COMMONWEALTH OF PENNSYLVANIA **MEMO**
Department of Environmental Protection
Southwest Regional Office

TO Air Quality Permit File PA-04-00740C

FROM Melissa L. Jativa/MLJ
Environmental Engineering Specialist
Air Quality Program

THROUGH Edward F. Orris, P.E./EFO
Environmental Engineer Manager
Air Quality Program

Mark R. Gorog, P.E./MRG
Program Manager
Air Quality Program

RE Comment and Response Document
Shell Chemical Appalachia LLC
Shell Polymers Monaca Site
Permit Decision: Approved
Potter and Center Townships, Beaver County
APS # 1011255, Auth # 1305377, PF # 775836

DATE February 18, 2021

Shell Chemical Appalachia LLC ("Shell") submitted a plan approval application received by the Pennsylvania Department of Environmental Protection ("Department") on February 14, 2020, for "as-built" changes in design and construction associated with the Shell Polymers Monaca Site to be located in Potter and Center Townships, Beaver County. The Department of Environmental Protection's ("Department's") review of the submitted application has been completed and the public comment period has expired. This memo documents activity that has taken place since the Department's review memo was finalized.

Notice of intent to issue the plan approval was published in the *Pennsylvania Bulletin* on October 3, 2020; published in *The Times (Beaver County Times)* on October 5-7, 2020; sent to United States Environmental Protection Agency ("EPA") on October 6, 2020; and sent to WV DEP and OH EPA on October 6, 2020, in accordance with the requirements of 25 Pa. Code §§127.44-127.46. All required methods of public notice were fulfilled as of October 7, 2020, and the regulatory 30-day public comment period would have ended at the close of business on November 6, 2020. Commenters who requested an extension were informed by the Department via email that the Department would accept comments until November 16, 2020. The Department also posted a statement on the regional website that "DEP will accept written comments on draft plan approvals 04-00740B and 04-00740C until November 16, 2020.

Notice of intent to issue was provided to the applicant on September 28, 2020, and the applicant fulfilled the requirement to publish the notice within 10 days of receipt, in accordance with the requirements of 25 Pa. Code §127.44(c). Copies of the proposed plan approval and review memo were emailed to H. James Sewell, CSU Environmental Manager, Shell Polymers.

Copies of the proposed plan approval and review memo were made available for the public to view on the Department's regional website on October 3, 2020. Copies of the plan approval application were made available for the public to view on the website on October 15, 2020. The Department posted a statement on the regional website that "DEP will accept written comments on draft plan approvals 04-00740B and 04-00740C until November 16, 2020." Commenters who requested an extension were informed by the Department via email that the Department would accept comments until November 16, 2020. Additionally all comments received to date have been addressed in this action.

Received comments are substantively addressed in this document below the list of commentators. Comments have been identified, summarized, and categorized where possible. Numbers in parentheses following each comment identify to which commentators the comment applies.

