COMMENTS ON MARYLAND'S PETITON TO THE OZONE TRANSPORT COMMISSION FOR ADDITIONAL CONROL MEASURES PURSUANT TO SECTION 184(c) OF THE CLEAN AIR ACT

SUBMITTED ON BEHALF OF HOMER CITY GENERATING STATION

AUGUST 16, 2019

Introduction

On May 30, 2019 the Secretary of the Maryland Department of the Environment submitted a petition to the Ozone Transport Commission pursuant to Section 184(c) of the Clean Air Act ("Petition"). The Petition calls on the Commission to develop and transmit to the Administrator of the U.S. Environmental Protection Agency recommendations for additional control measures to be applied to certain coal-fired power plants in Pennsylvania equipped with post-combustion controls.

The recommended controls that Maryland seeks include:

- Requiring certain coal-fired generating units in Pennsylvania for each operating day during the ozone season to operate and optimize the use of all installed pollution control technology and combustion controls consistent with the technological limitations, manufacturers' specifications, good engineering and maintenance practices and good air pollution control practices, and
- Meet facility-specific daily and 30-day rolling average NOx emissions limits developed by Maryland.

The facility-specific emissions limits are calculated values based on each unit's lowest overall ozone season average emission rate during the years 2005 – 2018. Daily NOx emissions rates were calculated using NOx mass and heat input data reported to the Clean Air Markets Division, and these data were used to calculate 30-day rolling averages. The maximum 30-day rolling average calculated for each unit from the best/lowest ozone season for that unit is the proposed limit for that unit. These emissions rates were then used to estimate "excess emissions" from these units and to compare excess emissions on preceding days when the NAAQS for ozone was exceeded at monitoring locations in Maryland.

Maryland's Petition is Founded on Invalid Assumptions

The relief Maryland seeks in its Petition is based on a number of assumptions which are not valid, for the reasons described in the following comments.

1. **The analysis does not consider all of the emissions reductions achieved under Pennsylvania's RACT II regulations.**

   Homer City, and possibly other coal-fired units, received extensions of the compliance deadlines to upgrade NOx controls. In the case of Homer City, those upgrades were only recently completed and the resulting NOx emissions reductions are not reflected in the 2017 and 2018 ozone season data used in the Maryland analysis.

2. **The assumption that EGU operators only have to operate their NOx controls consistent with historical best practices is not valid.**

   - Of the 21 units evaluated, the best emission rates for 15 units were achieved 10-15 years ago, when controls were operated only during ozone season and units were operated as baseload capacity. Today, Homer City and other coal-fired units in Pennsylvania are operating their emissions controls year-round, which reduces the amount of time for maintenance needed to sustain optimum treatment efficiency. Moreover, in today's unregulated electricity market, units are constantly changing load to follow demand, and emissions controls are less effective in this load changing mode than when operating under steady state baseload conditions.

   - Contrary to Maryland's allegations, Pennsylvania coal-fired units are operating their emissions controls year-round, and in a manner consistent with good operating practices. Operators are required by their permits to operate their NOx controls consistent with good operating practices.

   - Homer City had to spend tens of millions of dollars to upgrade controls to meet the Pennsylvania RACT II limits. Homer City would not have to spend this money if all it had to do was operate existing controls consistent with historical best emissions rates.

3. **The Maryland evaluation focused on coal-fired units with post-combustion controls and does not appear to include emissions from Brunner Island, which does not have SCRs, and which is the closest coal-fired station to Maryland, Delaware and New Jersey.**

4. **The modeling used for the straw-man proposal appears to exaggerate the impacts of the Pennsylvania generating stations.**

   Comparison of the optimized vs. non-optimized scenarios for some of the largest Pennsylvania stations shows emissions a factor of 2 to 9 times higher for the non-optimized scenario. Such a wide range of differences between optimized and non-optimized scenarios is not realistic.

Emissions from the Homer City Generating Station are Not Causing Ozone Exceedances in Maryland

5. **Homer City's NOx emissions are dwarfed by local NOx emissions along the 1-95 corridor in Maryland.**

   Figure 1 is a map of the Mid-Atlantic States, showing NOx emissions by county for those counties with NOx emissions greater than 10 tons per day. The NOx emissions are depicted with blue solid circles on the map. The circles are scaled to show daily NOx emissions by county, with larger circles representing higher daily NOx emissions. The number inside the circle represents NOx emissions in tons per day.

