

## **Projection Years PM<sub>2.5</sub> Maintenance SIP Point Source Inventory**

The PM<sub>2.5</sub> Maintenance SIP requires a point source inventory for projections. Projection (future year) inventories are compared to the base year inventory to verify attainment of the air quality standard. The analysis that supports this PM<sub>2.5</sub> Maintenance SIP evaluated the 2026 and 2035 future year inventories. For further information on how these specific years were determined, refer to the Projection Years portion of this Technical Support Document (TSD).

As with all inventories collected for this analysis, the pollutants of concern included PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, CO, and NH<sub>3</sub> and the unit of measurement was tons per year (tpy).

### **Source Selection:**

Industrial point sources are one of the fundamental pieces to this inventory. At the outset of this project the 2017 triannual inventory was the latest and most current inventory available for point sources. This included all major sources, Title V sources, and any sources included in the PM<sub>10</sub> or ozone maintenance plans.

For the SIP base year inventory, UDAQ used the definition of a major source under Title V of the Clean Air Act (as specified in 40 CFR 51.1000) to define the thresholds for the reporting of actual emissions for point sources in the Salt Lake Nonattainment Area. These thresholds are 70 tons per year or more of direct PM<sub>2.5</sub> or any PM<sub>2.5</sub> precursor in a serious nonattainment area for the PM<sub>2.5</sub> NAAQS. For point sources located in the Provo Nonattainment Area a threshold for potential to emit annual emissions of 70 tons for any of the relevant criteria air pollutants was also used. For point sources located in the Surrounding Area however, a threshold for potential to emit annual emissions of 100 tons for any of the relevant criteria air pollutants was used. Emissions from sources under the above thresholds were included in the area source base year inventory.

It was determined that according to the above definition that 54 major sources were contained within the modeling domain as of 2017. Additional sources contained in the modeling domain but located outside of Utah were also identified. Emissions from these 54 major sources support modeled attainment demonstration for the Salt Lake Nonattainment Area.

As indicated above 54 major sources were contained within the modeling domain as of 2017. However, between 2017 and 2026 six of the 54 major sources were designated as minor sources. These six sources were ACH Foam Technologies, LLC – Expanded Polystyrene Mfg. Plant, Bimbo Bakeries USA, Inc. – Salt Lake City Bakery, Brigham Young University – Main Campus, Geneva Nitrogen Inc. – Geneva Nitrogen Plant, Snowbird Resort LLC – Snowbird Ski and Summer Resort, and Wasatch Integrated Waste Management District: County Landfill & Energy Recovery Facility.

### **Projection of Emissions for Sources in the Surrounding Area:**

A description of how the 2017 base year emissions were projected to the future years of 2026 and 2035 for the sources in the Surrounding Area is listed below.

The projection data agreed upon between UDAQ and EPA for point sources in the PM<sub>2.5</sub> Serious SIP was from the Regional Economic Models, Inc. (REMI). In order to maintain consistency, it was therefore determined that REMI data would be used to project emissions for point sources located in the Surrounding Area of the PM<sub>2.5</sub> Maintenance SIP. Since REMI data did not exist for military installations the Kem C. Gardner Policy Institute data that was used for projecting area sources was used for projecting emissions at military installations. A description of how the projection data for military installations was developed is detailed at the end of this document. Projection data is available upon request.

It should be noted that a cursory comparison was made on point source emissions in the Surrounding Area using projection data from both REMI and Kem C. Gardner Policy Institute. It was determined that overall, the point source emissions in the Surrounding Area were greater when using projection data from REMI than from the Kem C. Gardner Policy Institute. This supported the use of REMI data to project point source emissions in the Surrounding Area since the resulting emissions were greater, and therefore more conservative.

It should be noted that UDAQ anticipates emissions from electric generating facilities in the Surrounding Area to decrease in future years. However, in order to be conservative UDAQ held the emissions from electric generating facilities in the Surrounding Area constant from 2017 to 2026 and 2035. Also, emissions projected using REMI resulted in a decrease in future emissions for various natural gas and mining facilities in the Surrounding Area. In order to be conservative with regard to future years the emissions for these facilities were held constant from 2017 to 2026 and 2035.

