Backsliding 110(l):

The State has prepared these Maintenance Plans for its PM_{10} areas, and will ask that EPA approve the plan revisions and redesignate each of the areas back to attainment.

Because the Act states, in Section 110(l), that "The Administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress or any other applicable requirement of this Act," Utah has prepared the following information to assure that these revisions to the federally approved PM_{10} SIP will in fact not interfere with attainment or RFP for PM_{10} or any other NAAQS.

Considering, as a benchmark, the control strategies from the existing federally approved PM_{10} SIPs, for both PM_{10} and its precursors, SO_2 and NOx, one can look at any differences in control strategies contained in the proposed PM_{10} Maintenance Plans to see if there should be any concern with regard to Section 110(l).

Because the control strategies from both the existing PM_{10} SIPs and the proposed Maintenance Plan can be thought of as applying selectively to various source categories, any changes to these controls can be discussed within that context.

<u>Source Categories:</u>

As discussed throughout the SIP Narratives and this Technical Support Document (TSD), the many sources in these airsheds have been categorized as one of the following:

- Point Sources – these are stationary industrial sources, sufficiently large so as to have emitted (in 2011), or to have the potential to emit, at least 100 tons per year of PM_{10}, SO_2 or NOx.

- Area Sources – these are also stationary sources, some industrial and others residential. None of these sources is large enough to warrant specific attention, but collectively they contribute in a significant way to the air quality in the region.

- On-Road Mobile Sources – these are the cars and trucks that travel on paved surface roads.

- Off-Road Mobile Sources – this category includes planes, trains, cars and trucks traveling on dirt roads, lawn and garden equipment, and other mobile engines.

The control strategies for each of these categories are addressed below:

On-Road Mobile Sources – The 1991 PM_{10} SIPs were written after I/M was already required in Salt Lake, Davis, and Utah Counties. The I/M program in Weber County was cited in the Clean Data Policy determination as one of the controls leading to PM_{10} compliance in Ogden City. No changes to any of the existing I/M programs are proposed as part of these Maintenance Plans.

As part of the 1991 SIPs however, I/M was also applied to diesel vehicles. There was subsequently some disagreement about whether any credit for resulting PM_{10} control could be taken in a SIP, and in 2002 when the Utah County SIP was revised, the credit for diesel I/M was zeroed-out. That SIP was approved by EPA, and the program was subsequently discontinued in Utah County. No changes to the existing Diesel I/M programs are proposed as part of these Maintenance Plans.

The 1991 SIPs also projected mobile source emissions out to 2003 based on the CAA requirement that cars manufactured after 1994 achieve lower (Tier 1) NOx emissions. Though these Maintenance Plans make no requirements concerning motor vehicle emission rates, it is well documented that Tier 1 has been successfully superseded by Tier 2, and now EPA has just promulgated Tier 3 which will affect model years and fuels beginning in 2017. Thus, even though it never was a SIP requirement, the performance of the vehicular fleet will continue to improve throughout the planning horizon for these Maintenance Plans, and mobile source emissions will continue to decrease.

The 1991 SIPs also made specifications pertaining to the salting and sanding of roadways. These specifications appear in R307-307, and will not change as a result of these Maintenance Plans.

In summary, the existing emission controls affecting on-road mobile sources remain <u>unchanged</u> as a result of these proposed maintenance plans. Therefore, there is no reason to anticipate backsliding with regard to attainment, maintenance, or RFP. This may be concluded, not only for PM_{10}, but for any of the other criteria pollutants as well.

Off-Road Mobile Sources – Neither the 1991 SIPs for Salt Lake and Utah Counties, nor the Clean Data Policy as applied to Ogden City took any credit for the control of emissions from off-road mobile sources. This is a source category that is generally regulated at the federal level (Under Title II of the Act). The emissions projections used in these maintenance plans were calculated using EPA's OFFROAD model. Improvements made at the federal level to control emissions from these sources are coded into the model and are therefore reflected in the emissions projections. Since controls on these sources are becoming more stringent, there is nothing to suggest any backsliding in that regard, and these maintenance plans would certainly not compromise efforts to attain the PM_{10} or any other NAAQS.

Area Sources – Utah's air program relies on many rules affecting emissions from area sources. Most of these rules affect emissions of VOC, for purposes of ozone control, but there are several noteworthy rules that mitigate emissions of PM_{10} and which were relied upon by either the 1991 PM_{10} nonattainment SIPs or were cited as part of the Clean Data Policy as being responsible for compliance with the PM_{10} NAAQS in Ogden City.

For Ogden these rules covered: open burning, visible emissions, and fugitive dust. The maintenance plan for Ogden City proposes <u>no changes to any of these rules</u>.

The 1991 PM_{10} SIPs for Salt Lake and Utah Counties introduced and relied on woodburning controls that commenced in the winter of 1991/92. The rule that was adopted at that time, and approved into the Utah SIP, made it unlawful to burn when ambient PM_{10} concentrations reached 120 µg/m3 and the weather forecast included a temperature inversion over the next 24 hours.

The Maintenance Plans for these areas propose no relaxation to this rule. Rather, the woodburning program has been strengthened over the years, though none of these revisions has been approved at the federal level.

First, the rule as constructed for PM_{10} in Salt Lake and Utah Counties was applied to Weber County, which is inclusive of Ogden City, in 2005.

