhealthy levels of pollution throughout the year. There is now evidence that exposure to ozone and $PM_{2.5}$ can act synergistically, increasing the adverse health effects from these air pollutants.[1]

$PM_{2.5}$ air pollution at the levels experienced by residents of the northern counties of Utah has the approximately same type and magnitude of biologic effect as living with an active smoker. *E.g.* 71 Fed. Reg. 61144, 61157 (Oct. 17, 2006). That should not be a surprise, because most of the chemicals found in tobacco smoke are also found in fine particulate matter. As with smoking, particulate matter pollution and ozone cause increased systemic oxidative stress leading to pathologic vascular changes, including progression of atherosclerotic plaques to vulnerable forms, prothrombotic states, endothelial dysfunction and altered autonomic nervous system control.[2]

For the last several years, the research-based conventional wisdom has been that with each 10 $\mu g/m^3$ increase in $PM_{2.5}$ long-term average, there is an increase in community mortality rate of about 10%.[3] New research draws an even stronger correlation – a mortality rate of 14% for each 10 $\mu g/m^3$ increase.[4] The elderly and those with existing morbidities are particularly vulnerable to air pollution consequences.

Based on extrapolations from numerous studies and the American Heart Association (AHA) scientific statement explained below, Utah Physicians estimates that between 1,400 and 2,000 premature deaths occur every year in Utah from $PM_{2.5}$. *See* 78 Fed. Reg. 3086, 3103 (Jan. 15, 2013) ("[S]tudies have reported consistent increases in morbidity and/or premature mortality related to ambient $PM_{2.5}$ concentrations, with the strongest evidence reported for cardiovascular-related effects."); 77 Fed. Reg. 38890, 38908-09 (June 29, 2012) ("[N]ewly available information combined with information available in the last review provides substantially stronger confidence in a causal relationship between long- and short-term exposures to $PM_{2.5}$ and mortality and cardiovascular effects."). The AHA has estimated that residents of most cities in the United States lose between one and three years of life expectancy due to fine particulate air pollution.[5] Furthermore, studies show that even small reductions in air pollution improve community life expectancy.[6] 77 Fed. Reg. at 38907.

Since the late 1980s, more than 150 epidemiological studies have reported associations between daily changes in particulate air pollution and respiratory and cardiovascular mortality, hospitalizations and other related health endpoints.[7] 71 Fed. Reg. at 61150-61162; 78 Fed. Reg. at 3103; 77 Fed. Reg. at 38908-09. These adverse effects are seen at low and "common" concentrations of particulate pollution. A Dutch study demonstrated risks for cardiopulmonary mortality even at what are considered "background" levels of particulate pollution.[8] A study done in our own area demonstrated that each short-term 10 $\mu g/m^3$ increase in $PM_{2.5}$ was associated with an increase in the risk of acute ischemic coronary artery events (unstable angina and myocardial infarction) of 4.5%.[9]

Not only does $PM_{2.5}$ result in an increase in death from cardiovascular causes, but there is also an increased risk for non-fatal events. 71 Fed. Reg. at 61151-52; 77 Fed. Reg. at 38907; 77

Fed. Reg. at 38923 ("Bell et al. (2008) reported higher $PM_{2.5}$ risk estimates for hospitalization for cardiovascular and respiratory diseases in the winter compared to other seasons."). For each 10 $\mu g/m^3$ increase in $PM_{2.5}$ there is a 24% increase in risk of a cardiovascular event and a 76% increase in the risk of death from that event. There is also an increased risk of cerebrovascular events.[10,11,12] 77 Fed. Reg. at 38907. It should be noted that this rate of increase approaches that demonstrated from a chronic active smoking habit. 71 Fed. Reg. at 61157.

The significance of our $PM_{2.5}$ spikes may not be dismissed with observations that our annual average fine particulate matter concentrations are not extraordinarily high. This is false comfort and reflects a poor understanding of the existing research. Many medical studies show that impacts from pollution are seen very quickly and can last long after the air has cleared. 71 Fed. Reg. at 61164. For example, within as little as 30 minutes, exposure to particulate matter is associated with increases in blood pressure, followed within hours by increased rates of heart attacks and strokes. Community mortality rates stay elevated for 30 days after a spike in PM_{10} even if the episode lasts less than 24 hours.[13]

Within one hour, exposure to traffic pollution, including particulate matter, is associated with increased rates of heart attacks as much as 300% compared to non-exposed individuals.[14] Other studies show rates of strokes and heart attacks in the community increase within hours after spikes in PM_{10}.[15] *See also* 78 Fed. Reg. at 3103 (Evidence links "long-term exposure to PM2.5 with an array of cardiovascular effects such as heart attacks, congestive heart failure, stroke, and mortality."). In 2010, the AHA summarized:

> The overall evidence from time-series analyses conducted worldwide since publication of the first AHA statement confirms the existence of a small, yet consistent association between increased mortality and short-term elevations in PM_{10} and $PM_{2.5}$ approximately equal to a 0.4% to 1.0% increase in daily mortality (and cardiovascular death specifically) due to a 10 $\mu g/m^3$ elevation in $PM_{2.5}$ during the preceding 1 to 5 days.[3]

Confirming the strong correlation between modest, short-term spikes in PM and serious health consequences are three new studies that showed spikes of as little as one day in PM_{10} were associated with higher rates of heart attacks,[16] daily spikes of either PM_{10} or $PM_{2.5}$ were associated with significant increases in emergency room visits for hypertensives crisis,[17] and less than 24 hours of a spike in $PM_{2.5}$ of 15-40 $\mu g/m^3$ increased rates of strokes 34%, with the peak increase occurring within 12 hours.[18] Not only have numerous studies shown that there is no safe level of PM exposure, but a recent landmark study published in the flagship journal of the AHA, using data from over 1 million people, demonstrated that when cardiac mortality, the signature air pollution health outcome, was plotted against particulate matter from air pollution, first and second-hand cigarette smoke, all three sources showed a steep curve at low doses. In other words, per unit dose of exposure, it is the low levels of PM that cause higher rates of mortality.[19]

Long-term exposure to particulate matter air pollution is associated with an average rise in blood pressure for chronically exposed populations. Average blood pressure was found to rise 1.7 mmHg for an increase of 2.4 $\mu g/m^3$ in $PM_{2.5}$. A similar association was found with the coarser PM_{10}. The rise was found in both systolic and diastolic blood pressure.[20] Chronic exposure to particulate matter has also been shown to increase the thickening of arterial walls, which is a known end result of higher blood pressure. A chronic increase in PM_{10} of 5.2 $\mu g/m^3$ is associated with a 5% increase in the intima-media thickness of the carotid artery, which is one of many end results of the biologic process described above.[21]

Another study showed a remarkable correlation between chronic exposure to $PM_{2.5}$ and narrowing in the tiny arteries in the back of the eye. Chronic exposure to 3 $\mu g/m^3$ of $PM_{2.5}$ (one fourth of the annual NAAQS) was associated with narrowing equivalent to seven years of aging.[22] These finding are especially significant because they demonstrate community-wide

effects, acceleration of the aging process, and impairing the health of everyone exposed, not just a susceptible population. *See* 78 Fed. Reg. at 3104 ("The population potentially affected by $PM_{2.5}$ is large. In addition, large subgroups of the U.S. population have been identified as at-risk populations.").

There is a remarkable correlation between rates of deep vein thrombosis and increased levels of PM_{10}, beginning at very modest levels.[23] *See also* 77 Fed. Reg. at 38923 ("[R]ecent studies provide additional evidence for cardiovascular effects associated with sub-daily (e.g., one to several hours) exposure to PM, especially effects related to cardiac ischemia, vasomotor function, and more subtle changes in markers of systemic inflammation, hemostasis, thrombosis and coagulation[.]"). A likely mechanism of this clinical outcome is revealed by studies that show PM_{10} causes excessive platelet aggregation in diabetics.[24]

Throughout the age spectrum, from infants to the elderly, air pollution has been shown to impair brain function. 77 Fed. Reg. at 38909. Oxidative stress (OS) appears to be the biological genesis of numerous diseases processes and a major contributor to the aging phenomenon. OS is the mechanism behind the role of particulate matter and carbon monoxide pollution in central nervous system dysfunction, neuro inflammation, cortical stress, cognitive impairment and memory loss in children and neuro-degenerative diseases such as Alzheimer's disease.[25, 26] Numerous studies show such specific outcomes as impaired intellect and penetration of particle matter and Alzheimer type protein deposition among children who grow up breathing more particulate air pollution.[27, 28, 29] Volunteers exposed to typical urban levels of diesel exhaust demonstrate brain cortical stress measured by EEG.[30]

Children exposed to more air pollution or whose mothers were more exposed during pregnancy show an IQ loss of five to nine points.[31, 32, 33] Rates of neurobehavioral disorders

correlate with NO_X and PM_{10} levels.[34] Children exposed to more vehicle pollution show a doubling in rates of autism.[35] Older people show accelerated cognitive decline if chronically exposed to more traffic generated air pollution.[36, 37] A recent landmark study showed that chronic exposure to 10 $\mu g/m^3$ of either $PM_{2.5}$ or $PM_{2.5}$-PM_{10} was associated with faster cognitive decline in older women, equivalent to about two years of aging.[38]

Because of strong evidence that particulate air pollution's neurotoxicity is related to attached metals,[39, 40, 41] the oil refineries contribution to Wasatch Front pollution takes on additional public health significance.

It is intuitive that short-term exposure to fine particulate matter would have adverse impacts on the pulmonary system. 71 Fed. Reg. at 61145 & 61152; 78 Fed. Reg. at 3103-04. Indeed, numerous studies show increased rates of asthma and virtually all other respiratory diseases including lung cancer where short-term $PM_{2.5}$ is higher. 71 Fed. Reg. at 61154-61155 & 61157; 77 Fed. Reg. at 38907. Equally disturbing are less obvious outcomes. Even young, healthy people demonstrate rapid decrease in lung function from brief exposure to particulate matter that persists for several days after the exposure has ended. *Id*. at 61152, 61154 & 61169.[42, 43] Again, this contradicts any comfort derived from the perspective that Utah's fine particulate matter air pollution problem is episodic and therefore less of a problem.

An unusually large proportion of Utah's population is young. Census-based estimates indicate that nearly a third of Utah residents are under age 18 and one of every 10 residents is under age five, figures approximately 40 percent higher than the national average. This means that Utah's unhealthy levels of air pollution constitute a public health crisis that endangers its most vulnerable populations. 74 Fed. Reg. at 58690; 77 Fed. Reg. at 38911 ("With regard to respiratory effects in children associated with short-term exposures to $PM_{2.5}$, currently available

studies provide stronger evidence of respiratory-related hospitalizations with larger effect estimates observed among children.").

The physiology of children differs from that of adults in many important ways, causing them to be affected more profoundly by air pollution than adults. Children have higher metabolic rates, meaning their oxygen demand is higher, they breathe faster and have higher heart rates and blood flows on a per weight basis than an adult. Combined with their rapidly growing organ size and function, this physiologic difference makes them more susceptible to the adverse influence of air pollution. "There is emerging but limited evidence for an association between long-term $PM_{2.5}$ exposure and respiratory mortality in post-neonatal infants where long-term exposure was considered as approximately one month to one year." 77 Fed. Reg. at 38908. Children who breathe more air pollution can experience a permanent stunting of their lung growth. Just as chronic exposure to second-hand cigarette smoke causes a permanent loss of lung function growth in children, so does long-term exposure to $PM_{2.5}$ air pollution.[44,45] 71 Fed. Reg. at 61154, 61172; *see also id*. at 61169; 77 Fed. Reg. 38890, 38911 (June 29, 2012) ("These analyses provide evidence that $PM_{2.5}$-related effects [to children] persist into early adulthood and are more robust and larger in magnitude than previously reported."). Not only does short-term exposure to $PM_{2.5}$ air pollution permanently impair the exercise capacity of individuals so affected,[46] few physiologic outcomes have more of an ultimate impact on longevity than lung function.

Various forms of cancer such as lung, cervical, stomach and brain cancer show increased rates with higher concentrations of community particulate matter.[47, 48] 71 Fed. Reg. at 61152; 77 Fed. Reg. at 38908. Each 10 $\mu g/m^3$ increase in long term $PM_{2.5}$ concentration is associated with a 15-27% increase in lung cancer mortality.[49] *See also* 77 Fed. Reg. at 38908. Especially

troubling are the numerous studies that show increases in childhood leukemia among more exposed populations,[50, 51] and a significant association between nitrogen oxide concentrations and rates of breast cancer.[52]

The precipitation of oxidative stress, as mentioned above, is the likely explanation for new studies that show higher rates of numerous other, seemingly unrelated diseases among populations subjected to more air pollution. These diseased include type II diabetes, obesity, arthritis, and lupus. [53, 54, 55, 56, 57]

Air pollution, especially particulate matter, may have its largest impact on public health through its effect on the human embryo. A study in laboratory animals demonstrated a change in morphology of the placenta that compromised blood flow to the fetus.[58, 46] Exposure of pregnant women to various components of traffic-related air pollution, including PM_{10}, results in intrauterine growth retardation, including smaller head size, increased rates of spontaneous abortions, premature births and low birth weight syndrome. 77 Fed. Reg. at 38908.

Genetic damage and epigenetic changes can have virtually identical consequences and both can be passed on to subsequent generations. Newborn babies whose mothers are exposed to more air pollution show increases in both, and the life-long disease burden that results can include higher rates of metabolic disorders, reactive airway disease, cardiovascular disease, cancer, Alzheimer's and all the diseases consequent to immuno-suppression. 78 Fed. Reg. 3104 ("The strongest evidence for an association between $PM_{2.5}$ and developmental and reproductive effects comes from epidemiological studies of low birth weight and infant mortality, especially due to respiratory causes during the post-neonatal period (i.e., 1 month–12 months of age)."). Epigenetic changes can be seen within three days after exposure to $PM_{2.5}$ and perhaps even as soon as minutes after exposure.[59-66] There is strong evidence for a persistence of epigenetic

changes from one generation to another. Medical science is now learning that the air pollution today can adversely affect the health of future generations. For example, episodic air pollution, the type that occurs along the Wasatch Front, has been shown to be associated with fragmentation of DNA in human sperm.[67]

The common assumption about particulate air pollution has been that internalizing the particles and their adsorbed compounds like heavy metals occurs through the lungs. Smaller particles are assumed more dangerous because they can penetrate more deeply into the lungs and are cleared by the lung cilia less readily. However, there is new evidence to suggest that atmospheric particulate matter is also swallowed, leading to toxicity of internal organs and increased carcinogenic risk. This is of particular relevance for increasing childhood risk.[68]

That all the above mentioned adverse health outcomes can be the result of pregnant women smoking is easy for physicians and the lay public alike to comprehend and the sight of a pregnant woman smoking is now repulsive to society at large. *See* 71 Fed. Reg. at 61157. It is a new thought process, but equally scientifically based, to think that the same thing happens when a pregnant woman has to breathe particulate air pollution. Again, regarding impact on the human embryo, there appears to be no safe threshold of exposure.

As a manifestation of the evidence for severe health effects from air pollution, virtually every major medical organization in the United States has called for stricter NAAQS for annual $PM_{2.5}$ and for ozone, including the American Medical Association, the American Thoracic Society, the American Lung Association, the American Academy of Pediatrics, the American College of Cardiology, the American Heart Association, the American Cancer Society, the American Public Health Assoc., and the National Assoc. of Local Boards of Health, and the

EPA's Clean Air Scientific Advisory Committee (considered the nation's premier air pollution experts). 77 Fed. Reg. at 38897.

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BEFORE THE UTAH AIR QUALITY BOARD

PETITION FOR A RULE CHANGE
MONITORING RULE

Submitted by HEAL Utah,
Utah Physicians for a Healthy Environment
WESTERN RESOURCE ADVOCATES
January 13, 2016

Pursuant to Utah Code Ann. § 63G-3-601(2) and Utah Admin. Code R15-2-1 *et seq*., HEAL Utah, Utah Physicians for a Healthy Environment, and Western Resource Advocates respectfully submit to the Utah Air Quality Board this Petition for a Rule Change. Attached to this Petition is the text of a proposed rule that would amend or supplement Utah regulations Utah Admin. Code R307-165-1 *et seq*.; $PM_{2.5}$ State Implementation Plan for the Salt Lake City, Utah Nonattainment Area, Section IX.A.21; $PM_{2.5}$ State Implementation Plan for the Provo, Utah Nonattainment Area, Section IX.A.22; $PM_{2.5}$ State Implementation Plan for the Logan, Utah-Idaho Nonattainment Area, Section IX.A.23; $PM_{2.5}$ Emission Limits and Operating Practices, Sections IX.11, 12 and 13; Utah Admin. Code R307-403 *et seq*. and/or the applicable part of Utah Admin. Code Rule 307. Exhibit "1" attached. HEAL Utah, Utah Physicians for a Healthy Environment and Western Resource Advocates ask the Air Quality Board, as authorized by Utah

Code Ann. § 63G-3-601(6)(b)(ii), to initiate rulemaking proceedings relative to the proposed rule as specified by Utah Code Ann. § 63G-3-301 and ultimately to adopt the proposed rule.

I. Purpose of the Rule

The "Monitoring Rule" increases the frequency of the monitoring of emissions from individual sources identified in the $PM_{2.5}$ State Implementation Plans (SIPs) for the Salt Lake City, Provo and Logan nonattainment areas (the "Three NAAs") by requiring, where feasible, the use of a continuous emissions monitoring system (CEMS) to monitor SO_2, NO_X and filterable particulate matter (PM). The rule also requires that, where stack testing is employed and has been demonstrated adequate to show continuous compliance with SIP emission limitations, this testing will occur at least once a year.

The purpose of the proposed rule is two-fold. First, the Monitoring Rule will meet the Clean Air Act requirement that all nonattainment state implementation plan control measures be enforceable. SIPs must provide for the expeditious implementation of all reasonably available or best available control measures for larger emitting facilities. 42 U.S.C. § 7502(c)(1); 42 U.S.C. § 7513a(a)(1)(C); 42 U.S.C. § 7513a(b)(1)(B).[1] These controls must be "enforceable," 42 U.S.C. § 7502(c)(6) ("[P]lan provisions shall include enforceable emission limitations."), and "measurable," and "include periodic source testing, monitoring or other viable means to establish whether the source meets the applicable emission limit." 80 Fed. Reg. 15340, 15378 (March 23 2015). The Monitoring Rule meets this mandate.

Second, the Monitoring Rule serves to increase the accuracy of emission inventories, to identify appropriate control measures and to reduce emissions. 80 Fed. Reg. at 15453.

[1] SIPs must also provide for additional reasonable measures and additional feasible measures. 80 Fed. Reg. 15340, 15468 & 15469 (March 23, 2015). These measures must also be enforceable. *Id.*

"[A]ppropriate stationary source emissions monitoring requirements, like the control measures with which they are associated, are a fundamental element of an approvable implementation plan." *Id.* For example, EPA has found that improved monitoring can provide information that allows a source to take "corrective action that could potentially reduce emissions up to 15 percent[.]" *Id*. Similarly, more frequent monitoring "could yield potential stationary source emissions reductions of up to 13 percent." *Id.* Thus, the Monitoring Rule is a critical component of an adequate SIP intended to ensure that the Three NAAs will meet the 24-hour $PM_{2.5}$ national ambient air quality standards (NAAQS) as expeditiously as practicable, *see e.g.* 42 U.S.C. § 7513(c)(1) & (c)(2), and will continue to maintain the PM_{10} NAAQS. *See* 42 U.S.C. § 7505a.

II. Jurisdiction

The Air Quality Board has jurisdiction to consider, analyze and adopt this proposed rule pursuant to Utah Code Ann. § 19-2-104(1)(a) (Board may make rules "regarding the control, abatement, and prevention of air pollution from all sources and the establishment of the maximum quantity of air pollutants that may be emitted by an air pollutant source"); Utah Code Ann. § 19-2-104(1)(c)(i) (Board may make rules "requiring persons engaged in operations that result in air pollution to…install, maintain, and use emission monitoring devices, as the board finds necessary"); and, Utah Code Ann. § 19-2-109(2)(a) ("The [B]oard may establish emission control requirements by rule that in its judgment may be necessary to prevent, abate, or control air pollution that may be statewide or may vary from area to area, taking into account varying local conditions."); *See also* Utah State Implementation Plan, Section I (Legal Authority); 42 U.S.C. § 7513-7513b; 42 U.S.C. § 7501-7509a.

III. Petitioning Organizations

Members of **Utah Physicians for a Healthy Environment**, the largest community service organization of its kind in Utah, include health professionals, toxicologists, biologists, chemists and engineers. The organization is dedicated to protecting the health and well-being of the citizens of Utah by promoting science-based health education and interventions that result in progressive, measurable improvements to air quality and the environment.

Western Resource Advocates (WRA) is a regional non-profit conservation organization with programs and staff spanning the Intermountain West, including Utah. Our mission is to protect the land, air and water of our region, using law, science, economics, advocacy, education, and action. To this end, we work to improve air quality, curb climate change and achieve environmentally sustainable management of energy, land, and water resources. WRA represented intervenor Utah Physicians for a Healthy Environment before the D.C. Circuit Court of Appeals, successfully defending an EPA decision to include the most populous portions of Tooele and Box Elder County in the Salt Lake City Nonattainment Area. *ATK Launch Systems v. EPA*, 669 F.3d 330 (D.C. Cir. 2012).

HEAL Utah is an environmental non-profit that promotes renewable energy and protects Utah's public health and environment from air pollution and nuclear, toxic, and dirty energy threats. Beginning in 2012, HEAL began working to urge state officials to do more to clean the air, creating online actions sending strong messages to policymakers, organizing historic rallies on the steps of the Capitol, and packing hearings where key air quality decisions are made.

In carrying out their missions, these organizations have met with former Governor John Huntsman Jr., Governor Gary Herbert, members of the Utah Public Service Commission, staff of the Utah Division of Air Quality and the Environmental Protection Agency, several local

mayors, Utah business leaders, media and concerned citizens to advocate for clean air and to advance efforts to reduce air pollution. We have repeatedly submitted comments to state and federal regulators and decision makers relative to specific projects and rulemaking processes that impact and influence the condition of Utah's air quality, environment and the health of the people living here.

The organizations have a strong legal interest in the promotion and ultimate adoption of the proposed rule. The Clean Air Act, which largely governs the content of Utah's State Implementation Plan (SIP), and Utah Air Conservation Act, have as goals the protection of public health and the environment. *E.g.* 42 U.S.C. § 7401(b)(1); Utah Code Ann. § 19-2-101(2). These statutes also guarantee the public a significant role in the government actions impacting air quality, including the drafting and review of SIPs. *E.g.* 42 U.S.C. § 7410(a)(1), (a)(2) & (a)(3)(B); 42 U.S.C. § 7410(l); *see also,* 42 U.S.C. § 7427; Utah Code Ann. § 63G-3-601(2); Utah Admin. Code R15-2-1 *et seq*. The organizations' staff and members, their families and their patients, who live, work, and recreate in the nonattainment areas, are harmed by air pollution, particularly concentrations of $PM_{2.5}$ that exceed the NAAQS, and are entitled, by the Clean Air Act and Utah Air Conservation Act, to air quality that meets the NAAQS. 42 U.S.C. § 7513-7513b; 42 U.S.C. § 7501-7509a; Utah Code Ann. § 19-2-107(2)(xii).

Where air quality exceeds the health-based standards, such as in the Salt Lake City, Provo and Logan nonattainment areas, the law requires that measures be taken immediately to bring air quality into compliance with NAAQS as expeditiously as practicable. *E.g.* 42 U.S.C. § 7502(a)(2)(A) & (a)(2)(B); 42 U.S.C. § 7513(c)(1) & (c)(2). Poor air quality and a failure to attain the NAAQS harm the organizations' staff and members, their families and patients because air pollution adversely affects their health, quality of life, recreational pursuits and

aesthetic sense. Therefore, the organizations have a protectable legal interest in ensuring that rules promulgated under the Utah Air Conservation Act comply with the Clean Air Act, 42 U.S.C. § 7410; 42 U.S.C. § 7502; 42 U.S.C. § 7513a, and include the measures necessary to attain, *inter alia*, the 24-hour NAAQS as expeditiously as practicable. 42 U.S.C. § 7502(a)(2)(A), (a)(2)(B) &(c)(1); 42 U.S.C. § 7513(c)(1) & (c)(2).