### **Projection of Emissions for Sources in the Provo Nonattainment Area:**

A description of how the 2017 base year emissions were projected to the future years of 2026 and 2035 for sources in the Provo Nonattainment Area is listed below.

According to UDAQ permit engineers normal business operations can result in fluctuations of up to +/- 5% for both McWane Ductile – Utah, and Pacificorp Energy – Lakeside Power Plant. Therefore, the emissions for these sources were grown 5% from 2017 to 2026 and then held constant from 2026 to 3035.

## **Projection of Emissions for Sources in the Salt Lake Nonattainment Area:**

A description of how the 2017 base year emissions were projected to the future years of 2026 and 2035 for the sources in the Salt Lake Nonattainment Area is listed below.

### Emissions Held Constant for Future Years

According to UDAQ permit engineers the 2017 base year emissions were held constant for future years for the following sources located in the non-attainment area: Compass Minerals Ogden Inc. – Production Plant, Lhoist North America – Grantsville Plant, Nucor Steel – Plymouth (Nucor), and Vulcraft – Division of Nucor Corporation.

### Future Year Emissions Changes due to Installation or Updates of Equipment

According to UDAQ permit engineers changes from the 2017 base year emissions to future years resulted from the installation or update of equipment for the following sources in the non-attainment area: Hexcel Corporation – Salt Lake Operations, and Tesoro Refining & Marketing Company LLC – Salt Lake Refinery.

### Future Year Emissions Changes due to Equipment Updates as well as Site Specific Data

According to UDAQ permit engineers changes from the 2017 base year emissions to future years resulted from the installation or update of equipment as well as site specific data with input from the sources for the following: Kennecott Utah Copper LLC – Mine & Copperton Concentrator, Kennecott Utah Copper LLC – Power Plant Lab Tailings Impoundment, and Kennecott Utah Copper LLC – Smelter & Refinery, and Proctor & Gamble – Paper Manufacturing.

### Future Year Emissions Changes from Fluctuations due to Normal Business Operations

According to UDAQ permit engineers normal business operations can result in fluctuations of up to +/- 5% for various sources. Therefore, emissions were grown 5% from 2017 to 2026 and then held constant from 2026 to 2035 for the following sources in the nonattainment area: Big West Oil, LLC – Big West Oil Refinery, Chevron Products Co – Salt Lake Refinery, Holly Corp – HRMC and HEP Woods Cross Operations, Pacificorp Energy – Gadsby Power Plant, and Utah Municipal Power Agency – West Valley Power Plant.

### Future Year Emissions for ATK Launch Systems – Promontory

According to UDAQ permit engineers changes from the 2017 base year emissions to the future year of 2026 resulted from fluctuations in fugitive emissions due to rocket burning operations. Emissions were then held constant from 2026 to 2035.

### Future Year Emissions for Hill Air Force Base – Main Base

Due to the nature of national security and the inherent unpredictability of mission and readiness requirements (e.g. conflict, war, acts of terrorism), it is not technically feasible for the Air Force to take a limit on the quantity of alternative fuel consumption. Therefore, potential to emit (PTE) emissions were included in future years for Hill Air Force Base – Main Base.

### Future Emissions for the University of Utah – University of Utah Facilities

According to UDAQ permit engineers along with input from the source it was determined that REMI data would be used to project 2017 base year emissions for the University of Utah – University of Utah Facilities. In addition, emissions due to equipment scheduled to be installed after 2017 was included in 2026 for the facility.

### **Best Available Control Technology (BACT) Adjustments:**

BACT was applied to each of sources in the non-attainment area in order to meet national requirements and the future year emissions were adjusted accordingly. For further information on how BACT was applied to each individual source, refer to the BACT portion of the PM<sub>2.5</sub> Serious SIP TSD.

The major sources in the non-attainment area along with their BACT adjusted emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, CO and NH<sub>3</sub> for the projection years of 2026 and 2035 are listed in Tables 1 and 2 respectively.

Electronic workbooks containing baseline emissions, projections, and BACT for the major point sources in the modeling domain areas can be found in the point source projection year folders of this TSD.

