

***Pennsylvania's 2020 Ambient Air
Monitoring Network Plan***

Comment/Response Document

September 2020

**Tom Wolf, Governor
Commonwealth of Pennsylvania**

**Patrick McDonnell, Secretary
Department of Environmental Protection**

www.dep.pa.gov

Comment and Response Document

Concerning Pennsylvania's 2020 Annual Air Monitoring Network Plan

Overview

On May 30, 2020, the Pennsylvania Department of Environmental Protection (DEP) published a notice in the *Pennsylvania Bulletin* concerning public inspection of Pennsylvania's 2020 Ambient Air Monitoring Network Plan (Plan) (50 Pa.B. 2787). The Plan outlines the air monitoring program history, provides an overview of the air monitoring network and discusses in detail monitoring sites, methods and equipment. In addition, past and anticipated monitoring activities for a period of 18 months are addressed.

The Plan outlines several changes to DEP's ambient air monitoring network. First, the Plan outlines an increase in monitoring in response to the Marcellus Shale activity in the Commonwealth, including the expansion of the PM_{2.5} monitoring network to Indiana County. Secondly, the Plan discusses the discontinuation of the Spring Grove monitoring site, which was in place to support the air monitoring requirement of the SO₂ Data Requirements Rule and is no longer needed. Finally, the Plan also provides updates on additional topics, including DEP's plan to meet the federally required Enhanced Monitoring Plan and DEP's update on meeting the continuing requirements of the SO₂ Data Requirements Rule. The DEP has consulted with EPA Region 3 monitoring staff regarding most of these proposed changes.

Public Comment

Notice of the availability of the proposed Plan for public review and comment was published in the *Pennsylvania Bulletin* on May 30, 2020 (50 Pa.B. 2787). The public comment period on the proposed Plan closed on June 29, 2020. This document summarizes the written comments received during the 30-day public comment period. Comments were received from nine commenters. Comments and the Department's responses follow the List of Commenters in this document.

Table 1. List of Commentators for Pennsylvania's 2020 Ambient Air Monitoring Network Plan

Number	Commentator	Affiliation
1	Angelo Taranto	Allegheny County Clean Air Now
2	Thomas Y. Au	Clean Air Board (CAB) of Central Pennsylvania
3	Helen Ortman	Citizen, Pittsburgh, PA
4	Nancy F. Parks	Sierra Club, PA Chapter, Clean Air Committee
5	Kurt Lyle	Citizen, Warren, PA
6	Matthew Mehalik	Breathe Project
7	Terrie Baumgardner	Citizen, Aliquippa, PA
8	Rachel Kathleen Sica Meyer	Citizen, Independence Township, PA
9	Gail Murray	Communities First Sewickley Valley

Comments and Responses

The comments are presented by commenter, in the order listed in Table 1. The identity of the commentator is indicated by the commenter number in parentheses at the end of each comment. Department responses are bolded and follow each comment.

1. **Comment:** While the Shenango coke works on Neville Island has closed, there are many other pollution sources on Neville Island that generate air pollution that impacts Neville Island and neighboring communities. In 2018, we identified twenty-seven major and minor sources of air pollution either on Neville Island or in close proximity to it. Allegheny County Clean Air Now (ACCAN) continues to monitor those industries and having monitors at the ACHD's Avalon site provides useful information. In addition to the PM_{2.5} monitors which ACHD will continue to have at Avalon, ACCAN requests that the wind speed/direction monitor be reinstalled and also requests that VOC and Ozone monitors be installed there. There are many industries on Neville Island that emit VOCs. (1)

Response: DEP appreciates the commenter's concerns regarding air monitoring in Allegheny County. Ambient air quality monitoring in Allegheny County is performed independently by the Allegheny County Health Department (ACHD). DEP has referred this comment to ACHD for consideration in future network assessments.

2. **Comment:** Again DEP has no plans to monitor for ozone in Cumberland County. We believe that this is an important oversight by the DEP. Ozone continues to be a pollutant of concern, since DEP has issued Code Orange Air Quality Action Day alerts for the Susquehanna Valley, including Cumberland County. Unless DEP has collected actual data from ground level monitors, DEP cannot know whether the alerts are warranted or the extent of the area affected. (2)

Response: DEP appreciates the commenter's request for an additional ozone monitor in Cumberland County, PA.

