

Shyamala Rajan

From: Ozone Transport
Sent: Monday, December 02, 2019 1:05 PM
To: Shyamala Rajan
Subject: FW: Comments on: Petition to the Ozone Transport Commission for Additional Control Measures Pursuant to Section 184(c) of the Clean Air Act
Attachments: Comments to OTctlb11192019 (003).pdf; Annual_NOx_MD_Summary (1).pdf

From: Terry Black <Terry.Black@erm.com>
Sent: Friday, November 22, 2019 4:08 PM
To: Ozone Transport <Ozone@otcair.org>
Cc: Cline, Gary (Gary.Cline@nrg.com) <Gary.Cline@nrg.com>; Englert, John P. (John.Englert@saul.com) <John.Englert@saul.com>; Mark Garrison <Mark.Garrison@erm.com>
Subject: Comments on: Petition to the Ozone Transport Commission for Additional Control Measures Pursuant to Section 184(c) of the Clean Air Act

Homer City Generation LP submits the following comments as an addition to our oral comments (attached) presented at the public hearing on November 21, 2019.

Homer City obtained total NOx concentrations at measurement stations in Maryland from EPA for the years 2011-2018. Annual average concentrations were calculated and the change for each year from the previous year was calculated. The results are displayed in the attached Table. With few exceptions, total concentrations fluctuated within a narrow band of plus or minus approximately 10-20%. NOx concentrations represent a form of "tracer gas" for NOx emissions since other pollutants (e.g. Ozone and NO2) are more sensitive to atmospheric transformations. Large reductions in NOx emissions from power plants have been recorded in Maryland and Pennsylvania over the period 2011-2018. Data regarding the reductions in NOx emissions for the electric generating sector are presented as part of Homer City's oral comments and in the attached submission of those comments. The lack of significant change in total NOx concentration at several sites in Maryland suggests that the power sector NOx emissions do not play a large role in affecting NOx concentrations across the Maryland ozone nonattainment areas.

Terry Black
Principal Consultant

ERM
75 Valley Stream Parkway, Suite 200 | Malvern, PA 19355
T +1 4849130337 | M 6107450758
E terry.black@erm.com | W www.erm.com

Read our 2018 [Sustainability Report](#) and [ERM Foundation Annual Review](#).

Please visit the North America Technical Editing site on Minerva [here](#).



**COMMENTS OF HOMER CITY GENERATION LP
ON OZONE TRANSPORT COMMISSION
PROPOSED RECOMMENDATION FOR ESTABLISHING DAILY LIMITS FOR
COAL-FIRED EGUs IN PENNSYLVANIA**

NOVEMBER 21, 2019

Introduction

On May 30, 2019 the Secretary of the Maryland Department of the Environment submitted a petition to the Ozone Transport Commission (“OTC” or “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. In response to the Petition the Commission has prepared its *Recommendation for Establishing Daily Limits for Coal-Fired EGUs in Pennsylvania to Ensure that Existing Control Technologies are Optimized to Minimize Nitrogen Oxide [NO_x] Emissions Each Day of the Summer Ozone Season* (“Recommendation”).

The Recommendation would have EPA require Pennsylvania to revise its State Implementation Plan to establish daily NO_x emissions limits for all coal-fired EGUs which have already installed Selective Catalytic Reduction (“SCR”) or Selective Noncatalytic Reduction (“SNCR”) controls. The Recommendation would require Pennsylvania’s regulations to be as stringent as the regulations implemented in Maryland, Delaware or New Jersey. Those regulations require the following:

- Delaware imposes a NO_x emissions limit of 0.125 lbs/MMBtu on a 24-hour rolling average;
- New Jersey imposes a NO_x emissions limit of 1.5 lbs/MW-hr on a 24-hour period during the period from May 1-September 30 and on a 30 day period from October 1-April 30.
 - This limit excludes startup and shutdown.
 - Combustion tuning before the ozone season is also required.
- Maryland imposes a NO_x emissions limit of 0.15 lbs/MMBtu on a 30-day systemwide rolling average.
 - Maryland also requires for each operating day during the ozone season the operation and optimization 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 24-hour rolling average NO_x emissions limits ranging from 0.07-0.34 lbs/MMBtu, excluding startup, shutdown and low load or emergency operations directed by the grid operator.