   - The data were obtained from the 2014 National Emissions Inventory (NEI) for non-Electric Generating Units ("non-EGU sources"), which includes both stationary and mobile sources. The NEI data are annual values, which, for non-EGU sources, are relatively constant throughout the year. For comparison to daily emissions from Homer City, the annual values were divided by 365 to calculate the average tons per day of NOx emissions for each county.

   As indicated on Figure 1, total average daily NOx emissions for the six (6) counties in Maryland along the I-95 corridor, where most of the monitored ozone exceedances occur, is 158 tpd. By comparison, the maximum daily NOx emissions from Homer City for the day before an ozone exceedance day in Maryland range from 7 to 30 tpd, or 4 to 20% of the locally emitted NOx. Moreover, this is before the substantial amount of dispersion that would occur in the approximately 300 km distance from Homer City to Baltimore.

   - Considering Homer City emissions for the day before an ozone exceedance day in Maryland is based on trajectory analyses which indicate the plume travel time from Homer City to Baltimore is on that order. This is also consistent with Maryland's analysis which states "The integration of ozone exceedance days and the previous days is critical when determining excess emissions released by each selected unit specific to those days."[1]

6. **There is no correlation between Homer City's emissions and ozone exceedances.**

   If, as Maryland alleges, emissions from the Homer City station are causing or contributing to ozone exceedances in Maryland, there should be some correlation between Homer City's emissions and the exceedances measured in Maryland. However, comparison of NOx emissions from Homer City on ozone exceedance days and the previous two days to the number of monitoring locations exceeding the 8-hour ozone standard shows no correlation.

[1] Maryland Petition, Attachment 6, Section 1.6.

Table 1 presents data concerning ozone exceedance days and the two days preceding the ozone exceedance days in 2017, 2018 and 2019. Values in the "# Exceedances" columns are the number of ozone monitoring stations in Maryland and in other states which exceed the 8-hour ozone NAAQS. The "Homer City NOx tpd" columns present the daily NOx emissions from Homer City for the exceedance day and the two preceding days.

Figure 2 is the same base map as Figure 1, with locations of ozone monitors added to the county NOx data. Ozone monitors in Maryland are indicated by a "+" symbol with the name of the monitoring location provided. Other ozone monitoring stations are depicted with a diamond shape.

In **Figure 3** the number of monitoring locations in Maryland exceeding the ozone standard is plotted against the NOx emissions from Homer City and correlation coefficients are calculated. The plotted data and correlation coefficients demonstrate that there is no correlation between emissions from Homer City and number of monitoring locations in Maryland exceeding the ozone standard on the ozone exceedance day, or on either of the two preceding days.

The same information is presented for ozone monitoring stations outside of Maryland in **Figure 4**. Likewise, the plotted data show no correlation between emissions from Homer City and number of monitoring locations exceeding the ozone standard on the ozone exceedance day, or on either of the two preceding days.