IV. Adverse Health Impacts of Particulate Matter Pollution

Anyone living along the Wasatch Front has experienced our air pollution crisis, particularly wintertime "inversions" that settle on Salt Lake Valley for extended periods, causing concentrations of fine particulate matter ($PM_{2.5}$) to skyrocket and giving Utah the dubious distinction of having the nation's worst air quality. We have felt our eyes and lungs burn, fretted over whether to let our children outside to play, agonized about parents and grandparents with heart problems – even taken them to the emergency room as their symptoms worsened – and watched those with asthma struggle to breathe.

The health consequences of our dirty air are significant. The findings of 3,000 published research papers underscore key concepts now accepted by the medical community worldwide. First, there is no safe level of exposure to particulate pollution and no threshold below which negative health effects disappear. *Health Impacts of Particulate Air Pollution* at 1-4, attached as Exhibit "2." People literally die from exposure. For every 10 $\mu g/m^3$ increase in $PM_{2.5}$ concentrations, community mortality rates rise 14%. *Id*. at 1. Therefore, Utah Physicians estimates that 1,400 to 2,000 premature deaths occur every year in Utah from $PM_{2.5}$. *Id*. at 2. Air pollution has the same extensive, broad-based health consequences as cigarette smoke because the signature physiologic response is the same – low-grade arterial inflammation, narrowing of blood vessels and increased propensity for clot formation, resulting in immediate

increases in blood pressure, followed within hours by higher rates of heart attacks and strokes. *Id*. at 2-4.

The inflammation caused by $PM_{2.5}$ affects other organs. Particulate pollution penetrates every cell in the body, but is particularly well-documented in the brain. There, air pollution is linked to poor neurologic outcomes across the age spectrum, including loss of intelligence in children, higher rates of autism, and attention deficit disorders, as well as multiple sclerosis, Alzheimer's, and accelerated cognitive decline in the elderly. *Id*. at 5-6. Virtually every lung disease is caused or exacerbated, and growth of lung function during childhood can be irreversibly stunted by air pollution exposure. *Id*. at 6-7. Cancers, including childhood leukemia, lung, breast, prostate, cervical, brain and stomach cancer, occur at higher rates among people exposed to more air pollution, while cancer survival rates are reduced. *Id*.

The blood vessel inflammation caused by air pollution also affects the placenta, arguably representing the most significant public health impact of air pollution. Women who breathe more air pollution have higher rates of adverse pregnancy outcomes, their newborn babies showing increased birth defects, genetic damage, and a life-long disease burden that includes higher rates of metabolic disorders, reactive airway disease, cardiovascular disease, cancer, Alzheimer's and all diseases consequent to immuno-suppression. *Id*. at 8-9. The alteration of genetic material triggered by pollution can be seen within minutes, underscoring that short-term spikes in air pollution harm developing fetuses. *Id.*

V. Air Quality in the Nonattainment Areas

In 2015, the American Lung Association (ALA) designated the metropolitan area of Salt Lake City, Provo and Orem as having the 7th worst short-term $PM_{2.5}$ air pollution in the nation – the most polluted location outside of California.[2] Logan was ranked as the 8th worst area in the nation. *Id.* The ALA estimated that, in the Salt Lake City metropolitan area, there are 734,560 children under the age of 18; 214,000 adults over the age of 65; 45,600 children with asthma; 148,700 adults with asthma; 64,000 adults with chronic obstructive pulmonary disease; 99,000 adults with cardiovascular disease; 113,350 adults with diabetes; and, 284,260 individuals living in poverty, all of whom are particularly at risk for heart attacks, strokes, emergency room visits for asthma, cardiovascular disease, and an early death brought on by $PM_{2.5}$. *Id.* Based on this analysis, the ALA gave Cache, Davis, Salt Lake City, Utah and Weber counties "F" grades for their high particulate air pollution days in 2011-2013. *Id.* at 156. Over the same time frame, Salt Lake County was given an "F" for its high ozone pollution days, while Utah and Weber counties received "D" grades. *Id.*

Monitors quantify this public health emergency. Since 2009, Salt Lake, Davis, Weber, Utah, Cache counties and the most populous areas of Tooele and Box Elder counties have been formally designated as failing to attain the nation's 24-hour $PM_{2.5}$ NAAQS. 74 Fed. Reg. 58688, 58768-70 (November 13, 2009). These counties are included in the Salt Lake City, Provo and Logan nonattainment areas. *Id.* Salt Lake County, Utah County and Ogden City are also designated as nonattainment areas for the 24-hour PM_{10} NAAQS, and Salt Lake and Toole counties as nonattainment areas for the SO_2 NAAQS.[3]

[2] http://www.stateoftheair.org/2015/assets/ALA_State_of_the_Air_2015.pdf at 11

[3] http://www3.epa.gov/airquality/greenbk/ancl.html. The 24-hour $PM_{2.5}$ standard is met at an ambient air quality monitoring site when the 3-year average of the annual 98th percentile 24-

Our air pollution is serious. In 2013, air quality along the Wasatch Front exceeded the 24-hour $PM_{2.5}$ standard on at least **43 days** – often by alarming levels. In January of that year, the monitor at the playground of Hawthorne Elementary School recorded 17 violations of the NAAQS, with a high reading of 62 $\mu g/m^3$, almost double the 24-hour standard of 35 $\mu g/m^3$.[4] In Lindon, January also brought 17 exceedances with a high reading of 123 $\mu g/m^3$ – 350% of the standard – while in Logan the standard was violated on 18 days, topping out at 97 $\mu g/m^3$. *Id.* Over the entire year, monitored values in Logan exceeded the standard on 39 days and values in Salt Lake City on 37 days.[5] This means that for more than a month, our community – including its most vulnerable populations, the young and the old – were subjected to levels of air pollution considerably higher than concentrations deemed unsafe and unhealthy at exposures lasting only 24 hours. 71 Fed. Reg. 61144, 61150-77 (Oct. 17, 2006).

In January of 2014, the Hawthorne monitor recorded that the 24-hour $PM_{2.5}$ standard was exceeded on 13 days and the Logan monitor determined violations on 11 days. The highest reading that month – 68 $\mu g/m^3$ – was in Ogden.[6] The winter of 2014 to 2015 was an outlier – the warmest Utah winter on record.[7] The average temperature over the months December 2014 to February 2015 was 6.8º F higher than the 20th Century average temperature. *Id.* The average

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hour average $PM_{2.5}$ concentration is less than or equal to 35 $\mu g/m^3$. As EPA explains, the standard is "defined as an integer (zero decimal places) as determined by rounding. For example, a 3-year average 98th percentile concentration of 35.49 $\mu g/m^3$ would round to 35 $\mu g/m^3$ and thus meet the 24-hour standard and a 3-year average of 35.50 $\mu g/m^3$would round to 36 and, hence, violate the 24-hour standard."
http://www3.epa.gov/ttn/naaqs/standards/pm/s_pm_history.html.

[4] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN13.pdf

[5] http://www.airmonitoring.utah.gov/dataarchive/archpm25.htm

[6] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN14.pdf

[7] http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php?periods%5B%5D=3&parameter=tavg&state=42&div=0&month=2&year=2015#ranks-form

minimum temperature for that period was also the warmest ever and the average maximum temperature the second warmest on record and the warmest since 1981. *Id.* As a result, air quality in the nonattainment areas generally met the standard. In January 2015, the Hawthorne monitor logged 4 readings over the standard, the highest at 53 $\mu g/m^3$, while the Rose Park monitor documented 5 exceedances, the highest at 56 $\mu g/m^3$.[8]

Periods of high ozone concentrations are increasingly plaguing the Wasatch Front. In 1978, Davis and Salt Lake counties were designated as not meeting the then applicable 1-hour ozone NAAQS.[9] EPA revised the ozone NAAQS, first in 1997, by replacing the 1-hour standard with an 8-hour standard and then by lowering the standard in 2008.[10] Initially, Utah was deemed in compliance with the 1997 and 2008 8-hour ozone NAAQS.[11] However, now significant portions of the Wasatch Front are failing to comply with the 2008 8-hour ozone standard. For example, in 2012, there were 13 days in the Salt Lake City-Ogden-Clearfield airshed that exceeded the **2008** 8-hour ozone standard (.075 ppm) and 5 days in the Provo-Orem airshed.[12] The greater Salt Lake City area recorded 11 days that exceeded the 2008 standard in 2013 and Provo-Orem 5 days. In 2014, air quality in both the Salt Lake City and Provo areas exceeded the 2008 ozone standard on 4 days. Preliminary 2015 data show 11 days where readings in the Salt Lake City-Ogden-Clearfield airshed surpassed the 8-hour ozone standard.[13]

On October 1, 2015, EPA strengthened the 8-hour NAAQS for ground-level ozone to 70 parts per billion (ppb), based on extensive scientific evidence about ozone's adverse effects on

[8] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf
[9] http://www3.epa.gov/airquality/greenbook/phistory_ut.html
[10] http://www3.epa.gov/ttn/naaqs/standards/ozone/s_o3_history.html
[11] http://www3.epa.gov/ozonedesignations/
[12] http://www.airmonitoring.utah.gov/dataarchive/archo3.htm (Violation Days (CSV))
[13] http://www3.epa.gov/airdata/ad_rep_mon.html

public health and welfare.[14] EPA determined, based on existing monitored data for ozone concentrations in Utah, that Salt Lake, Utah, Weber, Tooele, Duchesne and Uintah counties are not attaining the 2015 ozone standard.[15] Utah will be required to develop, secure EPA approval of and implement an ozone SIP for any nonattainment area that is not in compliance with the 2015 ozone standard. *See* 42 U.S.C. §§ 7501-7509 & 7511-7511f.

Examination of predicted and monitored "design values," representing the 3-year average of the annual 98th percentile 24-hour $PM_{2.5}$ concentrations and the manner in which compliance with the 24-hour $PM_{2.5}$ NAAQS is determined, confirm that the Three NAAs will be plagued by dangerous air quality for years to come. For example, the Director's air quality models concluded that the Salt Lake City and Provo nonattainment areas would not meet the 24-hour $PM_{2.5}$ NAAQS until December 14, 2019, and then only by the slimmest margin. Utah SIP, Section IX. Part A.21 at 40 (December 3, 2013) ("[T]his plan identifies an attainment date of December 14, 2019, and requests that the Administrator extend the attainment date the full 5 years permissible under Section 172(a)(2) of the Act."); Utah SIP, Section IX. Part A.22 at 40 (Provo Nonattainment Area); Utah SIP, Section IX. Part A.21 (December 3, 2014) at 58, fn. 1 ("The SIP revision adopted by the Utah Air Quality Board on December 4, 2013 had demonstrated attainment by December 14, 2019. This SIP revision includes a demonstration under CAA Section 189(a)(1)(B) that it is impracticable to attain the NAAQS in 2015.")

Moreover, in the 2014 $PM_{2.5}$ SIP, the Director estimated that, after accounting for emission reductions from the SIP measures, the 2013-2015 "design value" – the 3-year average of the annual 98th percentile 24-hour $PM_{2.5}$ concentrations – at the Hawthorne, Salt Lake City

[14] http://www3.epa.gov/ozonepollution/actions.html
[15] http://www3.epa.gov/ozonepollution/maps.html

monitoring station would be 37 µg/m^3. Utah SIP, Section IX. Part A.21 at 43 (December 3, 2014) (2015 design value based on the "combination of SIP reductions on point sources and new rules to be implemented that will affect smaller commercial and industrial businesses"). Likewise, the Director anticipated a 2015 design value for the Lindon, Utah County monitoring station of 36 µg/m^3. Utah SIP, Section IX. Part A.22 at 43 (December 3, 2014) Given that Utah is having extreme difficulty securing the emission reductions necessary to attain the NAAQS and is failing to show attainment before December 2019, the difference between these 2015 design values and attainment constitutes a considerable barrier to compliance. Thus, when the effects of the 2014 SIP measures and emission reductions were **modeled**, the 2015 design values for the Salt Lake City and Provo nonattainment areas were predicted to exceed the NAAQS by a considerable margin.

Moreover, 2015 design values based on **monitored** 24-hour $PM_{2.5}$ concentrations confirm that the nonattainment areas are not close to attaining the NAAQS. The 3-year averages of the annual 98th percentile monitored $PM_{2.5}$ concentrations for the Salt Lake City and Provo nonattainment areas, calculated by averaging the 98th percentile monitored 24-hour $PM_{2.5}$ concentrations for 2013 and 2014 with the 98th percentile monitored January 2015 concentrations, are 43.8 µg/m^3 and 42.8 µg/m^3, respectively.[16, 17] These design values are

[16] If the January 2015 98th percentile concentration monitored at Hawthorne (29.3 µg/m^3) is averaged with the 98th percentile monitored values from 2013 and 2014, 58.8 µg/m^3 and 43.3 µg/m^3 respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **43.8 µg/m^3**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[17] If the January 2015 98th percentile concentration monitored at Lindon to date (26.9 µg/m^3) is averaged with the 98th percentile monitored values from 2013 and 2014, 72.4 µg/m^3 and 29.1 µg/m^3 respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **42.8 µg/m^3**, which eclipses the NAAQS.

substantially higher than the NAAQS and significantly higher than the **modeled** values of 37 $\mu g/m^3$ and 36 $\mu g/m^3$.

More importantly, the **monitored** design values (3-year average of the annual 98th percentile) for the Hawthorne monitor – 38.2 $\mu g/m^3$ (2010-2012), 41.1 $\mu g/m^3$ (2011-2013), 43.7 $\mu g/m^3$ (2012-2014),[18] and 43.8 $\mu g/m^3$ (2013-January 2015) – show a steady trend **away** from attainment and certainly do **not** show linear progress toward attainment of the 24-hour $PM_{2.5}$ standard. Similarly, the **monitored** design values for the Lindon monitor – 32.4 $\mu g/m^3$ (2010-2012), 44.3 $\mu g/m^3$ (2011-2013), 41.8 $\mu g/m^3$ (2012-2014),[19] and 42.8 $\mu g/m^3$ (2013-January 2015) and the Logan monitor – 37.3 $\mu g/m^3$ (2010-2012), 45.8 $\mu g/m^3$ (2011-2013), 45 $\mu g/m^3$ (2012-2014),[20] and 43.2 $\mu g/m^3$ (2013-January 2015)[21] – fail to establish consistent progress toward attainment of the NAAQS.[22]

VI. Air Quality is of Overwhelming Concern to Utahns.

Addressing Utah's poor air quality is increasingly a top concern of Utah's urban dwellers. A *Salt Lake Tribune* poll released on January 20, 2014 found that 57% of Utahns reported being

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http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[18] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[19] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[20] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[21] If the January 2015 98th percentile concentration monitored at the Logan monitor (21.8 $\mu g/m^3$) is averaged with the 98th percentile monitored values from 2013 and 2014, 68 $\mu g/m^3$ and 39.9 $\mu g/m^3$ respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **43.2 $\mu g/m^3$**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[22] December 2015 monitored values for the Three NAAs have been high enough that the annual 98th percentile of the 24-hour $PM_{2.5}$ concentration will ultimately be greater than the numbers used to make these calculations. Thus, the design values for 2013-2015 will increase.

more concerned about air quality than they were five years ago. Those polled also favored, by a 3 to 1 margin, tougher emission standards for industry.

On January 25, 2014, more than 5,000 Utahns stood on the steps of the Capitol to advocate for state government intervention in the fight against air pollution. Protesters wore surgical and gas masks to demonstrate their understanding that Wasatch Front air quality threatens their health. A child bore a sign stating simply that "I want to play outside." Another common slogan read "Clean Air Now, No Excuses." Dr. Moench, founder of Utah Physicians for a Healthy Environment, told the crowd, "The most fundamental right there is is the right to breathe clean air. Air pollution tarnishes our community reputation, erodes our quality of life and stifles our economy much as it does our lungs."[23]

A survey released by Envision Utah on January 15, 2015 revealed that Utahns rank poor air quality as detracting from their quality of life more than any other aspect of living in the state – more than Utah's lack of diversity, education constraints and scarcity of water combined.[24] Survey authors noted that "poor air quality threatens core values identified in the survey, attacking the health of families and impairing the ability to get out and enjoy that scenic beauty."[25] The study concluded while Utahns rank air quality as one of the most important issues in the state, they also believe that Utah is performing worse on air quality than on any other issue. *Id.* "The concern about air quality relates primarily to the impacts to health, the

[23] http://www.sltrib.com/sltrib/news/57447995-78/capitol-clean-industry-lake.html.csp
[24] http://www.deseretnews.com/article/865620440/Utah-residents-rank-air-pollution-as-No-1-threat-to-quality-of-life.html?pg=all.
[25] http://www.deseretnews.com/article/865620440/Utah-residents-rank-air-pollution-as-No-1-threat-to-quality-of-life.html?pg=all

inability to enjoy the outdoors during poor air quality episodes, and the legacy we leave for future generations," Envision Utah stated. "Utahns want the air to improve."[26]

In April and May, 2015, 52,845 Utahns participated in a more detailed Envision Utah survey. These participants also "ranked air quality as one of the state's most important issues, and a resounding three out of four Utahns voted to reduce emissions by 40% from [today's levels], even as Utah's population nearly doubles."[27] This 75% of survey participants indicated that they wanted air quality that was well within national health-based standards. *Id.*

VII. Regulatory Background

On October 17, 2006, EPA revised the 24-hour NAAQS for $PM_{2.5}$ to provide increased protection of public health by lowering its level to 35 $\mu g/m^3$. 71 FR 61224 (October 17, 2006). Effective on December 14, 2009, EPA designated the Three NAAs as nonattainment for the 2006 $PM_{2.5}$ standard. 74 Fed. Reg. 58688, (Nov. 13, 2009).[28] On June 2, 2014, EPA classified all the areas that were designated in 2009 – including the Three NAAs – as "Moderate" nonattainment areas and required those areas to submit Moderate SIPs to EPA by December 31, 2014. 42 U.S.C. § 7513(a); 79 Fed. Reg. 31566 (June 2, 2014).[29] Among other requirements, the Moderate SIPs for the Three NAAs must provide for the implementation of all reasonably available control measures [RACM] for the control of $PM_{2.5}$ as expeditiously as practicable, but no later than December 14, 2013. 42 U.S.C. § 7502(c)(1); 42 U.S.C. § 7513a(a)(1)(C). The plans must also either demonstrate that the plan will provide for attainment by the Moderate attainment date –

[26] http://www.sltrib.com/news/2063029-155/utahns-rank-poor-air-quality-the
[27] http://yourutahyourfuture.org/topics/air-quality/item/48-your-utah-your-future-survey-results
[28] EPA originally designated these areas under Clean Air Act title I, part D, subpart 1. Subsequently, on January 4, 2013, the D.C. Circuit held that EPA should have implemented the 2006 $PM_{2.5}$ 24-hour standard based on both CAA title I, part D, subpart 1 and subpart 4.
[29] The rule did not affect the Moderate area attainment date of December 31, 2015.

December 31, 2015 – or demonstrate that attainment by that date is impracticable. 42 U.S.C. § 7513a(a)(1)(B). As explained above, Utah submitted SIPs for the Three NAAs that demonstrated attainment of the 24-Hour $PM_{2.5}$ NAAQS by December 31, 2015 was impracticable.

That demonstration has proven to be accurate. Despite fairly good air quality in 2015 to date, none of the nonattainment areas will attain the 24-hour $PM_{2.5}$ standard by December 31, 2015 – the Moderate attainment date.[30] Because the 24-hour $PM_{2.5}$ standard is based on the 3-year average of the annual 98th percentile, and annual values for 2013 and 2014 were so high, the relevant 3-year average (2013-2015) for each nonattainment area will be considerably greater than 35 $\mu g/m^3$.[31] Based on January 2015 monitored data, the 2013-2015 design values are 43.8 $\mu g/m^3$ for the Hawthorne monitor, 42.8 $\mu g/m^3$ for the Lindon monitor, and 43.2 $\mu g/m^3$ for the Logan monitor. These values exceed the 24-hour standard by a substantial amount.

On November 9, 2015, acknowledging that the Three NAAs could not attain the 24-hour $PM_{2.5}$ standard by December 31, 2015, EPA proposed to "bump up" the designation of the Salt Lake City, Provo and Logan nonattainment areas to "Serious" areas prior to the Moderate attainment date pursuant to its purported 42 U.S.C. § 7513(b)(1), Clean Air Act § 188(b)(1), authority. 80 Fed. Reg. 69173, 69178 (Nov. 9, 2015); 80 Fed. Reg. 69172 (Nov. 9, 2015). Alternatively, after the Moderate attainment date, EPA is required to designate the Three NAAs

[30] 42 U.S.C. § 7513(c)(1) (the moderate "attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as nonattainment"); 74 Fed. Reg. 58688, 58768-70 (November 13, 2009) (designating Salt Lake City, Provo and Logan nonattainment areas as of December 14, 2009).
[31] Footnotes 16, 17 and 22, *supra*. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

as "Serious" areas by operation of the law pursuant to 42 U.S.C. § 7513(b)(2), Clean Air Act § 188(b)(2).

Regardless of the route the Three NAAs take to designation as Serious areas, the Director must, no later than "18 months after reclassification of the area as a Serious Area," 42 U.S.C. § 7513a(b)(2),[32] submit "provisions to assure that the best available control measures for the control of [$PM_{2.5}$] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area." 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. § 7513a(b)(2) (referencing paragraph (1)(B)). In other words, by June 2017 or shortly thereafter, the Director must, at minimum, present a "Serious" SIP identifying all best available control measures (BACM) and establishing that these measures will be implemented in the nonattainment areas no later than 2019.

The designation of the Three NAAs as "Serious" underscores the need for the immediate implementation of the effective and potent measures necessary to bring these areas into attainment as soon as possible. Because of the significant threat to public health and the environment posed by air pollution that exceeds the national standards, the Clean Air Act demands that air quality in nonattainment areas be brought into compliance with the NAAQS as soon as possible. Specifically, where air quality exceeds the health-based standards, such as in the Three NAAs, the Clean Air Act requires that measures be taken immediately to attain NAAQS as "expeditiously as practicable." *E.g.* 42 U.S.C. § 7502(a)(2)(A) & (a)(2)(B); 42 U.S.C. § 7513(c)(1) ("For a Moderate Area, the attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as

[32] Reclassification dates to the failure of the area to attain the NAAQS – December 31, 2015. *See* 42 U.S.C. § 7513(b)(2)(A) ("[T]he area shall be reclassified by operation of law as a Serious Area.").

nonattainment") & (c)(2) ("For a Serious Area, the attainment date shall be as expeditiously as practicable but no later than the end of the tenth calendar year beginning after the area's designation as nonattainment."). Thus, the law guarantees Utah's citizens air that meets the national standards as promptly as feasible.

VIII. The Proposed Rule Is Legally Mandated and Represents a Sound Strategy for Attaining the 24-Hour $PM_{2.5}$ NAAQS as Expeditiously as Possible.

A. The Monitoring Rule Responds to the Infrequent Testing Required by Utah Regulation and the $PM_{2.5}$ SIPs.

The "Monitoring Rule" increases the frequency and efficacy of the monitoring of emissions from individual sources identified in the $PM_{2.5}$ SIPs. Exhibit "1." The rule generally requires the use of CEMS to monitor SO_2, NO_X and filterable PM. To authorize a monitoring or testing method for SO_2, NO_X and filterable PM other than CEMS, the Director must, after public notice and comment, make a demonstration that CEMS is infeasible and that an alternative method is sufficient to assure continuous compliance with the relevant emission limitation.

To utilize a monitoring or testing method other than CEMS for an air pollutant **other** than SO_2, NO_X or filterable PM, the Director must, after public notice and comment, demonstrate that the alternative method is sufficient to assure continuous compliance with the relevant emission limitation. Where the approved monitoring method involves stack testing, that stack testing must occur at least once a year unless a further demonstration of infeasibility is made.

The Monitoring Rule amends Utah regulation, which mandates only infrequent emissions monitoring of $PM_{2.5}$ SIP sources. The rule also addresses the requirement that the 2014 $PM_{2.5}$ SIPs must derive adequate monitoring requirements in the context RACT analysis and otherwise establish that the monitoring imposed is sufficient to show continuous compliance with SIP emission limitations.