Homer City Generation's comments are as follows:

1. The Recommendation is not necessary.

- EPA has already determined that Pennsylvania sources are not violating the Good Neighbor provisions of the Clean Air Act ("CAA"). Maryland and Delaware each filed petitions with EPA under CAA Section 126 seeking additional restrictions on coal-fired EGUs in other states. EPA has denied these petitions based on the emissions restrictions imposed by the Cross State Air Pollution Rule ("CSPAR") Update. In denying these petitions EPA found that EGUs named in the petitions (including the Homer City Station) do not have further cost effective NO_x reduction potential beyond the levels finalized in the CSPAR Update emissions budget. 83 Fed. Reg. 50444,50445 (Oct. 5, 2018).
- Pennsylvania already requires stationary sources to operate in accordance with good air pollution control practices and this requirement is included as a condition in each facility's Title V operating permit. 25 Pa. Code § 127.25
- The Recommendation is based on modeling performed by Maryland using emissions data from 2011. Since then Pennsylvania has reduced NO_x emissions from all EGUs by 77% and from coal-fired EGUs by 80%. Further reductions will be realized as the result of the recently-announced closures of the Bruce Mansfield, Colver Power Project, and Cambria Cogen stations, all in western Pennsylvania. In 2017 and 2018, the combined NO_x emissions from these three facilities were 3046 tons and 4,550 tons, respectively.

2. Pennsylvania's regulations already impose stringent NO_x emissions limits.

- Pennsylvania requires its coal-fired EGUs equipped with SCRs or SNCRs to operate them year-round, and imposes a NO_x emissions limit on SCR controlled units of 0.12 lbs/MMBtu on a 30-day rolling average.
- Unlike the Maryland limits, the Pennsylvania limit is on a per unit basis, not a systemwide average.
- Pennsylvania regulates startup, shutdown and low load operations based on the threshold operating temperature for the SCRs (600°F), as defined by the physical and

chemical characteristics of the SCR process, whereas the other States' regulations exclude startup, shutdown and low load operations based on subjective definitions and conditions.

3. The Recommendation's focus on Pennsylvania coal-fired EGUs with SCR or SNCR controls is misplaced as it ignores greater contributions from uncontrolled and undercontrolled sources, including mobile sources, in and closer to Delaware, Maryland, and New Jersey.

- The Recommendation specifies additional emission control measures for EGUs with existing NO_x emission controls, but does not address additional EGU emission reductions that would occur with the installation and operation of emission controls on units that are not presently controlled or not controlled to the levels to which the targeted Pennsylvania facilities are required to meet. These uncontrolled/undercontrolled units include large EGU boilers and high energy demand day turbines and engines many of which are in closer proximity to Maryland's ozone nonattainment areas than the controlled EGUs in Pennsylvania which the Commission seeks to overcontrol.
- These local emissions, primarily from mobile sources and from other combustion sources with low elevation discharges, including high energy demand day units, would have a greater impact on ozone air quality than more remote emissions sources such as the Homer City Station, approximately 200 miles from Baltimore.
- In Homer City's comments submitted to the Commission on August 16, 2019 regarding the Maryland Petition, we provided information regarding non-electric generating unit (EGU) daily emissions for counties in proximity to the Baltimore ozone nonattainment area. These NO_x emission data are shown in Figure 1.

