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ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

March 8, 2019

Mr. Bhaskar Chandan
Supervising Air Quality Engineer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Subject: MGS (Facility ID# 155474) Responses to the SCAQMD Telephonic Comments

Dear Mr. Chandan;

Malburg Generating Station (MGS) is providing the following responses to the District's comments on the modeling analyses.

Compton Meteorological Data

The MGS modeling analysis utilized three years of meteorological data from the Compton monitoring site with the technical justification summarized in the October 2017 Modeling Protocol which was submitted to the SCAQMD and the CEC. While EPA Appendix W (Guidelines on Air Quality Models) recommends up to five (5) years of National Weather Service (NWS) data (subsection 8.3.1.2), it allows for at least one (1) year of on-site representative data in order to determine the design concentration for the receptor utilized in the modeling assessment. While the Appendix W Guidelines are focused on the preparation of PSD modeling assessments, the Guidelines do allow for flexibility in determining the appropriate meteorological data base to be used in dispersion modeling assessments. Specifically, Appendix W allows for *"Procedures with respect to the review and analysis of air quality modeling and data analyses in support of SIP revisions, PSD permitting, or other regulatory requirements need a certain amount of standardization to ensure consistency in the depth and comprehensiveness of both the review and the analysis itself. This section recommends procedures that permit some degree of standardization while at the same time allowing the flexibility needed to assure the technically best analysis for each regulatory application."* (Appendix W Section 10.0 Regulatory Application of Models).

The use of the Compton meteorology was deemed to be the most representative data during the development of the modeling protocol. While the USC data became available after the permit application submittal, analyzing the surface characteristics of the area surrounding the data collection site and comparing it with Table 2 of the MGS Modeling Protocol still demonstrates

that the land use characteristics at the Compton site more closely matches the land uses and types around the MGS project site.

The modeling guidelines also clarify that the probabilistic form of the 1-hour NO_2 standard is based on the modeled 3-year average of the 98th percentile of the annual distribution of the daily maximum concentrations. As noted in the EPA Clarification Memorandum *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard* (March 2011) "The June 29, 2010 memo addressed one aspect of the applicability of ambient monitoring requirements, set forth in Appendix S to 40 CFR Part 50 in relation to the 1-hour NO_2 standard, to modeling applications to demonstrate compliance with the NAAQS, namely the use of 3 years of ambient monitoring data as the basis for attainment of the NAAQS using monitoring vs. the use of 5 years of meteorological data for modeling demonstrations of compliance with the NAAQS. Specifically, the June 29, 2010 memo indicated that "*Although the monitored design value for the 1-hour NO_2 standard is defined in terms of the 3-year average, this definition does not preempt or alter the Appendix W requirement for use of 5 years of NWS meteorological data or at least 1 year of site specific data. The 5-year average based on use of NWS data, or an average across one or more years of available site-specific data, serves as an unbiased estimate of the 3-year average for purposes of modeling demonstrations of compliance with the NAAQS. Modeling of 'rolling 3-year averages,' using years 1 through 3, years 2 through 4, and years 3 through 5, is not required*." While we do not disagree that the use of 5-years of USC data would satisfy the Appendix W requirements, the use of the 3-year Compton meteorological data set also allows for the calculation of the 3-year average for purposes of determining the probabilistic form of the NO_2 NAAQS and would still satisfy the Appendix W requirements.

It is also important to mention that the EPA defines the term "site specific data" to mean data that would be representative of atmospheric dispersion conditions at the source and at locations where the source may have a significant impact on air quality. Specifically, the meteorological data requirement originates from the Clean Air Act in Section 165(e)(1), which requires an analysis "of the ambient air quality at the facility and in areas which may be affected by emissions from such facility for each pollutant subject to regulation under [the Act] which will be emitted from such facility." This requirement and EPA's guidance on the use of on-site monitoring data are also outlined in the "*On-Site Meteorological Program Guidance for Regulatory Modeling Applications (USEPA, 2000)."* The representativeness of meteorological data is dependent upon: (a) the proximity of the meteorological monitoring site to the area under consideration; (b) the complexity of the topography of the area; (c) the exposure of the meteorological sensors; and (d) the period of time during which the data are collected.

The use of the 3-year Compton meteorological data set, based on both regional wind field flow characteristics and the surrounding land use classifications would also satisfy the definition of

site-specific data and would therefore be considered to be the most meteorologically representative data set to use for modeling the dispersion characteristics in the region surrounding the MGS project site.