U.S. EPA sets forth minimum monitoring requirements for ozone in 40 CFR Part 58, Appendix D. These requirements are based on Metropolitan Statistical Areas (MSAs) defined by the federal Office of Management and Budget. Cumberland County is part of the Harrisburg-Carlisle, PA MSA, which also includes Dauphin and Perry Counties. As outlined in the Plan, DEP is required by the minimum monitoring requirements set forth in 40 CFR to locate two ozone monitors in the Harrisburg-Carlisle MSA. DEP maintains two ozone monitors in this region at its Harrisburg and Hershey monitoring stations, both in Dauphin County.

Ground-level ozone is primarily a secondary pollutant, being formed in the atmosphere from precursor compounds, mainly NO₂ and VOC, in the presence of sunlight. For this reason, maximum ozone concentrations are generally measured

downwind of precursor emitters (sources), often several miles away. Measured ambient ozone concentrations may also reflect regional transport of ozone. Based on the geography, meteorology and downwind location to precursor sources, including mobile sources from major highways, DEP's Dauphin County monitors are located in areas where maximum concentrations of ozone are likely to occur in the MSA. In addition, both ozone monitors are located in areas in which ozone transported from western Pennsylvania, and more importantly from the Baltimore and Washington metropolitan areas, would be captured. Therefore, DEP considers the location of these monitors in the Harrisburg-Carlisle MSA to be the most protective of the MSA population as a whole, and adequate to properly characterize the region.

Similar to air quality characterizations within an MSA region, Air Quality Index (AQI) forecasting is based on maximum concentrations measured within a forecast region. With respect to the Susquehanna Valley AQI forecast area (which encompasses the counties of Cumberland, Dauphin, Lancaster, Lebanon and York), Cumberland County is the only county that does not have an ozone monitor. As with all of the other areas in PA, the highest ozone concentrations are found in areas downwind of the major metropolitan areas. In the case of the Susquehanna Valley, the maximum ozone concentration with respect to the 2015 ozone NAAQS is at the Lebanon monitor. DEP does not expect ozone concentrations in Cumberland County would exceed those measured at its monitoring sites in both Dauphin and Lebanon counties.

Over the past few years, the Allentown, PA area has undergone a similar transition to the one in Carlisle, PA, to handle increased truck traffic. In the Lehigh Valley air quality forecast area, both of DEP's Allentown and Freemansburg monitors are in attainment for the 2015 ozone NAAQS. A similar result is expected in Cumberland County, should an ozone monitor be installed there.

Although it does not intend to install additional monitoring in Cumberland County at this time, DEP is looking to enhance its photochemical modeling capabilities. Once established, DEP expects to be able to utilize these resources in future ambient air monitoring network assessments. DEP will include Cumberland County in its photochemical modeling activities performed for future network assessments.

3. **Comment:** DEP needs to increase the number of ozone monitors in and near densely populated areas. Currently, there are many counties in Pennsylvania that do not have ozone monitors. DEP frequently declares air quality action days for these counties, but does not have relevant monitoring stations these counties. (2)

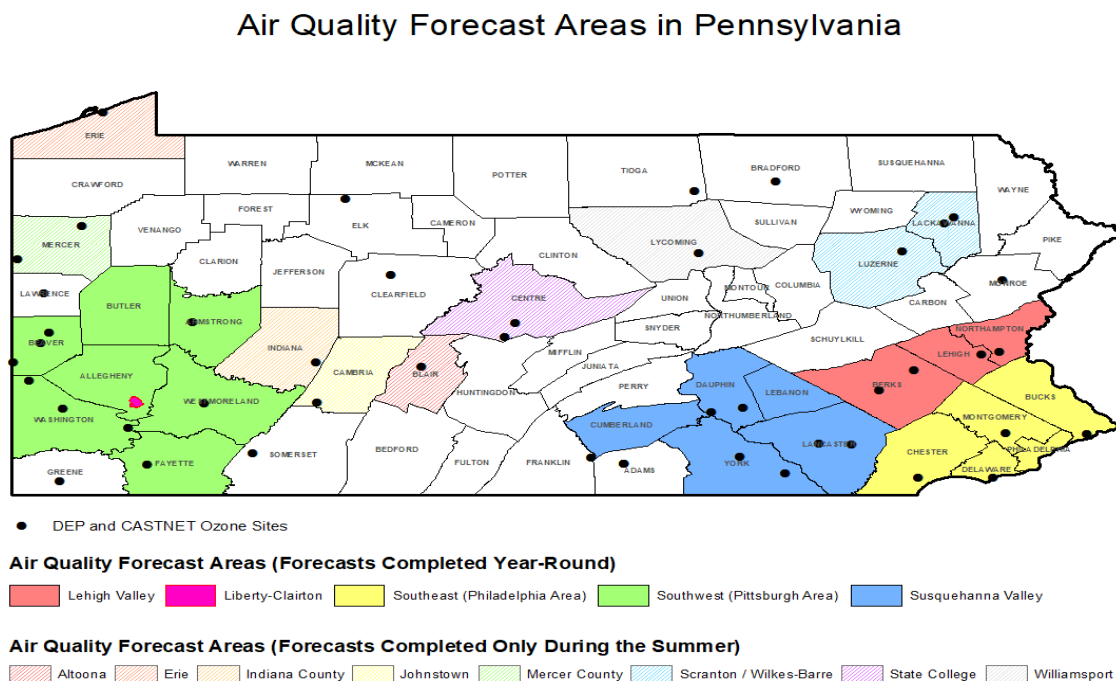
Response: DEP appreciates the commenter's request for increased ozone monitoring.