**Table 1. Salt Lake PM<sub>2.5</sub> Maintenance SIP – 48 Major Point Sources with 2026 Projected Emissions (BACT Included)**

Modeling Area	Count	Company Name	Site ID	Site Name	2026 Projection Year Emissions (tons/yr)						
					PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO	NH <sub>3</sub>
Provo Non-Attainment Area	1	McWane Ductile	10794	Utah	16.75	12.82	9.09	36.14	28.14	13.06	0.79
	2	PacifiCorp Energy	13031	Lakeside Power Plant	68.33	68.33	7.98	217.41	27.57	962.93	115.86
					85.08	81.15	17.07	253.55	55.71	975.99	116.65
Salt Lake Non-Attainment Area	3	ATK Launch Systems	10009	Promontory	217.82	195.17	0.79	80.24	29.93	36.59	5.70
	4	Big West Oil, LLC	10122	Big West Oil Refinery	26.40	17.26	34.68	120.91	710.42	246.88	7.02
	5	Chevron Products Co.	10119	Salt Lake Refinery	41.94	29.23	34.00	266.33	382.08	258.23	8.10
	6	Compass Minerals International	10917	Production Plant	221.10	104.53	1.18	68.42	34.01	90.10	0.71
	7	Hexcel Corporation	11386	Salt Lake Operations	131.79	86.30	38.49	149.99	152.85	116.80	72.24
	8	Hill Air Force Base	10121	Main Base	28.40	21.97	33.73	286.33	205.71	332.83	1.72
	9	Holly Corp	10123	HRMC and HEP Woods Cross Operations	19.07	19.07	46.57	179.04	228.33	424.46	14.85
	10	Kennecott Utah Copper LLC	10572	Power Plant Lab Tailings Impoundment	249.40	223.98	16.23	266.74	48.30	486.64	41.47
	11	Kennecott Utah Copper LLC	10346	Smelter & Refinery	713.55	628.31	861.54	173.80	11.91	109.39	9.70
	12	Kennecott Utah Copper LLC	10571	Mine & Copperton Concentrator	1951.34	412.39	6.58	5835.79	309.10	1677.78	1.78
	13	Lhoist North America	10707	Grantsville Plant	7.57	1.10	0.00	0.11	0.07	0.06	0.00
	14	Nucor Steel	10008	Nucor Steel	45.90	32.49	80.17	182.41	31.49	688.01	2.24
	15	Pacificorp Energy	10355	Gadsby Power Plant	8.56	5.27	0.48	40.75	2.37	28.44	4.96
	16	Procter and Gamble	14107	Paper Manufacturing Plant	150.38	150.16	1.45	124.89	162.40	156.47	1.21
	17	Tesoro Refining & Marketing Company LLC	10335	Salt Lake City Refinery	142.61	91.38	91.20	275.00	268.63	400.18	3.77
	18	University of Utah	10354	University of Utah facilities	13.82	13.82	0.82	53.84	10.59	63.85	3.50
	19	Utah Municipal Power Agency	12495	West Valley Power Plant	4.86	4.86	0.38	10.59	1.55	15.09	0.00
	20	Vulcraft - Division of Nucor Corporation	10028	Steel Products Manufacturing	17.94	7.90	0.25	6.15	42.92	6.38	0.00
					3992.46	2045.20	1248.54	8121.33	2632.66	5138.18	178.96
	Surrounding Area	21	Ash Grove Cement Company	10303	Leamington Cement Plant	163.64	141.04	26.66	1667.78	74.16	8784.94
22		CCI Paradox Midstream LLC	10034	Lisbon Natural Gas Processing Plant	14.31	13.23	76.48	236.18	18.02	391.66	1.26
23		Clean Harbors Aragonite LLC	10725	Hazardous Waste Storage Incineration	6.17	2.94	39.45	209.24	9.70	71.94	0.00
24		Dugway Proving Ground U.S. Army	10706	Dugway Proving Ground	676.06	70.84	0.85	13.52	10.09	102.63	0.13
25		Energy Fuels Resources (USA) Inc.	14010	Tony M. Mine	12.92	3.57	0.10	142.14	5.01	19.18	
26		EnerVest Operating	12929	Sage Brush Flat Compressor Station	2.41	2.41	0.14	15.28	20.74	3.05	0.00
27		EnerVest Operating L.L.C.	12948	Dry Canyon Compressor Station	2.53	2.53	0.08	7.40	14.34	9.79	0.04
28		EnerVest Operating L.L.C.	13284	Interplanetary Compressor Station	3.38	3.38	0.11	5.13	13.30	7.13	0.00
29		Genpak Corporation	11767	Polystyrene Foam Production Facility	0.84	0.84	0.01	1.61	106.50	0.69	0.31
30		Graymont Western US Incorporated	10313	Crickit Mountain Plant	277.29	135.63	17.56	568.99	12.34	278.82	25.82
31		Hill Air Force Base	11284	Utah Test and Training Range	170.03	62.47	0.83	14.14	3.51	5.02	0.08
32		Holcim (US) Inc.	10007	Devil's Slide Plant	104.96	22.61	285.72	2077.47	65.68	1542.65	5.75
33		Intermountain Power Service Corporation	10327	Intermountain Generation Station	983.45	923.90	2483.62	9333.37	9.65	964.59	1.65
34		Kern River Gas Transmission Company	12512	Veyo Compressor Station	10.83	10.83	0.39	109.26	8.50	17.69	0.01
35		Kinder Morgan Altamont LLC	10209	Altamont East Compressor Station	6.71	6.71	0.18	451.58	55.90	84.66	0.01
36		Kinder Morgan Altamont LLC	10210	Altamont West Compressor Station	1.50	1.50	0.05	312.56	34.66	20.65	0.00
37		Kinder Morgan Altamont LLC	10211	Altamont South Compressor Station	5.41	5.41	0.15	397.14	41.60	64.38	0.00
38		Materion Natural Resources	10311	Delta Mill	22.78	4.44	0.44	13.70	6.21	8.86	82.50
39		Northwest Pipeline GP	10259	Cisco Compressor Station	0.10	0.10	0.35	3.21	0.05	1.37	0.01
40		Northwest Pipeline GP	10627	Moab Compressor Station	0.73	0.73	0.26	42.27	1.61	6.06	0.00
41		PacifiCorp Energy	12524	Currant Creek Power Plant	24.23	24.23	2.74	157.68	10.02	297.96	40.91
42		PacifiCorp	10237	Hunter Power Plant	503.92	385.33	3511.61	9776.71	119.75	3158.09	1.36
43		PacifiCorp	10238	Huntington Power Plant	474.01	218.81	2280.98	5934.58	74.78	5107.68	0.82
44		Questar Pipeline LLC	11532	Kastler Marushack Compressor Station	7.17	7.17	1.17	1048.35	73.47	45.97	4.67
45		St. George City Power	10892	Red Rock Power Generation Station	3.32	3.32	0.36	15.99	2.85	6.01	0.00
46		Sunnyside Cogeneration Associates	10096	Sunnyside Cogeneration Facility	60.53	39.87	477.05	430.77	25.39	42.76	0.15
47		US Magnesium LLC	10716	Rowley Plant	1209.06	911.67	9.95	1556.37	968.00	473.62	2.66
48		Utelite Corporation	10676	Shale Processing	86.98	36.73	133.70	206.02	2.26	9.03	0.03
				4835.26	3042.24	9351.01	34748.45	1788.08	21526.88	250.38	