Secondly, the introduction of $PM_{2.5}$ has led to State rule revisions that enact the mandatory no-burn condition based on real time $PM_{2.5}$ concentrations. The first such revision set the no-burn threshold at 52 µg/m3 (80% of the 1997 standard; 65 µg/m3).

It became immediately apparent that this trigger would occur sooner, in the build-up of an episode of high particulate concentrations, than the PM_{10} trigger of 120 µg/m3. The new State rule was therefore more restrictive than the federally approved rule as it applies to PM_{10}.

The 52 µg/m3 $PM_{2.5}$ trigger subsequently became problematic when the standard was changed in 2006 to only 35 µg/m3. Real time monitors could be reporting values above the new standard, yet burning wood was still permissible. So Utah again revised the woodburning rule, this time initiating the mandatory no-burn condition at 35 µg/m3.

The 2006 standard resulted in three new nonattainment areas for $PM_{2.5}$. Once Utah began work on implementation plans for these new areas, the rule was revised to again lower the threshold, this time to 25 µg/m3, and to also expand its applicability throughout all of Utah's $PM_{2.5}$ nonattainment areas.

Utah anticipates that the woodburning rule, in its current form, will eventually be approved by EPA into the Utah SIP. Until that time, it is safe to say that none of the three Maintenance Plans for PM_{10} proposes any relaxation of the woodburning rule from what is currently approved.

Point Sources – As discussed above, a point source for the purpose of this maintenance plan is a stationary industrial source that either emitted (in 2011), or has the potential to emit, at least 100 tons per year of PM_{10} or one of its precursors; SO_2 or NOx. These criteria are consistent with both the inventory reporting requirements of 40 CFR 51 and the nonattainment plans recently completed (though not yet approved) for $PM_{2.5}$.

It is not, however, consistent with the way in which the list of point sources was compiled for the 1991 SIPs. Those plans specifically included point sources without regard for any distinct emissions criteria. Many would be considered minor sources, and would be regulated either by rule or by Utah's minor source permitting rule (which requires a BACT analysis in order to secure a permit to construct). Of particular note are the many sand and gravel plants that would not meet the 100 tpy criteria. Though

numerous, these aggregate plants were only a partial list of all such facilities in Salt Lake and Utah counties.

As Utah essentially re-compiled a list of the point sources to be considered significant from the standpoint of a PM_{10} maintenance plan, the other thing that became apparent was the 25 years that had passed since the list was first compiled for the 1991 SIPs. Over that time, some of the original sources ceased their operations, and others reduced their emissions to levels that no longer rose to the level of 100 tpy. There are even some new sources that did not exist when the 1991 SIPs were written. These have been added to the new list.

Source-specific emission limitations and operating practices for PM_{10} are included in the SIP at Section IX. Part H. The Maintenance Plans for Salt Lake and Utah Counties propose to revise these provisions, most fundamentally by revising the list of sources included in Part H.

It should be noted that the Utah County PM_{10} SIP was revised in 2002, and some of the smaller sources included in 1991 were dropped from the list. This revision was approved by EPA, so the difference between "the federal SIP" and what is now proposed in these Maintenance Plans is most apparent in the plan for Salt Lake County. Ogden City never had a nonattainment SIP. Furthermore, Ogden City does not include any stationary sources large enough to have been included in its proposed Maintenance Plan.

Beyond the proposed changes to the list of sources regulated in the SIP for PM_{10}, some of the specific terms and conditions that apply to the sources that will be retained in the proposed Maintenance Plans have been modified and may now differ from what had been approved as part of the 1991 SIP for Salt Lake County or the 2002 SIP for Utah County.

Together, these proposed revisions warrant some discussion as it pertains to the provisions of CAA Section 110(l). That discussion can begin by grouping the stationary sources into 3 categories:

Sources to be retained for individual regulation in Part H - Each source to be retained in Part H was reviewed to insure that the revised limits do not represent backsliding. These reviews may be found in Section 5.c. of the TSD.

Sand & Gravel sources – As mentioned before, the 1991 SIPs had included numerous sand and gravel pits even though their emissions would categorize them as minor sources. Still, there were many more sources located in these counties that were never included. This created inequities between these sources and was inconsistent from a regulatory standpoint. The proposed maintenance plans now treat these as Area Sources, and <u>Utah has adopted a new area source rule that regulates ALL sand and gravel sources throughout the PM_{10} nonattainment areas</u>. This rule was adopted by the State as part of the recent $PM_{2.5}$ nonattainment SIP, and proposed for approval into the Utah SIP by EPA (FR 80 No. 164, August 25, 2015, pp. 51499). As such, it contains emission limitations and operating practices that meet the benchmark of Reasonably Available Control Methods (RACM). This (RACM) was the same benchmark to be met by the sources included in the 1991 SIPs. With the new rule, RACM is now applied

to all sand and gravel pits in these PM_{10} nonattainment areas (and the greater area described by $PM_{2.5}$ nonattainment).

As such, even though these sources are proposed for elimination from the source-specific SIP regulations, there is actually better and more comprehensive regulation of this source category due to this new area source rule.

Sources to be dropped from Part H – As mentioned above, it is really only in Salt Lake County that there are any sources belonging to this category. When the Utah County PM_{10} SIP was revised in 2002, the list was pared down to eliminate these smaller sources. The only remaining source in Utah County is also a sand and gravel source, now covered by the area source rule (see above).