U.S. EPA sets forth network design requirements for ozone in 40 CFR Part 58, Appendix D, including minimum number of monitors and monitoring objectives. Appendix C of DEP's 2020 Annual Network Plan outlines these requirements and

provides details demonstrating DEP's ozone monitoring network both meets and exceeds these requirements.

DEP respectfully disagrees with the commenter's assertion that it lacks relevant ozone monitoring stations in the counties for which it declares Air Quality Action Days. In the twelve forecast areas for which the DEP currently forecasts Air Quality Action Days with respect to ozone, there is at least one ozone monitor in each of those areas. Below is a map illustrating the density of ozone monitoring sites maintained by DEP, along with air quality forecast, areas across Pennsylvania. (Note: DEP only forecasts for PM_{2.5} for the Liberty-Clairton area, not ozone.)

Figure 1. Map of Air Quality Forecast Areas in Pennsylvania



In all AQI forecast areas, DEP maintains monitoring within areas where maximum ozone concentrations impacts are likely to be captured. However, as stated in its response to Comment #2 DEP is looking to develop greater photochemical modeling capabilities. Once established, DEP will utilize such modeling to further evaluate its ozone monitoring network, in future network assessments.

4. **Comment:** The Clean Air Board supports the additional ozone monitoring proposed for southeast Pennsylvania. (2)

Response: DEP appreciates the commenter's support for its plan for Enhanced Monitoring for Ozone at its Bristol monitoring site.

5. **Comment:** More monitors are needed to capture the long term activity from natural gas drilling and production. The monitors need to be located close to areas where drilling pads have been constructed. Drilling activity can induce many kinds of ancillary activity, including the transport of water, waste, and fluids, the installation of tanks, generators, and compressors, the construction of gathering lines and water lines, and construction of centralized facilities. There are multiple sites throughout Pennsylvania which can have significant multiple pollutant impacts. Unless monitors are installed that can measure these pollutants, the public health impact remains unknown. (2)

Response: DEP understands that public concerns regarding air quality impacts from shale gas operations encompass all aspects of natural gas processing, from drilling to processing to transportation of product or materials. DEP also understands that this industry is active over a large geographical region of Pennsylvania, including rural areas, which may not have historical air monitoring sites. As described in this and previous Annual Network Plans, DEP has installed additional monitors, and established several monitoring sites, with the intent of specifically capturing ambient air impacts from shale gas-related industries. In recent years, DEP has established new sites and/or expanded monitoring in Bradford, Fayette, Lycoming, Susquehanna, Tioga, Washington and Wyoming Counties. In this year's plan, DEP details the planned expansion of PM_{2.5} monitoring in Indiana County. DEP continues to evaluate the need for additional monitoring, and expand its monitoring network in areas of Marcellus Shale gas extraction and transport operations, as resources permit.

6. **Comment:** A state's air quality monitoring plan is a necessary component of the state implementation plans under the federal Clean Air Act. DEP cannot adequately protect the health of the residents of the Commonwealth unless it has up-to-date and accurate information on the pollutants from all sources in the Commonwealth. (2)

Response: DEP appreciates the commenter's concerns regarding pollutant sources. DEP does have access to all pollutant emissions reported to Bureau of Air Quality as part of the National Emissions Inventory (NEI) program, when assessing its air monitoring network. DEP is aware that not all pollutant emissions are reported to the NEI, so in addition to emissions data, DEP also considers geography, population, traffic and land use data as part of its air monitoring network assessments.