We would also note that on the SCAQMD web site (http://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/aermod-table-1) which lists the available data for use in preparing modeling assessments (AERMOD Table 1) that the 3-year Compton data set is available for regulatory application with the proper justification. The technical justification was provided in the MGS Modeling Protocol as the most representative data set available at that time of the modeling submittal.

> *"The Compton (CMPT) station is not available for download as the station does not have 5 years of data that meets quality assurance procedures. However, in special cases where it can be demonstrated that there are no other meteorologically-representative stations within the Basin for the modeled source(s), 3 years of processed data (2012, 2015, and 2016) are available upon request and approval of use. Technical justification will need to be provided within the modeling report on why this station was considered more appropriate than other stations."*

In summary, and in keeping with the regulatory flexibility allowed under Appendix W, the use of the 3-year Compton meteorological data set would assure that the following occurs:

- The technically best analysis for this regulatory application has been used
- The Compton data set satisfies the use of site-specific data
- The 3-year length of record satisfies the calculation methodology of the 1-hour probabilistic form of the NO_2 standard

Background Air Quality Data

We have reviewed the background air quality data, specifically the 3-year averages of the concentrations used for the National Ambient Air Quality Standards (NAAQS). We have confirmed that the 3-year averages of the 98th percentile daily 1-hour NO_2 daily maxima, the 99th percentile daily 1-hour SO_2 daily maxima, the 98th percentile 24-hour PM2.5 concentrations, and the annual PM2.5 concentrations are correct on Table 6 of the original application. However, the maximum 4th high daily maximum 8-hour ozone concentration of 143 µg/m^3 was shown instead of the 3-year average of 132 µg/m^3. A corrected Table 6 is attached at the end of this response.

Additional Receptors/Impacts for City of Vernon Property

Additional 20-meter spaced receptors covering the City of Vernon property located on the same block as the project site were analyzed with the same meteorology and methodology as followed in the application and comment responses. Also, 10-meter spaced receptors along the property

boundary between the project site and the City of Vernon property were analyzed. These receptors are shown in the attached Figure 1. All of the modeled concentrations for the City of Vernon property are less than the prior maximum impacts as shown on the attached table. Therefore, no updates to prior modeling analyses are required.

Flagpole Receptors for Health Risk Assessment

A review of all the properties surrounding the project site with Google Earth street view show mostly single-story warehouses and other commercial properties. Therefore, flagpole receptors are not required for most nearby properties. Any nearby multi-storied structures are identified on the attached Figure 1 and were modeled with flagpole receptors at the appropriate heights to update estimates of off-site worker exposures. These structures are listed in Table 1.

Table 1 Flagpole Receptor Locations and Heights

Structure (BPIP ID#)	Description	Flagpole Hts (ft)
City of Vernon (#7A)	60' Power Plant & Offices (equiv. to 3 stories)	5', 25', 45'
Offices (#F)	48' 2-story Offices	5', 29'
Warehouse (#E3)	48' 2-story Warehouse	5', 29'
Offices (#C3)	22' 2-story Offices	5', 16'

These receptors were assessed with the Air Dispersion Modeling and Risk Tool (ADMRT) to develop new worker risk values for the additional receptors in order to characterize the risks from the MGS facility. Based on the locations of the receptors on the City of Vernon property, only worker exposures were calculated. The overall maximum facility risk of 3.97 in a million from the previous assessments is still maintained as the new risk values summarized in Table 2 are significantly less than the reported

Table 2 Worker Results from ADMRT 19044

Scenario	MIR Receptor #	Cancer Risk	Chronic HI at MIR	Acute HI at MIR
2019 Total Facility Values	2612	3.97 E-6	0.00476	0.00524
3/2019 Worker Max Cancer and Chronic Receptor	136	2.03 E-7	0.00354	0.00615
3/2019 Worker Max Acute Receptor	75	5.98E-8	0.00212	0.00633

The January 2019 results are based on the same emissions and plot files as the May 2018 analysis. The total facility values include the turbines, cooling tower, and fire-pump.
Additional worker receptors added in March 2019 at request of SCAQMD. Results based on total facility emissions and include flagpole receptors.
The latest version of HARP (ADMRT 18159) was used versus the earlier version ADMRT 17320 which was valid for the approximate period 1-7-17 through 6-13-18. Version 19044 was used for the 3/2019 worker evaluation.

Copies of this submittal will be sent to the California Energy Commission. We will also provide a separate modeling CD via overnight delivery and as such, those modeling files are not included with this response package. Please feel free to contact me at (831) 620-0481 if you have any questions concerning this response.