The proposed removal from the SIP of these sources in the Salt Lake County maintenance plan would, at first glance, seem to be of potential concern from a backsliding perspective. However, one can also look at backsliding from an airshed-wide perspective and consider the aggregate emissions from the point sources included in the proposed Maintenance Plan vs. the aggregate emissions from the point sources in the 1991 nonattainment SIP.

This is possible because, despite what the 1991 SIP had allowed, the emissions from most of these sources has generally declined over the 25 years since the SIP was written. This is due largely to technological improvements made over the years, and permitted through New Source Review where BACT is required.

Thus, one can look at the *difference* between what the 1991 SIP had allowed, for the collection of sources that are to be retained in the 2014 Maintenance Plan, and what are now their current emissions, as given in the most recent tri-annual emissions inventory for 2011 (also the baseline year for the maintenance plan). The Table below shows that, for every pollutant, this difference *exceeds* what the '91 SIP had allowed for the collection of (non-S&G) sources that are slated for removal.

	1991 SIP Name	Post 1991 SIP Allowable Emissions (ton/day)				Current Name	Actual Emissions from 2011 (ton/day)			
		PM10	SOx	NOx	Total		PM10	SOx	NOx	Total
retained										
	Amoco	0.3096	5.5151	1.8849	7.7096	Tesoro West Coast- Salt Lake City Refinery	0.3454	2.1789	1.0513	3.5756
	Bountiful City Power	0.0030	0.0164	0.6849	0.7044	Bountiful City Light and Power- Power Plant	0.0002	0.0000	0.0009	0.0012
	Central Valley Water	0.0019	0.0110	0.5581	0.5710	Central Valley Water Reclamation Fac.- Wastewater Treatment Plant	0.0031	0.0016	0.0707	0.0753
	Chevron	0.4795	7.0636	2.7989	10.3419	Chevron Products Co - Salt Lake Refinery	0.1288	0.0666	0.8755	1.0710
	Flying-J	0.0603	2.3688	0.7636	3.1926	Flying J Incorporated- Flying J Refinery (Big West Oil Co.)	0.1310	0.5170	0.5363	1.1844
	Hercules	0.8715	0.0041	0.6600	1.5356	Hexcel Corp (+ ATK Launch Systems- Bacchus Works - Plant 1 NIROP Bacchus West)	0.1828	0.0422	0.3753	0.6003
	KUC - Smelter & Refinery	3.8134	51.3359	0.7288	55.8781	Kennecott Utah Copper LLC- Smelter & Refinery	0.6770	1.9065	0.4604	3.0440
	KUC - Mine & Copp. Conc.	7.6877	0.5285	11.1471	19.3633	Kennecott Utah Copper LLC- Mine & Copperton Concentrator	1.9819	0.0103	9.7482	11.7405
	KUC - Magna Conc. & UPP	1.3463	17.0392	13.9323	32.3178	Kennecott Utah Copper LLC- Power Plant Lab Tailings Impoundment	0.1898	4.6690	2.5215	7.3802
	Pacificorp - Gadsby	0.1679	0.1855	8.1726	8.5260	Pacificorp Energy- Gadsby Power Plant	0.0336	0.0022	0.1948	0.2306
	Phillips	0.4408	5.5233	1.8986	7.8627	Holly Corp- HRMC and HEP Woods Cross Operations	0.1494	0.3590	0.5746	1.0830
	University of Utah	0.2036	0.6008	0.6734	1.4778	University of Utah- University of Utah facilities	0.0365	0.0018	0.1624	0.2007
	Subtotal:	**15.3855**	**90.1921**	**43.9033**	**149.4808**		**3.8597**	**9.7552**	**16.5718**	**30.1867**
dropped										
	Crysen	0.0074	0.5644	0.4274	0.9992	Silver Eagle Refining - Woods Cross Inc.- Petroleum Products Refining	0.0204	0.0040	0.0672	0.0915
	Harshaw Filtrol	0.0956	0.0863	0.2589	0.4408	aka Engelhard	0.0000	0.0000	0.0000	0.0000
	Interstate Brick	0.2627	0.0000	0.1274	0.3901	Interstate Brick Company- Brick Manufacturing Plant	0.0964	0.0194	0.0301	0.1460
	Kennecott - Barney's Canyon	0.4370	0.0641	0.5921	1.0932	Kennecott Barneys Canyon Mining Company- Barney's Canyon Mine	0.0002	0.0000	0.0042	0.0044
	LDS Hospital	0.0170	0.4299	0.2036	0.6504		0.0016	0.0001	0.0106	0.0123
	LDS Welfare Square	0.0307	0.0014	0.0038	0.0359		0.0000	0.0000	0.0000	0.0000
	Morton Salt	0.1345	0.0025	0.0501	0.1871		0.0000	0.0000	0.0000	0.0000
	Mountain Bell	0.0008	0.0014	0.0107	0.0129	Qwest- Standby Diesel Generators - 2 sites	0.0005	0.0019	0.0150	0.0175
	Mountain Fuel - 1st S. 180 W.	0.0068	0.0038	0.1948	0.2055		0.0000	0.0000	0.0000	0.0000
	Mountain Fuel - 1st S. 1078 W.	0.0030	0.0011	0.0855	0.0896	Questar Gas- North Operations Center	0.0009	0.0006	0.0673	0.0687
	Murray City Power	0.0044	0.0066	0.6849	0.6959	Murray City Power Department- Electrical Generation Plant	0.0004	0.0000	0.0035	0.0040
	Ostler Rocky Mountain	0.0159	0.0000	0.0104	0.0263		0.0000	0.0000	0.0000	0.0000
	Pacificorp - 40 N. 1st W.	0.0055	0.0005	0.1501	0.1562		0.0025	0.0002	0.0324	0.0351
	Utah Metal Works	0.0118	0.0000	0.0027	0.0145	Utah Metal Works Incorporated- Utah Metal Works	0.0262	0.0084	0.1053	0.1398
	Veteran's Admin. Hospital	0.0014	0.0000	0.0271	0.0285	Veterans Affairs Medical Center- Veterans Affairs Medical Center	0.0016	0.0012	0.0171	0.0199
	Subtotal:	**1.0345**	**1.1619**	**2.8296**	**5.0260**		**0.1506**	**0.0358**	**0.3527**	**0.5392**