The ambient air monitoring network is part of DEP's effort to safeguard the health of Pennsylvanians and their environment. Other Bureau of Air Quality functions, such as facility permitting and continuous emissions monitoring are also part of that effort.

7. **Comment:** The DEP has an obligation to PA citizens to ensure that we all have clean air to breath[e]. As someone with breathing issues, this is especially important to me. This obligation supersedes the desires of corporations to minimize their costs and maximize their profits. (3)

Response: DEP appreciates the commenter's concerns regarding the importance of ensuring clean air for public health. The primary National Ambient Air Quality Standards are established to safeguard public health. DEP maintains its ambient air monitoring network both in compliance with, and often exceeding, monitoring requirements set forth by the U.S. EPA. In addition, DEP maintains air toxics monitoring, which is not federally-mandated, to assist in its effort to better understand and characterize pollutant impacts on Pennsylvania's air quality. As stated in DEP's Response #2, other Bureau of Air Quality functions, such as facility permitting and continuous emissions monitoring are also part of DEP's effort to safeguard public health. DEP will continue to evaluate data and assess its ambient air network to optimize pollutant monitoring and analysis.

8. **Comment:** I continue to advocate for increased ground level monitors across PA for the criteria pollutants. Can we properly track the west to east ozone trend across the PA northern tier counties? (4)

Response: DEP appreciates the commenter's concern regarding ozone concentrations across the northern tier of PA (DEP is defining the northern tier counties as any counties located north of Interstate 80). Currently the DEP, along with the Allegheny County Health Department, the Philadelphia Air Management Services and EPA's CASTNET program, has a very robust network of ozone monitors throughout PA. Across the northern tier of PA, DEP and EPA have a combination of twelve ozone monitors, extending from west (Erie) to east (Swiftwater). In addition, the New York State Department of Environmental Conservation maintains three monitors that span upstate NY's southern region. An in-depth map of the active ozone monitors in PA and NY can be found by accessing the EPA AirData website: <https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=5f239fd3e72f424f98ef3d5def547eb5&extent=-146.2334,13.1913,-46.3896,56.5319>. DEP considers the measurement data provided by combination of these fifteen monitors to be adequate to evaluate ozone transport across the region north of Interstate 80.

9. **Comment:** The positioning on both conventional natural gas wells and unconventional fracking wells across PA is intense and densely packed. We should have as many monitors of criteria pollutants as we need to protect the human health of our PA citizens. Never less. (4)

Response: See Response #5.

10. **Comment:** We also need VOC emissions reductions – these are mostly toxic air emissions - in areas with natural gas harvesting and DIRECT controls and reductions of methane emissions in these same areas. (4)

Response: DEP appreciates the commenter's response for a reduction in VOC and methane emissions. However, the 2020 Air Monitoring Network Plan is a description of existing and planned activities for the ambient air monitoring

network maintained by the Bureau of Air Quality, Division of Air Quality Monitoring. The amount of allowable pollutant emissions from pollutant sources is governed by regulations. The Permitting division of the Bureau of Air Quality is responsible for the oversight of facility emissions. As such, this comment is beyond the scope of this document.

11. **Comment:** It appears that Cumberland County has a higher than anticipated incidence of ozone exceedances, yet there is no ground level ozone monitor. There should be in this densely populated area. (4)

Response: See Response #2.

12. **Comment:** PADEP/BAQ should be coordinating and cooperating with the Department of Health on gathering data on health status and affects in residential areas (SW PA) and tourist areas (Grand Canyon PA Tioga County, Ohiopyle, etc) near all natural gas extraction areas. (4)

Response: DEP appreciates the commenter's support of coordination with the Department of Health (DOH). In the past, DEP has worked with DOH to facilitate the development of PA's addition to the Center of Disease Control's Environmental Health Tracking Project. DEP will continue coordination with DOH to address environmental health impacts across PA.