The Monitoring Rule also fosters public participation and oversight of SIP implementation and permitting by requiring that electronic monitoring and testing data and reports be submitted to and retained by the Director. The rule also mandates that the Director post quarterly compliance reports online for five years to ensure that such information is readily accessible by the public. *Id.* at 15448 ("EPA also recommends that compliance reports be made available online so that the general public can readily access the information without the need to submit Freedom of Information Act (FOIA) requests to the EPA. The EPA is in the process of revising federal rules to make similar requirements apply.").

Currently, Utah law requires "emission testing" at least **once every five years** to establish compliance with, *inter alia*, the emission limitations specified in the $PM_{2.5}$ SIPs for the Three NAAs. Utah Admin. Code R307-165-2. The $PM_{2.5}$ SIP itself states that unless source-specific conditions indicate otherwise, H.11.e establishes the stack testing protocol intended to show that sources in the Salt Lake City and Provo nonattainment areas are complying with the applicable SIP emission limits. $PM_{2.5}$ Emission Limits and Operating Practices, Section IX, Part H at 41-41 (December 2014). As 11.e does not specify a stack testing frequency, the default is once every five years. *Id.*; Utah Admin. Code R307-165-2.

In many instances, the source-specific conditions reference neither 11.e nor any stack testing frequency to determine or verify emission factors used to determine compliance with SIP emission limits. For example, the Chevron Refinery is required to conduct stack testing to establish a filterable $PM_{2.5}$ emission factor for the FCC catalyst generator and the ratio of condensable $PM_{2.5}$ from the unit and the SRUs, but the SIP fails to stipulate if and when this testing will be repeated to verify whether the derived emission factors are representative of emissions. Section IX, Part H at 54-55; *id.* at 77 (Tesoro); *see also id.* (source-wide daily NO_X limit determined by "associated emission factor," while "the most recent listing of these emission

factors is maintained in Chevron's AO"); *id*. at 55 (Chevron emission factor for catalyst regeneration system "established by most recent stack test"). Similarly, at the HollyFrontier Refinery, performance tests may be used to adjust emission factors, but the SIP fails to indicate if and when these performance tests must be repeated to confirm their veracity. *Id.* at 61-63. The same approach is adopted for Tesoro, *id.* at 77; *see also id.* at 77-78 ("[E]mission factors for all other emission units are based on the results for the most recent stack test for that unit."), and Big West. *Id.* at 48-49; *see also id.* at 93 (Provo City Power Plant "emission factors for NO_X shall be derived from the most recent emission test results").

Where it is mentioned, source-specific stack testing frequency is typically once every three to five years. *E.g.* Section IX, Part H at 42 (Refinery FCCUs – once every five years); *id.* at 53 (Central Valley engines – once every five years); *id.* at 54 (Chemical Lime Co. kiln – once every five years); *id.* at 57-58 (Great Salt Lake Mineral boilers and SOP dryers – once every three years); *id.* at 66 (Kennecott power plant – once every three years); *id.* at 70 (Kennecott refinery tank house boilers – once every three years); *id.* at 72 (Nucor Steel – once every three years and once every five years); *id.* at 79 (Proctor and Gamble – once every five years); *id.* at 80-81 (University of Utah boilers – once every three years); *id.* at 85 (BYU – once every three years); *id.* at 87 (Geneva – once every three years); *id.* at 92 (Payson City Power – once every three years and once every five years). Therefore, in many instances, SIP emission limits on large industrial sources generally require only infrequent monitoring.

Moreover, in most situations, there is no explanation or showing, either generally or specific to the $PM_{2.5}$ SIP sources, to establish that any monitoring regime is sufficient to assure continuous compliance with any particular SIP emission limitation. This is particularly true when monitoring is based on emission factors derived from stack testing.

In commenting on the 2014 $PM_{2.5}$ SIPs, EPA expressed significant concern about the sufficiency of the infrequent monitoring of $PM_{2.5}$. SIP emission limits. *E.g.* EPA Region 8 Comments on Utah's Proposed $PM_{2.5}$ State Implementation Plans and Technical Support Documents at 7, 9-10 & 12 (Oct. 30, 2014). EPA emphasized that adequate monitoring is a crucial component of an acceptable SIP, *id.* at 12 ("Implementation includes adequate monitoring, which must be in the SIP."), and that stack testing once every three to five years is, on its face, inadequate to show continuous compliance, *id.* at 9-10 ("We are concerned with stack test frequencies longer than one year. Please explain why these test frequencies are sufficient to ensure continuous compliance with the limits."), and requested that the Director explain why the specified monitoring was adequate to support modeling, establish RACT and demonstrate attainment. *Id.* at 7 ("[W]e suggest that the UDAQ…clarify and provide more detail…in SIP sections and/or RACT evaluations" to explain "how and why…frequency of monitoring/ testing…(continuous, daily, monthly, etc. for monitoring; once per year, 3 years, 5 years for stack testing)…[is] considered valid to support modeling and attainment").

B. The Proposed Rule Is a Necessary Component of both a Moderate and Serious SIP.

1. Utah Must Implement All Reasonably Available Control Measures and Additional Reasonable Measures.

A nonattainment SIP shall provide for the implementation of all reasonably available control measures (RACM), including reasonably available control technology (RACT), as expeditiously as practicable. 42 U.S.C. § 7502(c)(1); 80 Fed. Reg. at 15369.[33] In setting forth

[33] *Id.* at 15464 (RACM "is any technologically and economically feasible measure that can be implemented in whole or in part within 4 years after the date of designation of a $PM_{2.5}$ nonattainment area and that achieves permanent and enforceable reductions in direct $PM_{2.5}$ emissions and/or $PM_{2.5}$ precursor emissions from sources in the area. RACM includes reasonably available control technology (RACT)").

additional requirements for particulate matter nonattainment areas, Congress mandated that Moderate area attainment plans contain provisions to assure that RACM and RACT are implemented no later than four years after designation, 42 U.S.C. § 7513a(a)(1)(C), or in the case of the Utah nonattainment areas, no later than December 2013. 74 Fed. Reg. at 58768-70 (November 13, 2009) (designating the Three NAAs on December 14, 2009). Thus, Utah's Moderate SIP must provide for the implementation of RACM and RACT for existing sources of $PM_{2.5}$ and $PM_{2.5}$ precursors as expeditiously as practicable, but no later than December 2013. This is true even in the case of Moderate areas that cannot practicably attain by the statutory attainment date and therefore will be or have been designated as Serious areas. 80 Fed. Reg. at 15369.

Beyond RACM and RACT, nonattainment SIPs must "include enforceable emission limitations, and such other control measures, means or techniques. . . as may be necessary or appropriate to provide for attainment." 42 U.S.C. § 7502(c)(6). EPA has interpreted this provision to require states to implement any technologically and economically feasible control measures, including control technologies, for all sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors, that can only be implemented **after** the 4 year deadline for RACM and RACT has passed, but **before** six years after the designation date. 80 Fed. Reg. at 15368.[34] In the case of the Three NAAs, Utah must impose all additional reasonable measures that are capable of being implemented before December 31, 2015. In Moderate areas that cannot practicably comply with the standard by the statutory attainment date, states must still implement all RACM and RACT,

[34] *Id.* at 15464 ("Additional reasonable measure is any control measure that otherwise meets the definition of [RACM] but can only be implemented in whole or in part during the period beginning 4 years after the date of designation of a nonattainment area and no later than the end of the sixth calendar year following the date of designation of the area.").

together with any additional reasonable measures, on sources in the nonattainment area. 80 Fed. Reg. at 15369.

2. Utah Must Implement all Best Available Control Measures.

As they will fail to attain the 24-hour $PM_{2.5}$ standard by December 31, 2015, the Three NAAs will be designated "Serious" area by EPA as an operation of law. 42 U.S.C. § 7513(b)(2)(A). Alternatively, EPA has proposed to acknowledge that the Three NAAs cannot practicably attain the standard and, prior to the Moderate attainment date, designate the areas as "Serious" nonattainment areas. 42 U.S.C. § 7513(b)(1). In either case, the Director must, no later than "18 months after reclassification of the area as a Serious Area," 42 U.S.C. § 7513a(b)(2),[35] submit "provisions to assure that the best available control measures for the control of PM_{10} [including $PM_{2.5}$] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area." 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. § 7513a(b)(2) (referencing paragraph (1)(B)). Therefore, by June 14, 2017, the Director must present a "Serious" SIP identifying all best available control measures (BACM) and establishing that these measures will be implemented in the nonattainment areas no later than December 2019.

BACM is defined as "the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts and other costs." 80 Fed. Reg. at 15405; *Id.* at 15464 (BACM "is any technologically and economically feasible control measure that can be implemented in whole or in part within 4 years after the date of reclassification of a $PM_{2.5}$

[35] Reclassification dates to the failure of the area to attain the NAAQS – December 15, 2015. *See* 42 U.S.C. § 7513(2)(A) ("[T]he area shall be reclassified by operation of law as a Serious Area").

nonattainment area and that generally can achieve greater permanent and enforceable emissions reductions in direct $PM_{2.5}$ emissions and/or emissions of $PM_{2.5}$ precursors from sources in the area than can be achieved through the implementation of RACM on the same source(s). BACM includes best available control technology (BACT).").[36]

3. The Monitoring Rule is a Necessary Element of RACM and BACM and Required to Ensure that the Three NAAs Will Attain the 24-Hour $PM_{2.5}$ NAAQS Expeditiously.

Utah is currently under significant obligation to impose reasonable and best control measures on and secure substantial emission reductions from industrial sources in the nonattainment areas. The Clean Air Act requires Utah to have implemented all RACM and other additional reasonable measures by December 31, 2015. Starting December 31, 2015, the State is also required to begin implementing any BACM as expeditiously as practicable. Ultimately, the Clean Air Act mandates attainment of the 24-hour $PM_{2.5}$ standard as soon as is feasible. There is real urgency in the mandate that Utah immediately take the steps necessary to bring the Three NAAs into attainment with the standard.

As the Monitoring Rule is a necessary component of both RACM and BACM and a legally adequate SIP, adoption of the rule is warranted. First, the Monitoring Rule will meet the requirement that all SIP control measures be enforceable. SIPs must provide for the expeditious implementation of all reasonably available or best available control measures for larger emitting

[36] Under 42 U.S.C. § 7502(c)(6), states addressing Serious nonattainment areas must also implement "additional feasible measures" as well as BACM. 80 Fed. Reg. at 15406. An "additional feasible measure" is "any control measure that otherwise meets the definition of [BACM] but can only be implemented in whole or in part beginning 4 years after the date of reclassification of an area as Serious and no later than the statutory attainment date for the area." *Id.* at 15464.

facilities. 42 U.S.C. § 7502(c)(1); 42 U.S.C. § 7513a(a)(1)(C); 42 U.S.C. § 7513a(b)(1)(B).[37] These controls must be "enforceable," 42 U.S.C. § 7502(c)(6) ("plan provisions shall include enforceable emission limitations"), and "measurable," and "include periodic source testing, monitoring or other viable means to establish whether the source meets the applicable emission limit." 80 Fed. Reg. at 15378. As EPA explained in more detail:

> [SIP] control measures must be enforceable. This means that they must…include periodic source testing, monitoring or other viable means to establish whether the affected source meets the applicable emission limit. Additionally, to verify the continued performance of the control measure, specific emissions monitoring programs appropriate for the type of control measure employed and the level of emissions must be included to verify the continued performance of the control measure.

Id.; *see also id.* at 15412 ("After a state has identified its BACM and BACT and additional feasible measures for a particular nonattainment area, it must implement those measures through a legally enforceable mechanism to be included in the SIP.").

Second, the Monitoring Rule will reduce emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors from industrial sources and therefore represents RACM and BACM. EPA has found that improved monitoring provides information that allows a source to take "corrective action that could potentially reduce emissions up to 15 percent[.]" 80 Fed. Reg. 15340, 15378. Similarly, more frequent monitoring "could yield potential stationary source emissions reductions of up to 13 percent." *Id.*

Third, the Monitoring Rule serves to increase the accuracy of emission inventories and to identify appropriate control measures. 80 Fed. Reg. at 15453. Thus, the rule would play an

[37] SIPs must also provide for additional reasonable measures and additional feasible measures. 80 Fed. Reg. 15340, 15468 & 15469 (March 23, 2015). These measures must also be enforceable. *Id.*

important role in the derivation and implementation of the Serious SIP Utah must submit to EPA to show expeditious attainment of the NAAQS.

Finally, the details of the Monitoring Rule correspond to the elements EPA identified as critical to ensuring SIP control measures are enforceable and approvable. The Monitoring Rule acknowledges the link between control measures and monitoring requirements – without monitoring, control measures are not meaningful – and identifies monitoring as a component of a legally sufficient SIP. *E.g.* 80 Fed. Reg. at 15453 ("[A]ppropriate stationary source emissions monitoring requirements, like the control measures with which they are associated, are a fundamental element of an approvable implementation plan."). The rule sets as the standard CEMS for measuring and monitoring of emissions. *Id.* at 15448 ("Directly enforceable emission measurements, such as PM CEM[S], are preferred wherever feasible."). With its flexible approach to feasibility and ultimate focus on sufficiency, the Monitoring Rule appropriately mandates that all emissions limits must be accompanied by monitoring of sufficient frequency and efficacy to assure continuous compliance with the SIP emission limitation. *Id.* at 15447 ("[M]onitoring requirements would have to be sufficient to enable the state or the EPA to determine whether the source is complying with the emission limit on a continuous basis."). By requiring that electronic monitoring and testing data and reports be submitted to and retained by the Director and by mandating that quarterly compliance reports be made available online, the Monitoring Rule also implements EPA policy that such information be readily accessible by the public. *Id.* at 15448 ("EPA also recommends that compliance reports be made available online so that the general public can readily access the information without the need to submit Freedom of Information Act (FOIA) requests to the EPA. The EPA is in the process of revising federal rules to make similar requirements apply.").

Thus, whether looked at through the lens of RACM or BACM, the Monitoring Rule is a critical element of a Moderate or Serious SIP and a reasonable measure that will make Utah's SIP control measures enforceable and will reduce emissions to ensure, as the Clean Air Act requires, that the nonattainment areas will attain the 24-hour $PM_{2.5}$ national standards as expeditiously as practicable, *see e.g.* 42 U.S.C. § 7513(c)(1) & (c)(2).[38]

Acknowledging the complexity of the industrial sources and monitoring technologies, the proposed rule provides the Director discretion to determine monitoring and stack testing requirements adequate to ensure continuous compliance with emission limitations. Above, we outline the many reasons while requiring broader use of CEMS and boosting stack test frequency is a critical step towards reducing emissions and increasing public confidence in air quality regulation.

We also recognize that for particular pollutants and for specific emission units, CEMS may not be feasible due to considerations such as cost or the availability of the relevant technology. In response, the Monitoring Rule is structured to create a transparent process that allows for public input, by which the Director can make an informed decision on an appropriate monitoring and testing regimen that will ensure continuous compliance with SIP emission limitations. The Monitoring Rule achieves this goal by boosting monitoring and testing effectiveness and frequency, but without an unnecessarily rigid mandate.

C. The Proposed Rule Furthers Other Legal and Policy Goals.

State and local officials in Utah have sought for years to identify appropriate measures to help reduce dangerous emissions of air pollution and bring Utah into compliance with the 24-

[38] The Monitoring Rule will also promote continuous maintenance of the PM_{10} NAAQS. *See* 42 U.S.C. § 7505a(a).

hour NAAQS for $PM_{2.5}$. Those efforts have borne fruit, but additional steps – including this proposed rule – are necessary to ensure expeditious and long-term compliance with the standard.

First, given that all projections agree that Utah's population and economy will continue to grow significantly in the coming decades, our air quality policies will need to keep pace by enacting controls to address expanding mobile, area and point sources. Census data released earlier this year[39] show familiar statistics: a five-year population growth rate that ranks fourth in the nation; the second highest growth in new homes over the past year; and, the third highest over the previous five. The state's population recently surpassed three million residents – and is projected to hit four million in as few as 16 years.[40]

According to a detailed report from the Utah Foundation,[41] which examined a wide array of research, much of that growth is expected not just in our non-attainment areas, but in more far-flung suburban areas, raising the specter of a significant increase in commutes and vehicle miles travelled (VMTs). Predictions of Utah's future emissions inventory offer some significant reasons for hope – particularly due to a slow but steady reduction from the mobile sector. Our cars and trucks will pollute less both because of the EPA's Tier 3 program and also from increased Corporate Average Fuel Economy (CAFE) standards. But much of those gains will be eaten away by increases in population, the number of homes and in overall VMTs, due to more cars on the road and the expansion of the suburbs. These trends mean that Utah will need to

[39] *Another Piece to the Puzzle: Census Reveals Utah's Growth Among Top In Nation*, Deseret News, 2015-05-20, http://www.deseretnews.com/article/865629128/Another-piece-to-the-puzzle-Census-reveals-Utahs-growth-among-top-in-nation.html?pg=all
[40] *Herbert Says there Are Three Million People Living in Utah*," The Salt Lake Tribune, 2015-10-26, http://www.sltrib.com/home/3103221-155/utahs-population-surpasses-3-million.
[41] *A Snapshot of 2050: An Analysis of Projected Population Change in Utah*, the Utah Foundation, April 2014, http://www.utahfoundation.org/uploads/rr720.pdf

continue to find additional emission reductions and bolster its regulatory oversight for decades to come – twin goals that our proposed rule will accomplish.

Secondly, Utah faces serious repercussions if it does not meet the 24-hour $PM_{2.5}$ NAAQS by 2019. While the precise penalties are not certain, the Clean Air Act gives a clear idea of what might come. Sanctions include: 1) being required to adopt the most stringent measures being implemented in any other states, 42 U.S.C. § 7513(e); and, 2) having to identify an additional 5 percent emission cuts across the board every year until the standard has been attained. 42 U.S.C. § 7513a(d). Each of these requirements serves to take discretion out of the state's hands, forcing the state to implement measures that would be not be tailored to Utah's particular situation and that would likely be unpopular.

Third, as it reviews Utah's Moderate SIP, Serious SIP and any request for an extension of the attainment date for a Serious area, EPA has authority to approve or disapprove aspects of the plans and, if necessary, assume authority to develop and implement a SIP. *See* 42 U.S.C. § 7502(b), (c) & (d); 42 U.S.C. § 7410(k); 42 U.S.C. § 7513(e); 42 U.S.C. § 7509. Thus, we believe, it is important for state officials to demonstrate that Utah is willing to make difficult decisions and embrace policies that will reduce emissions from all polluting sectors, including large stationary sources. More colloquially, it is urgent to look under every rock for emissions cuts and it is important that Utah exhibit a willingness to impose these available measures with the goal of achieving the national standard as soon as possible.

Fourth, there are significant advantages to having the Division and the Board carefully consider this rule on its own merits, rather than as an element of a Moderate SIP or the Serious SIP that Utah will be required to develop and implement in the next two years. Utah's SIPs have

been and will continue to be highly technical and expansive documents, covering a wide range of control measures. The 2014 SIP, for example, included 23 new rules on area sources alone. Due to the sheer volume of these plans and the documents that support them, it is very difficult for the Board and the public to debate any particular SIP provision or to offer revisions to the SIP in the short comment period that has typically attended these rulemaking efforts.

The rule presented here, on the other hand, offers opportunity for individual scrutiny. The Division, public and regulated community will have the chance to provide meaningful and detailed feedback, while the Board will have the chance to carefully review these comments one rule at a time, which is very difficult to do when it is faced with approving or disapproving of an entire nonattainment SIP as a single rule.

Lastly, we maintain that it is valuable to focus rulemaking on stationary sources, even though inventories suggest that emissions from this sector are less than emissions from either mobile or area sources. Various estimates, which misleadingly give equal weight to direct $PM_{2.5}$ and $PM_{2.5}$ precursors, indicate that about 12 percent of total emissions in the Salt Lake City nonattainment area come from stationary sources and the 2013 SIP anticipates that by 2019, these sources will account for 28 percent of direct $PM_{2.5}$ emissions in the area. It is true that mobile and area sources contribute significantly to our failure to attain the NAAQS. That is why we have pushed hard for rules, programs and funds to address these sources of $PM_{2.5}$ emissions, such as the Tier 3 program, electric vehicle incentives, expansion of transit funding, updates to building codes, and low NO_X hot water heater requirements.

We are confident that rules addressing large industrial sources have merit as one important piece of an overall strategy intended to bring the nonattainment areas into compliance with the 24-hour $PM_{2.5}$ NAAQS as expeditiously as practicable. Cleaning up Utah's air is not

about adopting a few measures or addressing only those sectors that contribute the most emissions. Rather, the severity of our air pollution problem requires that we implement every effective measure and strategy to reduce emissions of $PM_{2.5}$ and its precursors. Because the proposed rule, backed by the EPA, will minimize emission increases and strengthen the state's overall oversight of stationary sources, is not only worth debating, but also worth adding to our SIP as an appropriate and necessary addition to a legally robust plan designed to attain and maintain the NAAQS.

IX. Conclusion

The Monitoring Rule is a critical component of an adequate $PM_{2.5}$ SIP. By increasing the frequency and efficacy of monitoring and mandating that any monitoring or testing regime will assure continuous compliance with $PM_{2.5}$ SIP emission limitations, the rule imposes a reasonable control measure on industrial sources, functions to make SIP emission limitations enforceable, reduces emissions and improves Utah's emissions inventory, and informs its selection of control measures. Therefore, Utah Physicians for a Healthy Environment, HEAL Utah and Western Resource Advocates respectfully ask the Air Quality Board to initiate Utah Code Ann. § 63G-3-301 rulemaking proceedings relative to the Monitoring Rule as authorized by Utah Code Ann. § 63G-3-601(6)(b)(ii) and ultimately to adopt the proposed rule.

Respectfully submitted the 13th day of January 2016.

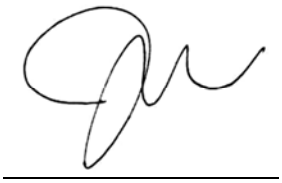

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Exhibit List

Exhibit “1”	Monitoring Rule – Proposed Text
Exhibit “2”	Health Impacts of Particulate Air Pollution

EXHIBIT “1”

The "Monitoring Rule"

R307-XXX. Nonattainment Areas for $PM_{2.5}$: Emission Monitoring and Testing.

R307-XXX-1. $PM_{2.5}$ SIP Emission Limitations.

(1) *$PM_{2.5}$ SIP Emission Limitation* means any emission limitation or emission standard imposed on any source, installation or emission unit where that emission limitation:

(a) is implemented pursuant to or meets the requirements of subpart 1 or subpart 4, part D of title I of the Clean Air Act;

(b) has been determined by the Director to represent reasonably available control technology (RACT), reasonably available control measure(s) (RACM), best available control technology (BACT), or best available control measure(s) (BACM) for the purposes of section 189(a)(1)(C) or section 189(b)(1)(B) of the Clean Air Act;

(c) is included in Utah $PM_{2.5}$ SIP Subsections IX.H.11, 12, or 13 ($PM_{2.5}$ Emissions Limits and Operating Practices); or,

(d) has otherwise been determined to contribute to the attainment of the $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS).

(2) *Stack Test* or *Stack Testing*, also referred to in U.S. Environmental Protection Agency (EPA) regulations as a performance or source test, is a procedure that measures the amount of a specific regulated pollutant, pollutants, or surrogates being emitted; demonstrates the capture efficiency of a capture system; or determines the destruction or removal efficiency of a control device used to reduce emissions at facilities subject to the requirements of the Clean Air Act.

(3) *Continuous Emission Monitoring System* (CEMS) is the total equipment necessary for the determination of a gas or particulate matter concentration or emission rate using pollutant analyzer measurements and a conversion equation, graph, or computer program to produce results in units of the applicable emission limitation or standard.

R307-XXX-2. Continuous Emission Monitoring Systems (CEMS) Required.

(1) For any $PM_{2.5}$ SIP emission limitation:

(a) Utah $PM_{2.5}$ SIP Subsections IX.H.11, 12, or 13; and,

(b) any approval order and any operating permit containing that emission limitation must mandate with particularity monitoring and/or stack testing on a sufficiently frequent basis to assure continuous compliance, including during periods of start-up and shut-down, with the applicable requirements and/or emission limitation as specified by the corresponding averaging time or period.