Note that the emissions in the table are express in terms of tons/day (as: tpy * 1/365).

The next table shows the same information, but omits the data for each individual source. Units are tons per day, and parentheses indicate negative numbers.

	PM10	SOx	NOx	Total
Retained Sources (2011 - Post SIP)	(11.5257)	(80.4369)	(27.3315)	(119.2941)
Retained Sources (2011)	3.8597	9.7552	16.5718	30.1867
Dropped Sources (Post SIP)	1.0345	1.1619	2.8296	5.0260
Sum of the two:	4.8943	10.9171	19.4014	35.2128

The first row shows how dramatic the difference is between what the 1991 SIP had allowed and what the actual emissions are. Note that the parentheses denote negative values. The sum of the next two rows is presented as a worst case. In other words, even if the aggregate emissions from the sources not retained in the proposed Maintenance Plan are added back to the 2011 totals for the sources that are to be retained, the sum does not even rise to the level of the reductions in Post SIP emissions from the sources to be retained, much less the Post SIP emissions themselves.

This conclusion remains valid even if the banked emission credits are factored into the analysis. The Emission Reduction Credits (ERCs) standing in the registry for Salt Lake County were included in the air quality modeling to verify attainment / maintenance would still be predicted if they were all used for new source review permitting on a 1 to 1 basis. If these totals for PM_{10}, SOx and NOx (1.01 tpd, 30.45 tpd, and 1.97 tpd respectively) were to be considered in the Table above, the *difference* between what the 1991 SIP had allowed, for the collection of sources that are to be retained in the 2014 maintenance plan, and what are now their current emissions, would still be greater than the sum of: their current emissions, plus the Post SIP emissions from the sources to be dropped, plus the banked ERCs.

Therefore, even though the new maintenance plan proposes to drop certain sources from the list, it shows that the overall emissions from large stationary point sources will be sufficiently less than they had been projected to be in the old SIP to cover the emissions from the other sources. As this pertains to CAA Section 110(l), the proposed plan revision would not be expected to interfere with attainment or reasonable further progress for PM_{10} or any other NAAQS involving PM_{10}, SO_2, or NOx.

PM_{10} and Other Criteria Pollutants – The analysis discussed in the preceding section made an evaluation with respect to any revisions to the control strategies from the federally approved SIPs (and Clean Data Policy for Ogden) that the proposed Maintenance Plans could have on attainment and maintenance of the PM_{10} NAAQS. Proposed revisions to the control strategies were shown to be limited to the stationary point source group in Salt Lake County, and those revisions would be with respect to the 1991 nonattainment SIP for Salt Lake County. There are no proposed revisions to the controls approved in the 2000 SIP for Utah County, or to what had been cited by the Clean Data Policy in Ogden City.

There are several other NAAQS to consider as well. This next section will make some evaluations with respect to each of those, and for the sake of completeness, will consider Utah County and Ogden City as well. For this discussion, it is important to keep in mind that the proposed PM_{10} Maintenance Plans have only addressed emissions of PM_{10}, SO_2, and NOx. Other NAAQS to be considered include: NO_2, CO, SO_2, Ozone, and $PM_{2.5}$.

Also to be considered is the attainment status, with respect to each of the NAAQS, for each of the three nonattainment areas.

Aside from PM_{10}, Salt Lake County is presently designated nonattainment for $PM_{2.5}$ and SO_2. It is a maintenance area for the 1997 Ozone standard, and within the county, Salt Lake City is a maintenance area for carbon monoxide (CO).

Utah County is also a nonattainment area for $PM_{2.5}$, and the Provo-Orem area within Utah County is a maintenance area for CO.

Ogden City is also part of the Salt Lake City, UT nonattainment area for $PM_{2.5}$, and the city itself is a maintenance area for CO.

NO2 – Looking first NO_2, it will be useful to look at recently monitored data from within the three areas, none of which has ever been designated nonattainment. The following tables shows that Utah continues to monitor compliance with the NAAQS for NO_2, which is set at 100 ppb for a one-hour averaging period, and determined as the three-year average of annually determined 98th percentile one-hour values. There is also an annual standard of 53 ppb, but the hourly standard is more constraining.

Utah has never experienced difficulty with the NO_2 standard anywhere in the state, so the relatively low values shown in the Tables below come as no surprise. Remember, the 1-hour standard is 100 ppb.