LIST OF COMMENTATORS

1. Adam Kron
   Attorney, Environmental Integrity Project

2. Katherine Peterson
   Allegheny County

3. Angela M. Kilbert
   Staff Attorney, PennFuture

4. Stephanie Ulmer

5. Ray Roberts

6. Vincent Amatangelo
   Allegheny County

7. Emily De Ferrari

8. Warwick Powell
   350 Pittsburgh Steering Committee.

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10. Deb Smit

11. Richard Sorek
    Allegheny County

12. Terrie Baumgardner
    Beaver County

13. Edward H. Wrenn, M.D.,
    Allegheny County

14. Linda Wichmann

15. Greg Kochanski

16. Julie DiCenzo
    Allegheny County

17. Lucyna de Barbaro
    Allegheny County

18. David Bertenthal
    Allegheny County

19. Debra Smit

Director of Communications, Breathe Project

20. Phoebe Shackeroff Reese
    Co-Chair, Climate Reality: Pittsburgh & Southwestern PA Chapter

21. Andrea J. Lewis

22. Al Ferrucci
    Allegheny County

23. Robert Gibb
    Allegheny County

24. Barbara Talerico
    Allegheny County

25. Dave Bindewald
    Allegheny County

26. Adam Sachs
    Allegheny County

27. Regina Brooks
    Allegheny County

28. Lisa Holman
    Allegheny County

29. Melody Farrin
    Allegheny County

30. Mark Fichman
    Allegheny County

31. Maria Joseph
    Allegheny County

32. Kathryn Stevens
    Allegheny County

33. Erica Jackson
    Allegheny County

34. Christine Brill
    Allegheny County

35. Andi Fischhoff
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36. Laura Jacko
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37. Greg Curtin
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38. Gail Neustadt
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39. Kathy Ober
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40. Carol Thompson
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41. Brian Shannon
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42. Darlene Dech
    Allegheny County

43. Daina Coury
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44. Deborah Marchand
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45. Matthew Mehalik
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46. Ross Carmichael
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47. Marian Crossman
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48. Susie Rissler
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49. Zuleikha Erbeldinger-Bjork
    Allegheny County

50. Eric Stalnaker
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51. Daniel Scheid
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66. Rosemary Trump
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69. Pam Krakowski
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70. Laura Horowitz
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72. Dan Cavanaugh
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73. Michael Coblenz
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74. Kate Sherman
    Beaver County

75. Rachael Neffshade
    Allegheny County

76. Maren Cooke
    Allegheny County

77. Nora Johnson
    Beaver County Marcellus Awareness Community (BCMAC)

78. Erica Jackson
    Manager of Community Outreach and Support, FracTracker Alliance

79. Jared Ruiz

80. Joseph Otis Minott, Esq.
    Executive Director, Clean Air Council

81. Matthew Mehalik
    Executive Director, Breathe Project

82. Gail Murray
    Director, Communities First Sewickley Valley

83. Karen Feridun
    Co-founder, Better Path Coalition

84. Sharon Furlong,
    Spokesperson, Bucks Environmental Action

85. Andrew Woomer,
    Advocacy Coordinator, The Clean Air Council

86. April Clisura
Co-Chair, Greenfield Neighbors for Clean Air

87. Vivian Stockman,
Executive Director, OVEC-Ohio Valley Environmental Coalition

88. Mark Abbott
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89. Peter Adams
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90. Lois Bower-Bjornson
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91. Gabrielle Corson
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163. Sarah Cutshall
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507. Danielle Jordan
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508. Michael Mihalsky
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509. Jo Riley
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513. Gretchen Gladkowski
Allegheny County