FIGURE 1

NOx EMISSIONS BY COUNTY

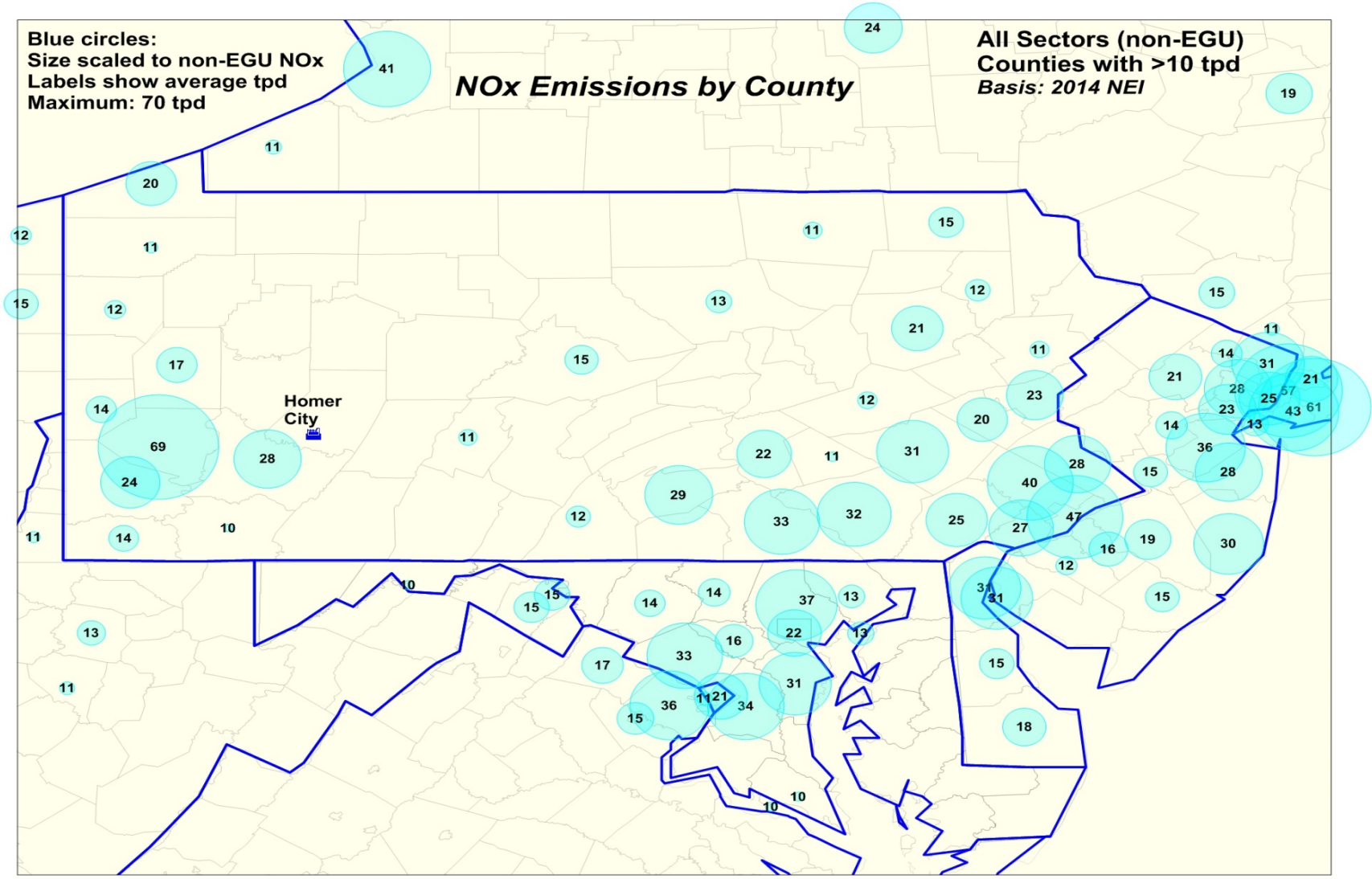

FIGURE 2

OZONE MONITOR LOCATIONS

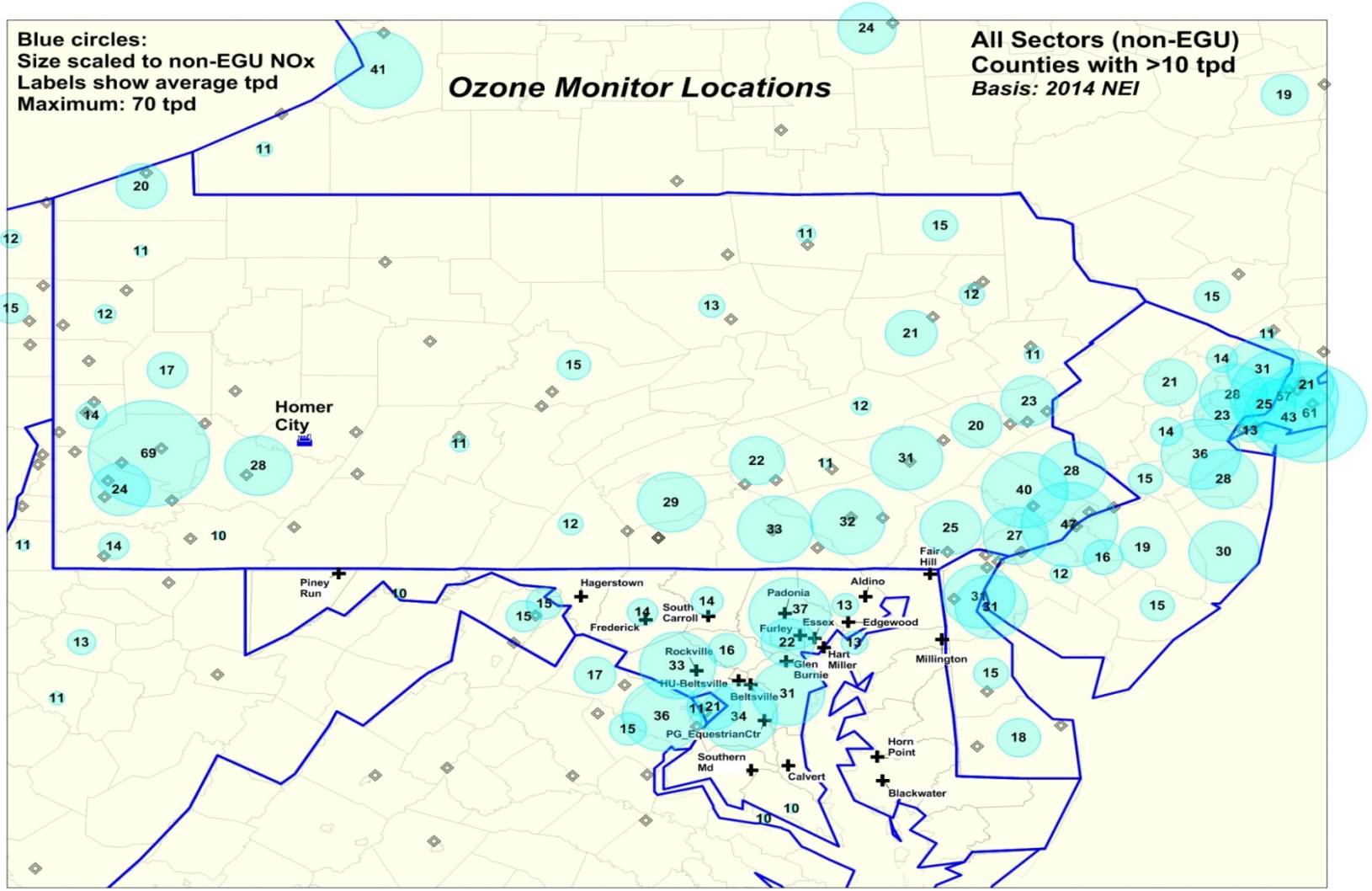

FIGURE 3

COMPARISON OF HOMER CITY NOx EMISSIONS TO OZONE MONITOR EXCEEDANCES IN MARYLAND

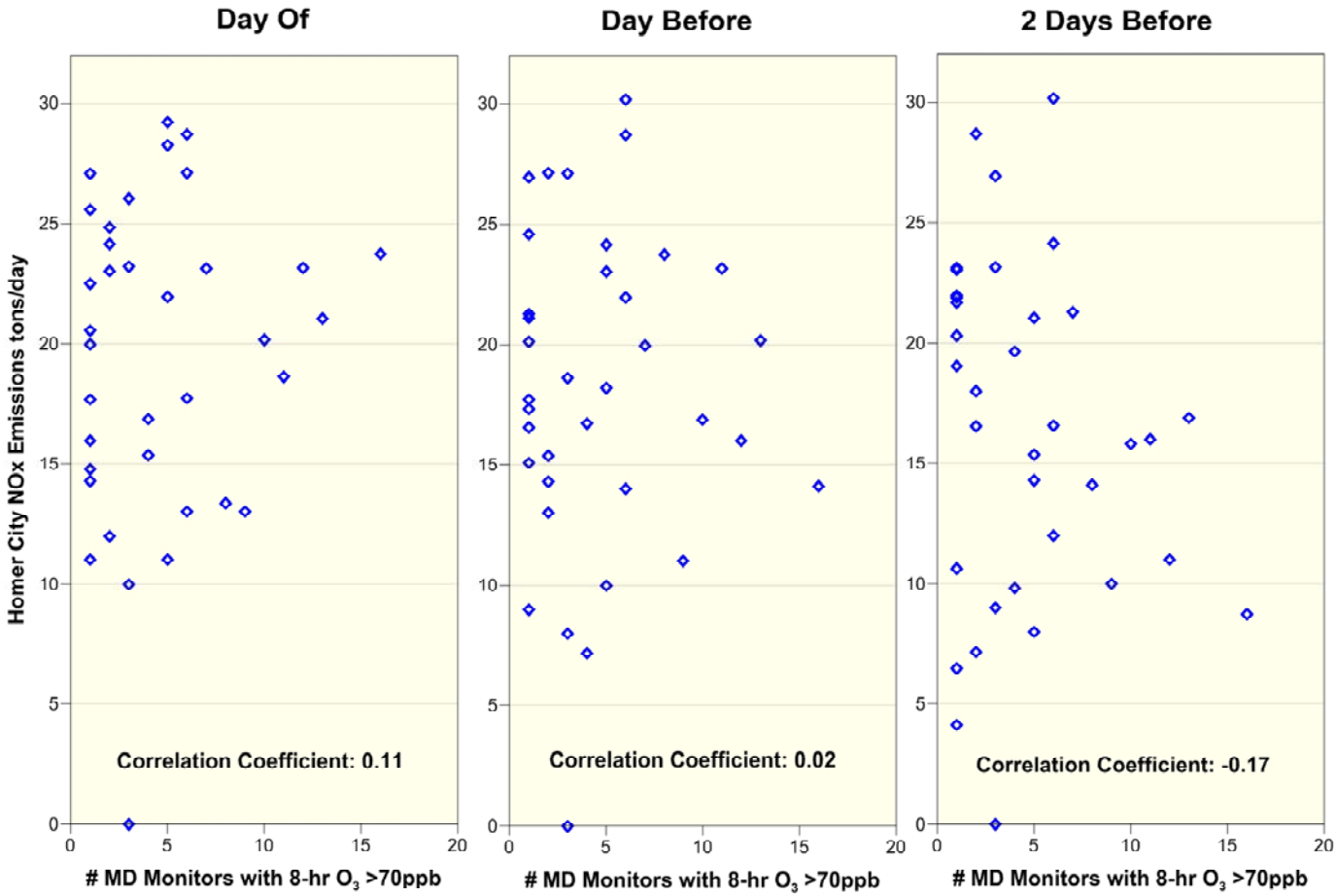

FIGURE 4

COMPARISON OF HOMER CITY NOx EMISSIONS TO OZONE MONITOR EXCEEDANCES OUTSIDE MARYLAND