**Table 2. Salt Lake PM<sub>2.5</sub> Maintenance SIP – 48 Major Point Sources with 2035 Projected Emissions (BACT Included)**

Modeling Area	Count	Company Name	Site ID	Site Name	2035 Projection Year Emissions (tons/yr)						
					PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	VOC	CO	NH <sub>3</sub>
Provo Non-Attainment Area	1	McWane Ductile	10794	Utah	16.75	12.82	9.09	36.14	28.14	13.06	0.79
	2	PacifiCorp Energy	13031	Lakeside Power Plant	68.33	68.33	7.98	217.41	27.57	962.93	115.86
					85.08	81.15	17.07	253.55	55.71	975.99	116.65
Salt Lake Non-Attainment Area	3	ATK Launch Systems	10009	Promontory	217.82	195.17	0.79	80.24	29.93	36.59	5.70
	4	Big West Oil, LLC	10122	Big West Oil Refinery	26.40	17.26	34.68	120.91	710.42	246.88	7.02
	5	Chevron Products Co.	10119	Salt Lake Refinery	41.94	29.23	34.00	266.33	382.08	258.23	8.10
	6	Compass Minerals International	10917	Production Plant	221.10	104.53	1.18	68.42	34.01	90.10	0.71
	7	Hexcel Corporation	11386	Salt Lake Operations	131.79	86.30	38.49	149.99	152.85	116.80	72.24
	8	Hill Air Force Base	10121	Main Base	28.40	21.97	33.73	286.33	205.71	332.83	1.72
	9	Holly Corp	10123	HRMC and HEP Woods Cross Operations	19.07	19.07	46.57	179.04	228.33	424.46	14.85
	10	Kennecott Utah Copper LLC	10572	Power Plant Lab Tailings Impoundment	249.40	223.98	16.23	266.74	48.30	486.64	41.47
	11	Kennecott Utah Copper LLC	10346	Smelter & Refinery	713.55	628.31	861.54	173.80	11.91	109.39	9.70
	12	Kennecott Utah Copper LLC	10571	Mine & Copperton Concentrator	1951.34	412.39	6.58	5835.79	309.10	1677.78	1.78
	13	Lhoist North America	10707	Grantsville Plant	7.57	1.10	0.00	0.11	0.07	0.06	0.00
	14	Nucor Steel	10008	Nucor Steel	45.90	32.49	80.17	182.41	31.49	688.01	2.24
	15	PacifiCorp Energy	10355	Gadsby Power Plant	8.56	5.27	0.48	40.75	2.37	28.44	4.96
	16	Procter and Gamble	14107	Paper Manufacturing Plant	150.38	150.16	1.45	124.89	162.40	156.47	1.21
	17	Tesoro Refining & Marketing Company LLC	10335	Salt Lake City Refinery	142.61	91.38	91.20	275.00	268.63	400.18	3.77
	18	University of Utah	10354	University of Utah facilities	15.19	15.19	0.89	58.50	11.70	66.65	3.79
	19	Utah Municipal Power Agency	12495	West Valley Power Plant	4.86	4.86	0.38	10.59	1.55	15.09	0.00
	20	Vulcraft - Division of Nucor Corporation	10028	Steel Products Manufacturing	17.94	7.90	0.25	6.15	42.92	6.38	0.00
					3993.83	2046.57	1248.61	8126.00	2633.77	5140.99	179.25
	Surrounding Area	21	Ash Grove Cement Company	10303	Leamington Cement Plant	221.35	190.78	36.06	2256.03	100.32	11883.49
22		CCI Paradox Midstream LLC	10034	Lisbon Natural Gas Processing Plant	15.15	14.01	80.98	250.06	19.08	414.68	1.34