514. Karl Zellars
Allegheny County

515. Adam Zarr
Allegheny County

516. Jessie Marshall
Butler County

517. Sam Applefield
Allegheny County

518. Andrew Seitz
Allegheny County

519. Diana Hull
Allegheny County

520. Hanna Tedros
Milford, CT

521. Justin Sandherr
Allegheny County

522. Joshua Ash
Allegheny County

523. Barbara Shafran
Allegheny County

524. Barbara Czyrnik
Beaver County

525. Wade Larison
Allegheny County

526. Henry McKay
Allegheny County

527. David Himes
Allegheny County

528. William Hart
Allegheny County

529. Eric Lutz
Allegheny County

530. Nicholas Findley
Allegheny County

531. Laura Zeitz
Allegheny County

532. Sachin Velankar
Allegheny County

533. Jan Milburn
Westmoreland County

534. Madelyn Kerr
Crawford County

535. Seth Allen
Allegheny County

536. Thalia Gray
Allegheny County

537. Vic Costikyan
Allegheny County

538. Gillian Graber
Westmoreland County

539. Angela Baughman
Westmoreland County

540. Emilee Betz
Allegheny County

541. Joyce Boyle
Allegheny County

542. Stephanie Ulmer
Allegheny County

543. Bobbie Hineline
Westmoreland County

544. Chie Togami
Allegheny County

545. Gail Meister
Westmoreland County

546. Grace Cameron
Allegheny County

547. Terrie Balko
Westmoreland County

548. Tiffany Barker
Beaver County

549. Diane Sipe
Marecllus Outreach Butler

550. Ashley Funk
Mountain Watershed Association

551. Tammy Murphy, M.A., LL.M.
Advocacy Director, Physicians for Social Responsibility Pennsylvania

552. Patrick J. Pagano, MSc, PhD, FAHA
Protect Allegheny County (formerly Protect Franklin Park)

553. Joanne Martin
Re-Imagine Beaver County

554. Amanda Kiger,
Director, River Valley Organizing

555. Daniel Keen-Rossi, Monaca PhD,
Executive Director, Riverwise

556. Wanda Guthrie
Thomas Merton Center

557. Ron Slabe
Upper Burrell Citizens Against Marcellus Pollution

558. Nancy Harkins
Chester County

559. Peter G. Fitzpatrick,
Venango County

560. Steve Runfola
Morgantown, WV

561. Tris Ozark
Allegheny County

562. Margaret (Peggy) Whelan
Allegheny County

563. Joe Guthrie

Allegheny County

564. John Judson, M.D.

565. Debbie and Larry Borowiec
Westmoreland County

566. Caelan Borowiec
Allegheny County

567. Barbara Sims
Westmoreland County

568. Neill Simakas
Allegheny County

569. Miriam Rader

570. Bill Henry
Allegheny County

571. Dave Blair

572. Dianne Peterson
Allegheny County

573. Celia M. Janosik
Allegheny County

574. Jill Bejger-Frederick
Allegheny County

575. Renee K. Mosticone

576. Tom Moser
Westmoreland County

577. Grace A. Coleman
Beaver County

578. Jennifer Boyle,
Environmental Organizer, River Valley Organizing

579. Pamela Oriszko
Allegheny County

580. Elizabeth Brown
Beaver County

581. Dr. Randi Pokladnik

Uhrichsville, OH

582. Jennifer Wood
Beaver County

583. Lynn Strezeski
Allegheny County

584. Simona Pribik
Allegheny County

585. Peter W. Deutsch
Beaver County

586. Robert Steffes
Beaver County

587. Randy Shannon
Beaver County

588. Tina Shannon
Beaver County

589. Valentine Brkich
Beaver County

590. Connor Mulvaney
Allegheny County

591. Patrick Corcoran
Beaver County

592. Tara Alexander
Allegheny County

593. JoAnn Chirico
Westmoreland County

594. Lou Hancherick
Marcellus Outreach Butler

595. Mrs. Lani Fritz
Beaver County

596. ICloda Hewitt

597. Guilise V. Gondre
Baldwin, NY

598. Evalynn Welling

Allegheny County

599. Christy Begley
Beaver County

600. Patrick Begley
Beaver County

601. Elizabeth Begley
Beaver County

602. Margaret Henry

603. Tim Leon-Guerrero
EPA Region III

604. H. James Sewell
CSU Environmental Manager, Shell Chemical Appalachia LLC

Air Dispersion Modeling (United States Environmental Protection Agency "EPA")

1. **Comment:** There are modeled 1-hour NO_2 violations in the NAAQS analysis provided by Shell Chemical. The applicant and PA DEP have correctly shown that Shell Chemical does not significantly contribute to any of the modeled violations and can therefore continue through the current permitting process. Pennsylvania, however, is responsible for adequately addressing the modeled violations in Shell Chemical's 1-hour NO_2 NAAQS modeling analysis. (603)

   EPA reviewed the modeling files provided by Pennsylvania and found 10 model receptors near sources identified as Anchor Hocking and Nova Chem Beaver Valley. EPA reran AERMOD for the 10 violating model receptors using the MAXDCONT option and source groupings for Anchor Hocking and Nova Chem Beaver Valley and confirmed these were the primary sources contributing to the violating model receptors.

   Pennsylvania should further investigate these sources to ensure there are no (NAAQS) violating receptors. The violating Nova Chem Beaver Valley receptor could be within the facility's ambient air boundary. Anchor Hocking may need further source refinement (or possibly new source emission limits) to address the other 9 violating receptors given some of the model receptors are located nearly a kilometer west of Anchor Hocking's emission sources.