FIGURE 1

NO_x EMISSIONS BY COUNTY

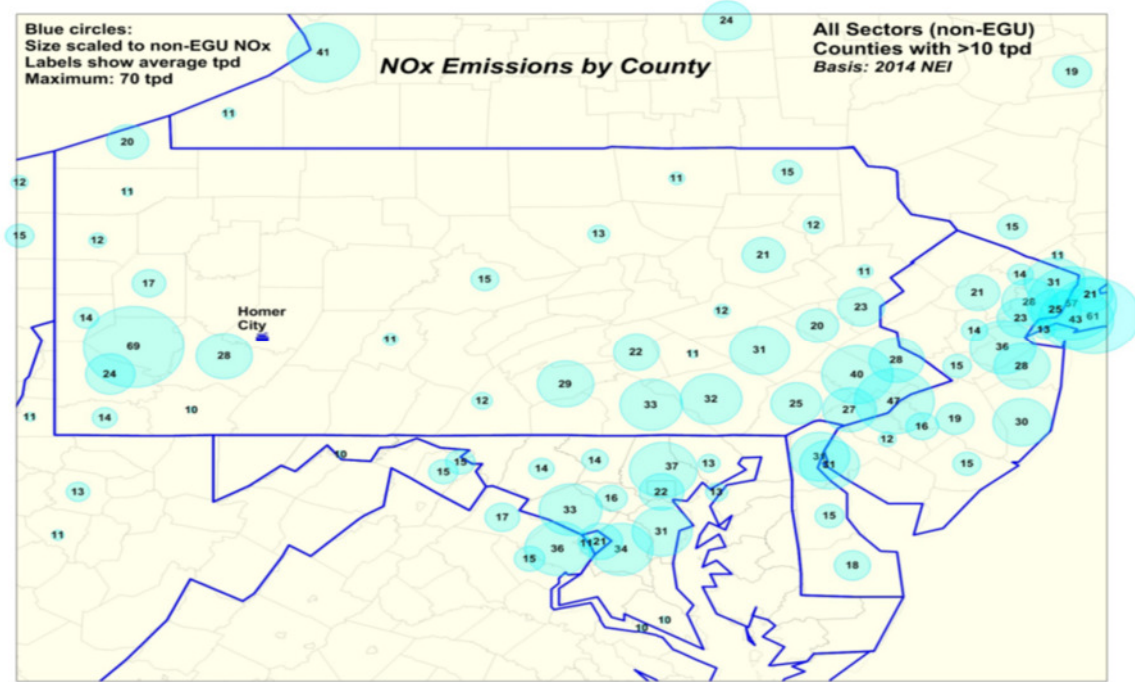
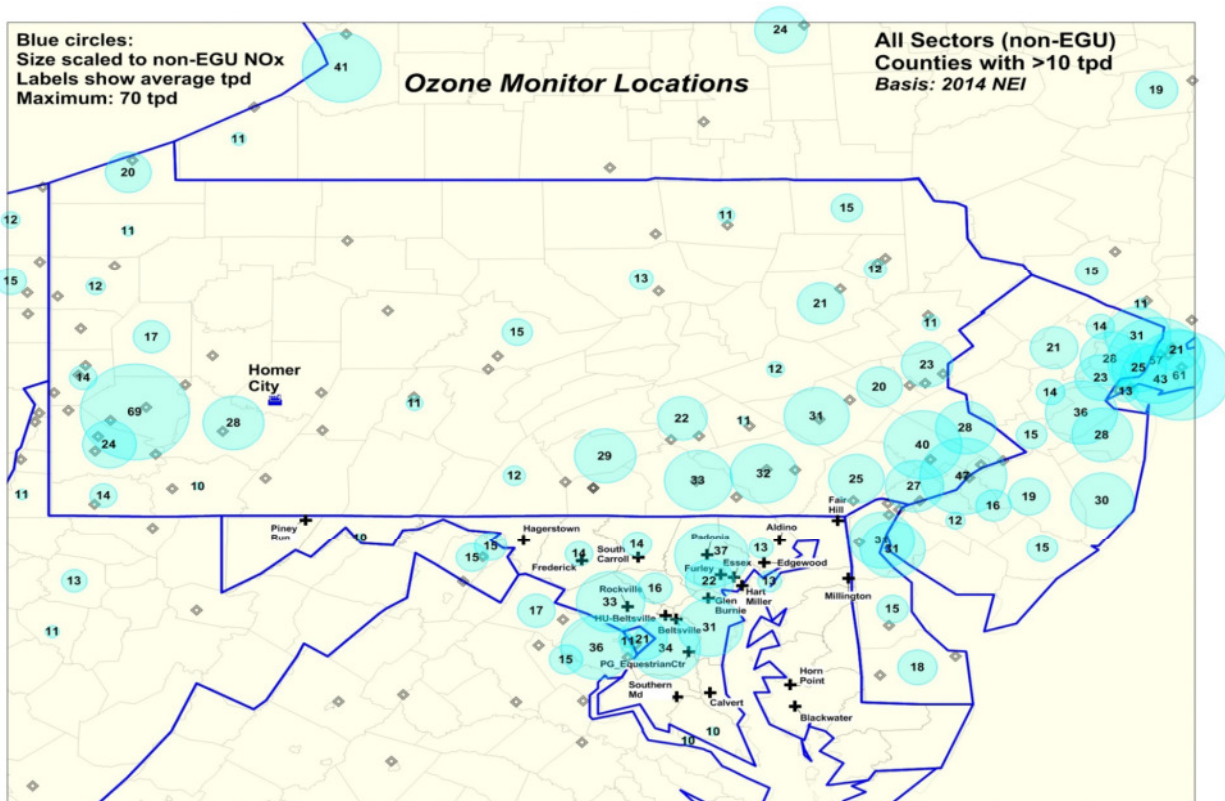