(2) Absent a demonstration of infeasibility made by the Director, a continuous emission monitoring systems (CEMS) shall be used to monitor compliance with a $PM_{2.5}$ SIP emission limitation for SO_2, NO_X or filterable particulate matter (PM).

R307-XXX-3. Alternative Monitoring or Testing.

(1) Only following a demonstration of infeasibility made by the Director determining that it is infeasible to use CEMS to monitor SO_2, NO_X, or filterable PM as controlled by a $PM_{2.5}$ SIP emission limitation, may an alternative monitoring method be employed.

(2) Before authorizing any method other than CEMS to monitor SO_2, NO_X, or filterable PM for compliance with a $PM_{2.5}$ SIP emission limitation or authorizing any method to monitor another air pollutant control by a $PM_{2.5}$ SIP emission limitation, the Director must make a demonstration of sufficiency establishing that the alternative method shall provide assurance of compliance with the corresponding emission limitation at all times, including during start-up and shut-down.

(3) Any monitoring method deemed to meet the requirements of subsection (2) that relies on stack testing must be conducted under operational conditions that:

> (a) represent the range of combined process and control measure conditions under which the source expects to operate;
>
> (b) are likely to challenge the facility or emission unit emission control measures or technology on which any $PM_{2.5}$ SIP emission limitation is based; and
>
> (c) are described by, included in and required by Utah $PM_{2.5}$ SIP Subsections IX.H.11, 12, or 13 as conditions under which the monitoring method will be conducted.

(4) Absent a demonstration of infeasibility, no monitoring method or stack testing used to establish compliance with a $PM_{2.5}$ SIP emission limitation may occur less frequently than once per year.

R307-XXX-4. Demonstrations of Infeasibility and Sufficiency.

(1) A demonstration of infeasibility, as referenced in R307-XXX-2(2), R307-XXX-3(1) and R307-XXX-3(4) may consider, if relevant, cost; technical feasibility; availability of the technology; recent monitoring and testing results; total emissions and controlled emissions; the margin of compliance; the variability of process, equipment and emissions; frequency of breakdowns, start-ups and shut-downs; and the age and condition of the proposed control technology.

(2) A demonstration of sufficiency, as referenced in R307-XXX-3(2) must, at a minimum: incorporate and analyze recent monitoring and testing results; total emissions and controlled emissions; the margin of compliance; the variability of process, equipment and emissions; frequency of breakdowns, start-ups and shut-downs; and the age and condition of the proposed control technology. Consideration of recent monitoring data must include an evaluation of the

frequency of the underlying monitoring or testing and whether these data represent the range of combined process and control measure conditions under which the source expects to operate.

(3) The Director shall give the public adequate notice of any proposed demonstration of sufficiency or infeasibility and provide a period of at least 30 days for the public to comment on the proposed demonstration. Prior to the beginning of the public comment period, the Director shall make readily available to the public—preferably by posting electronic copies on the Division website—all documents on which the Director relies in making the proposed demonstration. Before issuing a final demonstration, the Director shall consider and respond to any timely submitted comments and make that response publically available.

R307-XXX-5. Reporting and Public Availability of Monitoring and Testing Data.

All monitoring and testing data and reports associated with any $PM_{2.5}$ SIP emission limitation shall be submitted to the Director and retained by the Director in electronic form. A report demonstrating compliance (or noncompliance) with any $PM_{2.5}$ emission limitation shall be submitted to the Director in electronic form on a quarterly basis (every three months). The Director shall make these quarterly compliance reports available online for five years so that the general public can readily access the information without making a request pursuant to the Government Records and Access Management Act or Freedom of Information Act.

R307-XXX-6. Timing of Implementation.

(1) Within two years of the date this regulation takes effect, the Director shall comply with R307-XXX-2 to XXX-5 for any $PM_{2.5}$ SIP emission limitation included in the Utah $PM_{2.5}$ SIP ($PM_{2.5}$ Emissions Limits and Operating Practices) Subsections IX.H.11, 12, and 13 on the date this regulation takes effect.

(2) For any $PM_{2.5}$ SIP emission limitation **not** included in the Utah $PM_{2.5}$ SIP ($PM_{2.5}$ Emissions Limits and Operating Practices) Subsections IX.H.11, 12, and 13 on the date this regulation takes effect, the Director shall comply with R307-XXX-2 to XXX-5 as soon as possible, but no later than 6 months after the $PM_{2.5}$ SIP emission limitation is established.

(3) Notwithstanding subpart (2), the earliest date by which the Director must comply with R307-XXX-2 to XXX-5 for any $PM_{2.5}$ SIP emission limitation established after the date this regulation takes effect shall be two years after the date this regulation takes effect.

EXHIBIT “2”

Health Impacts of Particulate Air Pollution

Medical research in the last ten years clearly indicates that, certainly for fine particulate matter ($PM_{2.5}$), and likely also for ozone, there is no "safe level" of exposure. Even levels previously thought to be benign we now know are not. There is no threshold below which there are no health effects and all persons are adversely affected by air pollution, regardless of age or overall state of health. 77 Fed. Reg. 38890, 38903 (June 29, 2012). Most Utahns are exposed to high levels of ozone in the summer and $PM_{2.5}$ in the winter, as well as PM_{10} and SO_2 year-round, meaning that a large percentage of Utah's population is exposed repeatedly to unhealthy levels of pollution throughout the year. There is now evidence that exposure to ozone and $PM_{2.5}$ can act synergistically, increasing the adverse health effects from these air pollutants.[1]

$PM_{2.5}$ air pollution at the levels experienced by residents of the northern counties of Utah has the approximately same type and magnitude of biologic effect as living with an active smoker. *E.g.* 71 Fed. Reg. 61144, 61157 (Oct. 17, 2006). That should not be a surprise, because most of the chemicals found in tobacco smoke are also found in fine particulate matter. As with smoking, particulate matter pollution and ozone cause increased systemic oxidative stress leading to pathologic vascular changes, including progression of atherosclerotic plaques to vulnerable forms, prothrombotic states, endothelial dysfunction and altered autonomic nervous system control.[2]

For the last several years, the research-based conventional wisdom has been that with each 10 $\mu g/m^3$ increase in $PM_{2.5}$ long-term average, there is an increase in community mortality rate of about 10%.[3] New research draws an even stronger correlation – a mortality rate of 14% for each 10 $\mu g/m^3$ increase.[4] The elderly and those with existing morbidities are particularly vulnerable to air pollution consequences.

Based on extrapolations from numerous studies and the American Heart Association (AHA) scientific statement explained below, Utah Physicians estimates that between 1,400 and 2,000 premature deaths occur every year in Utah from $PM_{2.5}$. *See* 78 Fed. Reg. 3086, 3103 (Jan. 15, 2013) ("[S]tudies have reported consistent increases in morbidity and/or premature mortality related to ambient $PM_{2.5}$ concentrations, with the strongest evidence reported for cardiovascular-related effects."); 77 Fed. Reg. 38890, 38908-09 (June 29, 2012) ("[N]ewly available information combined with information available in the last review provides substantially stronger confidence in a causal relationship between long- and short-term exposures to $PM_{2.5}$ and mortality and cardiovascular effects."). The AHA has estimated that residents of most cities in the United States lose between one and three years of life expectancy due to fine particulate air pollution.[5] Furthermore, studies show that even small reductions in air pollution improve community life expectancy.[6] 77 Fed. Reg. at 38907.

Since the late 1980s, more than 150 epidemiological studies have reported associations between daily changes in particulate air pollution and respiratory and cardiovascular mortality, hospitalizations and other related health endpoints.[7] 71 Fed. Reg. at 61150-61162; 78 Fed. Reg. at 3103; 77 Fed. Reg. at 38908-09. These adverse effects are seen at low and "common" concentrations of particulate pollution. A Dutch study demonstrated risks for cardiopulmonary mortality even at what are considered "background" levels of particulate pollution.[8] A study done in our own area demonstrated that each short-term 10 $\mu g/m^3$ increase in $PM_{2.5}$ was associated with an increase in the risk of acute ischemic coronary artery events (unstable angina and myocardial infarction) of 4.5%.[9]

Not only does $PM_{2.5}$ result in an increase in death from cardiovascular causes, but there is also an increased risk for non-fatal events. 71 Fed. Reg. at 61151-52; 77 Fed. Reg. at 38907; 77

Fed. Reg. at 38923 ("Bell et al. (2008) reported higher $PM_{2.5}$ risk estimates for hospitalization for cardiovascular and respiratory diseases in the winter compared to other seasons."). For each 10 $\mu g/m^3$ increase in $PM_{2.5}$ there is a 24% increase in risk of a cardiovascular event and a 76% increase in the risk of death from that event. There is also an increased risk of cerebrovascular events.[10,11,12] 77 Fed. Reg. at 38907. It should be noted that this rate of increase approaches that demonstrated from a chronic active smoking habit. 71 Fed. Reg. at 61157.

The significance of our $PM_{2.5}$ spikes may not be dismissed with observations that our annual average fine particulate matter concentrations are not extraordinarily high. This is false comfort and reflects a poor understanding of the existing research. Many medical studies show that impacts from pollution are seen very quickly and can last long after the air has cleared. 71 Fed. Reg. at 61164. For example, within as little as 30 minutes, exposure to particulate matter is associated with increases in blood pressure, followed within hours by increased rates of heart attacks and strokes. Community mortality rates stay elevated for 30 days after a spike in PM_{10} even if the episode lasts less than 24 hours.[13]

Within one hour, exposure to traffic pollution, including particulate matter, is associated with increased rates of heart attacks as much as 300% compared to non-exposed individuals.[14] Other studies show rates of strokes and heart attacks in the community increase within hours after spikes in PM_{10}.[15] *See also* 78 Fed. Reg. at 3103 (Evidence links "long-term exposure to PM2.5 with an array of cardiovascular effects such as heart attacks, congestive heart failure, stroke, and mortality."). In 2010, the AHA summarized:

> The overall evidence from time-series analyses conducted worldwide since publication of the first AHA statement confirms the existence of a small, yet consistent association between increased mortality and short-term elevations in PM_{10} and $PM_{2.5}$ approximately equal to a 0.4% to 1.0% increase in daily mortality (and cardiovascular death specifically) due to a 10 $\mu g/m^3$ elevation in $PM_{2.5}$ during the preceding 1 to 5 days.[3]

Confirming the strong correlation between modest, short-term spikes in PM and serious health consequences are three new studies that showed spikes of as little as one day in PM_{10} were associated with higher rates of heart attacks,[16] daily spikes of either PM_{10} or $PM_{2.5}$ were associated with significant increases in emergency room visits for hypertensives crisis,[17] and less than 24 hours of a spike in $PM_{2.5}$ of 15-40 $\mu g/m^3$ increased rates of strokes 34%, with the peak increase occurring within 12 hours.[18] Not only have numerous studies shown that there is no safe level of PM exposure, but a recent landmark study published in the flagship journal of the AHA, using data from over 1 million people, demonstrated that when cardiac mortality, the signature air pollution health outcome, was plotted against particulate matter from air pollution, first and second-hand cigarette smoke, all three sources showed a steep curve at low doses. In other words, per unit dose of exposure, it is the low levels of PM that cause higher rates of mortality.[19]

Long-term exposure to particulate matter air pollution is associated with an average rise in blood pressure for chronically exposed populations. Average blood pressure was found to rise 1.7 mmHg for an increase of 2.4 $\mu g/m^3$ in $PM_{2.5}$. A similar association was found with the coarser PM_{10}. The rise was found in both systolic and diastolic blood pressure.[20] Chronic exposure to particulate matter has also been shown to increase the thickening of arterial walls, which is a known end result of higher blood pressure. A chronic increase in PM_{10} of 5.2 $\mu g/m^3$ is associated with a 5% increase in the intima-media thickness of the carotid artery, which is one of many end results of the biologic process described above.[21]

Another study showed a remarkable correlation between chronic exposure to $PM_{2.5}$ and narrowing in the tiny arteries in the back of the eye. Chronic exposure to 3 $\mu g/m^3$ of $PM_{2.5}$ (one fourth of the annual NAAQS) was associated with narrowing equivalent to seven years of aging.[22] These finding are especially significant because they demonstrate community-wide

effects, acceleration of the aging process, and impairing the health of everyone exposed, not just a susceptible population. *See* 78 Fed. Reg. at 3104 ("The population potentially affected by $PM_{2.5}$ is large. In addition, large subgroups of the U.S. population have been identified as at-risk populations.").

There is a remarkable correlation between rates of deep vein thrombosis and increased levels of PM_{10}, beginning at very modest levels.[23] *See also* 77 Fed. Reg. at 38923 ("[R]ecent studies provide additional evidence for cardiovascular effects associated with sub-daily (e.g., one to several hours) exposure to PM, especially effects related to cardiac ischemia, vasomotor function, and more subtle changes in markers of systemic inflammation, hemostasis, thrombosis and coagulation[.]"). A likely mechanism of this clinical outcome is revealed by studies that show PM_{10} causes excessive platelet aggregation in diabetics.[24]

Throughout the age spectrum, from infants to the elderly, air pollution has been shown to impair brain function. 77 Fed. Reg. at 38909. Oxidative stress (OS) appears to be the biological genesis of numerous diseases processes and a major contributor to the aging phenomenon. OS is the mechanism behind the role of particulate matter and carbon monoxide pollution in central nervous system dysfunction, neuro inflammation, cortical stress, cognitive impairment and memory loss in children and neuro-degenerative diseases such as Alzheimer's disease.[25, 26] Numerous studies show such specific outcomes as impaired intellect and penetration of particle matter and Alzheimer type protein deposition among children who grow up breathing more particulate air pollution.[27, 28, 29] Volunteers exposed to typical urban levels of diesel exhaust demonstrate brain cortical stress measured by EEG.[30]

Children exposed to more air pollution or whose mothers were more exposed during pregnancy show an IQ loss of five to nine points.[31, 32, 33] Rates of neurobehavioral disorders

correlate with NO_X and PM_{10} levels.[34] Children exposed to more vehicle pollution show a doubling in rates of autism.[35] Older people show accelerated cognitive decline if chronically exposed to more traffic generated air pollution.[36, 37] A recent landmark study showed that chronic exposure to 10 $\mu g/m^3$ of either $PM_{2.5}$ or $PM_{2.5}$-PM_{10} was associated with faster cognitive decline in older women, equivalent to about two years of aging.[38]

Because of strong evidence that particulate air pollution's neurotoxicity is related to attached metals,[39, 40, 41] the oil refineries contribution to Wasatch Front pollution takes on additional public health significance.

It is intuitive that short-term exposure to fine particulate matter would have adverse impacts on the pulmonary system. 71 Fed. Reg. at 61145 & 61152; 78 Fed. Reg. at 3103-04. Indeed, numerous studies show increased rates of asthma and virtually all other respiratory diseases including lung cancer where short-term $PM_{2.5}$ is higher. 71 Fed. Reg. at 61154-61155 & 61157; 77 Fed. Reg. at 38907. Equally disturbing are less obvious outcomes. Even young, healthy people demonstrate rapid decrease in lung function from brief exposure to particulate matter that persists for several days after the exposure has ended. *Id*. at 61152, 61154 & 61169.[42, 43] Again, this contradicts any comfort derived from the perspective that Utah's fine particulate matter air pollution problem is episodic and therefore less of a problem.

An unusually large proportion of Utah's population is young. Census-based estimates indicate that nearly a third of Utah residents are under age 18 and one of every 10 residents is under age five, figures approximately 40 percent higher than the national average. This means that Utah's unhealthy levels of air pollution constitute a public health crisis that endangers its most vulnerable populations. 74 Fed. Reg. at 58690; 77 Fed. Reg. at 38911 ("With regard to respiratory effects in children associated with short-term exposures to $PM_{2.5}$, currently available

studies provide stronger evidence of respiratory-related hospitalizations with larger effect estimates observed among children.").

The physiology of children differs from that of adults in many important ways, causing them to be affected more profoundly by air pollution than adults. Children have higher metabolic rates, meaning their oxygen demand is higher, they breathe faster and have higher heart rates and blood flows on a per weight basis than an adult. Combined with their rapidly growing organ size and function, this physiologic difference makes them more susceptible to the adverse influence of air pollution. "There is emerging but limited evidence for an association between long-term $PM_{2.5}$ exposure and respiratory mortality in post-neonatal infants where long-term exposure was considered as approximately one month to one year." 77 Fed. Reg. at 38908. Children who breathe more air pollution can experience a permanent stunting of their lung growth. Just as chronic exposure to second-hand cigarette smoke causes a permanent loss of lung function growth in children, so does long-term exposure to $PM_{2.5}$ air pollution.[44,45] 71 Fed. Reg. at 61154, 61172; *see also id*. at 61169; 77 Fed. Reg. 38890, 38911 (June 29, 2012) ("These analyses provide evidence that $PM_{2.5}$-related effects [to children] persist into early adulthood and are more robust and larger in magnitude than previously reported."). Not only does short-term exposure to $PM_{2.5}$ air pollution permanently impair the exercise capacity of individuals so affected,[46] few physiologic outcomes have more of an ultimate impact on longevity than lung function.

Various forms of cancer such as lung, cervical, stomach and brain cancer show increased rates with higher concentrations of community particulate matter.[47, 48] 71 Fed. Reg. at 61152; 77 Fed. Reg. at 38908. Each 10 $\mu g/m^3$ increase in long term $PM_{2.5}$ concentration is associated with a 15-27% increase in lung cancer mortality.[49] *See also* 77 Fed. Reg. at 38908. Especially

troubling are the numerous studies that show increases in childhood leukemia among more exposed populations,[50, 51] and a significant association between nitrogen oxide concentrations and rates of breast cancer.[52]

The precipitation of oxidative stress, as mentioned above, is the likely explanation for new studies that show higher rates of numerous other, seemingly unrelated diseases among populations subjected to more air pollution. These diseased include type II diabetes, obesity, arthritis, and lupus. [53, 54, 55, 56, 57]

Air pollution, especially particulate matter, may have its largest impact on public health through its effect on the human embryo. A study in laboratory animals demonstrated a change in morphology of the placenta that compromised blood flow to the fetus.[58, 46] Exposure of pregnant women to various components of traffic-related air pollution, including PM_{10}, results in intrauterine growth retardation, including smaller head size, increased rates of spontaneous abortions, premature births and low birth weight syndrome. 77 Fed. Reg. at 38908.

Genetic damage and epigenetic changes can have virtually identical consequences and both can be passed on to subsequent generations. Newborn babies whose mothers are exposed to more air pollution show increases in both, and the life-long disease burden that results can include higher rates of metabolic disorders, reactive airway disease, cardiovascular disease, cancer, Alzheimer's and all the diseases consequent to immuno-suppression. 78 Fed. Reg. 3104 ("The strongest evidence for an association between $PM_{2.5}$ and developmental and reproductive effects comes from epidemiological studies of low birth weight and infant mortality, especially due to respiratory causes during the post-neonatal period (i.e., 1 month–12 months of age)."). Epigenetic changes can be seen within three days after exposure to $PM_{2.5}$ and perhaps even as soon as minutes after exposure.[59-66] There is strong evidence for a persistence of epigenetic

changes from one generation to another. Medical science is now learning that the air pollution today can adversely affect the health of future generations. For example, episodic air pollution, the type that occurs along the Wasatch Front, has been shown to be associated with fragmentation of DNA in human sperm.[67]

The common assumption about particulate air pollution has been that internalizing the particles and their adsorbed compounds like heavy metals occurs through the lungs. Smaller particles are assumed more dangerous because they can penetrate more deeply into the lungs and are cleared by the lung cilia less readily. However, there is new evidence to suggest that atmospheric particulate matter is also swallowed, leading to toxicity of internal organs and increased carcinogenic risk. This is of particular relevance for increasing childhood risk.[68]

That all the above mentioned adverse health outcomes can be the result of pregnant women smoking is easy for physicians and the lay public alike to comprehend and the sight of a pregnant woman smoking is now repulsive to society at large. *See* 71 Fed. Reg. at 61157. It is a new thought process, but equally scientifically based, to think that the same thing happens when a pregnant woman has to breathe particulate air pollution. Again, regarding impact on the human embryo, there appears to be no safe threshold of exposure.

As a manifestation of the evidence for severe health effects from air pollution, virtually every major medical organization in the United States has called for stricter NAAQS for annual $PM_{2.5}$ and for ozone, including the American Medical Association, the American Thoracic Society, the American Lung Association, the American Academy of Pediatrics, the American College of Cardiology, the American Heart Association, the American Cancer Society, the American Public Health Assoc., and the National Assoc. of Local Boards of Health, and the

EPA's Clean Air Scientific Advisory Committee (considered the nation's premier air pollution experts). 77 Fed. Reg. at 38897.

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BEFORE THE UTAH AIR QUALITY BOARD

PETITION FOR A RULE CHANGE
OFFSET RULE

Submitted by,
WESTERN RESOURCE ADVOCATES
Utah Physicians for a Healthy Environment and HEAL Utah
January 14, 2015

Pursuant to Utah Code Ann. § 63G-3-601(2) and Utah Admin. Code R15-2-1 *et seq*., Western Resource Advocates, Utah Physicians for a Healthy Environment and HEAL Utah respectfully submit to the Utah Air Quality Board this Petition for a Rule Change. Attached to this Petition is the text of a proposed rule that would amend or supplement Utah regulations Utah Admin. Code R307-165-1 *et seq*.; $PM_{2.5}$ State Implementation Plan for the Salt Lake City, Utah Nonattainment Area, Section IX.A.21; $PM_{2.5}$ State Implementation Plan for the Provo, Utah Nonattainment Area, Section IX.A.22; $PM_{2.5}$ State Implementation Plan for the Logan, Utah-Idaho Nonattainment Area, Section IX.A.23; $PM_{2.5}$ Emission Limits and Operating Practices, Sections IX.11, 12 and 13; Utah Admin. Code R307-403 *et seq*. and/or the applicable part of Utah Admin. Code Rule 307. Exhibit "1" attached. Western Resource Advocates, HEAL Utah and Utah Physicians for a Healthy Environment ask the Air Quality Board, as authorized by Utah

Code Ann. § 63G-3-601(6)(b)(ii), to initiate rulemaking proceedings relative to the proposed rule as specified by Utah Code Ann. § 63G-3-301 and ultimately to adopt the proposed rule.

I. Purpose of the Rule

The purpose of the proposed rule is to require that reductions in emissions from existing sources be obtained to offset emission increases from specified new and modified sources of $PM_{2.5}$ and $PM_{2.5}$ precursors located in the Salt Lake City, Provo and Logan nonattainment areas (the "Three NAAs").[1] The "Offset Rule" lowers the thresholds, both for new sources and for modifications to existing sources, above which the obligation to acquire offsets applies. The required emission offsets will minimize increases in emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors to ensure, as the Clean Air Act requires, that the nonattainment areas will attain the $PM_{2.5}$ national ambient air quality standards (NAAQS) as expeditiously as practicable, *see ,e.g.*, 42 U.S.C. § 7513(c)(1) & (c)(2), and will continue to maintain the PM_{10} NAAQS. *See* 42 U.S.C. § 7505a(a).

II. Jurisdiction

The Air Quality Board has jurisdiction to consider, analyze and adopt this proposed rule pursuant to Utah Code Ann. § 19-2-104(1)(a) (Board may make rules "regarding the control, abatement, and prevention of air pollution from all sources and the establishment of the maximum quantity of air pollutants that may be emitted by an air pollutant source"); Utah Code Ann. § 19-2-104(1)(c)(i) (Board may make rules "requiring persons engaged in operations that result in air pollution to…install, maintain, and use emission monitoring devices, as the board finds necessary"); and, Utah Code Ann. § 19-2-109(2)(a) ("The [B]oard may establish emission control requirements by rule that in its judgment may be necessary to prevent, abate, or control air pollution that may be statewide or may vary from area to area, taking into account varying

[1] There are currently no large industrial sources in the Logan Nonattainment Area.

local conditions."); *See also* Utah State Implementation Plan, Section I (Legal Authority); 42 U.S.C. § 7513-7513b; 42 U.S.C. § 7501-7509a.