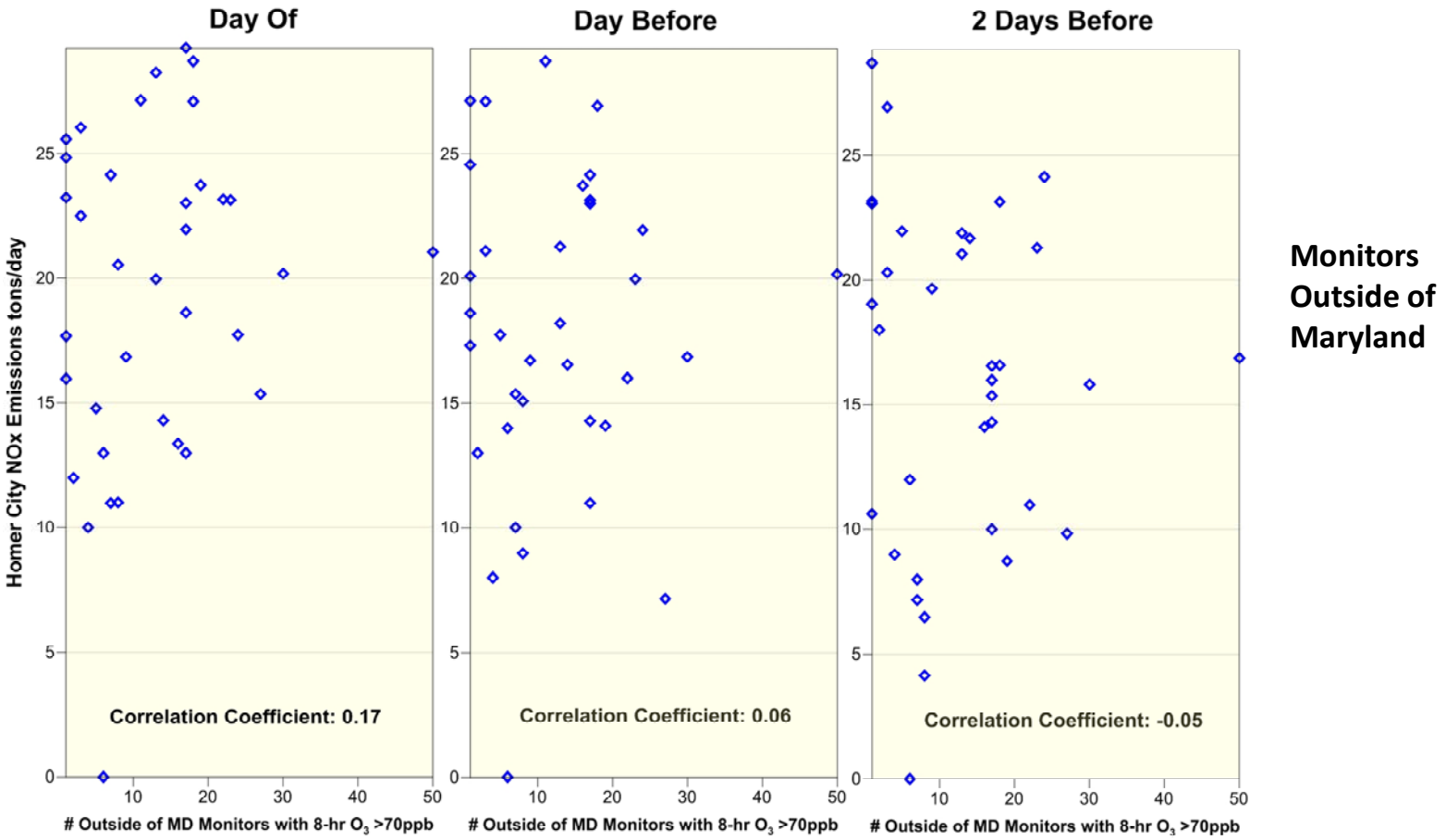

TABLE 1

OZONE EXCEEDANC DAYS FOR 2017-2019 AND CORRESPONDING HOMER CITY NOx EMISSIONS

Date	# Exceedances		Homer City NOx tpd		
	MD	Others	day of	day before	2 days before
4/11/2017	3	6	0	0	0
5/17/2017	16	19	24	14	9
5/18/2017	8	16	13	24	14
6/10/2017	4	27	15	7	10
6/11/2017	2	7	24	15	7
6/12/2017	5	17	22	24	15
6/13/2017	6	24	18	22	24