Salt Lake County NO2	Annual NO2 98% (ppb)	3-Yr DV NO2 98% (ppb)
Year	Hawthorne	Hawthorne
2007	69	
2008	64	
2009	56	63.0
2010	54	58.0
2011	57	55.7
2012	54	55.0
2013	62	57.7
2014	48	54.7

Utah County NO2	Annual NO2 98% (ppb)	3-Yr DV NO2 98% (ppb)
Year	North Provo	North Provo
2007	63	
2008	57	
2009	56	58.7
2010	50	54.3
2011	58	54.7
2012	66	58.0
2013	75	66.3
2014	62	67.7

Weber County NO2	Annual NO2 98% (ppb)	3-Yr DV NO2 98% (ppb)
Year	Ogden	Ogden
2007	65	
2008	67	
2009	64	65.3
2010	57	62.7
2011	52	57.7
2012	50	53.0
2013	63	55.0
2014	54	55.7

CO – As mentioned above, Salt Lake City, the Provo-Orem area, and Ogden City are all carbon monoxide (CO) maintenance areas. Nothing in this proposal would be expected to increase emissions of CO, and

thereby impact the continued maintenance of the CO NAAQS in any of these three areas. Additionally, each area has its own CO Maintenance Plan. Motor Vehicle Emission Budgets for CO are established in each plan to keep these areas in attainment with the CO standard. Nothing in this proposal changes these budgets, and the respective Metropolitan Planning Organizations have been able to demonstrate conformity to them by a wide margin.

A look at recently monitored data from each area can also be useful in looking at any potential impact from the proposed PM_{10} Maintenance Plans. The following Tables show that Utah continues to monitor compliance with the NAAQS for CO, which is set at 35 ppm for a one-hour averaging period and 9 ppm for an 8-hour averaging period.

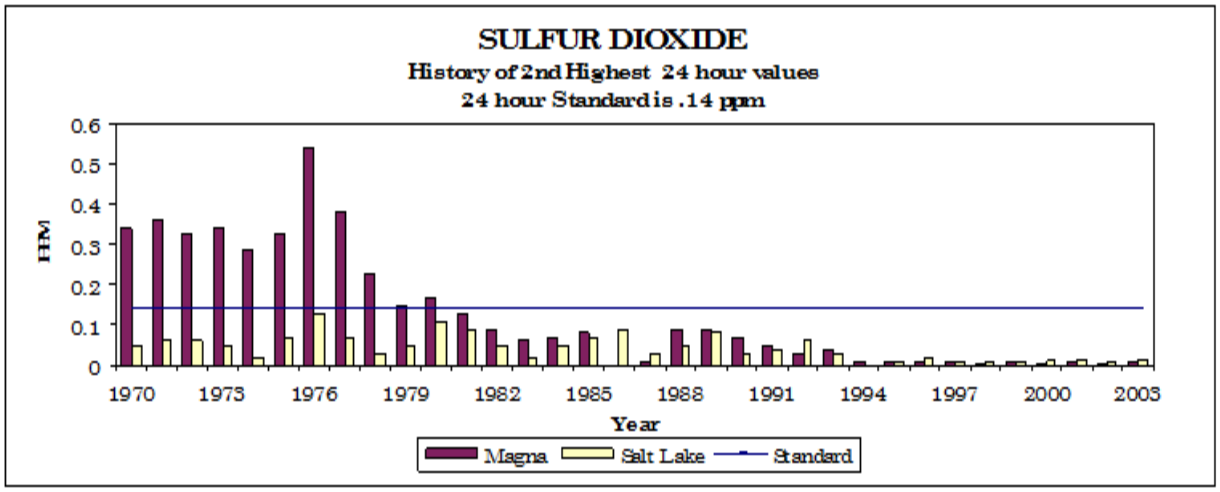
Salt Lake County CO	Annual		3-Yr DV	
	CO 1-Hr (ppm)	CO 8-Hr (ppm)	CO 1-Hr (ppm)	CO 8-Hr (ppm)
Year	Hawthorne	Hawthorne	North Provo	North Provo
2007	8.6	3.4		
2008	3.6	2.3		
2009	3.7	2.3	5.3	2.7
2010	3.5	1.9	3.6	2.2
2011	2.81	1.6	3.3	1.9
2012	3.61	1.8	3.3	1.8
2013	2.72	1.7	3.0	1.7
2014	2.92	1.7	3.1	1.7

Utah County CO	Annual		3-Yr DV	
	CO 1-Hr (ppm)	CO 8-Hr (ppm)	CO 1-Hr (ppm)	CO 8-Hr (ppm)
Year	North Provo	North Provo	North Provo	North Provo
2007	3.8	2.5		
2008	3.9	1.8		
2009	3.9	2.5	3.9	2.3
2010	2.8	1.9	3.5	2.1
2011	2.9	2	3.2	2.1
2012	2.7	1.8	2.8	1.9
2013	3	2.1	2.9	2.0
2014	2.7	1.9	2.8	1.9

Weber County CO	Annual		3-Yr DV	
	CO 1-Hr (ppm)	CO 8-Hr (ppm)	CO 1-Hr (ppm)	CO 8-Hr (ppm)
Year	Ogden	Ogden	Ogden	Ogden
2007	3.3	1.9		
2008	3.3	2.1		
2009	3.8	2.5	3.5	2.2
2010	3.5	1.8	3.5	2.1
2011	2.8	1.6	3.4	2.0
2012	2.6	1.8	3.0	1.7
2013	2.7	1.7	2.7	1.7
2014	7.3	2	4.2	1.8

SO_2 – As discussed above, in the context of point source emissions, it was shown that SOx emissions from the aggregation of point sources in Salt Lake County will be much less than what had been contemplated by the 1991 SIP. It is also helpful to look at the ambient monitoring data for Salt Lake County, and consider how that might change as a result of the proposed PM_{10} Maintenance Plan.