III. Petitioning Organizations

HEAL Utah is an environmental non-profit that promotes renewable energy and protects Utah's public health and environment from air pollution and nuclear, toxic, and dirty energy threats. Beginning in 2012, HEAL began working to urge state officials to do more to clean the air, creating online actions sending strong messages to policymakers, organizing historic rallies on the steps of the Capitol, and packing hearings where key air quality decisions are made.

Members of **Utah Physicians for a Healthy Environment**, the largest community service organization of its kind in Utah, include health professionals, toxicologists, biologists, chemists and engineers. The organization is dedicated to protecting the health and well-being of the citizens of Utah by promoting science-based health education and interventions that result in progressive, measurable improvements to air quality and the environment.

Western Resource Advocates (WRA) is a regional non-profit conservation organization with programs and staff spanning the Intermountain West, including Utah. Our mission is to protect the land, air and water of our region, using law, science, economics, advocacy, education, and action. To this end, we work to improve air quality, curb climate change and achieve environmentally sustainable management of energy, land, and water resources. WRA represented intervenor Utah Physicians for a Healthy Environment before the D.C. Circuit Court of Appeals, successfully defending an EPA decision to include the most populous portions of Tooele and Box Elder County in the Salt Lake City Nonattainment Area. *ATK Launch Systems v. EPA*, 669 F.3d 330 (D.C. Cir. 2012).

In carrying out their missions, these organizations have met with former Governor John Huntsman Jr., Governor Gary Herbert, members of the Utah Public Service Commission, staff of the Utah Division of Air Quality and the Environmental Protection Agency, several local mayors, Utah business leaders, media and concerned citizens to advocate for clean air and to advance efforts to reduce air pollution. We have repeatedly submitted comments to state and federal regulators and decision makers relative to specific projects and rulemaking processes that impact and influence the condition of Utah's air quality, environment and the health of the people living here.

The organizations have a strong legal interest in the promotion and ultimate adoption of the proposed rule. The Clean Air Act, which largely governs the content of Utah's State Implementation Plan (SIP), and Utah Air Conservation Act, have as goals the protection of public health and the environment. *E.g.* 42 U.S.C. § 7401(b)(1); Utah Code Ann. § 19-2-101(2). These statutes also guarantee the public a significant role in the government actions impacting air quality, including the drafting and review of SIPs. *E.g.* 42 U.S.C. § 7410(a)(1), (a)(2) & (a)(3)(B); 42 U.S.C. § 7410(l); *see also*, 42 U.S.C. § 7427; Utah Code Ann. § 63G-3-601(2); Utah Admin. Code R15-2-1 *et seq*. The organizations' staff and members, their families and their patients, who live, work, and recreate in the nonattainment areas, are harmed by air pollution, particularly concentrations of $PM_{2.5}$ that exceed the NAAQS, and are entitled, by the Clean Air Act and Utah Air Conservation Act, to air quality that meets the NAAQS. 42 U.S.C. § 7513-7513b; 42 U.S.C. § 7501-7509a; Utah Code Ann. § 19-2-107(2)(xii).

Where air quality exceeds the health-based standards, such as in the Salt Lake City, Provo and Logan nonattainment areas, the law requires that measures be taken immediately to bring air quality into compliance with NAAQS as expeditiously as practicable. *E.g.* 42 U.S.C. §

7502(a)(2)(A) & (a)(2)(B); 42 U.S.C. § 7513(c)(1) & (c)(2). Poor air quality and a failure to attain the NAAQS harm the organizations' staff and members, their families and patients because air pollution adversely affects their health, quality of life, recreational pursuits and aesthetic sense. Therefore, the organizations have a protectable legal interest in ensuring that rules promulgated under the Utah Air Conservation Act comply with the Clean Air Act, 42 U.S.C. § 7410; 42 U.S.C. § 7502; 42 U.S.C. § 7513a, and include the measures necessary to attain, *inter alia*, the 24-hour NAAQS as expeditiously as practicable. 42 U.S.C. § 7502(a)(2)(A), (a)(2)(B) &(c)(1); 42 U.S.C. § 7513(c)(1) & (c)(2).

IV. Adverse Health Impacts of Particulate Matter Pollution

Anyone living along the Wasatch Front has experienced our air pollution crisis, particularly wintertime "inversions" that settle on Salt Lake Valley for extended periods, causing concentrations of fine particulate matter ($PM_{2.5}$) to skyrocket and giving Utah the dubious distinction of having the nation's worst air quality. We have felt our eyes and lungs burn, fretted over whether to let our children outside to play, agonized about parents and grandparents with heart problems – even taken them to the emergency room as their symptoms worsened – and watched those with asthma struggle to breathe.

The health consequences of our dirty air are significant. The findings of 3,000 published research papers underscore key concepts now accepted by the medical community worldwide. First, there is no safe level of exposure to particulate pollution and no threshold below which negative health effects disappear. *Health Impacts of Particulate Air Pollution* at 1-4, attached as Exhibit "2." People literally die from exposure. For every 10 $\mu g/m^3$ increase in $PM_{2.5}$ concentrations, community mortality rates rise 14%. *Id*. at 1. Therefore, Utah Physicians estimates that 1,400 to 2,000 premature deaths occur every year in Utah from $PM_{2.5}$. *Id*. at 2.

Air pollution has the same extensive, broad-based health consequences as cigarette smoke because the signature physiologic response is the same – low-grade arterial inflammation, narrowing of blood vessels and increased propensity for clot formation, resulting in immediate increases in blood pressure, followed within hours by higher rates of heart attacks and strokes. *Id*. at 2-4.

The inflammation caused by $PM_{2.5}$ affects other organs. Particulate pollution penetrates every cell in the body, but is particularly well-documented in the brain. There, air pollution is linked to poor neurologic outcomes across the age spectrum, including loss of intelligence in children, higher rates of autism, and attention deficit disorders, as well as multiple sclerosis, Alzheimer's, and accelerated cognitive decline in the elderly. *Id*. at 5-6. Virtually every lung disease is caused or exacerbated, and growth of lung function during childhood can be irreversibly stunted by air pollution exposure. *Id*. at 6-7. Cancers, including childhood leukemia, lung, breast, prostate, cervical, brain and stomach cancer, occur at higher rates among people exposed to more air pollution, while cancer survival rates are reduced. *Id*.

The blood vessel inflammation caused by air pollution also affects the placenta, arguably representing the most significant public health impact of air pollution. Women who breathe more air pollution have higher rates of adverse pregnancy outcomes, their newborn babies showing increased birth defects, genetic damage, and a life-long disease burden that includes higher rates of metabolic disorders, reactive airway disease, cardiovascular disease, cancer, Alzheimer's and all diseases consequent to immuno-suppression. *Id*. at 8-9. The alteration of genetic material triggered by pollution can be seen within minutes, underscoring that short-term spikes in air pollution harm developing fetuses. *Id.*

V. Air Quality in the Nonattainment Areas

In 2015, the American Lung Association (ALA) designated the metropolitan area of Salt Lake City, Provo and Orem as having the 7th worst short-term $PM_{2.5}$ air pollution in the nation – the most polluted location outside of California.[2] Logan was ranked as the 8th worst area in the nation. *Id.* The ALA estimated that, in the Salt Lake City metropolitan area, there are 734,560 children under the age of 18; 214,000 adults over the age of 65; 45,600 children with asthma; 148,700 adults with asthma; 64,000 adults with chronic obstructive pulmonary disease; 99,000 adults with cardiovascular disease; 113,350 adults with diabetes; and, 284,260 individuals living in poverty, all of whom are particularly at risk for heart attacks, strokes, emergency room visits for asthma, cardiovascular disease, and an early death brought on by $PM_{2.5}$. *Id.* Based on this analysis, the ALA gave Cache, Davis, Salt Lake City, Utah and Weber counties "F" grades for their high particulate air pollution days in 2011-2013. *Id.* at 156. Over the same time frame, Salt Lake County was given an "F" for its high ozone pollution days, while Utah and Weber counties received "D" grades. *Id.*

Monitors quantify this public health emergency. Since 2009, Salt Lake, Davis, Weber, Utah, Cache counties and the most populous areas of Tooele and Box Elder counties have been formally designated as failing to attain the nation's 24-hour $PM_{2.5}$ NAAQS. 74 Fed. Reg. 58688, 58768-70 (November 13, 2009). These counties are included in the Salt Lake City, Provo and Logan nonattainment areas. *Id.* Salt Lake County, Utah County and Ogden City are also designated as nonattainment areas for the 24-hour PM_{10} NAAQS, and Salt Lake and Toole counties as nonattainment areas for the SO_2 NAAQS.[3]

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[2] http://www.stateoftheair.org/2015/assets/ALA_State_of_the_Air_2015.pdf at 11

[3] http://www3.epa.gov/airquality/greenbk/ancl.html. The 24-hour $PM_{2.5}$ standard is met at an ambient air quality monitoring site when the 3-year average of the annual 98th percentile 24-

Our air pollution is serious. In 2013, air quality along the Wasatch Front exceeded the 24-hour $PM_{2.5}$ standard on at least **43 days** – often by alarming levels. In January of that year, the monitor at the playground of Hawthorne Elementary School recorded 17 violations of the NAAQS, with a high reading of 62 $\mu g/m^3$, almost double the 24-hour standard of 35 $\mu g/m^3$.[4] In Lindon, January also brought 17 exceedances with a high reading of 123 $\mu g/m^3$ – 350% of the standard – while in Logan the standard was violated on 18 days, topping out at 97 $\mu g/m^3$. *Id.* Over the entire year, monitored values in Logan exceeded the standard on 39 days and values in Salt Lake City on 37 days.[5] This means that for more than a month, our community – including its most vulnerable populations, the young and the old – were subjected to levels of air pollution considerably higher than concentrations deemed unsafe and unhealthy at exposures lasting only 24 hours. 71 Fed. Reg. 61144, 61150-77 (Oct. 17, 2006).

In January of 2014, the Hawthorne monitor recorded that the 24-hour $PM_{2.5}$ standard was exceeded on 13 days and the Logan monitor determined violations on 11 days. The highest reading that month – 68 $\mu g/m^3$ – was in Ogden.[6] The winter of 2014 to 2015 was an outlier – the warmest Utah winter on record.[7] The average temperature over the months December 2014 to February 2015 was 6.8º F higher than the 20th Century average temperature. *Id.* The average

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hour average $PM_{2.5}$ concentration is less than or equal to 35 $\mu g/m^3$. As EPA explains, the standard is "defined as an integer (zero decimal places) as determined by rounding. For example, a 3-year average 98th percentile concentration of 35.49 $\mu g/m^3$ would round to 35 $\mu g/m^3$ and thus meet the 24-hour standard and a 3-year average of 35.50 $\mu g/m^3$would round to 36 and, hence, violate the 24-hour standard."
http://www3.epa.gov/ttn/naaqs/standards/pm/s_pm_history.html.

[4] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN13.pdf

[5] http://www.airmonitoring.utah.gov/dataarchive/archpm25.htm

[6] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN14.pdf

[7] http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php?periods%5B%5D=3&parameter=tavg&state=42&div=0&month=2&year=2015#ranks-form

minimum temperature for that period was also the warmest ever and the average maximum temperature the second warmest on record and the warmest since 1981. *Id.* As a result, air quality in the nonattainment areas generally met the standard. In January 2015, the Hawthorne monitor logged 4 readings over the standard, the highest at 53 $\mu g/m^3$, while the Rose Park monitor documented 5 exceedances, the highest at 56 $\mu g/m^3$.[8]

Periods of high ozone concentrations are increasingly plaguing the Wasatch Front. In 1978, Davis and Salt Lake counties were designated as not meeting the then applicable 1-hour ozone NAAQS.[9] EPA revised the ozone NAAQS, first in 1997, by replacing the 1-hour standard with an 8-hour standard and then by lowering the standard in 2008.[10] Initially, Utah was deemed in compliance with the 1997 and 2008 8-hour ozone NAAQS.[11] However, now significant portions of the Wasatch Front are failing to comply with the 2008 8-hour ozone standard. For example, in 2012, there were 13 days in the Salt Lake City-Ogden-Clearfield airshed that exceeded the **2008** 8-hour ozone standard (.075 ppm) and 5 days in the Provo-Orem airshed.[12] The greater Salt Lake City area recorded 11 days that exceeded the 2008 standard in 2013 and Provo-Orem 5 days. In 2014, air quality in both the Salt Lake City and Provo areas exceeded the 2008 ozone standard on 4 days. Preliminary 2015 data show 11 days where readings in the Salt Lake City-Ogden-Clearfield airshed surpassed the 8-hour ozone standard.[13]

On October 1, 2015, EPA strengthened the 8-hour NAAQS for ground-level ozone to 70 parts per billion (ppb), based on extensive scientific evidence about ozone's adverse effects on

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[8] http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf
[9] http://www3.epa.gov/airquality/greenbook/phistory_ut.html
[10] http://www3.epa.gov/ttn/naaqs/standards/ozone/s_o3_history.html
[11] http://www3.epa.gov/ozonedesignations/
[12] http://www.airmonitoring.utah.gov/dataarchive/archo3.htm (Violation Days (CSV))
[13] http://www3.epa.gov/airdata/ad_rep_mon.html

public health and welfare.[14] EPA determined, based on existing monitored data for ozone concentrations in Utah, that Salt Lake, Utah, Weber, Tooele, Duchesne and Uintah counties are not attaining the 2015 ozone standard.[15] Utah will be required to develop, secure EPA approval of and implement an ozone SIP for any nonattainment area that is not in compliance with the 2015 ozone standard. *See* 42 U.S.C. §§ 7501-7509 & 7511-7511f.

Examination of predicted and monitored "design values," representing the 3-year average of the annual 98th percentile 24-hour $PM_{2.5}$ concentrations and the manner in which compliance with the 24-hour $PM_{2.5}$ NAAQS is determined, confirm that the Three NAAs will be plagued by dangerous air quality for years to come. For example, the Director's air quality models concluded that the Salt Lake City and Provo nonattainment areas would not meet the 24-hour $PM_{2.5}$ NAAQS until December 14, 2019, and then only by the slimmest margin. Utah SIP, Section IX. Part A.21 at 40 (December 3, 2013) ("[T]his plan identifies an attainment date of December 14, 2019, and requests that the Administrator extend the attainment date the full 5 years permissible under Section 172(a)(2) of the Act."); Utah SIP, Section IX. Part A.22 at 40 (Provo Nonattainment Area); Utah SIP, Section IX. Part A.21 (December 3, 2014) at 58, fn. 1 ("The SIP revision adopted by the Utah Air Quality Board on December 4, 2013 had demonstrated attainment by December 14, 2019. This SIP revision includes a demonstration under CAA Section 189(a)(1)(B) that it is impracticable to attain the NAAQS in 2015.")

Moreover, in the 2014 $PM_{2.5}$ SIP, the Director estimated that, after accounting for emission reductions from the SIP measures, the 2013-2015 "design value" – the 3-year average of the annual 98th percentile 24-hour $PM_{2.5}$ concentrations – at the Hawthorne, Salt Lake City

[14] http://www3.epa.gov/ozonepollution/actions.html
[15] http://www3.epa.gov/ozonepollution/maps.html

monitoring station would be 37 µg/m^3. Utah SIP, Section IX. Part A.21 at 43 (December 3, 2014) (2015 design value based on the "combination of SIP reductions on point sources and new rules to be implemented that will affect smaller commercial and industrial businesses"). Likewise, the Director anticipated a 2015 design value for the Lindon, Utah County monitoring station of 36 µg/m^3. Utah SIP, Section IX. Part A.22 at 43 (December 3, 2014) Given that Utah is having extreme difficulty securing the emission reductions necessary to attain the NAAQS and is failing to show attainment before December 2019, the difference between these 2015 design values and attainment constitutes a considerable barrier to compliance. Thus, when the effects of the 2014 SIP measures and emission reductions were **modeled**, the 2015 design values for the Salt Lake City and Provo nonattainment areas were predicted to exceed the NAAQS by a considerable margin.

Moreover, 2015 design values based on **monitored** 24-hour $PM_{2.5}$ concentrations confirm that the nonattainment areas are not close to attaining the NAAQS. The 3-year averages of the annual 98th percentile monitored $PM_{2.5}$ concentrations for the Salt Lake City and Provo nonattainment areas, calculated by averaging the 98th percentile monitored 24-hour $PM_{2.5}$ concentrations for 2013 and 2014 with the 98th percentile monitored January 2015 concentrations, are 43.8 µg/m^3 and 42.8 µg/m^3, respectively.[16, 17] These design values are

[16] If the January 2015 98th percentile concentration monitored at Hawthorne (29.3 µg/m^3) is averaged with the 98th percentile monitored values from 2013 and 2014, 58.8 µg/m^3 and 43.3 µg/m^3 respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **43.8 µg/m^3**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[17] If the January 2015 98th percentile concentration monitored at Lindon to date (26.9 µg/m^3) is averaged with the 98th percentile monitored values from 2013 and 2014, 72.4 µg/m^3 and 29.1 µg/m^3 respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **42.8 µg/m^3**, which eclipses the NAAQS.

substantially higher than the NAAQS and significantly higher than the **modeled** values of 37 $\mu g/m^3$ and 36 $\mu g/m^3$.

More importantly, the **monitored** design values (3-year average of the annual 98th percentile) for the Hawthorne monitor – 38.2 $\mu g/m^3$ (2010-2012), 41.1 $\mu g/m^3$ (2011-2013), 43.7 $\mu g/m^3$ (2012-2014),[18] and 43.8 $\mu g/m^3$ (2013-January 2015) – show a steady trend **away** from attainment and certainly do **not** show linear progress toward attainment of the 24-hour $PM_{2.5}$ standard. Similarly, the **monitored** design values for the Lindon monitor – 32.4 $\mu g/m^3$ (2010-2012), 44.3 $\mu g/m^3$ (2011-2013), 41.8 $\mu g/m^3$ (2012-2014),[19] and 42.8 $\mu g/m^3$ (2013-January 2015) and the Logan monitor – 37.3 $\mu g/m^3$ (2010-2012), 45.8 $\mu g/m^3$ (2011-2013), 45 $\mu g/m^3$ (2012-2014),[20] and 43.2 $\mu g/m^3$ (2013-January 2015)[21] – fail to establish consistent progress toward attainment of the NAAQS.[22]

VI. Air Quality Is of Overwhelming Concern to Utahns.

Addressing Utah's poor air quality is increasingly a top concern of Utah's urban dwellers. A *Salt Lake Tribune* poll released on January 20, 2014 found that 57% of Utahns reported being

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http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[18] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[19] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[20] http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

[21] If the January 2015 98th percentile concentration monitored at the Logan monitor (21.8 $\mu g/m^3$) is averaged with the 98th percentile monitored values from 2013 and 2014, 68 $\mu g/m^3$ and 39.9 $\mu g/m^3$ respectively, the result, representing the 3-year average of the annual 98th percentile of 24-hour $PM_{2.5}$ concentrations, comes to **43.2 $\mu g/m^3$**, which eclipses the NAAQS. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf and http://www.airmonitoring.utah.gov/dataarchive/PM25JAN15.pdf

[22] December 2015 monitored values for the Three NAAs have been high enough that the annual 98th percentile of the 24-hour $PM_{2.5}$ concentration will ultimately be greater than the numbers used to make these calculations. Thus, the design values for 2013-2015 will increase.

more concerned about air quality than they were five years ago. Those polled also favored, by a 3 to 1 margin, tougher emission standards for industry.

On January 25, 2014, more than 5,000 Utahns stood on the steps of the Capitol to advocate for state government intervention in the fight against air pollution. Protesters wore surgical and gas masks to demonstrate their understanding that Wasatch Front air quality threatens their health. A child bore a sign stating simply that "I want to play outside." Another common slogan read "Clean Air Now, No Excuses." Dr. Moench, founder of Utah Physicians for a Healthy Environment, told the crowd, "The most fundamental right there is is the right to breathe clean air. Air pollution tarnishes our community reputation, erodes our quality of life and stifles our economy much as it does our lungs."[23]

A survey released by Envision Utah on January 15, 2015 revealed that Utahns rank poor air quality as detracting from their quality of life more than any other aspect of living in the state – more than Utah's lack of diversity, education constraints and scarcity of water combined.[24] Survey authors noted that "poor air quality threatens core values identified in the survey, attacking the health of families and impairing the ability to get out and enjoy that scenic beauty."[25] The study concluded while Utahns rank air quality as one of the most important issues in the state, they also believe that Utah is performing worse on air quality than on any other issue. *Id.* "The concern about air quality relates primarily to the impacts to health, the

[23] http://www.sltrib.com/sltrib/news/57447995-78/capitol-clean-industry-lake.html.csp
[24] http://www.deseretnews.com/article/865620440/Utah-residents-rank-air-pollution-as-No-1-threat-to-quality-of-life.html?pg=all.
[25] http://www.deseretnews.com/article/865620440/Utah-residents-rank-air-pollution-as-No-1-threat-to-quality-of-life.html?pg=all

inability to enjoy the outdoors during poor air quality episodes, and the legacy we leave for future generations," Envision Utah stated. "Utahns want the air to improve."[26]

In April and May, 2015, 52,845 Utahns participated in a more detailed Envision Utah survey. These participants also "ranked air quality as one of the state's most important issues, and a resounding three out of four Utahns voted to reduce emissions by 40% from [today's levels], even as Utah's population nearly doubles."[27] This 75% of survey participants indicated that they wanted air quality that was well within national health-based standards. *Id.*

VII. Regulatory Background

On October 17, 2006, EPA revised the 24-hour NAAQS for $PM_{2.5}$ to provide increased protection of public health by lowering its level to 35 $\mu g/m^3$. 71 FR 61224 (October 17, 2006). Effective on December 14, 2009, EPA designated the Three NAAs as nonattainment for the 2006 $PM_{2.5}$ standard. 74 Fed. Reg. 58688, (Nov. 13, 2009).[28] On June 2, 2014, EPA classified all the areas that were designated in 2009 – including the Three NAAs – as "Moderate" nonattainment areas and required those areas to submit Moderate SIPs to EPA by December 31, 2014. 42 U.S.C. § 7513(a); 79 Fed. Reg. 31566 (June 2, 2014).[29] Among other requirements, the Moderate SIPs for the Three NAAs must provide for the implementation of all reasonably available control measures [RACM] for the control of $PM_{2.5}$ as expeditiously as practicable, but no later than December 14, 2013. 42 U.S.C. § 7502(c)(1); 42 U.S.C. § 7513a(a)(1)(C). The plans must also either demonstrate that the plan will provide for attainment by the Moderate attainment date –

[26] http://www.sltrib.com/news/2063029-155/utahns-rank-poor-air-quality-the
[27] http://yourutahyourfuture.org/topics/air-quality/item/48-your-utah-your-future-survey-results
[28] EPA originally designated these areas under Clean Air Act title I, part D, subpart 1. Subsequently, on January 4, 2013, the D.C. Circuit held that EPA should have implemented the 2006 $PM_{2.5}$ 24-hour standard based on both CAA title I, part D, subpart 1 and subpart 4.
[29] The rule did not affect the Moderate area attainment date of December 31, 2015.

December 31, 2015 – or demonstrate that attainment by that date is impracticable. 42 U.S.C. § 7513a(a)(1)(B). As explained above, Utah submitted SIPs for the Three NAAs that demonstrated attainment of the 24-Hour $PM_{2.5}$ NAAQS by December 31, 2015 was impracticable.

That demonstration has proven to be accurate. Despite fairly good air quality in 2015 to date, none of the nonattainment areas will attain the 24-hour $PM_{2.5}$ standard by December 31, 2015 – the Moderate attainment date.[30] Because the 24-hour $PM_{2.5}$ standard is based on the 3-year average of the annual 98th percentile, and annual values for 2013 and 2014 were so high, the relevant 3-year average (2013-2015) for each nonattainment area will be considerably greater than 35 $\mu g/m^3$.[31] Based on January 2015 monitored data, the 2013-2015 design values are 43.8 $\mu g/m^3$ for the Hawthorne monitor, 42.8 $\mu g/m^3$ for the Lindon monitor, and 43.2 $\mu g/m^3$ for the Logan monitor. These values exceed the 24-hour standard by a substantial amount.