Regards,

Atmospheric Dynamics, Inc.
Gregory Darvin

cc: Kyle McCormack, MGS
Scott Galati, Dayzen, LLC

Additional Tables and Figures

TABLE 6 BACKGROUND AIR QUALITY DATA

Pollutant and Averaging Time	Background Value (µg/m^3)
Ozone – 1-hour Maximum CAAQS	**192**
Ozone – 8-hour Maximum CAAQS/ 3-year average 4th High NAAQS	**159/132**
PM10 – 24-hour Maximum CAAQS/ 24-hour High, 2nd High NAAQS	**88/63**
PM10 – Annual Maximum CAAQS	**35.4**
PM2.5 – 3-Year Average of Annual 24-hour 98th Percentiles NAAQS	**31.5**
PM2.5 – Annual Maximum CAAQS/ 3-Year Average of Annual Values NAAQS	**12.6/11.9**
CO – 1-hour Maximum CAAQS/NAAQS	**6,871**
CO – 8-hour Maximum CAAQS/NAAQS	**4,466**
NO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 98th Percentile 1-hour Daily Maxima NAAQS	**138.5/110.6**
NO_2 – Annual Maximum CAAQS/NAAQS	**31.8**
SO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 99th Percentile 1-hour Daily Maxima NAAQS	**35.1/11.5**
SO_2 – 3-hour Maximum NAAQS (Not Available - Used 1-hour Maxima)	**35.1**
SO_2 – 24-hour Maximum CAAQS/NAAQS	**3.7**
SO_2 – Annual Maximum NAAQS	**0.8**

As noted in text, Compton measurements used for representative background concentrations when available (Los Angeles North Main Street measurements required for SO_2 and PM10)
Conversion of ppm/ppb measurements to µg/m^3 concentrations based on:
µg/m^3 = ppm x 40.9 x MW, where MW = 48, 28, 46, and 64 for ozone, CO, NO_2, and SO_2, respectively.

Comparison of Impacts for Additional Receptors for City of Vernon Property

Pollutant	Averaging Period	Prior Maximum Concentrations (µg/m³)	City of Vernon Property Maximum Concentrations (µg/m³)
Normal Operating Conditions			
NO_2*	1-hour maximum (CAAQS)	126.6	52.7
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	4.46	3.29
	3-year average of 1-hour yearly 98th % (NAAQS)	3.48	2.53
	Annual maximum (CAAQS/NAAQS)	0.50	0.24
CO	1-hour maximum (NAAQS/CAAQS)	33.0	5.9
	8-hour maximum (NAAQS/CAAQS)	1.9	0.8
SO_2	1-hour maximum (CAAQS)	0.42	0.14
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	0.15	0.12
	3-year average of 1-hour yearly 99th % (NAAQS)	0.14	0.10
	3-hour maximum (NAAQS)	0.15	0.08
	24-hour maximum (CAAQS/NAAQS)	0.04	0.02
	Annual maximum (NAAQS)	0.016	0.007
PM10	24-hour maximum (CAAQS/NAAQS)	0.98	0.41
	24-hour 4th highest over 3 years (NAAQS)	0.86	0.38
	Annual maximum (CAAQS)	0.35	0.15
PM2.5	3-year average of 24-hour yearly maxima (NAAQS) [a]	0.86	0.39
	3-year average of 24-hour yearly 98th % (NAAQS)	0.70	0.31
	Annual maximum (CAAQS)	0.35	0.15
	3-year average of annual concentrations (NAAQS) [a]	0.31	0.14
Cold Start-up Periods			
NO_2*	1-hour maximum (CAAQS)	85.58	82.45
	3-year average of daily 1-hour yearly maxima (NAAQS) [a]	78.59	75.97
	3-year average of 1-hour yearly 98th % (NAAQS)	65.78	57.96
CO	1-hour maximum	143.6	137.9
Non-Cold Start-up Periods			
NO_2*	1-hour maximum (CAAQS)	70.74	69.55
	3-year average of daily 1-hour maxima (NAAQS) [a]	65.15	63.85
	3-year average of 1-hour yearly 98th % (NAAQS)	54.90	48.42
CO	1-hour maximum	82.6	81.2
Start-up/Shutdown Periods			
CO	8-hour maximum	32.1	16.3
Commissioning Activities			
NO_2*	1-hour maximum (CAAQS)	71.69	71.23
CO	1-hour maximum	142.6	141.3
	8-hour maximum	53.1	27.7

*1-hour NO_2 impacts for comparison to CAAQS under Normal Operating Conditions evaluated with the Ozone Limiting Method (OLM). All other NO_2 1-hour and annual impacts evaluated assuming 100% conversion of NOx to NO_2.

Figure 1
Additional Receptors and Flagpole Receptor Locations