   Response: In accordance with the requirements of the Prevention of Significant Deterioration (PSD) regulations, Shell Chemical Appalachia LLC's (Shell) revised air quality analyses, which incorporate "as-built" changes in design and construction associated with the Shell Polymers Monaca Site, henceforth Shell Facility, demonstrate that the Shell Facility's proposed emissions would not cause or contribute to air pollution in violation of the 1-hour nitrogen dioxide (NO_2) National Ambient Air Quality Standard (NAAQS).

   According to the U.S. Environmental Protection Agency's (EPA) longstanding policy, the issuance of a plan approval for an individual project, such as the Shell project, is not dependent on the Pennsylvania Department of Environmental Protection (DEP) addressing modeled violations of the NAAQS. The EPA's July 5, 1988, memorandum from Gerald A. Emison, "Air Quality Analysis for Prevention of Significant Deterioration (PSD)," states, "the proposed source may be issued a permit (even when a new violation would result from its insignificant impact), but the State must also take the appropriate steps to substantiate the NAAQS or increment violation and begin to correct it through the State implementation plan (SIP)." Moreover, the EPA Region III's April 25, 1990, letter from Marcia L. Spink states, "[t]he source seeking the PSD permit may be permitted, constructed, and allowed to operate at its permitted, enforceable allowable emission rate because at that emission rate, the source has no significant impact. Although the state "owes" EPA a revision to its SIP to correct the modeled violation(s) from the existing source(s), that SIP revision and the issuance of the PSD permit are independent events."

The DEP intends to conduct a more in-depth review of the model input data for the Anchor Hocking/Monaca and BVPV Styrenics/Beaver (formerly Nova Chemical) facilities and work to correct any modeled violations of the 1-hour NO_2 NAAQS, if confirmed, in a timely manner. That analysis has already commenced and the next internal meeting between the Southwest Region, the DEP Modeling Section, & DEP upper management is scheduled for February 23, 2021, to move forward with that corrective action.

2. **Comment:** Table 1 lists Shell Chemical's individual source stack parameters and source emissions rates. The table lists individual source emission rates, in pounds per hour, for both NO_2 and NO_x. EPA checked the modeled emission rates in Shell Chemical's modeling analysis and confirmed the modeled emission rates match the NO_2 emission rates listed in Table 1. Could Pennsylvania please explain the purpose of the NO_x emission rates listed in Table 1? (603)

   Response: Table 1 in Attachment A of Appendix C of Shell Chemical Appalachia LLC's (Shell) application for Plan Approval PA-04-00740C, which includes the tables with the headers "Point Source Input Parameters" and "Volumes Sources," contains misleading column headers. Two subsequent tables with headers "Furnace Modes" and "Shell Franklin Off-Site Source Model Input Data" also contains misleading column headers. The "NO2 (lb/hr)" column header should be "NOx 1-hour (lb/hr)" and the "NOx (lb/hr)" column header should be "NOx Annual (lb/hr)." In response to this comment, Shell corrected the column headers and provided the DEP with electronic copies of the affected pages.

Air Toxics and Risk Assessment

3. **Comment:** Shell's updated health risk assessments show an increase in the cancer risk to residents. (88 – 548)

   Response: DEP conducted an independent risk assessment of the Shell facility and found no unacceptable risks from the operations. The chronic cancer risks from both studies were below the U.S.EPA target level of 1.0 × 10-5. In the as-built modeled cancer risks, some individual compounds increased in risk, and some decreased in risk from the 2015 risk assessment analysis. Chronic cancer risks are additive.