On November 9, 2015, acknowledging that the Three NAAs could not attain the 24-hour $PM_{2.5}$ standard by December 31, 2015, EPA proposed to "bump up" the designation of the Salt Lake City, Provo and Logan nonattainment areas to "Serious" areas prior to the Moderate attainment date pursuant to its purported 42 U.S.C. § 7513(b)(1), Clean Air Act § 188(b)(1), authority. 80 Fed. Reg. 69173, 69178 (Nov. 9, 2015); 80 Fed. Reg. 69172 (Nov. 9, 2015). Alternatively, after the Moderate attainment date, EPA is required to designate the Three NAAs

[30] 42 U.S.C. § 7513(c)(1) (the moderate "attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as nonattainment"); 74 Fed. Reg. 58688, 58768-70 (November 13, 2009) (designating Salt Lake City, Provo and Logan nonattainment areas as of December 14, 2009).
[31] Footnotes 16, 17 and 21, *supra*. http://www.airmonitoring.utah.gov/dataarchive/Y98pt12-14Avepm25.pdf

as "Serious" areas by operation of the law pursuant to 42 U.S.C. § 7513(b)(2), Clean Air Act § 188(b)(2).

Regardless of the route the Three NAAs take to designation as Serious areas, the Director must, no later than "18 months after reclassification of the area as a Serious Area," 42 U.S.C. § 7513a(b)(2),[32] submit "provisions to assure that the best available control measures for the control of [$PM_{2.5}$] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area." 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. § 7513a(b)(2) (referencing paragraph (1)(B)). In other words, by June 2017 or shortly thereafter, the Director must, at minimum, present a "Serious" SIP identifying all best available control measures (BACM) and establishing that these measures will be implemented in the nonattainment areas no later than 2019.

The designation of the Three NAAs as "Serious" underscores the need for the immediate implementation of the effective and potent measures necessary to bring these areas into attainment as soon as possible. Because of the significant threat to public health and the environment posed by air pollution that exceeds the national standards, the Clean Air Act demands that air quality in nonattainment areas be brought into compliance with the NAAQS as soon as possible. Specifically, where air quality exceeds the health-based standards, such as in the Three NAAs, the Clean Air Act requires that measures be taken immediately to attain NAAQS as "expeditiously as practicable." *E.g.* 42 U.S.C. § 7502(a)(2)(A) & (a)(2)(B); 42 U.S.C. § 7513(c)(1) ("For a Moderate Area, the attainment date shall be as expeditiously as practicable but no later than the end of the sixth calendar year after the area's designation as

[32] Reclassification dates to the failure of the area to attain the NAAQS – December 31, 2015. *See* 42 U.S.C. § 7513(b)(2)(A) ("[T]he area shall be reclassified by operation of law as a Serious Area.").

nonattainment") & (c)(2) ("For a Serious Area, the attainment date shall be as expeditiously as practicable but no later than the end of the tenth calendar year beginning after the area's designation as nonattainment."). Thus, the law guarantees Utah's citizens air that meets the national standards as promptly as feasible.

VIII. The Proposed Rule Is Legally Mandated and Represents a Sound Strategy for Attaining the 24-Hour $PM_{2.5}$ NAAQS as Expeditiously as Possible.

A. The Offset Rule Will Minimize Increases of $PM_{2.5}$ and $PM_{2.5}$ Precursors.

The Offset Rule will minimize emission increases of $PM_{2.5}$ and $PM_{2.5}$ precursors from industrial sources by requiring that emission reductions be obtained from existing sources to "offset" emission increases from new and modified sources of $PM_{2.5}$ and $PM_{2.5}$ precursors located in the Three NAAs. The required emission offsets will minimize increases in emissions to ensure, as the Clean Air Act requires, that these areas will attain the 24-hour $PM_{2.5}$ national standards as expeditiously as practicable, *see, e.g.*, 42 U.S.C. § 7513(c)(1) & (c)(2), and will continue to maintain the PM_{10} NAAQS. *See* 42 U.S.C. § 7505a(a).

Federal law applicable to Utah already requires, at a minimum, offsets for new major sources and major modifications to existing major sources of $PM_{2.5}$ and $PM_{2.5}$ precursors. 42 U.S.C. § 7503(a)(1)(A). In Serious nonattainment areas, the Clean Air Act defines a "major" source as one that emits (or has the potential to emit) 70 tons per year (tpy) of $PM_{2.5}$. 42 U.S.C. § 7513a(b)(3) (explaining that for a Serious Area, "major source" includes "any stationary source…that emits, or has the potential to emit, at least 70 tons per year" of $PM_{2.5}$); 80 Fed. Reg. 15340, 15463 (March 23, 2015). Any control requirements in a SIP applicable to major stationary sources of particulate matter must also apply to major stationary sources of particulate precursors. 42 U.S.C § 7513a(e). Therefore, for Serious nonattainment areas, EPA has proposed to set the major source threshold for the $PM_{2.5}$ precursors NO_X, SO_2 and VOCs to 70 tpy. 80

Fed. Reg. at 15433 & 15463. These means that under current federal law, in a Serious nonattainment area, offsets are required for a new major source that has the potential to emit 70 tpy or more of $PM_{2.5}$, NO_X, SO_2 or VOCs.

For the purpose of determining when a change to a major source qualifies as a major modification, EPA has proposed to define a "significant" emissions increase[33] as an increase of 10 tpy of $PM_{2.5}$ and 40 tpy of the $PM_{2.5}$ precursors NO_X, SO_2 and VOCs. *Id.* at 15463. Therefore, as proposed under current federal law, in a Serious nonattainment area, offsets would be required for a modification to a major source (emitting 70 tpy or more of $PM_{2.5}$, NO_X, SO_2 or VOCs) resulting in an emissions increase of 10 tpy or more of $PM_{2.5}$ and 40 tpy or more of the $PM_{2.5}$ precursors NO_X, SO_2 and VOCs.

The Offset Rule merely reduces these thresholds for the purposes of determining when offsets are required. Under the rule, offsets are required for any new stationary source that would be located in the Three NAAs and that has the potential to emit $PM_{2.5}$ or $PM_{2.5}$ precursors in an amount equal to or greater than the following emissions levels:

$PM_{2.5}$	25 tpy
SO_2	40 tpy
NO_X	40 tpy
VOCs	40 tpy
Total of $PM_{2.5}$ + SO_2 + NO_X + VOCs	50 tpy

[33] In this context, significant emissions increase refers to a significant emissions increase **and** a significant net emissions increase.

As a result of the offset requirement, emission increases from these new sources would be balanced by emission reductions with a result that guarantees a net benefit to air quality.

Similarly, the Offset Rule mandates offsets for a modification to an existing source where the modification would increase emissions of $PM_{2.5}$ or $PM_{2.5}$ precursors in an amount equal to or greater than the following emissions levels:

$PM_{2.5}$	25 tpy
SO_2	40 tpy
NOx	40 tpy
VOCs	40 tpy
Total of $PM_{2.5}$ + SO_2 + NOx + VOCs	50 tpy

Finally, under the Offset Rule, offsets must be obtained for any modification to a "large" existing source – defined as having the potential to emit at least 70 tons per year of $PM_{2.5}$ or $PM_{2.5}$ precursors – where the modification would result in an increase of emissions of $PM_{2.5}$ or $PM_{2.5}$ precursors in an amount equal to or greater than the following emissions levels:

$PM_{2.5}$	5 tpy
SO_2	20 tpy
NOx	20 tpy
VOCs	20 tpy
Total of $PM_{2.5}$ + SO_2 + NOx + VOCs	30 tpy

As explained above, in Serious nonattainment areas, the Clean Air Act defines a "major source" as any stationary source that emits or has the potential to emit 70 tons per year or more

of $PM_{2.5}$ and $PM_{2.5}$ precursors. 42 U.S.C. § 7513a(b)(3) & (e). Therefore, the Offset Rule requires that emission increases from modifications to sources defined as "major" in Serious nonattainment areas at the levels listed above be offset by corresponding emission reductions. Again, the rule mandates that emission increases from these modifications would be balanced by corresponding emission reductions and guarantees a net improvement in air quality in the nonattainment area.

Importantly, recognizing that emissions of $PM_{2.5}$ are more potent and contribute more directly to increased concentrations of $PM_{2.5}$ than do emissions of $PM_{2.5}$ precursors, the Offset Rule restricts interpollutant trading. For example, increases in $PM_{2.5}$ must be offset by reductions of $PM_{2.5}$, while emissions of SO_2 may be offset by reductions of SO_2 and $PM_{2.5}$. NO_X emission increases may be offset by reductions of NOx, $PM_{2.5}$ and VOCs and VOCs increases may be offset by reductions of VOCs and $PM_{2.5}$. Interpollutant trading in combinations other than those provided by the rule are allowed only if there is a demonstration that the proposed offsets will yield a net air quality improvement.

The Offset Rule is modeled after two existing Utah rules, Utah Admin. Code R307-421 and R307-403-5. These rules similarly lowered the threshold for requiring offsets for PM_{10} and PM_{10} precursors with the goal of attaining the 24-hour PM_{10} NAAQS expeditiously. As with $PM_{2.5}$, federal law applicable to Utah already requires, at a minimum, offsets for new major sources and major modifications to existing sources of PM_{10} and PM_{10} precursors. 42 U.S.C. § 7503(a)(1)(A). For Moderate areas, the Clean Air Act defines a "major" source as one that emits (or has the potential to emit) 100 tpy of PM_{10} or PM_{10} precursors. 40 C.F.R. § 51.165(a)(1)(iv)(A)(*1*); 42 U.S.C. § 7513a(a)(1)(A). For the purpose of determining when a

project would be a major modification, federal law defines a "significant" emissions increase[34] as an increase of 15 tpy of PM_{10} and 40 tpy of the PM_{10} precursors NO_X, SO_2 and VOCs. 40 C.F.R. § 51.165(a)(1)(x)(A).

Like the Offset Rule, Utah Admin. Code R307-421 and R307-403-5 require offsets for emission increases of PM_{10} and PM_{10} precursors from new sources and modifications at thresholds much lower than those imposed by federal law. Affecting both Salt Lake and Utah counties, R307-421 applies equally to new sources (or the potential to emit of a new source) and modifications (or an emission increase from a modification of a source). In either instance, if the emission increases of the PM_{10} precursors NO_X or SO_2 from the project equal 50 tpy or more, offsets in a ratio of 1.2 units of emission decrease to 1unit of emission increase are required. Utah Admin. Code R307-421-3(1)(a). For an emission increase of NO_X or SO_2 of 25 tpy or more, but less than 50 tpy, an offset ratio of 1 to 1 is mandated. *Id.* at 3(1)(b).

R307-403-5 applies to sources in or that impact PM_{10} nonattainment areas and similarly equates emission increases from new sources (or the potential to emit from a new source) to emission increases from modifications (or the emission increases from a modification of an existing source). In either case, if the emission increases of PM_{10}, NO_X and SO_2 from the project combined equal 50 tpy or more, an offset ratio of 1.2 to 1 is required. Utah Admin. Code R307-403-5(1)(b). For a combined project emission increase of PM_{10}, NO_X and SO_2 of 25 tpy or more, but less than 50 tpy, an offset ratio of 1 to 1 is mandated. Utah Admin. Code R307-403-5(1)(c). These offsets may be met by any combination of PM_{10}, NO_X and SO_2 reductions. Utah Admin. Code R307-403-5(2). Thus, both the existing Utah PM_{10} offset rules and the proposed Offset

[34] In this context, significant emissions increase refers to a significant emissions increase **and** a significant net emissions increase.

Rule acknowledge that reducing the offset threshold is a reasonable way to help achieve the relevant 24-hour particulate matter NAAQS as expeditiously as possible. Moreover, these rules lower the thresholds for new and modified sources to a comparable extent. Chart 1 compares the threshold at which existing federal law requires offsets for PM_{10} and PM_{10} precursors to the thresholds imposed by Utah Admin. Code R307-403-5 for both new sources and modifications. Exhibit "3" attached. Chart 2 likewise compares existing federal law thresholds for $PM_{2.5}$ and $PM_{2.5}$ precursors to those envisioned by the proposed Offset Rule. *Id.*

B. The Proposed Rule Is a Necessary Component of Both a Moderate and Serious SIP.

1. Utah Must Implement All Reasonably Available Control Measures and Additional Reasonable Measures.

A nonattainment SIP shall provide for the implementation of all reasonably available control measures (RACM), including reasonably available control technology (RACT), as expeditiously as practicable. 42 U.S.C. § 7502(c)(1); 80 Fed. Reg. at 15369.[35] For particulate matter nonattainment areas, Congress mandated that Moderate area attainment plans contain provisions to assure that RACM and RACT are implemented no later than four years after designation, 42 U.S.C. § 7513a(a)(1)(C), or in the case of the Utah nonattainment areas, no later than December 2013. 74 Fed. Reg. at 58768-70 (November 13, 2009) (designating the Three NAAs on December 14, 2009). Thus, Utah's Moderate SIP must provide for the implementation of RACM and RACT for existing sources of $PM_{2.5}$ and $PM_{2.5}$ precursors as expeditiously as practicable, but no later than December 2013. This is true even though the Three NAAs cannot

[35] *Id.* at 15464 (RACM "is any technologically and economically feasible measure that can be implemented in whole or in part within 4 years after the date of designation of a $PM_{2.5}$ nonattainment area and that achieves permanent and enforceable reductions in direct $PM_{2.5}$ emissions and/or $PM_{2.5}$ precursor emissions from sources in the area. RACM includes reasonably available control technology (RACT)").

practicably attain by the statutory attainment date and therefore will be designated as "Serious" areas. 80 Fed. Reg. at 15369.

Beyond RACM and RACT, nonattainment SIPs must "include enforceable emission limitations, and such other control measures, means or techniques. . . as may be necessary or appropriate to provide for attainment." 42 U.S.C. § 7502(c)(6). This requires states to implement any technologically and economically feasible control measures, including control technologies, for all sources of direct $PM_{2.5}$ and $PM_{2.5}$ precursors, that can only be implemented after the 4 year deadline for RACM and RACT has passed, but before six years after the designation date. 80 Fed. Reg. at 15368.[36] In the case of the Three NAAs, Utah must have imposed these additional reasonable measures that are capable of being implemented before December 31, 2015. In Moderate areas that cannot practicably comply with the standard by the statutory attainment date, states must still implement all RACM and RACT, together with any additional reasonable measures, on sources in the nonattainment area. 80 Fed. Reg. at 15369.

2. Utah Must Implement All Best Available Control Measures.

As they have failed to attain the 24-hour $PM_{2.5}$ standard by December 31, 2015, the Three NAAs will be designated "Serious" area by EPA as an operation of law. 42 U.S.C. § 7513(b)(2)(A). Alternatively, EPA has proposed to acknowledge that the Three NAAs cannot practicably attain the standard and, prior to the Moderate attainment date, designate the areas as "Serious" nonattainment areas. 42 U.S.C. § 7513(b)(1). In either case, the Director must, no later than "18 months after reclassification of the area as a Serious Area," 42 U.S.C. §

[36] *Id.* at 15464 ("Additional reasonable measure is any control measure that otherwise meets the definition of [RACM] but can only be implemented in whole or in part during the period beginning 4 years after the date of designation of a nonattainment area and no later than the end of the sixth calendar year following the date of designation of the area.").

7513a(b)(2), submit "provisions to assure that the best available control measures for the control of PM_{10} [including $PM_{2.5}$] shall be implemented no later than 4 years after the date the area is classified (or reclassified) as a Serious Area." 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. § 7513a(b)(2) (referencing paragraph (1)(B)). Thus, by June 14, 2017, the Director must, at minimum, present a "Serious" SIP identifying all best available control measures (BACM) and establishing that these measures will be implemented in the nonattainment areas no later than December 2019.

BACM is "the maximum degree of emission reduction achievable from a source or source category which is determined on a case-by-case basis, considering energy, economic and environmental impacts and other costs." 80 Fed. Reg. at 15405; *id.* at 15464 (BACM "is any technologically and economically feasible control measure that can be implemented in whole or in part within 4 years after the date of reclassification of a $PM_{2.5}$ nonattainment area and that generally can achieve greater permanent and enforceable emissions reductions in direct $PM_{2.5}$ emissions and/or emissions of $PM_{2.5}$ precursors from sources in the area than can be achieved through the implementation of RACM on the same source(s). BACM includes best available control technology (BACT).").

3. The Offset Rule is a Necessary Element of RACM and BACM and Required to Ensure that the Three NAAs Will Attain the 24-Hour $PM_{2.5}$ NAAQS Expeditiously.

Utah is currently under significant obligation to impose reasonable and best control measures on and secure substantial reduce emissions from industrial sources in the nonattainment areas. The Clean Air Act requires Utah to have implemented all RACM and other additional reasonable measures by December 31, 2015. Starting December 31, 2015, the State is also required to begin implementing any BACM as expeditiously as practicable. Ultimately, the Clean Air Act mandates attainment of the 24-hour $PM_{2.5}$ standard as soon as is feasible. There is

real urgency in the mandate that Utah immediately take the steps necessary to bring the Three NAAs into attainment with the standard.

Initially, the Offset Rule will minimize emission increases of $PM_{2.5}$ and $PM_{2.5}$ precursors from industrial sources by requiring emission reductions from existing sources to offset emission increases from new or modified sources of $PM_{2.5}$ and $PM_{2.5}$ precursors located in the Three NAAs. This is a reasonable measure and an important step toward attaining the NAAQS as expeditiously as practicable as Utah attempts to reduce emissions of these pollutants significantly and to do so from every sector.

That the rule is reasonable and could have been enacted before the Moderate attainment date – and therefore must be implemented as part of the Moderate SIP – is underscored by the fact that Utah adopted a very similar rule as part of its effort to bring Salt Lake and Utah counties and Ogden into attainment with the 24-hour PM_{10} standard. Before 2006, the PM_{10} standards were the sole mechanisms by which particulate matter air pollution was regulated. At that time, Utah properly acknowledged that a rule that would minimize emission increases of PM and PM precursors from industrial sources was a technologically and economically feasible measure that could be implemented at any time. The same reasoning applies here – and even more strongly – as Utah failed to attain the 24-hour $PM_{2.5}$ NAAQS by December 31, 2015, and monitored design values exceed the standard by levels that show substantially more emission reductions are necessary.

Adoption of the Offset Rule is further mandated because it is also BACM and therefore, given that the nonattainment areas will necessarily be designated as Serious areas, must be implemented as expeditiously as possible. *See* 42 U.S.C. § 7513a(b)(1)(B); 42 U.S.C. § 7513(c)(2). The Offset Rule represents "the maximum degree of emission reduction achievable"

from industrial sources. Again, given Utah's adoption of a similar rule to resolve the state's failure to attain the PM_{10} standards, the Offset Rule is plainly in keeping with Utah's previous reasonable approach to particulate matter pollution and represents a measure that will achieve the maximum reductions of industrial emissions.

Thus, whether looked at through the lens of RACM or BACM, the Offset Rule is a feasible element of a Moderate or Serious SIP and a reasonable measure that will minimize increases in emissions or secure the maximum degree of emission reduction achievable to ensure, as the Clean Air Act requires, that the nonattainment areas will attain the 24-hour $PM_{2.5}$ national standards as expeditiously as practicable, *see*, *e.g.*, 42 U.S.C. § 7513(c)(1) & (c)(2), and will continue to maintain the PM_{10} NAAQS. *See* 42 U.S.C. § 7505a(a).

C. The Proposed Rule Furthers Other Legal and Policy Goals.

State and local officials in Utah have sought for years to identify appropriate measures to help reduce dangerous emissions of air pollution and bring Utah into compliance with the 24-hour NAAQS for $PM_{2.5}$. Those efforts have borne fruit, but additional steps – including this proposed rule – are necessary to ensure expeditious and long-term compliance with the standard.

First, given that all projections agree that Utah's population and economy will continue to grow significantly in the coming decades, our air quality policies will need to keep pace by enacting controls to address expanding mobile, area and point sources. Census data released earlier this year[37] show familiar statistics: a five-year population growth rate that ranks fourth in the nation; the second highest growth in new homes over the past year; and, the third highest

[37] *Another Piece to the Puzzle: Census Reveals Utah's Growth Among Top In Nation*, Deseret News, 2015-05-20, http://www.deseretnews.com/article/865629128/Another-piece-to-the-puzzle-Census-reveals-Utahs-growth-among-top-in-nation.html?pg=all

over the previous five. The state's population recently surpassed three million residents – and is projected to hit four million in as few as 16 years.[38]

According to a detailed report from the Utah Foundation,[39] which examined a wide array of research, much of that growth is expected not just in our non-attainment areas, but in more far-flung suburban areas, raising the specter of a significant increase in commutes and vehicle miles travelled (VMTs). Predictions of Utah's future emissions inventory offer some significant reasons for hope – particularly due to a slow but steady reduction from the mobile sector. Our cars and trucks will pollute less both because of the EPA's Tier 3 program and also from increased Corporate Average Fuel Economy (CAFE) standards. But much of those gains will be eaten away by increases in population, the number of homes and in overall VMTs, due to more cars on the road and the expansion of the suburbs. These trends mean that Utah will need to continue to find additional emission reductions and bolster its regulatory oversight for decades to come – twin goals that our proposed rule will accomplish.

Secondly, Utah faces serious repercussions if it does not meet the 24-hour $PM_{2.5}$ NAAQS by 2019. While the precise penalties are not certain, the Clean Air Act gives a clear idea of what might come. Sanctions include: 1) being required to adopt the most stringent measures being implemented in any other states, 42 U.S.C. § 7513(e); and, 2) having to identify an additional 5 percent emission cuts across the board every year until the standard has been attained. 42 U.S.C. § 7513a(d). Each of these requirements serves to take discretion out of the state's hands, forcing

[38] *Herbert Says there Are Three Million People Living in Utah*," The Salt Lake Tribune, 2015-10-26, http://www.sltrib.com/home/3103221-155/utahs-population-surpasses-3-million.
[39] *A Snapshot of 2050: An Analysis of Projected Population Change in Utah*, the Utah Foundation, April 2014, http://www.utahfoundation.org/uploads/rr720.pdf

the state to implement measures that would be not be tailored to Utah's particular situation and that would likely be unpopular.

Third, as it reviews Utah's Moderate SIP, Serious SIP and any request for an extension of the attainment date for a Serious area, EPA has authority to approve or disapprove aspects of the plans and, if necessary, assume authority to develop and implement a SIP. *See* 42 U.S.C. § 7502(b), (c) & (d); 42 U.S.C. § 7410(k); 42 U.S.C. § 7513(e); 42 U.S.C. § 7509. Thus, we believe, it is important for state officials to demonstrate that Utah is willing to make difficult decisions and embrace policies that will reduce emissions from all polluting sectors, including large stationary sources. More colloquially, it is urgent to look under every rock for emissions cuts and it is important that Utah exhibit a willingness to impose these available measures with the goal of achieving the national standard as soon as possible.

Fourth, there are significant advantages to having the Division and the Board carefully consider this rule on its own merits, rather than as an element of a Moderate SIP or the Serious SIP that Utah will be required to develop and implement in the next two years. Utah's SIPs have been and will continue to be highly technical and expansive documents, covering a wide range of control measures. The 2014 SIP, for example, included 23 new rules on area sources alone. Due to the sheer volume of these plans and the documents that support them, it is very difficult for the Board and the public to debate any particular SIP provision or to offer revisions to the SIP in the short comment period that has typically attended these rulemaking efforts.

The rule presented here, on the other hand, offers opportunity for individual scrutiny. The Division, public and regulated community will have the chance to provide meaningful and detailed feedback, while the Board will have the chance to carefully review these comments one

rule at a time, which is very difficult to do when it is faced with approving or disapproving of an entire nonattainment SIP as a single rule.

Lastly, we maintain that it is valuable to focus rulemaking on stationary sources, even though inventories suggest that emissions from this sector are less than emissions from either mobile or area sources. Various estimates, which misleadingly give equal weight to direct $PM_{2.5}$ and $PM_{2.5}$ precursors, indicate that about 12 percent of total emissions in the Salt Lake City nonattainment area come from stationary sources and the 2013 SIP anticipates that by 2019, these sources will account for 28 percent of direct $PM_{2.5}$ emissions in the area. It is true that mobile and area sources contribute significantly to our failure to attain the NAAQS. That is why we have pushed hard for rules, programs and funds to address these sources of $PM_{2.5}$ emissions, such as the Tier 3 program, electric vehicle incentives, expansion of transit funding, updates to building codes, and low NO_X hot water heater requirements.