23		Clean Harbors Aragonite LLC	10725	Hazardous Waste Storage Incineration	9.55	4.56	61.11	324.09	15.02	111.43	0.00
24		Dugway Proving Ground U.S. Army	10706	Dugway Proving Ground	677.66	71.00	0.85	13.55	10.12	102.88	0.13
25		Energy Fuels Resources (USA) Inc.	14010	Tony M. Mine	12.92	3.57	0.10	142.14	5.01	19.18	
26		EnerVest Operating	12929	Sage Brush Flat Compressor Station	2.41	2.41	0.14	15.28	20.74	3.05	0.00
27		EnerVest Operating L.L.C.	12948	Dry Canyon Compressor Station	2.53	2.53	0.08	7.40	14.34	9.79	0.04
28		EnerVest Operating L.L.C.	13284	Interplanetary Compressor Station	3.38	3.38	0.11	5.13	13.30	7.13	0.00
29		Genpak Corporation	11767	Polystyrene Foam Production Facility	1.17	1.17	0.01	2.26	149.53	0.96	0.43
30		Graymont Western US Incorporated	10313	Crickit Mountain Plant	277.29	135.63	17.56	568.99	12.34	278.82	25.82
31		Hill Air Force Base	11284	Utah Test and Training Range	170.43	62.62	0.83	14.17	3.52	5.04	0.08
32		Holcim (US) Inc.	10007	Devil's Slide Plant	146.70	31.61	399.34	2903.59	91.80	2156.10	8.04
33		Intermountain Power Service Corporation	10327	Intermountain Generation Station	983.45	923.90	2483.62	9333.37	9.65	964.59	1.65
34		Kern River Gas Transmission Company	12512	Veyo Compressor Station	15.13	15.13	0.54	152.71	11.88	24.72	0.02
35		Kinder Morgan Altamont LLC	10209	Altamont East Compressor Station	6.71	6.71	0.18	451.58	55.90	84.66	0.01
36		Kinder Morgan Altamont LLC	10210	Altamont West Compressor Station	1.50	1.50	0.05	312.56	34.66	20.65	0.00
37		Kinder Morgan Altamont LLC	10211	Altamont South Compressor Station	5.41	5.41	0.15	397.14	41.60	64.38	0.00
38		Materion Natural Resources	10311	Delta Mill	22.78	4.44	0.44	13.70	6.21	8.86	82.50
39		Northwest Pipeline GP	10259	Cisco Compressor Station	0.12	0.12	0.42	3.86	0.05	1.65	0.01
40		Northwest Pipeline GP	10627	Moab Compressor Station	0.88	0.88	0.31	50.74	1.93	7.27	0.00
41		PacifiCorp Energy	12524	Currant Creek Power Plant	24.23	24.23	2.74	157.68	10.02	297.96	40.91
42		PacifiCorp	10237	Hunter Power Plant	503.92	385.33	3511.61	9776.71	119.75	3158.09	1.36
43		PacifiCorp	10238	Huntington Power Plant	474.01	218.81	2280.98	5934.58	74.78	5107.68	0.82
44		Questar Pipeline LLC	11532	Kastler Marushack Compressor Station	11.12	11.12	1.82	1626.99	114.03	71.35	7.24
45		St. George City Power	10892	Red Rock Power Generation Station	3.32	3.32	0.36	15.99	2.85	6.01	0.00
46		Sunnyside Cogeneration Associates	10096	Sunnyside Cogeneration Facility	60.53	39.87	477.05	430.77	25.39	42.76	0.15
47		US Magnesium LLC	10716	Rowley Plant	1669.23	1258.66	13.74	2148.73	1336.42	653.88	3.68
48		Utelite Corporation	10676	Shale Processing	90.21	38.09	138.66	213.66	2.34	9.36	0.03
				5413.10	3460.80	9509.86	37523.47	2302.57	25516.42	285.47	