4. **Comment:** The inhalation risk assessment summary presented in Appendix A of the 00740C Review Memo does not provide enough specificity to fully evaluate the entirety of the new inhalation risk assessment. The full assessment was not provided by the Department and the narrative reasoning and Shell's explanation behind the updated assessment is absent. This made a full evaluation of the inhalation risk assessment impossible in many aspects. By contrast, Shell's 2015 Inhalation Risk Assessment contained speciated emissions on a unit-by-unit basis and exhaustive calculations for each unit; OSBL fugitive emissions; detailed modeling analysis, protocol and modeling files and spreadsheets; maps of point source locations (which have since changed in the new permit), land use, and the receptor grid; information about meteorological data used to conduct the modeling analysis; and even location of the receptors of highest cancer and

non-cancer risk. This level of detail is absent from the files that DEP has made available to the public. Furthermore, DEP's failure to respond to requests for public hearing or an extension of the comment period, in combination with the pandemic-related difficulties around file reviews, has unnecessarily increased the difficulty of providing informed and substantive comments. (1, 3, 77, 80 – 82)

Response: Shell's application for Plan Approval 04-00740C and associated additional information, as well as the DEP's technical review memoranda associated with Shell's revised air dispersion modeling for the inhalation risk assessment, were posted on the DEP Southwest Regional Office's community information page at https://www.dep.pa.gov/About/Regional/SouthwestRegion/Community%20Information/Pages/Shell-Petrochemical-Complex-.aspx. Moreover, the data associated with Shell's revised air dispersion modeling for the inhalation risk assessment were, and are, available upon request. The DEP formally accepted public comments through November 16, 2020, and has responded in this document to all comments received to date, which provided sufficient time for the public to request, receive, review, and comment on application-related material.

The DEP's review memo and additional supporting documents are posted on the Southwest Regional Office's community information page at: Shell Petrochemical Complex (pa.gov) under Air Quality Plan Approval (04-00740). The review memo indicates the narrative reasoning and Shell's explanation behind the updated assessment and it can be found at: Microsoft Word - PA-04-00740C - Review Memo - Final Draft (state.pa.us)

5. **Comment:** With the movement of sources and changes in 00740C, the overall chronic and acute cancer and non-cancer risks are all increasing when compared to the previous inhalation risk assessment. Between the 2015 Inhalation Risk Assessment and now the HQ increases from 0.21 to 0.40. The HI increases from 0.07 to 0.099. The excess lifetime cancer risk (ELCR) increases from 8 in a million to 9.4 in a million. While these risks appear to be within the acceptable bounds (HQ<1, HI<0.25, ELCR< 1/100,000) this increase in risk increases the importance of monitoring HAP emissions and ensuring that LDAR for the facility is adequate and facility conditions for VOCs and HAPs are in compliance once operation commences. (1, 3, 77, 80 – 82)

   Response: Shell submitted a revised inhalation risk assessment considering approximately 53 compounds of potential concern (COPC). These COPC primarily include organic HAPs such as 1, 3-butadiene; benzene; hexane; and naphthalene; as well as metallic HAPs such as chromium and lead. The Department's technical review[1] concludes that Shell's inhalation risk assessment was conducted according to the Department-approved protocol and is acceptable. Furthermore, the Department's independent inhalation risk assessment concludes that chronic cancer and noncancer risks as well as acute noncancer risks do not exceed the Department's benchmarks.

   The risks evaluated by DEP are within the EPA's benchmark and are not unacceptable.

[1] Craig Evans, Chief, Air Toxics and Risk Assessment Section, Pennsylvania Department of Environmental Protection, Bureau of Air Quality, *Summary of Revised Air Dispersion Modeling for Inhalation Risk Assessment,* Shell Chemical Appalachia LLC, September 21, 2020.

Besides the risk assessment, DEP has placed adequate monitoring of VOC and HAP emissions and LDAR requirements in the plan approval. Shell will meet all applicable requirements of 40 CFR Part 63 Subpart EEEE for affected source categories. The organic HAP emissions will be controlled by oxidation catalysts and the rates at which they are controlled are considered representative of Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) respectively. Shell is required to develop and implement LDAR program. Shell has agreed to conduct a Fenceline Monitoring Program as part of a settlement of a third-party appeal of a prior plan approval.

The LDAR monitoring requirements for VOC and HAP emissions established a new LAER for this source category.