13. **Comment:** The Tioga County new air monitor was proposed in 2017-2018 to be placed on the geographic plateau above the Pine Creek/Grand Canyon Gorge, as told to AQTAC by Sean Nolan in 2018. I commented at that time that all the extensive natural gas extraction was below in the Pine Creek gorge, 800 feet lower than the proposed location. Where was this monitor ultimate located? (4)

Response: DEP appreciates the commenter's questions regarding the Tioga County monitor. DEP has operated its Tioga County monitor since June 1, 1999. DEP apologizes for the misunderstanding with respect to its Tioga County monitor. The monitor was originally sited in coordination with Pennsylvania State University (PSU) to study the impacts of ozone on vegetation. Since its original inception, DEP has expanded the monitoring capability at its Tioga County site to include monitoring for nitrogen oxides and PM_{2.5} as the gas industry has expanded its gas extraction operation within Tioga County. The monitor has not been moved since its original installation. However, DEP continues to review data to ensure monitors are appropriately sited, and assess whether there is a need to move the Tioga County site to a new location within the county.

14. **Comment:** The monitor and instruments for Ozone, SO₂, NO₂, PM_{2.5} in State College, PA are 'newly' sited just outside of the Penn State University Arboretum and downhill in a sheltered valley. This new site is not near to Rt 322 nor is it near to Rt I-99. The placement of this monitor will inhibit the gathering of gas and particulate data. We do not have a clear understanding of how badly polluted the local ambient air is at this site. (4)

Response: DEP appreciates the commenter's questions regarding the State College monitor. DEP has operated its State College site since February 1, 2000. Therefore, the State College monitor should not be considered as "newly" sited. When the State College monitoring station was originally sited, DEP worked with PSU to find a location that could be used to both assess local air pollution, while providing monitoring data useful to PSU projects associated with their recently-opened Arboretum. The State College monitoring site is northeast of the both the PSU campus as well as two heavily traveled roads in State College, Atherton Street and College Avenue. When the State College site was first installed, the highway that is now known as Interstate 99 was not complete. Due to the stop and go nature of traffic in State College, DEP expects the increased NOx emissions from idling vehicles traveling through the city proper to be of equal, if not greater, importance to local air quality impacts than the I-99 highway, where traffic flows more smoothly at higher speeds. Therefore, DEP considers its State College monitoring site to be in an adequate location to assess the impacts of the State College metropolitan area.

15. **Comment:** With the expectation that we will have NASA satellite air monitoring instrument coverage over North America by the TEMPO (Tropospheric Emissions: Monitoring Pollution) within the Intelsat40e SATELLITE IN 2022, will the PADEP/BAQ have access to that data from NASA? Has any PA ground air monitoring data been compared to the simulated proposed satellite data resolution? If so, was that result accurate compared to ground monitoring? (4)

Response: DEP appreciates the commenter's question regarding the use of NASA TEMPO satellite data. In the past, NASA has provided the satellite data on their website. DEP anticipates this will continue as NASA makes the data publicly available. With respect to the accuracy of the satellite data compared to that of ground-based air monitoring data, there are continual studies ongoing to understand how well the satellite data, which measures the amount of pollutants in a column of air, correlates with surface based observations. One such example is partially addressed in DEP's 2020 network plan. The Enhanced Monitoring Plan (EMP) for ozone section of the plan discusses NASA's PANDORA unit. The PANDORA unit will not only meet the requirements of the EMP, but the data will be used to validate satellite measurements. Since the satellites capture data for a column of air (from the upper troposphere to lower troposphere), there is a level of uncertainty in understanding how much of a particular pollutant is persisting near the surface as opposed to what resides near the upper troposphere (where it comes into contact with the stratosphere). At the current stage however, it is too early to understand the full accuracy of satellite data with respect to ground-based observations.

16. **Comment:** Will TEMPO be used for enforcement? (4)

Response: At this time, DEP does not anticipate that TEMPO satellite data will be used for enforcement. As discussed above in the response to Comment #15, there is still some uncertainty in how well the TEMPO satellite data characterizes surface-based observations. In addition, compliance and enforcement is centered around the NAAQS. The satellite imagery data is not measured or reported in units that are able to be converted to NAAQS-comparable data.

Satellite imagery measures NO₂ levels within a vertical column of air. The measurement result takes into account surface area (molecules per squared cm units), but it does not take into account the height, or thickness, of the sample. The measurement does not discern where those NO₂ molecules are occurring in the column (for instance, some could be coming from the stratosphere and leaking into the upper troposphere). This type of measurement is not directly relatable to surface based emissions. Therefore, at this present moment, there is no direct way to calculate a value that is comparable to the NAAQS.