## Data Collection and QA/QC

UDAQ has recently improved emissions inventory data management with the development and implementation of the State and Local Emissions Inventory System (SLEIS). This new system has established an online emissions inventory system, whereby point sources can submit their air emissions inventories to UDAQ. SLEIS includes extensive built-in calculation capabilities which simplify the process and reduce the workload for point sources required to submit an emissions inventory. SLEIS also contains extensive QA/QC which guides point sources as they submit their data, thereby greatly reducing oversight required by UDAQ staff. The 2017 triannual emissions inventory was submitted to UDAQ by point sources using the SLEIS online system. The submitted emissions inventories were thoroughly reviewed using additional QA/QC by UDAQ staff before being finalized. The extensive QA/QC contained in the SLEIS online system along with the review performed by UDAQ staff greatly surpasses EPA guidance requiring 10% QA/QC as the minimum criteria necessary for a SIP inventory. It should be noted that CCI Paradox – Lisbon Natural Gas Processing Plant which is located in the Surrounding Area did not operate and therefore submitted an inventory listing zero emissions for calendar year 2017. This was due to reconstruction and equipment installation at the facility which then began operating again in 2018. However, the facility was operating during 2016 which was also the base year for the PM<sub>2.5</sub> Serious SIP. Therefore, it was determined that the 2016 emissions inventory for CCI Paradox – Lisbon Natural Gas Processing Plant would be used in lieu of their 2017 emissions inventory for the PM<sub>2.5</sub> Maintenance SIP 2017 base year. It also should be noted that Energy Fuel Resources (USA) Inc. – Tony M. Mine which is located in the Surrounding Area has not operated since 2012. UDAQ staff anticipated that the facility would eventually shut down according to past communication with source representatives. However, the source submitted a notice of intent and the Approval Order (AO) for Energy Fuel Resources (USA) Inc. – Tony M. Mine was updated in 2018. At that time representatives for the source indicated that start-up of the mine was a possibility at some point in the future. Therefore, since the source did not operate in 2017 UDAQ used zero emissions for Energy Fuel Resources (USA) Inc. – Tony M. Mine for the 2017 base year. However, in order to be conservative with regard to future years, UDAQ used PTE emissions for Energy Fuel Resources (USA) Inc. – Tony M. Mine for the years of 2026 and 2035. The 2017 triannual point source emissions inventory data from SLEIS is contained in PM<sub>2.5</sub> Maintenance SIP workbooks constructed for the sources. The 2016 emissions inventory for CCI Paradox – Lisbon Natural Gas Processing Plant, and the PTE emissions for Energy Fuel Resources (USA) Inc. – Tony M. Mine are contained in separate workbooks. This data is available in electronic format upon request.