With regard to the NAAQS, the 1971 standard of 0.14 ppm (24-hour average) was revised in 2010. It is now a 1-hour standard, where the daily 1-hour maximum values are ranked, and the 99th percentile value is compared against a standard of 75 ppb. Salt Lake County was designated nonattainment for the old standard in 1978, and first addressed in a SIP by 1981. The last monitored exceedance of that standard also occurred in 1981, and there have been subsequent improvements in SO_2 emission rates that make compliance with this standard an afterthought (See Chart below).



The next Table shows how the 99th percentile values collected in Salt Lake County compare with the 2010 standard of 75 ppb.

Salt Lake County SO2	Annual SO2 99% (ppb)	3-Yr DV SO2 99% (ppb)
Year	Hawthorne	Hawthorne
2007		
2008		
2009		
2010	4	
2011	7.1	
2012	8.7	6.6
2013	6.4	7.4
2014	5.5	6.9

Clearly, there is a comfortable margin of headroom between current levels of monitored SO_2 and the NAAQS. Coupled with the decrease in SO_2 emissions from point sources, the dominant source of SO_2 emissions, this is enough to conclude that the proposed PM_{10} maintenance plan will not interfere with attainment of the SO_2 NAAQS in Salt Lake County, or progress thereto.

Looking at Utah County, the situation is somewhat similar. Again the banked SO_2 ERCs were included in the attainment / maintenance modeling, as they were in the approved SIP. There are no proposed changes to SO_2 control in Utah County. SO_2 concentrations are not even monitored in Utah County.

The proposed maintenance plan for Ogden City proposes no changes to the measures cited through the Clean Data Policy. As with Utah County, Ogden City has never violated the SO_2 NAAQS, and SO_2 data is not collectedin Weber County.

A final note about SO_2 – None of these three areas has yet been designated as nonattainment for the 2010 1-hour SO_2 standard. EPA considers monitoring data, by itself, sufficient only to designate areas as unclassifiable. The designation process is presently on-going, and will continue with the collection of additional information provided through modeling or localized monitoring. This additional information targets large sources of SO2, now specified in EPAs 2015 Data Requirements Rule as sources emitting 2,000 tpy (in 2014). There are no sources that reach this threshold in any of Utah's three PM_{10} nonattainment areas.

Ozone – The current ozone standard is 75 ppb, based on a three-year average of the annual 4th highest daily eight-hour average concentration. On November 25, 2014 EPA proposed to strengthen the ozone standard to within a range of 65 to 70 ppb and is expected to finalize the standard by October 2015.

A look at the recently monitored values from within each of the three PM_{10} nonattainment areas shows design values very near the current standard and probably in excess of whatever number is fixed to what will be the new ozone standard. Thus, these areas are likely to experience "new violations" of the ozone standard with or without the provisions proposed in these PM_{10} Maintenance Plans.

Salt Lake County Ozone	Annual O3 4th Max (ppb)	3-Yr DV O3 4th Max (ppb)
Year	Hawthorne	Hawthorne
2007	79	
2008	75	
2009	74	76.0
2010	73	74.0
2011	75	74.0
2012	78	75.3
2013	77	76.7
2014	72	75.7

Utah County Ozone	Annual O3 4th Max (ppb)		3-Yr DV O3 4th Max (ppb)	
Year	North Provo	Spinish Fork	North Provo	Spinish Fork
2007	75	77		
2008	74	71		
2009	68	69	72.3	72.3
2010	70	70	70.7	70.0
2011	65	65	67.7	68.0
2012	77	76	70.7	70.3
2013	77	70	73.0	70.3
2014	68	76	74.0	74.0

Weber County Ozone	Annual O3 4th Max (ppb)	3-Yr DV O3 4th Max (ppb)
Year	Ogden	Ogden
2007		
2008	74	
2009	69	
2010	73	72.0
2011	74	72.0
2012	66	71.0
2013	76	72.0
2014	70	70.7

Nonetheless, new ozone nonattainment areas will be expected to achieve Reasonable Further Progress toward attainment of this new standard, so the PM_{10} proposals need to be considered in that light.

Ground level ozone is formed by a complex chemical reaction involving volatile organic carbon compounds (VOCs) and oxides of nitrogen (NOx) in the presence of sunlight. Ozone production is a year-round phenomenon. However, the highest ozone levels generally occur during the summer when strong sunlight, high temperatures, and stagnant meteorological conditions combine to drive the chemical reactions and trap the air within a region for several days.

If fine particulate matter is Utah's wintertime smog, ozone is its summertime smog. NOx and VOC are precursors common to both ozone and $PM_{2.5}$, although VOC was never explicitly defined as a PM_{10} precursor in Utah's SIP.

Thus, in considering any potential effects of the proposed PM_{10} plans, it is instructive to look quantitatively at NOx emissions and perhaps qualitatively at potential emissions of VOC. For each of these pollutants, it is useful to consider their origin as belonging to Point, Area, or Mobile Sources.

NOx Emissions – In the prior discussion concerning emissions, it was shown that emissions from Point Sources would be no different in the proposed PM_{10} Maintenance Plans than they otherwise would, given either the existing nonattainment SIPs or, for Ogden, the Clean Data Policy. The exception to this was in Salt Lake County, where the proposed Maintenance Plan would not retain certain stationary sources that had been included in the 1991 SIP.