17. **Comment:** I think the Department should do everything it can to reduce air pollution and related climate change. We know it is a threat to all forms of life on this planet. I don't need to cite examples like 100 degree temperatures inside the Artic Circle, tundra fires in Serbia, the destruction of the Amazon Forest, forest fires in Australia and the United States, 3 billion fewer birds, more cataclysmic weather events creating more refugees and poverty, the melting of the polar caps and related sea rise and habitat loss, the likelihood of more pandemics, and on and on. You already know all this. You are fortunate that you can do something about it by enacting the proposed legislation. In regards to traditional wells, I have come across some that are "venting" off gases into the atmosphere with no monitoring or personnel around. I am sure the Department is aware of such practices. (5)

Response: DEP appreciates the commenter's concerns regarding the health and environmental impacts of air pollution. However, the 2020 Air Monitoring Network Plan is a description of existing and planned activities for the ambient air monitoring network maintained by the Bureau of Air Quality, Division of Air Quality Monitoring. As such, any proposed legislation regarding the emissions reporting requirement for gas wells is beyond the scope of this document.

18. **Comment:** In reviewing the monitoring network that exists in Beaver County, there are concerns that there are inadequate monitors for ozone, nitrogen oxides, and hazardous air pollutants. The concerns are based the anticipated air emissions from the Shell cracker plant that will possibly come online in 2021. The Shell plant is permitted to emit 522 tons of VOC's, 348 tons of NO_x, and 31 tons of Hazardous Air Pollutants. The current monitors located in the prevailing wind direction and in closest proximity (Vanport, Beaver Valley) do not have any sensing equipment at all for NO_x or hazardous air pollutants. The Beaver Valley site only samples ozone once every 6 days as a canister monitor. Continuous ozone monitors are located at Beaver Falls, Brighton, and Hookstown; however, none of these sites is located in the direction of the prevailing

winds nor are located in the river valley communities adjacent to the communities where the Shell plant will be operating. Therefore, it is my request that the DEP consider adding continuous ozone monitors, NOx monitors, and hazardous air pollutant monitors at the Beaver Valley and Vanport locations.

These updates to the monitoring network in Beaver County are essential for protecting our health. Our region already suffers from some of the worst air pollution in the United States. The American Lung Association's (ALA) annual "State of the Air" (SOTA) report for 2020 again put Beaver County on notice. Beaver County once again received an F for ozone. Ozone contributes significantly to poor air quality in all of Southwestern PA. An analysis of qualified EPA monitoring data showed that ozone is the driving factor of the air quality index for this region 347 out of 1096 days, about 1/3 of the time, over 2016 – 2018. Furthermore, of the ozone monitors in the SWPA, one of the sites was in the worst 10%, one was in the worst 20%, and four were in the 30% – 50% range over 2016 – 2018. Beaver County's nearly 170,000 people are at risk. This includes vulnerable populations who bear disproportionate risks from current levels of air pollution: 3,113 children with pediatric asthma; 13,373 people with adult asthma; 10,199 people with COPD; 14,213 people with cardiovascular disease; 18,061 people living with low incomes; and 17,483 people who are non-white. The environmental justice concerns are clear, substantial, and should not be ignored. The Breathe Project urges you to add continuous ozone monitors, NOx monitors, and hazardous air pollutant monitors at the Beaver Valley and Vanport locations. (6)

Response: DEP appreciates the commenter's inquiry into additional monitoring needs in Beaver County. Outside of Allegheny and Philadelphia counties, Beaver County has the highest number of monitors within its county boundaries in Pennsylvania. The commenter is correct in its assessment that the Beaver Valley and Vanport monitors are downwind of planned ethane cracker facility. However, the commenter is not correct in stating that the "Beaver Valley site only samples ozone once every 6 days as a canister monitor." The Beaver Valley site does not have an ozone sensor. However, the site does have a VOC canister, which samples once every six days. This VOC canister was originally at DEP's Beaver Falls site, but was moved to its Beaver Valley site in anticipation of the construction and operation of the ethane cracker facility. Many of the VOCs DEP analyzes as part of its TO-15 analysis are precursors of ozone, which, although not providing a direct measurement of ozone concentrations, may provide monitoring data significant to evaluating ozone formation in or downwind of the region.