Emissions data for any additional sources contained in the modeling domain but located outside of Utah was obtained from the EPA National Emission Inventory (NEI) database (2014 NEI v2).

The 2017 inventory was reported and compiled in terms of tons per year (tpy). Since the PM<sub>2.5</sub> Maintenance SIP is designed to protect the 24-hour standard, the model (CAMx)

evaluates emissions on an hourly basis. It uses a pre-processor called SMOKE in order to convert the annual inventory to a 24-hour basis (explained in further detail below).

Because the model is evaluating the buildup of PM<sub>2.5</sub> concentrations over the span of multi-day episodes, an (annual) inventory worksheet was used to develop each episode day. This stands in contrast to the mobile source portion of the inventory wherein differences between weekdays and weekends (among other factors) will result in daily variations.

### **Condensable Particulate Emissions:**

Condensable particulate matter (PM) is material that is vapor phase at stack conditions, but which condenses and/or reacts upon cooling and dilution in the ambient air to form solid or liquid PM after discharge from the stack. Note that all condensable PM, if present, is typically in the PM<sub>2.5</sub> size fraction, and therefore all of it is a component of both primary PM<sub>2.5</sub> and primary PM<sub>10</sub>. Condensable emissions were included in the 2017 emission inventories submitted by the sources.

### **The SMOKE Emissions Model and Processor**

The emissions processing model, SMOKE, takes the annual, county wide emissions inventory prepared by UDAQ and reformulates it for use in the air quality model. There are three aspects to this reformulation of the inventory that, in the end, produces a refined version of the inventory. These include temporal processing, spatial processing, and speciation. Temporal processing converts emissions from annual to daily and hourly values. Spatial processing locates emissions from the county to specific grid cells within the modeling domain. Speciation breaks PM and VOC emissions into their component subspecies.

The emissions processing for air quality modeling is done with sets of activity profiles based on various Source Classification Codes (SCCs) and associated cross reference files developed using source provided temporal data. This feature essentially establishes the level of detail required of the point source inventories, wherein each “source component” has with it an associated SCC. These SCCs and the cross-reference files are also created for area sources and mobile sources.

Once developed, these activity profiles serve to establish the temporal allocation of emissions within the model (e.g. 8-hour workdays), and also determine the speciation of PM and VOC emissions.



## **Development of Projection Data for Military Installations**

Since REMI data did not exist for military installations it was necessary to use data from another source to project from 2017 forward to 2026, and 2035. The data previously used to project emissions at military installations was from the Utah Governor's Office of Management and Budget (GOMB) and was expressed in number of employees. However, it was determined that the GOMB data was out of date and that more current projection data should be used. The data used for projecting area source emissions for the PM<sub>2.5</sub> Maintenance SIP was the Kem C. Gardner Policy Institute county projections which was released in July of 2017. This data set is also expressed in number of employees and includes projections for military installations. Since the Kem C. Gardner Policy Institute county data was much more current than the GOMB data, and was also the data set used to project area source emissions, it was determined that The Kem C. Gardner Policy Institute county projections data would be used for projecting emissions at military installations.