Figure 2 is the same base map as Figure 1, with locations of ozone monitors added to the county NO_x data. Ozone monitors in Maryland are indicated by a "+" symbol with the name of the monitoring location provided. Other ozone monitoring stations in Pennsylvania, Delaware and New Jersey are depicted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

**FIGURE 2
OZONE MONITOR LOCATIONS**



In our August 16, 2019 comments, we provided data that show the Homer City daily NO_x emissions (released approximately 200 miles from Baltimore) for each day on which an ozone exceedance was monitored in the Baltimore Maryland area. On no day during the 2017, 2018, and through July of the 2019 ozone seasons on which a monitored exceedance occurred in Maryland did the Homer City NO_x emissions exceed 30 tons per day. As shown on Figure 2 of the August 16, 2019 comments, there are no fewer than five Maryland counties in the immediate Baltimore area with average daily NO_x emissions in excess of 30 tons per day which are not subject to the dilution that occurs during transport, if any, of the distant emissions.

4. Imposing a 24-hour limit would result in greater emissions.

- In the case of a malfunction (e.g., loss of an ammonia pump in the SCR), a 24-hour limit does not provide the operator sufficient time to diagnose the problem and implement corrective actions before either shutting down the unit or exceeding the emission limit. Shutting down the unit will result in additional time when the SCR is below 600°F and the SCR system is not able to remove NO_x. This could result in

greater emissions than if the unit were able to continue operations for a sufficient period to correct the malfunction and restore proper operation of the SCR.

- If a larger EGU has to shut down on a peak demand day during the Ozone Season, that generating capacity has to be replaced by the grid operator, which typically involves calling up peaker units, many of which are uncontrolled or undercontrolled, thereby increasing the NO_x emissions.

5. The Commission’s Recommendation appears to be based on Maryland’s Petition, and Homer City Generation offers the following comments on the Petition for the Commission consideration in connection with the Recommendation.

- **Maryland’s Modeling Demonstration is not available to Stakeholders and has not been peer reviewed.**

It has been nearly six months since Maryland submitted its petition to the Ozone Transport Commission. Maryland has not made available to the Ozone Transport Commission members or other stakeholders sufficient information regarding its modeling for peer review. Before the Commission takes steps to develop and transmit to the Administrator of the EPA recommendations for additional control measures to be applied to certain coal-fired power plants in Pennsylvania equipped with post-combustion controls or for any source or class of sources, the modeling should be made available for review and comment by the stakeholders.

- **NO_x Emissions Data for 2011 are not representative of current emissions.**

It is unclear why Maryland’s modeling effort utilizes 2011 data. Clearly, there have been significant changes in emission patterns since that time. As shown in Table 1, there has been a 74% reduction in NO_x emissions from the EGU sector throughout the Pennsylvania, Maryland, Delaware and New Jersey area since 2011.

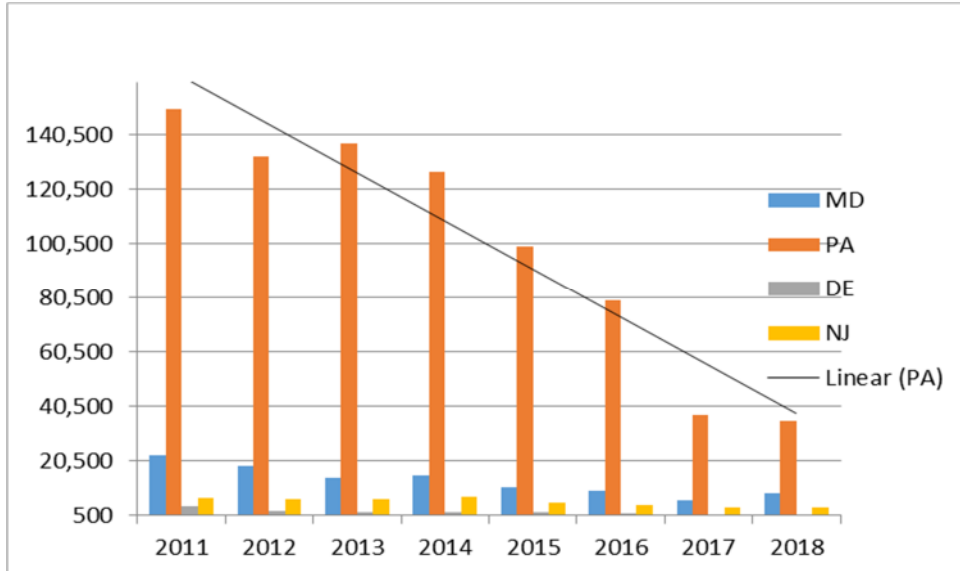
Table 1. EGU NO_x Emissions in tons/year (All Fuels)