In discussing point source emissions of NOx in Salt Lake County, it was shown that for the group of sources retained for regulation in the proposed Maintenance Plan, NOx emissions from 2011 were less than what had been allowed in the 1991 SIP by 27.3 tons per day. It was also shown that the 1991 SIP had allowed for 2.83 tons per day for another group of sources that will not be retained for regulation in the proposed Maintenance Plan. Comparing these two numbers, it can be seen that even if the Maintenance Plan proposed retention of these other sources, NOx emissions would still be roughly 25 tons per day fewer than what the 1991 SIP had allowed.

Another way to look at it is to compare the Point Source NOx totals from each plan. The 1991 SIP for Salt Lake County had allowed for a total of 49.7 tons per day (18,143.3 tpy). This included all stationary sources plus banked ERCs. The proposed maintenance plan projects a maximum of 22.7 tpd in 2030. Even if the banked total (1.97 tpd) and the 2.83 tpd from the sources not retained are added back in, the proposed PM_{10} Maintenance Plan projects a 22.2 tpd reduction in NOx; basically half of what the 1991 SIP had anticipated for 2003 and beyond. Such a reduction in NOx should benefit efforts to attain the ozone standard.

Looking at both Area Sources and Mobile Sources, none of the Maintenance Plans proposes to make any changes affecting NOx emissions from these sources, with the possible exception of a more expeditious curtailment to woodburning, which also produces NOx.

For Area Sources, NOx emissions are trending slightly downward by 2030, but represent only 11% of all NOx emissions in Salt Lake County (12% in Utah County).

Non-road Mobile Source NOx emissions are trending downward as well due to federal controls.

By far the most significant source category for NOx emissions is On-road Mobile Sources. In the baseline year of the plan (2011), On-road Mobile Source emissions are 61% and 69% of all NOx in Salt Lake and Utah Counties respectively. Though control of these sources is a federal matter (under Title II of the Act), and not prescribed by these SIPs or Maintenance Plans, the emission trends seen throughout are decreasing and are very encouraging. By 2030, NOx emissions from On-road Mobile Sources are projected to be 78% and 72% lower than they were in the baseline year of 2011. These estimates include the accompanying growth in vmt. Again, there is nothing to suggest that the proposed PM_{10} Maintenance Plans would interfere with reasonable further progress toward attainment of the ozone standard.

VOC Emissions – Again, VOCs are not defined in the Utah SIP as a PM_{10} precursor, and therefore do not appear in either the 1991 nonattainment SIPs or these proposed Maintenance Plans for PM_{10}. Nor did the Clean Data Policy cite any VOC controls in Ogden City. Qualitatively however, it is anticipated that EPA will be approving additional control strategies for $PM_{2.5}$ into the Utah SIP. These controls will be applicable in all three PM_{10} nonattainment areas, and will make enhancements to VOC controls initially promulgated to control ozone. It can well be expected that these new rules will benefit progress toward attainment of the ozone standard.

VOC emissions from on-road mobile sources are also expected to show a decline similar to NOx. The percentage of reduction anticipated between 2011 and 2030, in both Salt Lake and Utah Counties, is 62%. Again, this should help, not hinder, progress toward attainment of the ozone standard.

PM2.5 – As discussed above, all three PM_{10} nonattainment areas addressed in the proposed Maintenance Plans are also parts of designated nonattainment areas for the 2006 24-hour $PM_{2.5}$ standard.

It is therefore pointless to look at data showing monitored $PM_{2.5}$ concentrations in these areas. The data shows that the areas are already above the standard, and that there is no headroom between it and current ambient levels.

Thus, for purposes of Section 110(l), only the emissions data is important.

In the foregoing ozone discussion, a comparison of NOx emissions from Point Sources was made between the two plans for Salt Lake County. It was shown that the 1991 SIP had allowed for 49.7 tons per day (18,143.3 tpy), which included emissions from stationary sources plus banked ERCs. The proposed maintenance plan projects a maximum of 27.5 tpd in 2030 if the banked total (1.97 tpd) and the 2.83 tpd from the sources not retained are included. This represents a 22.2 tpd reduction in NOx, and should also benefit efforts to attain the $PM_{2.5}$ standard.

A similar comparison can be made for Utah County, where the 2002 SIP had allowed 22.6 tons of NOx per day[1]. This included any credits that were banked. By contrast, the proposed Maintenance Plan projects a maximum of 16.3 tpd in 2030. Even if the 1991 SIP totals (1.18 tpd) from the sources not retained are added back in, the proposed PM_{10} maintenance plan projects 5.13 fewer tons per day from Stationary Sources. Again, this should benefit efforts to attain the $PM_{2.5}$ standard.

For Ogden City there is no difference in stationary source control.

As stated above, NOx emissions for Area Sources are trending slightly downward by 2030, but represent only 11% of all NOx emissions in Salt Lake County (12% in Utah County).

Non-road Mobile Source NOx emissions are trending downward as well due to federal controls.

Again, the most significant source category for NOx emissions is On-road Mobile Sources. In the baseline year of the plan (2011), on-road mobile emissions are 61% and 69% of all NOx in Salt Lake and Utah Counties respectively. Though control of these sources is a federal matter (under Title II of the Act), and not the result of these SIPs or Maintenance Plans, the emission trends seen throughout are decreasing and are very encouraging. By 2030, NOx emissions from On-road Mobile Sources are projected to be 78% and 72% lower than they were in the baseline year of 2011. These estimates include the accompanying growth in vmt. Again, there is nothing to suggest that the proposed PM_{10} Maintenance Plans would interfere with Reasonable Further Progress toward attainment of the ozone standard.