We are confident that rules addressing large industrial sources have merit as one important piece of an overall strategy intended to bring the nonattainment areas into compliance with the 24-hour $PM_{2.5}$ NAAQS as expeditiously as practicable. Cleaning up Utah's air is not about adopting a few measures or addressing only those sectors that contribute the most emissions. Rather, the severity of our air pollution problem requires that we implement every effective measure and strategy to reduce emissions of $PM_{2.5}$ and its precursors. Because the proposed rule, backed by the EPA and modeled after an existing Utah rule, will minimize emission increases and strengthen the state's overall oversight of stationary sources, is not only worth debating, but also worth adding to our SIP as an appropriate and necessary addition to a legally robust plan designed to attain and maintain the NAAQS.

IX. Conclusion

The Offset Rule is a critical component of an adequate $PM_{2.5}$ SIP. By lowering the emission thresholds above which offsets are required and therefore minimizing increases in emissions of $PM_{2.5}$ and $PM_{2.5}$ precursors, the rule benefits air quality and health, and helps to ensure, as the Clean Air Act requires, that the Three NAAs will attain the $PM_{2.5}$ national ambient air quality standards (NAAQS) as expeditiously as practicable, and will continue to maintain the PM_{10} NAAQS. Therefore, Western Resource Advocates, Utah Physicians for a Healthy Environment and HEAL Utah respectfully ask the Air Quality Board to initiate Utah Code Ann. § 63G-3-301 rulemaking proceedings relative to the Offset Rule as authorized by Utah Code Ann. § 63G-3-601(6)(b)(ii) and ultimately to adopt the proposed rule.

Respectfully submitted the 14th day of January 2016.

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Exhibit List

Exhibit “1”	Offset Rule – Proposed Text
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EXHIBIT “1”

The "Offset Rule"

R307-XXX: $PM_{2.5}$ Nonattainment Areas: Offsets.

R307-XXX-1. Definitions.

The terms used in this rule shall have the meaning given to the terms as defined in Utah Admin. Code R307-101-2, unless specifically defined below:

(1) *$PM_{2.5}$ Nonattainment Area* means any area(s) of nonattainment for any of the $PM_{2.5}$ National Ambient Air Quality Standards promulgated by the Environmental Protection Agency at 40 C.F.R. § 81.345.

(2) *New Stationary Source* means, for the purposes of this rule, a building, structure, facility or installation that emits or has the potential to emit any air pollutant upon which construction commenced on or after the date of enactment of this rule and that is or will be located within a $PM_{2.5}$ nonattainment area and that is not specifically accounted for in the baseline and attainment emission inventories of the state implementation plan for a $PM_{2.5}$ nonattainment area adopted by the Utah Air Quality Board in December 2014.

(3) *Existing Stationary Source* means, for the purposes of this rule, a building, structure, facility, or installation that emits or has the potential to emit any air pollutant upon which construction commenced before the date of enactment of this rule and that is located in a $PM_{2.5}$ nonattainment area and that has been accounted for in the baseline and attainment emissions inventories of the state implementation plan for a $PM_{2.5}$ nonattainment area adopted by the Utah Air Quality Board in December 2014.

(4) *Large Existing Stationary Source* means an existing stationary source that emits, or has the potential to emit 70 tons per year of $PM_{2.5}$ or 70 tons per year of any $PM_{2.5}$ precursor.

(5) *Modify, Modified* or *Modification* means any planned change in a building, structure, facility, or installation that results in a potential increase of emissions.

R307-XXX-2. Applicability

(1) This rule applies to the following:

> (a) Any new stationary source in a $PM_{2.5}$ nonattainment area with the potential to emit $PM_{2.5}$ or $PM_{2.5}$ precursors in an amount equal to or greater than the following emissions levels:

$PM_{2.5}$	25 tpy
SO_2	40 tpy
NO_X	40 tpy
VOCs	40 tpy
Total of $PM_{2.5}$ + SO_2 + NO_X + VOCs	50 tpy

(b) Any modification to an existing stationary source in a $PM_{2.5}$ nonattainment area that would result in an emission increase of $PM_{2.5}$ or $PM_{2.5}$ precursors in an amount equal to or greater than the following emissions levels:

$PM_{2.5}$	25 tpy
SO_2	40 tpy
NO_X	40 tpy
VOCs	40 tpy
Total of $PM_{2.5}$ + SO_2 + NO_X + VOCs	50 tpy

(c) Any modification to a large existing stationary source in a $PM_{2.5}$ nonattainment area that would result in an emission increase of $PM_{2.5}$ or $PM_{2.5}$ precursors in an amount equal to or greater than the following emissions levels:

$PM_{2.5}$	5 tpy
SO_2	20 tpy
NO_X	20 tpy
VOCs	20 tpy
Total of $PM_{2.5}$ + SO_2 + NO_X + VOCs	30 tpy

(2) To determine whether the emission increase due to a modification to an existing stationary source would equal or exceed the emissions levels in subsection (1), the following calculation must be made:

(a) Determine the potential to emit of $PM_{2.5}$, SO_2, NO_X, and VOCs of the existing stationary source as modified.

(b) Determine the "baseline emissions" of $PM_{2.5}$, SO_2, NO_X, and VOCs of the existing stationary source in tons per year as the lower of the following:

(i) the emissions, in tons per year, assumed for the existing stationary source in the control strategy or the attainment emissions inventory of the state implementation plan for the nonattainment area adopted by the Utah Air Quality Board in December 2014; or

(ii) if no emissions are specifically identified for the existing stationary source in the state implementation plan for the $PM_{2.5}$ Nonattainment Area, then the potential to emit of $PM_{2.5}$, SO_2, NO_X, and VOCs for the installation.

(*c*) The increase in emissions for a modification to an existing stationary source is then determined for each pollutant as the difference between the potential to emit of the existing stationary source as modified and the baseline emissions.

(5) Fugitive emissions of $PM_{2.5}$, SO_2, NO_X, and/or VOCs must be included when determining applicability to these emission offset requirements.

(6) If a proposed new stationary source or installation to be located in a $PM_{2.5}$ nonattainment area is a proposed major stationary source or major modification as those terms are defined at R307-403-1 for $PM_{2.5}$, then the proposed new major stationary source or major modification must meet the emission offset requirements of R307-403-3(c) and R307-403-4.

R307-XXX-3. Requirement to Obtain Emission Offsets.

(1) For any new stationary source or modification to an existing stationary source that meets the applicability provisions above, enforceable emission offsets must be obtained at a ratio of greater than 1:1 for the emissions increases associated with the new stationary source or modification to an existing stationary source as calculated to determine applicability to this rule. Emission offsets must be obtained within the same source or from other sources located within that part of the same county encompassed by the $PM_{2.5}$ nonattainment area.

(2)

(a) For increases of $PM_{2.5}$, emission offsets must be obtained from emission reductions of $PM_{2.5}$.

(b) For increases of SO_2, emission offsets must be obtained from emission reductions of SO_2 or $PM_{2.5}$ or any combination of these two pollutants.

(c) For increases of NO_X, emission offsets must be obtained from emission reductions of NO_X, $PM_{2.5}$, or VOCs, or any combination of these pollutants.

(d) For increases of VOCs, emission offsets must be obtained from reductions of VOCs or $PM_{2.5}$ or any combination of these two pollutions.

(e) Emission reductions and interpollutant trading in combinations other than those stated above may be used for offsets only if a demonstration of a net air quality benefit is made.

(3) Emission offsets for a new stationary source or modification to an existing stationary source must be enforceable by the time construction commences on the source and must have actually occurred by the time the new or modified stationary source commences operation.

(4) Emission reductions otherwise required by the federal Clean Air Act or Utah Admin. Code R307, including any state implementation plan, shall not be creditable as emission reductions for purposes of any offset requirement. Incidental emission reductions which are not otherwise required by federal or state law shall be creditable as emission reductions if such emission reductions meet the requirements of this rule.

R307-XXX-4. Baseline for Crediting Emission Reductions to Be Used as Offsets.

(1) The baseline for crediting emission reductions is determined at the time the source applies to provide emission offsets or to bank emission reductions as offsets and is the lowest of the following:

(a) The allowable emissions for the source under the EPA-approved state implementation plan;

(b) The allowable emissions for the source under the control strategy of the most recent $PM_{2.5}$ state implementation plan adopted by the state; or

(c) The actual emissions for the source, based on an average of emissions over the two years prior to the application to provide or bank emission offsets.

(2) Only those emission reductions below the baseline for crediting emission reductions may be used as offsets.

EXHIBIT “2”

Health Impacts of Particulate Air Pollution

Medical research in the last ten years clearly indicates that, certainly for fine particulate matter ($PM_{2.5}$), and likely also for ozone, there is no "safe level" of exposure. Even levels previously thought to be benign we now know are not. There is no threshold below which there are no health effects and all persons are adversely affected by air pollution, regardless of age or overall state of health. 77 Fed. Reg. 38890, 38903 (June 29, 2012). Most Utahns are exposed to high levels of ozone in the summer and $PM_{2.5}$ in the winter, as well as PM_{10} and SO_2 year-round, meaning that a large percentage of Utah's population is exposed repeatedly to unhealthy levels of pollution throughout the year. There is now evidence that exposure to ozone and $PM_{2.5}$ can act synergistically, increasing the adverse health effects from these air pollutants.[1]

$PM_{2.5}$ air pollution at the levels experienced by residents of the northern counties of Utah has the approximately same type and magnitude of biologic effect as living with an active smoker. *E.g.* 71 Fed. Reg. 61144, 61157 (Oct. 17, 2006). That should not be a surprise, because most of the chemicals found in tobacco smoke are also found in fine particulate matter. As with smoking, particulate matter pollution and ozone cause increased systemic oxidative stress leading to pathologic vascular changes, including progression of atherosclerotic plaques to vulnerable forms, prothrombotic states, endothelial dysfunction and altered autonomic nervous system control.[2]

For the last several years, the research-based conventional wisdom has been that with each 10 $\mu g/m^3$ increase in $PM_{2.5}$ long-term average, there is an increase in community mortality rate of about 10%.[3] New research draws an even stronger correlation – a mortality rate of 14% for each 10 $\mu g/m^3$ increase.[4] The elderly and those with existing morbidities are particularly vulnerable to air pollution consequences.

Based on extrapolations from numerous studies and the American Heart Association (AHA) scientific statement explained below, Utah Physicians estimates that between 1,400 and 2,000 premature deaths occur every year in Utah from $PM_{2.5}$. *See* 78 Fed. Reg. 3086, 3103 (Jan. 15, 2013) ("[S]tudies have reported consistent increases in morbidity and/or premature mortality related to ambient $PM_{2.5}$ concentrations, with the strongest evidence reported for cardiovascular-related effects."); 77 Fed. Reg. 38890, 38908-09 (June 29, 2012) ("[N]ewly available information combined with information available in the last review provides substantially stronger confidence in a causal relationship between long- and short-term exposures to $PM_{2.5}$ and mortality and cardiovascular effects."). The AHA has estimated that residents of most cities in the United States lose between one and three years of life expectancy due to fine particulate air pollution.[5] Furthermore, studies show that even small reductions in air pollution improve community life expectancy.[6] 77 Fed. Reg. at 38907.

Since the late 1980s, more than 150 epidemiological studies have reported associations between daily changes in particulate air pollution and respiratory and cardiovascular mortality, hospitalizations and other related health endpoints.[7] 71 Fed. Reg. at 61150-61162; 78 Fed. Reg. at 3103; 77 Fed. Reg. at 38908-09. These adverse effects are seen at low and "common" concentrations of particulate pollution. A Dutch study demonstrated risks for cardiopulmonary mortality even at what are considered "background" levels of particulate pollution.[8] A study done in our own area demonstrated that each short-term 10 $\mu g/m^3$ increase in $PM_{2.5}$ was associated with an increase in the risk of acute ischemic coronary artery events (unstable angina and myocardial infarction) of 4.5%.[9]

Not only does $PM_{2.5}$ result in an increase in death from cardiovascular causes, but there is also an increased risk for non-fatal events. 71 Fed. Reg. at 61151-52; 77 Fed. Reg. at 38907; 77

Fed. Reg. at 38923 ("Bell et al. (2008) reported higher $PM_{2.5}$ risk estimates for hospitalization for cardiovascular and respiratory diseases in the winter compared to other seasons."). For each 10 $\mu g/m^3$ increase in $PM_{2.5}$ there is a 24% increase in risk of a cardiovascular event and a 76% increase in the risk of death from that event. There is also an increased risk of cerebrovascular events.[10,11,12] 77 Fed. Reg. at 38907. It should be noted that this rate of increase approaches that demonstrated from a chronic active smoking habit. 71 Fed. Reg. at 61157.

The significance of our $PM_{2.5}$ spikes may not be dismissed with observations that our annual average fine particulate matter concentrations are not extraordinarily high. This is false comfort and reflects a poor understanding of the existing research. Many medical studies show that impacts from pollution are seen very quickly and can last long after the air has cleared. 71 Fed. Reg. at 61164. For example, within as little as 30 minutes, exposure to particulate matter is associated with increases in blood pressure, followed within hours by increased rates of heart attacks and strokes. Community mortality rates stay elevated for 30 days after a spike in PM_{10} even if the episode lasts less than 24 hours.[13]

Within one hour, exposure to traffic pollution, including particulate matter, is associated with increased rates of heart attacks as much as 300% compared to non-exposed individuals.[14] Other studies show rates of strokes and heart attacks in the community increase within hours after spikes in PM_{10}.[15] *See also* 78 Fed. Reg. at 3103 (Evidence links "long-term exposure to PM2.5 with an array of cardiovascular effects such as heart attacks, congestive heart failure, stroke, and mortality."). In 2010, the AHA summarized:

> The overall evidence from time-series analyses conducted worldwide since publication of the first AHA statement confirms the existence of a small, yet consistent association between increased mortality and short-term elevations in PM_{10} and $PM_{2.5}$ approximately equal to a 0.4% to 1.0% increase in daily mortality (and cardiovascular death specifically) due to a 10 $\mu g/m^3$ elevation in $PM_{2.5}$ during the preceding 1 to 5 days.[3]

Confirming the strong correlation between modest, short-term spikes in PM and serious health consequences are three new studies that showed spikes of as little as one day in PM_{10} were associated with higher rates of heart attacks,[16] daily spikes of either PM_{10} or $PM_{2.5}$ were associated with significant increases in emergency room visits for hypertensives crisis,[17] and less than 24 hours of a spike in $PM_{2.5}$ of 15-40 $\mu g/m^3$ increased rates of strokes 34%, with the peak increase occurring within 12 hours.[18] Not only have numerous studies shown that there is no safe level of PM exposure, but a recent landmark study published in the flagship journal of the AHA, using data from over 1 million people, demonstrated that when cardiac mortality, the signature air pollution health outcome, was plotted against particulate matter from air pollution, first and second-hand cigarette smoke, all three sources showed a steep curve at low doses. In other words, per unit dose of exposure, it is the low levels of PM that cause higher rates of mortality.[19]

Long-term exposure to particulate matter air pollution is associated with an average rise in blood pressure for chronically exposed populations. Average blood pressure was found to rise 1.7 mmHg for an increase of 2.4 $\mu g/m^3$ in $PM_{2.5}$. A similar association was found with the coarser PM_{10}. The rise was found in both systolic and diastolic blood pressure.[20] Chronic exposure to particulate matter has also been shown to increase the thickening of arterial walls, which is a known end result of higher blood pressure. A chronic increase in PM_{10} of 5.2 $\mu g/m^3$ is associated with a 5% increase in the intima-media thickness of the carotid artery, which is one of many end results of the biologic process described above.[21]

Another study showed a remarkable correlation between chronic exposure to $PM_{2.5}$ and narrowing in the tiny arteries in the back of the eye. Chronic exposure to 3 $\mu g/m^3$ of $PM_{2.5}$ (one fourth of the annual NAAQS) was associated with narrowing equivalent to seven years of aging.[22] These finding are especially significant because they demonstrate community-wide

effects, acceleration of the aging process, and impairing the health of everyone exposed, not just a susceptible population. *See* 78 Fed. Reg. at 3104 ("The population potentially affected by $PM_{2.5}$ is large. In addition, large subgroups of the U.S. population have been identified as at-risk populations.").

There is a remarkable correlation between rates of deep vein thrombosis and increased levels of PM_{10}, beginning at very modest levels.[23] *See also* 77 Fed. Reg. at 38923 ("[R]ecent studies provide additional evidence for cardiovascular effects associated with sub-daily (e.g., one to several hours) exposure to PM, especially effects related to cardiac ischemia, vasomotor function, and more subtle changes in markers of systemic inflammation, hemostasis, thrombosis and coagulation[.]"). A likely mechanism of this clinical outcome is revealed by studies that show PM_{10} causes excessive platelet aggregation in diabetics.[24]

Throughout the age spectrum, from infants to the elderly, air pollution has been shown to impair brain function. 77 Fed. Reg. at 38909. Oxidative stress (OS) appears to be the biological genesis of numerous diseases processes and a major contributor to the aging phenomenon. OS is the mechanism behind the role of particulate matter and carbon monoxide pollution in central nervous system dysfunction, neuro inflammation, cortical stress, cognitive impairment and memory loss in children and neuro-degenerative diseases such as Alzheimer's disease.[25, 26] Numerous studies show such specific outcomes as impaired intellect and penetration of particle matter and Alzheimer type protein deposition among children who grow up breathing more particulate air pollution.[27, 28, 29] Volunteers exposed to typical urban levels of diesel exhaust demonstrate brain cortical stress measured by EEG.[30]

Children exposed to more air pollution or whose mothers were more exposed during pregnancy show an IQ loss of five to nine points.[31, 32, 33] Rates of neurobehavioral disorders

correlate with NO_X and PM_{10} levels.[34] Children exposed to more vehicle pollution show a doubling in rates of autism.[35] Older people show accelerated cognitive decline if chronically exposed to more traffic generated air pollution.[36, 37] A recent landmark study showed that chronic exposure to 10 $\mu g/m^3$ of either $PM_{2.5}$ or $PM_{2.5}$-PM_{10} was associated with faster cognitive decline in older women, equivalent to about two years of aging.[38]

Because of strong evidence that particulate air pollution's neurotoxicity is related to attached metals,[39, 40, 41] the oil refineries contribution to Wasatch Front pollution takes on additional public health significance.

It is intuitive that short-term exposure to fine particulate matter would have adverse impacts on the pulmonary system. 71 Fed. Reg. at 61145 & 61152; 78 Fed. Reg. at 3103-04. Indeed, numerous studies show increased rates of asthma and virtually all other respiratory diseases including lung cancer where short-term $PM_{2.5}$ is higher. 71 Fed. Reg. at 61154-61155 & 61157; 77 Fed. Reg. at 38907. Equally disturbing are less obvious outcomes. Even young, healthy people demonstrate rapid decrease in lung function from brief exposure to particulate matter that persists for several days after the exposure has ended. *Id*. at 61152, 61154 & 61169.[42, 43] Again, this contradicts any comfort derived from the perspective that Utah's fine particulate matter air pollution problem is episodic and therefore less of a problem.

An unusually large proportion of Utah's population is young. Census-based estimates indicate that nearly a third of Utah residents are under age 18 and one of every 10 residents is under age five, figures approximately 40 percent higher than the national average. This means that Utah's unhealthy levels of air pollution constitute a public health crisis that endangers its most vulnerable populations. 74 Fed. Reg. at 58690; 77 Fed. Reg. at 38911 ("With regard to respiratory effects in children associated with short-term exposures to $PM_{2.5}$, currently available

studies provide stronger evidence of respiratory-related hospitalizations with larger effect estimates observed among children.").

The physiology of children differs from that of adults in many important ways, causing them to be affected more profoundly by air pollution than adults. Children have higher metabolic rates, meaning their oxygen demand is higher, they breathe faster and have higher heart rates and blood flows on a per weight basis than an adult. Combined with their rapidly growing organ size and function, this physiologic difference makes them more susceptible to the adverse influence of air pollution. "There is emerging but limited evidence for an association between long-term $PM_{2.5}$ exposure and respiratory mortality in post-neonatal infants where long-term exposure was considered as approximately one month to one year." 77 Fed. Reg. at 38908. Children who breathe more air pollution can experience a permanent stunting of their lung growth. Just as chronic exposure to second-hand cigarette smoke causes a permanent loss of lung function growth in children, so does long-term exposure to $PM_{2.5}$ air pollution.[44,45] 71 Fed. Reg. at 61154, 61172; *see also id*. at 61169; 77 Fed. Reg. 38890, 38911 (June 29, 2012) ("These analyses provide evidence that $PM_{2.5}$-related effects [to children] persist into early adulthood and are more robust and larger in magnitude than previously reported."). Not only does short-term exposure to $PM_{2.5}$ air pollution permanently impair the exercise capacity of individuals so affected,[46] few physiologic outcomes have more of an ultimate impact on longevity than lung function.

Various forms of cancer such as lung, cervical, stomach and brain cancer show increased rates with higher concentrations of community particulate matter.[47, 48] 71 Fed. Reg. at 61152; 77 Fed. Reg. at 38908. Each 10 $\mu g/m^3$ increase in long term $PM_{2.5}$ concentration is associated with a 15-27% increase in lung cancer mortality.[49] *See also* 77 Fed. Reg. at 38908. Especially

troubling are the numerous studies that show increases in childhood leukemia among more exposed populations,[50, 51] and a significant association between nitrogen oxide concentrations and rates of breast cancer.[52]

The precipitation of oxidative stress, as mentioned above, is the likely explanation for new studies that show higher rates of numerous other, seemingly unrelated diseases among populations subjected to more air pollution. These diseased include type II diabetes, obesity, arthritis, and lupus. [53, 54, 55, 56, 57]

Air pollution, especially particulate matter, may have its largest impact on public health through its effect on the human embryo. A study in laboratory animals demonstrated a change in morphology of the placenta that compromised blood flow to the fetus.[58, 46] Exposure of pregnant women to various components of traffic-related air pollution, including PM_{10}, results in intrauterine growth retardation, including smaller head size, increased rates of spontaneous abortions, premature births and low birth weight syndrome. 77 Fed. Reg. at 38908.

Genetic damage and epigenetic changes can have virtually identical consequences and both can be passed on to subsequent generations. Newborn babies whose mothers are exposed to more air pollution show increases in both, and the life-long disease burden that results can include higher rates of metabolic disorders, reactive airway disease, cardiovascular disease, cancer, Alzheimer's and all the diseases consequent to immuno-suppression. 78 Fed. Reg. 3104 ("The strongest evidence for an association between $PM_{2.5}$ and developmental and reproductive effects comes from epidemiological studies of low birth weight and infant mortality, especially due to respiratory causes during the post-neonatal period (i.e., 1 month–12 months of age)."). Epigenetic changes can be seen within three days after exposure to $PM_{2.5}$ and perhaps even as soon as minutes after exposure.[59-66] There is strong evidence for a persistence of epigenetic

changes from one generation to another. Medical science is now learning that the air pollution today can adversely affect the health of future generations. For example, episodic air pollution, the type that occurs along the Wasatch Front, has been shown to be associated with fragmentation of DNA in human sperm.[67]

The common assumption about particulate air pollution has been that internalizing the particles and their adsorbed compounds like heavy metals occurs through the lungs. Smaller particles are assumed more dangerous because they can penetrate more deeply into the lungs and are cleared by the lung cilia less readily. However, there is new evidence to suggest that atmospheric particulate matter is also swallowed, leading to toxicity of internal organs and increased carcinogenic risk. This is of particular relevance for increasing childhood risk.[68]

That all the above mentioned adverse health outcomes can be the result of pregnant women smoking is easy for physicians and the lay public alike to comprehend and the sight of a pregnant woman smoking is now repulsive to society at large. *See* 71 Fed. Reg. at 61157. It is a new thought process, but equally scientifically based, to think that the same thing happens when a pregnant woman has to breathe particulate air pollution. Again, regarding impact on the human embryo, there appears to be no safe threshold of exposure.

As a manifestation of the evidence for severe health effects from air pollution, virtually every major medical organization in the United States has called for stricter NAAQS for annual $PM_{2.5}$ and for ozone, including the American Medical Association, the American Thoracic Society, the American Lung Association, the American Academy of Pediatrics, the American College of Cardiology, the American Heart Association, the American Cancer Society, the American Public Health Assoc., and the National Assoc. of Local Boards of Health, and the

EPA's Clean Air Scientific Advisory Committee (considered the nation's premier air pollution experts). 77 Fed. Reg. at 38897.