Year	Total	MD	PA	DE	NJ
2011	183,604	22,598	150,218	3,748	7,040
2012	159,826	18,448	132,812	2,266	6,300
2013	160,090	14,454	137,518	1,815	6,303
2014	150,824	15,053	126,866	1,791	7,114
2015	117,171	10,764	99,671	1,453	5,284
2016	94,745	9,422	79,634	1,308	4,382
2017	47,848	6,112	37,353	889	3,494
2018	47,755	8,413	34,949	948	3,445

Source: USEPA Clean Air Markets Division website Accessed November 13, 2019
<https://www.epa.gov/airmarkets>

Figure 3 graphically depicts the area-wide EGU NO_x reductions (all fuels) that have occurred since 2011.

Figure 3. EGU NO_x Emissions in tons/year (All Fuels)



Source: USEPA Clean Air Markets Division website Accessed November 13, 2019
<https://www.epa.gov/airmarkets>

Additionally, as shown in Table 2, NO_x emissions from Pennsylvania coal-fired EGUs have been reduced nearly 80% since 2011, with further reductions to be realized as the result of the recently-announced closures of the Bruce Mansfield, Colver Power Project, and Cambria Cogen stations, all in western Pennsylvania. In 2017 and 2018, the combined NO_x emissions from these three facilities were 3046 tons and 4,550 tons, respectively. These reductions are not shown in Tables 1 and 2 or Figures 2 and 3.

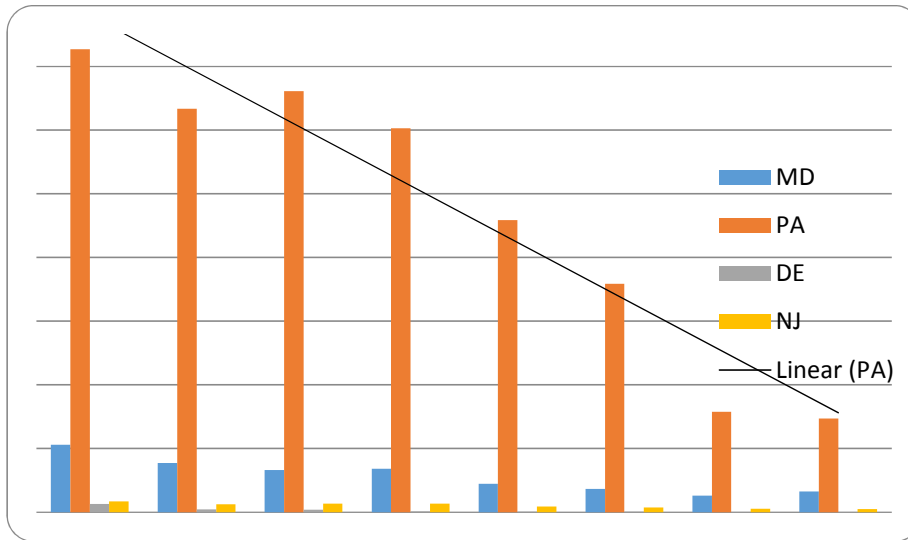
Table 2. EGU NO_x Emissions in tons/year (Coal Only)

Year	Total	MD	PA	DE	NJ
2,011	172,739	21,277	145,420	2,616	3,427
2,012	145,680	15,476	126,711	932	2,561
2,013	149,117	13,319	132,247	803	2,748
2,014	137,491	13,728	120,642	330	2,791
2,015	102,875	9,016	91,799	255	1,804
2,016	80,816	7,343	71,765	205	1,504
2,017	38,219	5,283	31,629	163	1,144
2,018	37,325	6,577	29,523	132	1,093

Source: USEPA Clean Air Markets Division website Accessed November 13, 2019
<https://www.epa.gov/airmarkets>

Figure 4 graphically depicts the area-wide EGU NO_x reductions (coal only) that have occurred since 2011.