6/14/2017	1	5	15	18	22
6/22/2017	4	9	17	17	20
7/4/2017	1	1	16	20	19
7/13/2017	1	1	18	25	23
7/19/2017	6	18	29	30	17
7/20/2017	6	11	27	29	30
7/21/2017	2	1	25	27	29
8/1/2017	1	8	11	9	4
8/16/2017	1	1	26	17	11
9/25/2017	1	8	21	15	6
4/13/2018	2	2	12	13	18

Date	# Exceedances		Homer City NOx tpd		
	MD	Others	day of	day before	2 days before
5/1/2018	12	22	23	16	11
5/2/2018	11	17	19	23	16
5/3/2018	3	1	23	19	23
6/16/2018	1	14	14	17	22
6/17/2018	2	17	23	14	17
6/18/2018	5	17	29	23	14
6/29/2018	1	13	20	21	22
6/30/2018	7	23	23	20	21
7/2/2018	1	18	27	27	23
7/3/2018	3	3	26	27	27
7/9/2018	10	30	20	17	16
7/10/2018	13	50	21	20	17
7/16/2018	5	13	28	18	21
7/20/2018	1	3	23	21	20
6/26/2019	3	4	10	8	9
6/27/2019	5	7	11	10	8
6/28/2019	9	17	13	11	10
7/2/2019	6	6	13	14	12