As with NOx, the same comparisons can be made using SO_2 emissions.

In Salt Lake County, the 1991 SIP allowed for 92.1 tons of SO_2 per day (33,632.1 tpy) from Stationary Sources; the dominant source of SO_2. By contrast, the proposed Maintenance Plan projects a maximum of 39.4 tpd including banked ERCs (8.9 tpd + 11,113.4 tpy / 365). The 1991 SIP totals from the sources not retained are only 1.16 tpd. SO_2 is a precursor to secondary $PM_{2.5}$, so this reduction should benefit efforts to attain the $PM_{2.5}$ standard.

[1] For emission totals from the 2002 SIP for Utah County, see TSD Supplement II-02.

In Utah County the 2002 SIP allowed for 5.39 tons of SO2 per day from stationary sources; the dominant source of SO2. By contrast, the proposed maintenance plan projects a maximum of 3.60 tpd including banked ERCs (0.49 tpd + 1,135.11 tpy / 365). The 1991 SIP totals from the sources not retained are only 1.16 tpd. Again, this reduction should benefit efforts to attain the PM2.5 standard.

And for PM10:

In Salt Lake County the 1991 SIP allowed for 18.4 tons of PM10 per day (6,726.6 tpy) from stationary sources. By contrast, the proposed maintenance plan projects a maximum of 12.8 tpd including banked ERCs (11.8 tpd + 370.16 tpy / 365). The 1991 SIP totals from the sources not retained are only 1.03 tpd. Even when added back in, the overall reduction is 4.57 tpd. Not all PM10 is PM2.5, but at least part of this reduction should benefit efforts to attain the PM2.5 standard.

In Utah County the 2002 SIP allowed for 6.89 tons of PM10 per day from stationary sources. By contrast, the proposed maintenance plan projects a maximum of 4.99 tpd including banked ERCs (0.99 tpd + 1,458.88 tpy / 365). The 2002 SIP totals from the sources not retained are only 0.49 (179 tpy / 365) tpd. Even when added back in, the overall reduction is 1.41 tpd. Not all PM10 is PM2.5, but at least part of this reduction should benefit efforts to attain the PM2.5 standard.

For Area Sources, PM_{10} emissions are holding more or less steady at about 5 tpd in Salt Lake County and 3 tpd in Utah County. These are similar to the numbers projected in the existing SIPs, but it should be kept in mind that the category called Area Sources is now much more inclusive than it was when the PM_{10} SIPs were first developed.

Non-road Mobile Source PM10 emissions are trending upward in spite of federal controls. This is reflective of growth that would take place with or without these proposed revisions.

On-road Mobile Source emissions are trending slightly upward, however this is a reflection of growth in vmt and the proportionality of re-entrained road dust to that vmt growth. Re-entrained road dust is largely crustal material that falls within the PM coarse fraction, and does not register as $PM_{2.5}$. Tailpipe PM emissions (largely $PM_{2.5}$) are continuing to fall with improvements in federal motor vehicle controls.

Conclusion

The preceding discussion shows that none of the proposed PM_{10} Maintenance Plans would interfere with attainment or Reasonable Further Progress toward attainment of PM_{10}, NO_2, CO, SO_2, Ozone, or $PM_{2.5}$. This is in keeping with section 110(l) of the Clean Air Act.

Looking beyond what is proposed in these PM_{10} Maintenance Plans, there are other regulatory actions in play that will affect future trends in the NOx and VOC emissions. These pollutants play a role in both ozone and $PM_{2.5}$ chemistry.

The projected trend in NOx emissions from On-road Mobile Sources is showing a significant decline. Looking at projected trends in NOx emissions from On-road Mobile Sources, EPA has just finalized an important rule designed to reduce air pollution from passenger cars and trucks. Starting in 2017, Tier 3 sets new vehicle emissions standards and lowers the sulfur content of gasoline. The tailpipe standards include different phase-in schedules that vary by vehicle class, but generally phase in between model years 2017 and 2025. The vehicle emission standards, combined with the reduction of gasoline sulfur content, will significantly reduce motor vehicle emissions of: nitrogen oxides (NOx), volatile organic compounds (VOC), direct particulate matter ($PM_{2.5}$), carbon monoxide (CO) and air toxics. Compared to current standards, the non-methane organic gases (NMOG) and nitrogen oxides (NOx), presented as NMOG+NOx, tailpipe standards for light-duty vehicles represent approximately an 80% reduction from today's fleet average. Both of these pollutants contribute to the formation of ozone and secondary $PM_{2.5}$. Reductions of this magnitude suggest that the trends of ozone, PM_{10}, and $PM_{2.5}$ concentrations will reflect these improvements.

In addition, it is anticipated that EPA will be approving additional control strategies for $PM_{2.5}$ into the Utah SIP. These controls will be applicable in all three PM_{10} nonattainment areas. They will include area source rules that make enhancements to woodburning control as well as the emissions of VOC. Though not defined in the Utah SIP as a precursor to PM_{10}, VOC is defined as a precursor to both $PM_{2.5}$ and Ozone. It is expected that these new rules will benefit attainment of, not only the $PM_{2.5}$ standard, but the PM_{10} and ozone NAAQS as well.