While DEP appreciates the commenter's reference to the 2020 ALA's SOTA report, DEP maintains its concerns with the basis of the grading system within the SOTA report. DEP compares its data to the NAAQS to determine whether any of its counties are meeting the federal required health-based standards. For NAAQS comparisons, DEP calculates design values (summary statistics), in accordance with calculation methods required by 40 CFR Part 50. In some instances, the ALA's grading methodology differs from this direct design value to NAAQS threshold comparison.

With respect to Beaver County, all ambient air monitors located within the county are currently monitoring attainment of their respective standards. DEP does recognize that there is a concern for vulnerable populations residing in Beaver County, as it relates to the impact of the planned ethane cracker facility. In light of this concern, DEP will revisit the commenter's request and explore the feasibility of adding additional monitoring at its Beaver Valley and/or Vanport sites, during its network assessment activities performed for the development of its 2021 Annual Monitoring Network Plan.

19. **Comment:** In 2011, I began working with the grassroots organization Beaver County Marcellus Awareness Community (BCMAC) after doing enough research to know that people were not being informed about the negative impacts of fracking. It took me much longer, though, to realize that the fracking infrastructure spreading in Southwestern Pennsylvania was meant to feed the massive ethane cracker that Shell began constructing in 2016, only six miles from my home.

When the cracker goes online as early as next year, it will be allowed to emit up to 522 tons per year of Volatile Organic Compounds, making it the largest source of VOC emissions in western Pennsylvania. Moreover, these VOCs will include the carcinogen benzene, which has been linked to childhood leukemia. Projections of emissions like these and their health impacts prompted Clean Air Council's legal fight for fence-line monitoring at the plant, and they spurred me to investigate air monitoring.

Beaver County's monitoring network lacks adequate monitors for ozone, nitrogen oxides, and hazardous air pollutants. VOCs are a key component of ozone, but the Beaver Valley site will only sample ozone once every 6 days as a canister monitor. And although there are continuous ozone monitors in Beaver Falls, Brighton, and Hookstown, none of these sites is located in the direction of the prevailing winds, nor are any monitors located in the river-valley communities surrounding the cracker.

Shell's cracker will also emit 348 tons of NO_x and 31 tons of Hazardous Air Pollutants, yet the current monitors located in the prevailing wind direction and in closest proximity (Vanport, Beaver Valley) do not have any sensing equipment at all for NO_x or hazardous air pollutants.

The need for more monitors is underscored by the fact that the impacts of all these emissions—and more—will be exacerbated by the frequent inversions that characterize the county's airshed.

Therefore, I am asking the DEP to consider adding continuous ozone monitors, NO_x monitors, and hazardous air pollutant monitors at the Beaver Valley and Vanport locations.

Our region already suffers from some of the worst air pollution in the United States. The American Lung Association's (ALA) annual "State of the Air" (SOTA) report for 2020 again put Beaver County on notice, assigning the county another F grade for ozone.

Ozone contributes significantly to poor air quality in all of Southwestern PA. An analysis of qualified EPA monitoring data showed that ozone is the driving factor of the air quality index for this region 347 out of 1096 days, about 1/3 of the time, over 2016 – 2018. Furthermore, of the ozone monitors in the SWPA, one of the sites was in the worst 10%, one was in the worst 20%, and four were in the 30% – 50% range over 2016 - 2018.

Our county's nearly 170,000 people are at risk. This includes vulnerable populations who bear disproportionate risks from current levels of air pollution: 3,113 children with pediatric asthma; 13,373 people with adult asthma; 10,199 with COPD; 14,213 with cardiovascular disease; 18,061 living with low incomes; and 17,483 who are non-white. These clear and substantial environmental justice concerns must be addressed.

Once again I urge you to add continuous ozone monitors, NOx monitors, and hazardous air pollutant monitors at the Beaver Valley and Vanport locations. Residents need these monitors not only to check emissions once the cracker becomes operational, but so they can act now to establish the baseline readings that are essential for their legal protection from the health impacts of those emissions.

In addition, residents need monitors that register spikes and peaks, not just averages, as well as more accommodations for distributed monitoring and for citizen science monitoring. (7)

Response: See Response #18.

20. **Comment:** I live in Independence Township in Beaver County. I am a science teacher concerned with the health of the environment and, in turn, public health. A big reason why I moved here was to raise my child in a healthy environment away from the city smog. Now I've come to realize that there is a lot of pollution to be concerned about here as well especially now with the cracker plant.