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EXHIBIT “3”

Chart 1: Comparing Federal Requirements to Utah's PM_{10} Offset Rule (R307-403-5)

New Source PM_{10} NA (Moderate)	Federal Baseline Definition of Major Source of PM_{10}	Utah's PM_{10} Offset Rule Applicability and Ratios for New Sources
PM_{10}	100 tons per year (tpy)	>50 tpy (total PM_{10}, NO_X and SO_X): 1.2:1 >25 tpy (total PM_{10}, NO_X and SO_X): 1:1
NO_X	100 tpy	>50 tpy (total PM_{10}, NO_X and SO_X): 1.2:1 >25 tpy (total PM_{10}, NO_X and SO_X): 1:1
SO_X	100 tpy	>50 tpy (total PM_{10}, NO_X and SO_X): 1.2:1 >25 tpy (total PM_{10}, NO_X and SO_X): 1:1

PM_{10}, NO_X and SO_X interchangeable under Utah rule. Federal rule does not specify.

Modification PM_{10} NA (Moderate)	Federal Baseline Definition of Major Modification	Utah's PM_{10} Offset Rule Applicability and Ratios for Modifications
PM_{10}	15 tpy	>50 tpy (total PM_{10}, NO_X and SO_X): 1.2:1 >25 tpy (total PM_{10}, NO_X and SO_X): 1:1
NO_X	40 tpy	>50 tpy (total PM_{10}, NO_X and SO_X): 1.2:1 >25 tpy (total PM_{10}, NO_X and SO_X): 1:1
SO_X	40 tpy	>50 tpy (total PM_{10}, NO_X and SO_X): 1.2:1 >25 tpy (total PM_{10}, NO_X and SO_X: 1:1

PM_{10}, NO_X and SO_X interchangeable under Utah PM_{10} rule.

Chart 2: Comparing Federal Baseline Requirements to Proposed $PM_{2.5}$ Offset Rule

Major Source $PM_{2.5}$ NA (Serious)	Proposed Federal Baseline Definition of Major Source for Serious $PM_{2.5}$ NA	Proposed $PM_{2.5}$ Offset Rule Applicability to New Stationary Source and Modification to Existing Stationary Source
$PM_{2.5}$	70 tons per year (tpy)	25 tpy
NO_X	70 tpy	40 tpy
SO_X	70 tpy	40 tpy
VOCs	70 tpy	40 tpy
Total $PM_{2.5}+SO_2+NO_X+VOCs$	n/a	50 tpy
ammonia	70 tpy	n/a

Major Source $PM_{2.5}$ NA (Serious)	Federal Baseline Definition of Major Modification for Serious $PM_{2.5}$ NA	Proposed $PM_{2.5}$ Offset Rule Applicability to Modification to "Large" Existing Stationary Source
$PM_{2.5}$	10 tpy	5 tpy
NO_X	40 tpy	20 tpy
SO_X	40 tpy	20 tpy
VOCs	40 tpy	20 tpy
Total $PM_{2.5}$ + NO_X + SO_2 + VOCs	n/a	30 tpy
ammonia	case-by-case	n/a

Comments received:
March 1, 2016

HOLLAND&HART LLP
THE LAW OUT WEST

Emily Schilling
Phone (801) 799-5753
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March 1, 2016

Dear Air Quality Board Members:

The attached comments are submitted for your consideration as the Board reviews the January 14, 2016 petitions for a rule change submitted on January 14, 2016 by Western Resource Advocates, Utah Physicians for a Healthy Environment, and HEAL Utah.

Best regards,

Emily C Schilling

Emily Schilling and Jacob Santini, Chairs
Utah Manufacturers' Association
Air Quality Committee

ECS/ju
Enclosure(s)

COMMENTS BY THE UTAH MANUFACTURERS' ASSOCIATION, THE UTAH PETROLEUM ASSOCIATION, AND THE UTAH MINING ASSOCIATION ON THE PETITIONS FOR RULE CHANGES SUBMITTED BY WESTERN RESOURCE ADVOCATES, UTAH PHYSICIANS FOR A HEALTHY ENVIRONMENT AND HEAL UTAH

MARCH 1, 2016

The Utah Manufacturers Association, the Utah Petroleum Association, and the Utah Mining Association (the "Associations") submit these comments to the Utah Air Quality Board for consideration as the Board reviews the January 14, 2016 petitions for a rule change submitted on January 14, 2016 by Western Resource Advocates, Utah Physicians for a Healthy Environment, and HEAL Utah ("Petitioners"). The Associations and their members agree with the Utah Division of Air Quality ("UDAQ") that the Board should decline to initiate rulemaking for the rules proposed by Petitioners.

Numerous of the Associations' member companies are located in the $PM_{2.5}$ nonattainment areas and their employees work, live, and recreate along the Wasatch Front. The Associations support actions to improve Utah's air quality, and based on the rules adopted as part of the $PM_{2.5}$ SIP, our members have invested millions of dollars to reduce $PM_{2.5}$ and $PM_{2.5}$ precursor emissions. These plans were developed based on a technically sound process initiated by the UDAQ, which included analysis of the costs and benefits of proposed rules as well as modeling of how specific emission reductions impact the unique chemistry that creates much of the pollution in our non-attainment areas.

The Associations believe that UDAQ has made a strong case for rejecting the petitions for rulemaking. The point of the Associations' comments is not to reiterate all of the arguments that UDAQ identified in their written response to the rulemaking petitions. Rather, our comments emphasize a handful of issues the Associations believe are important for the Board to consider as it responds to the rulemaking petitions.

- **The SIP Development Process Provides the Best Insurance that Emission Reduction Requirements Are Based on a Sound Technical and Economic Foundation and Will Deliver the Promised Results**

The Associations believe it is important to consider the rulemaking petitions in the context of the work that already has been done to address air quality along the Wasatch Front and the additional planning and implementation efforts that will take place in the coming months and years.

As this Board is aware, UDAQ recently completed the extensive process of developing $PM_{2.5}$ SIPs, based on a transparent process informed by stakeholder involvement and a comprehensive analysis of reasonable controls for $PM_{2.5}$ as well $PM_{2.5}$ precursors. The Associations and their members, as well as the Petitioners, were active participants in the SIP development process. This Board approved $PM_{2.5}$ SIPs in both late 2013 and early 2015 and implementation of those plans is ongoing. Indeed, many of the control requirements for stationary sources are only now taking effect and the reductions attributable to these controls have not been measured. Until UDAQ understands the air quality impact of these controls, it is premature to impose additional regulatory requirements. Moreover, because the major industrial sources already have invested

in compliance with SIP requirements, any additional regulatory obligations will be more expensive while yielding fewer and fewer actual emission reductions.

UDAQ also must have the opportunity to assess the costs and benefits of additional requirements on industrial sources in light of the relatively small contribution from stationary sources—UDAQ emissions inventories currently show that only about 11% of air pollutants come from large industrial sources, while 32% come from smaller area sources such as homes, small businesses, and agriculture, and 57% come from transportation. Any additional requirements for industry must carefully evaluated in this context with respect to technical and economic feasibility, as well as a demonstration that attainment will be materially expedited. Otherwise, meaningless regulations can result that may sound promising but in reality are not only costly but fail to deliver the promised reductions.[1] As UDAQ has noted, this evaluation process will begin again as early as this summer when UDAQ re-enters the $PM_{2.5}$ SIP planning process to develop a serious nonattainment SIP for the Salt Lake and Provo nonattainment areas.

Petitioners argue that there is benefit to the Board's consideration of these rules alone, rather than as part of the broader SIP planning process. But Petitioners' proposed rules are inextricably intertwined with the SIP and need to be examined in the context of the SIP. For example, Petitioners' emissions offset proposal would impose onerous requirements on existing sources above and beyond the technology assessments already required under the SIP. A rule that would require assessment, and potentially revision, of the technology standards only recently imposed as part of the SIP planning process cannot be reviewed in isolation. They must be analyzed as part of broader emission reductions that will be implemented as part of the SIP. Contrary to Petitioners' argument, the point of the "highly technical and expansive" SIP process is for the Board to assess the costs of these rules and resulting improvements in air quality as a part of a comprehensive "State Implementation *Plan*."

Petitioners assert that the rulemakings that they have crafted deserves public debate despite the technical infirmities and lack of supporting documentation required by statute. In other words, Petitioners want the petitions to be vetted through public comment. This strategy, however, is not as straightforward and simple as Petitioners contend.

First, the strategy is not supported by the statutes and regulations that govern the Board's consideration of the petitions. Utah Code section 63G-3-601(6)(b) restricts the Board to two options in responding to the petitioners: (1) deny the petition; or (2) initiate rulemaking proceedings. Rule 15-2-5(1)(b) provides further context in the event that the Board wishes to proceed to rulemaking. Under that rule, the Board is required to identify a "date when the agency is initiating a rule change consistent with the intent of the petition." It is evident from this authority that the second option – e.g., to initiate rulemaking proceedings – should not be used to vet ideas that come through a petition for rulemaking.

[1] The Associations and their members are not only fully engaged in the SIP development process and investing millions of dollars necessary to achieve the reductions that the SIPs require for attainment, but are also supporting the agency's efforts in other ways. For instance, the associations routinely support the agency's budget requests (as it has done this year) and has been aligned with the agency's and the Petitioners' efforts to allow the Air Quality Board to retain authority to regulate water heater emissions.

Second, the strategy suggests that there is no significant burden on the agency's limited resources to proceed by going to rulemaking. In their response, UDAQ has identified numerous tasks that it would need to complete before the proposed rules could be sent out for public comment. Additionally, any such rule would need to meet the requirements of Utah Code section 63G-3-301, which imposes the burden of preparing a rule analysis that includes, among other things, an examination of compliance costs to affected entities as well as costs to the state and small businesses. All of these requirements impose a significant expenditure of resources by UDAQ.

Finally, Petitioners fail to acknowledge that the SIP development process that UDAQ and this Board completed in 2013 and 2014/2015 contained the public debate that Petitioners desire. Petitioners also will have the opportunity as part of the serious SIP development process to weigh in on source-specific SIP limitations—including monitoring requirements, emission limits, and averaging periods. Importantly, these types of limitations would then be raised within the context of overall changes to the SIP, ensuring that UDAQ can undertake appropriate technical and economic analyses. UDAQ has limited resources and, in our view, this appears to be an inefficient use of their time and expertise, particularly where the agency has just completed a similar analysis and is preparing to do another round of SIP planning shortly. This process will provide the Petitioners ample opportunity to participate in the process and result in an integrated, technologically sound and effective SIP.

- **The Proposed Rules Flip the SIP Process On Its Head by Requiring the Agency to Rebut One-Size Fits All Requirements**

Petitioners' proposed one-size-fits-all rules strip away UDAQ's ability to use its technical expertise to fashion solutions to the local $PM_{2.5}$ problem. If the Board adopts Petitioners' approach, it would transform UDAQ from the expert agency to a defendant in a public process in which UDAQ bears the burden of demonstrating the reasonableness of its actions.

Whether in the context of single source permitting or SIP development, UDAQ relies on its expertise and information provided by public participants to determine the mix of reasonable controls necessary to attain air quality standards. When UDAQ evaluates and sets appropriate limitations and parameters, including averaging times and monitoring requirements for a particular facility, UDAQ engages in a case-by-case determination. All of that information is then vetted by the public in a formal review process. If the agency failed to consider a particular issue or erred in its analysis, the public, as well as the regulated source, has the opportunity to raise the issue with the UDAQ and the agency will respond in reliance on its technical expertise.

The proposed rules flip this process on its head. For instance, the proposed monitoring rule establishes a presumption that the agency will require a CEMS to monitor PM, NOx and SO2 limits identified in the SIP. Under the proposed rule, it is the agency's burden to prove that CEMS monitoring is not feasible. Rather than allowing UDAQ to exercise its technical expertise and determine what is available and reasonable to install in light of costs and air quality benefits, the proposed rule imposes the burden on UDAQ to demonstrate what is not available. This will result in a very resource intensive process. The Associations do not believe it is prudent to restrict the ability of the agency to make case-by-case determinations based on their expertise, particularly where the agency's current process—a process used by EPA and common to most

administrative agencies—already provides an avenue for a robust dialogue that ensures agency consideration of available monitoring methods.

- **UDAQ Already Considered and Rejected a Minor Source Offset Rule within the SIP Development Process**

The Clean Air Act's RACT/RACM requirement does not impose a mandatory duty for this Board to extend the offset rule to minor new sources and minor modifications under the PM2.5 SIP. In contrast to the position set out in the rulemaking petitions, the Clean Air Act and corresponding federal regulation speak with clarity to the offset thresholds required in nonattainment areas for all states.

The requirement to impose offsetting in nonattainment areas is founded in section 173(a)(1) of the Clean Air Act, which in turn only applies to major new construction or major modification. Other provisions of the CAA specify in detail the appropriate thresholds for major sources depending on the severity of the nonattainment area. For instance, when any of Utah's PM2.5 nonattainment areas are re-designated as serious nonattainment areas, this threshold will be moved to 70 tons per year.

Petitioners' proposed offset thresholds go well beyond what is required by the Clean Air Act, the requirements of other state air quality programs, and what is supported by the technical analysis supporting Utah's $PM_{2.5}$ SIPs. Such thresholds would impose an unwarranted restriction on economic growth with no demonstration that they would expedite attainment, placing Utah at a significant economic disadvantage relative to other areas—including nonattainment areas—around the country.

The Clean Air Act, rather than making the offset requirement mandatory for the minor source program, allows states to customize their SIPs to suit the needs of their airsheds. UDAQ has done that in the 2013 and 2014/2015 SIPs approved by this Board. Importantly, UDAQ considered—and ultimately rejected—a minor source offset program as part of the PM2.5 SIP development processes. Based on a public stakeholder process and UDAQ's technical analysis, the agency ultimately chose not to pursue that option because of the unintended consequences that could result, namely, sources would be constrained from modernizing, which often results in improvements in efficiency. In addition, in the current situation, where there are no offsets in the bank, sources requisite for public safety, community development, and basic lifestyle needs would be unable to run their businesses as needed to keep our growing communities functioning.

In light of these realities, the agency used its expertise to develop a plan that accounts for the specific meteorology, topography, source distribution, pollutant chemistry and other considerations that will bring the nonattainment areas into compliance with the NAAQS without requiring unnecessarily stringent offset requirements. This attainment demonstration expressly accounts for expected growth that will occur in the nonattainment areas related to new sources and modifications that are not subject to the Clean Air Act's mandatory major source offset requirements. Ultimately, an aggressive minor source offset requirement, as proposed by Petitioners, would severely limit the potential for modest economic expansion and growth without any demonstration of an improvement in $PM_{2.5}$ concentrations.

In conclusion, the Associations and their members are committed to working with UDAQ and other stakeholders to improve air quality. But the one-size fits all nature of these petitions fails to consider the implications of the rules on overall SIP planning. For this and the other reasons discussed above, the Board should exercise its discretion to deny the petitions at this time.

March 1, 2016

VIA EMAIL

Utah Air Quality Board
195 North 1950 West
Salt Lake City, UT 84116

Re: Staker Parson's Support for Denial of Western Resource Advocate's Petition for Rule Change – $PM_{2.5}$ Offset Rule

Dear Utah Air Quality Board:

Staker Parson Companies ("Staker Parson") respectfully submits this letter to the Utah Air Quality Board for consideration as the Board reviews the January 14, 2016 petition for rulemaking submitted by Western Resource Advocates on behalf of Utah Physicians for a Healthy Environment and HEAL Utah.[1] Specifically, Staker Parson requests that the Board deny the petitioners' request for rulemaking to establish a minor source offsetting program in the three Utah $PM_{2.5}$ nonattainment areas.

Staker Parson is a Utah corporation that produces aggregate and landscape products, including ready-mixed concrete and asphalt, and provides paving and construction services. Staker Parson's corporate headquarters are in Weber County, and it has business operations throughout Utah and the Intermountain West. Staker Parson's facilities are not major sources of air pollution under the Clean Air Act, but Staker Parson was one of the largest owners of banked $PM_{2.5}$ emission reduction credits ("ERCs") when the Utah Division of Air Quality ("UDAQ") zeroed out the $PM_{2.5}$ ERCs as part of the 2013/2014 $PM_{2.5}$ State Implementation Plan ("SIP") process. Staker Parson was seriously and uniquely affected by this decision. Petitioners' proposed minor offset rule would further harm Staker Parsons, and similarly situated area sources, without any proof that it would hasten attainment.

UDAQ already considered and rejected a minor source offsetting rule through the more inclusive and technically sound SIP development process, and petitioners' offset rule should not be considered in isolation from this past rulemaking. Staker Parson requests that the

[1] Staker Parsons also joins with the comments submitted to the Air Quality Board on behalf of the Utah Manufacturers' Association, the Utah Petroleum Association, and the Utah Mining Association.

Board continue to respect this process by denying petitioners' attempt to circumvent the SIP process.

I. The minor source offset rule is more restrictive than Clean Air Act requirements

The Clean Air Act already provides a graduated program that is designed to require emissions reductions from increasingly smaller sources based on the status of the nonattainment area.

For example, in areas that are attaining a National Ambient Air Quality Standard ("NAAQS"), the threshold for major source permitting is 250 tons per year (or 100 tons per year for certain categories of sources). In nonattainment areas, however, major sources must comply with more "stringent" conditions that are "designed to insure that the new source's emissions will be controlled to the greatest degree possible; that more than equivalent offsetting emission reductions (emission offsets) will be obtained from existing sources; and that there will be progress toward achievement of the NAAQS."[2] The threshold for "major source" does not remain at 250 tons per year, but decreases based on the area's nonattainment status. Currently, the "major source" threshold has been reduced to 100 tons per year in the Utah $PM_{2.5}$ nonattainment areas. When the Salt Lake and Utah County areas are designated serious nonattainment later this year, the emissions threshold for requiring offsets will be lowered to 70 tons per year. This threshold level would be lowered further if the standard is not attained as planned.

Therefore, the existing structure of the Clean Air Act contemplates achieving additional emission reductions by reaching smaller sources based on an area's nonattainment status, but it does so in a systematic and predictable manner. Under the proposed rule, the minor source offset program would prevent altogether new area source construction and modification of existing area sources because there are simply no $PM_{2.5}$ or $PM_{2.5}$ precursor ERCs available for use to offset *any* emissions increases in the attainment area.[3] Petitioners have offered no demonstration that layering a minor source offset program on top of the already existing stringent Clean Air Act permitting program would allow for reasonable growth and is necessary to demonstrate attainment.

II. The minor source offset rule was considered and rejected by UDAQ in the 2013 and 2014 SIPs

Petitioners' request for an offset rule for minor sources is not new. UDAQ considered and rejected the option of a minor source permitting program for the 2013 $PM_{2.5}$ SIPs. The decision not to include a minor source offset requirement was made within the context of

[2] *See* 40 CFR Part 51, Appendix S (Emission Offset Interpretive Ruling).

[3] There have been no $PM_{2.5}$ offsets created since December of 2013; the most recent update to the Salt Lake and Utah County banked emissions summary specifies that the emissions credits are "not available for PM2.5 offsetting."). *See* www.deq.utah.gov/Permits/air/EmissionOffsets.htm.

the full SIP attainment demonstration—including a baseline that contemplates economic and population growth—and input from stakeholder groups, which included petitioners. UDAQ outlined the reasoning for its decision on offsets in the 2013 and 2014 SIPs:

> DAQ did consider, during the SIP development process, the idea of also imposing an offset requirement for minor sources and minor modifications. This would have been over-and-above what is required by the federal Nonattainment NSR. In fact, a group of stakeholders was convened to discuss this very issue. As a result of that process, DAQ ultimately chose not to introduce this additional constraint.[4]

Instead, UDAQ declined to include any of the banked $PM_{2.5}$ and $PM_{2.5}$ precursor ERCs in the attainment demonstration, which means that these ERCs are no longer available for use as offsets in the $PM_{2.5}$ nonattainment areas. UDAQ's actions constrained allowable emissions increases for the nonattainment areas, and Staker Parson lost more than a thousand $PM_{2.5}$ and $PM_{2.5}$ precursor ERCs, worth millions of dollars.

The 2013 $PM_{2.5}$ SIP was the first time in the history of the Utah ERC bank that UDAQ did not include existing ERCs in the attainment demonstration. This decision was made within the broader context of UDAQ's decision not to further restrain growth through a minor source offset program. Because these two decisions are technically and economically related, and each has an impact on the emission reductions necessary to demonstrate attainment, a determination to institute a minor source offset program must not be made in isolation.

III. Enacting the minor source offset rule in isolation from a SIP development process would have unintended consequences

An important role of the SIP process is to avoid unintended consequences and to ensure that certain categories of sources do not bear a disproportionate cost of reducing emissions. As UDAQ explained:

> One of the considerations that support this decision [not to enact a minor source offset requirement] was to avoid the unintended consequence of not allowing sources to modernize, which often results in improvements in efficiency and, consequently, fewer emissions on a production basis.[5]

Requiring a minor source rule now, outside the context of the $PM_{2.5}$ SIP development process, deprives the stakeholders and the public of the proper contextual and technical analysis that takes place during SIP development.

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[4] DAQ, PM2.5 SIP Section X.A.21 and X.A.22 Public Comments: Summaries and Responses to Comments Made During the October 2013 Public Comment Period and Public Hearings, at 13 (Nov. 25, 2013).
[5] *Id.*

Another important unintended consequence of the proposed minor source offset rule would be to make local companies less competitive by increasing their costs of doing business. Area sources seeking to modify or modernize would be faced with the impossible task of obtaining offsets, which would make similar services from out-of-state companies more competitive and attractive for local consumers.

IV. Impacts of the proposed minor source offset program on Utah infrastructure development plans

Utah's rapid growth will place increasing pressure on the State's infrastructure: a new prison, an expansion of the airport, and more than $1 billion in road and infrastructure improvements are planned over the next decade. Moreover, construction and housing are just starting to recover from the impacts of the recession. Many of the general contractors in Utah are expecting record demand for services in 2016 (estimated at nearly $4 billion from six of the largest general contractors). Nearly $2 billion in large infrastructure projects are anticipated in the nonattainment areas, including:

- Prison Relocation (estimates range from $400 million to $650 million in construction and materials);
- Regent Street Hotel in Salt Lake City (an estimated $150 million in construction and materials);
- Overpass for 1800 North ($180 million plus in construction and materials);
- Mountain View Corridor ($135 million in construction and materials); and
- Salt Lake City Airport expansion ($400 million in construction and materials just in 2016; $1.5 billion over the next three-four years).

Each of these projects will seek bids for locally sourced aggregate and construction products and related services. The nature of the infrastructure and construction business requires companies to have the flexibility to move, modify, and expand their operations to provide the materials necessary to support infrastructure development projects. If Staker Parson and similarly situated companies with facilities emitting below the major source thresholds are unable to modify or expand their operations due to the inability to obtain offsets—as will be the case for the foreseeable future—the materials (and likely the labor) for these improvements must come from outside the airshed. Sourcing aggregate and construction products from other areas would dramatically increase costs, increase delays and heavy road traffic, and potentially lead to equivalent additional emissions from mobile and temporary sources traveling further distances within the nonattainment areas.

Staker Parson has a unique perspective on petitioners' proposed offset rule. Staker Parson suffered substantial financial loss as a result of UDAQ's decision in previous SIP development processes to preclude sources from using or selling preexisting $PM_{2.5}$ and $PM_{2.5}$ precursor ERCs to offset emissions in the nonattainment areas. If the Board initiates

rulemaking for the proposed offsets rule, Staker Parson would be further harmed because its facilities would be unable to undertake capacity increases or other projects necessary to service Utah's growing infrastructure demands. For these reasons, Staker Parson respectfully requests that the Board adopt UDAQ's recommendation and deny petitioners' rulemaking request for a minor source offset program.

Thank you for your consideration,

Mike Dalley, Oldcastle Mountain West Division Sustainability Director
Staker Parson Companies

cc: Melissa Yazhe, Administrative Secretary, Utah Division of Air Quality
Craig Anderson, Environmental Division Chief, Office of Attorney General

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