Figure 4. EGU NO_x Emissions in tons/year (Coal Only)



Source: USEPA Clean Air Markets Division website Accessed November 13, 2019 <https://www.epa.gov/airmarkets>

NOx Emissions in tons/year

Year	Total	All fuels				Total	Coal			
		MD	PA	DE	NJ		MD	PA	DE	NJ
2011	182,945	22536.18	149620.3	3748.033	7040.063	172,739	21,277	145,420	2,616	3,426
2012	158,994	18334.42	132094.1	2265.68	6299.873	145,644	15,476	126,675	932	2,561
2013	158,816	14453.95	136476.5	1814.974	6070.24	149,109	13,319	132,239	803	2,748
2014	149,552	15053.39	125611.7	1791.467	7095.912	136,637	13,728	119,793	330	2,787
2015	116,763	10763.65	99432.48	1453.128	5113.748	102,800	9,016	91,725	255	1,804
2016	94,535	9395.199	79449.58	1307.638	4382.106	80,816	7,343	71,765	205	1,504
2017	47,592	6112.244	37147.75	889.0593	3442.652	38,160	5,283	31,573	163	1,141
2018	47,572	8412.757	34803.22	947.9869	3408.022	37,325	6,577	29,523	132	1,093

Percent Decrease from base 2011

Year	Total	All fuels				Total	Coal			
		MD	PA	DE	NJ		MD	PA	DE	NJ
2011	-	-	-	-	-	-	-	-	-	-
2012	-13%	-19%	-12%	-40%	-11%	-16%	-27%	-13%	-64%	-25%
2013	-13%	-36%	-9%	-52%	-14%	-14%	-37%	-9%	-69%	-20%
2014	-18%	-33%	-16%	-52%	1%	-21%	-35%	-18%	-87%	-19%
2015	-36%	-52%	-34%	-61%	-27%	-40%	-58%	-37%	-90%	-47%
2016	-48%	-58%	-47%	-65%	-38%	-53%	-65%	-51%	-92%	-56%
2017	-74%	-73%	-75%	-76%	-51%	-78%	-75%	-78%	-94%	-67%
2018	-74%	-63%	-77%	-75%	-52%	-78%	-69%	-80%	-95%	-68%

Calculated Percentages

Year	State % of Total					Coal % of Total				
	Total	MD	PA	DE	NJ	Total	MD	PA	DE	NJ
2011	100%	12%	82%	2%	4%	94%	12%	79%	1%	2%
2012	100%	12%	83%	1%	4%	92%	10%	80%	1%	2%
2013	100%	9%	86%	1%	4%	94%	8%	83%	1%	2%
2014	100%	10%	84%	1%	5%	91%	9%	80%	0%	2%
2015	100%	9%	85%	1%	4%	88%	8%	79%	0%	2%
2016	100%	10%	84%	1%	5%	85%	8%	76%	0%	2%
2017	100%	13%	78%	2%	7%	80%	11%	66%	0%	2%
2018	100%	18%	73%	2%	7%	78%	14%	62%	0%	2%

Source: U.S. EPA Clean Air Markets website accessed 13 November 2019

<https://www.epa.gov/airmarkets>

Annual NOx Concentration (ppb)

Lochearn Baltimore 24-005-0009	Essex Baltimore 24-005-3001	Piney Run Garrett 24-023-0002	Howard Howard 24-027-0006	Beltsville Prince George's 24-033-0030	Oldtown Baltimore (City) 24-510-0040	Name County i.d.
-	26.9	-	-	-	-	
-	19.5	-	-	12.0	28.2	
-	17.2	-	-	10.5	24.1	
-	17.0	2.9	38.6	10.4	25.7	
-	19.1	2.5	38.3	11.0	28.4	
32.7	17.7	2.1	37.9	10.5	25.0	
29.2	14.2	1.9	33.5	8.2	20.8	
-	26.6	1.8	35.2	7.9	18.9	

Percent Decrease from previous year

Lochearn Baltimore 24-005-0009	Essex Baltimore 24-005-3001	Piney Run Garrett 24-023-0002	Howard Howard 24-027-0006	Beltsville Prince George's 24-033-0030	Oldtown Baltimore (City) 24-510-0040	Name County i.d.
-	-	-	-	-	-	
-	-28%	-	-	-	-	
-	-12%	-	-	-13%	-15%	
-	-1%	-	-	-2%	7%	
-	12%	-12%	-1%	7%	10%	
-	-7%	-17%	-1%	-5%	-12%	
-11%	-19%	-12%	-12%	-21%	-17%	
-	87%	-1%	5%	-4%	-9%	