I am concerned about the monitoring network that exists in Beaver County. We need to be prepared for the increased emissions that will come from Shell's cracker plant. The current monitors located in the prevailing wind direction and in closest proximity (Vanport, Beaver Valley) do not have any sensing equipment at all for NOx or hazardous air pollutants. The Beaver Valley site only samples ozone once every six days as a canister monitor. Continuous ozone monitors are located at Beaver Falls, Brighton, and Hookstown; however, none of these sites is located in the direction of the prevailing winds nor are they located in the river valley communities adjacent to the communities where the Shell plant will be operating.

I have asthma and so do many others in Beaver County along with other respiratory and cardiac illnesses that are aggravated by air pollution. There are environmental justice concerns here. Please add the needed monitors including continuous ozone, NOx, and hazardous air pollutants at the Beaver Valley and Vanport locations. (8)

Response: See Response #18.

21. **Comment:** I am the Communications Director and Spokesperson for Communities First Sewickley Valley. We represent the 11 municipalities in Allegheny County that are part of the Quaker Valley School district. Four of our municipalities border Beaver County. Our group's mission is to protect the quality of life in Sewickley Valley. Our current initiatives have included protective local oil and gas zoning ordinances, private water testing, and over seeing the construction of the Falcon Pipeline through the headwaters of the Ambridge Reservoir which four of our municipalities use as their public drinking water source. We've worked hard to increase awareness and to educate the people living here. We are a grassroots organization concerned about the health of our children, our property values, and the protection of our natural resources.

We are also concentrating on monitoring our air quality, particularly in light of the construction of the Shell Petro plant 12 miles upwind from us. We have expressed concern about our air quality in the valley – riverfront communities. We were told by the ACHD that the predominant winds would blow NE from the plant and would not impact us. However, the weather station at the Pittsburgh International Airport validates that this is not the only direction that the wind blows (see attached chart.) In addition, this analysis does not take into account the unique topography in this area which is comprised of river, hills and valleys.

We have valid, professionally affirmed reasons to believe that the VOC, volatile organic compounds, from the Shell Petro plant will mix with sulfur dioxide, NO₂, and sunlight to produce Ozone, O₃, and partially oxidized VOCs that will settle in our valleys. This could impact all of the communities along the Ohio River. We are 12 miles from Pittsburgh. In order to gauge the impacts of the Shell plant on Pittsburgh there should be an ACHD air monitor near the Sewickley Valley. If it is further down the river the results will be compromised by emissions from Neville Island, which should also be a concern.

We already have inferior air quality in this area. Along with manufacturing sites outside of Sewickley Valley, we are bordered by Ohio River Boulevard and the railroad tracks. The traffic on both will increase after the cracker plant is in operation. Edgeworth is currently the wealthiest community in PA. Sewickley is well known for its beautiful, historic neighborhoods and thriving downtown. Suffice it to say that it is still beyond the scope of most residents' comprehension that our air quality will soon put us in danger of respiratory problems for our children, elderly, and the adults with compromised health. In several more years scientific research indicates the likelihood of an increase in cancer cases. When it becomes apparent that this is a high health risk residential area, we can expect our property values to plummet. We are one of the front line/disposable communities to the Beaver County plant.

We have partnered with Carnegie Mellon University in the last 2 ½ years and are part of a network of RAMP monitors; Real-time, Affordable, Multi-Pollutant air quality monitors. We have a chemical engineer partnering with the technician at CMU and the group receives a weekly report. We've established a baseline for the air quality in this area as have the other locations. All of the RAMP and PurpleAir reports from Sewickley are compared to the ACHD air monitor in Avalon.

The RAMP monitors measure carbon monoxide (CO), nitrogen dioxide, (NO₂), sulfur dioxide (NO₂), ozone (O₃) and fine particulate matter (PM_{2.5}).

We recently purchased a VOC monitor and several PurpleAir monitors to track how the emissions from the plant will impact the residents who live here. We are setting up a citizens scientists' group and are working with other chemical engineers and organizations in the larger Pittsburgh area. These results will be widely shared and publicized.

We urge you not to move the ACHD air monitor in Avalon. If any changes are made, we recommend that you move the air monitor into an Ohio River Valley Community. We were told that the Shell Petrol plant would not impact us. We need the validated proof that this is not happening. (9)

Response: DEP appreciates the commenter's concerns regarding air monitoring in Allegheny County. Ambient air quality monitoring in Allegheny County is performed independently by the Allegheny County Health Department (ACHD). DEP has referred this comment to ACHD for consideration in future network assessments.