Additional Storage Capacity

6. **Comment:** Commenters are concerned over the significant increase in tank storage capacity for two types of oil as a potential expansion beyond Shell's previously stated use of the facility as an ethane cracker plant. Shell seeks a twenty-fold increase in the capacity of the recovered oil tank from 24,000 gallons to 521,000 gallons, and an increase in the "flow equalization and removal tank" capacity from 724,000 gallons to 878,000 gallons. This is accompanied by an increase in pyrolysis fuel oil loading from 1.5 million gallons annually to 5.3 million gallons. The stated intent of the additional storage capacity is "to allow greater operational flexibility within the wastewater treatment plant area."

   Commenters are concerned that Shell could be moving away from the originally stated intent to remove byproducts such as pyrolysis fuel oil and C3+ mixture from the site for disposal to a potential use or reuse of the materials onsite. It is also plausible that Shell is contemplating a future use for these byproducts that is separate from the ethylene production process which is currently the main purpose of the facility. (1, 3, 77, 80 – 82, 88 – 548)

   Response: There are no plans to use byproducts at the facility. This capacity changes in this plan approval are only correcting capacities from the original plan approval. The original application had an inaccurate capacity for the tanks. There are no changes in operations, just a change in what was built. While the tank is larger, the maximum potential throughput has not increased. The larger capacity will result in less frequent loadouts compared to a smaller tank.

   Recovered Oil Tank Volume (24,000 gallons up to 521,000 gallons) – The change reflects the final design of the recovered oil tank capacity. The estimated annual quantity of recovered oil is the same as the original design (210,000 gallons annually). The size of the storage tank is related to the estimated recovered oil volumes and installing a storage tank that provides enough storage capacity including a built-in margin of additional capacity and safety. The original design did not provide enough capacity for recovered oil collection and would have required more frequent unloading to maintain a safe level of available capacity. Regardless, the emission controls and emission rates are the same for the current design of the recovered oil tank.

Equalization Tanks (724,000 to 878,000 gallons) – The size of these two (2) Flow Equalization Tanks reflects the final design of the wastewater treatment plant (WWTP). The emission controls and emission rates are the same for the current design of the equalization tanks.

Pyrolysis fuel loading (1.5 million gallons to 5.3 million gallons annually) – The change reflects the maximum-case modeled pyrolysis oil produced by the facility. Although it is believed that these volumes of fuel loading will not be approached, these volumes reflect the maximum-case number in the design update.

Flare Systems

7. **Comment:** Shell and the DEP failed to include the U.S. Environmental Protection Agency's updated flare standards for ethane crackers, which would lead to preventable air pollution as a result of less efficient destruction of pollutants when they are burned. The Department must incorporate the Subpart YY flare standards in the draft plan approval. (1, 3, 77, 80 – 82, 88 – 548)

   Response: The overall requirement to comply with these conditions was already included in the proposed plan approval as condition # 023 of Section C. The Department has updated Group Name: G05 of the plan approval to include the applicability of 40 CFR Part 63 Subpart YY to Source ID's 204 and 205 (Low Pressure Header System and High Pressure Header System), as well as conditions for related federal subparts that were finalized by the EPA on July 6, 2020 via publication in the Federal Register.

8. **Comment:** The Department Must Incorporate Federally and Practically Enforceable Emission Limits in the Draft Plan Approval. The Department must amend the draft plan approval to include clear federally and practically enforceable limits for the facility's high-pressure (HP) and low-pressure (LP) flare systems to ensure that actual emissions do not exceed the potential to emit that Shell represented in its permit application. The Department must address this by amending the draft plan approval to include annual emission limits for each flare system that are based on Shell's emission calculations and operational limits on the waste gas flow rate to assure that the limits are practically enforceable.

   Additionally, Shell's Flare Minimization Plan designates that the HP ground flares will be used as the primary flares in the HP header system, and that the HP elevated flare will only be used as a secondary system to be used when the combined capacities of the two HP ground flares are exceeded. Though Commenters agree with changes made to limit emissions from the HP elevated flare, these must be formalized as terms within the plan approval to prohibit use of this flare unless specific conditions are met. (1, 3, 77, 80 – 82)

   Response: LAER is satisfied for the LP incinerator with a 99.9% VOC destruction efficiency requirement and emission limits of 0.0680 lb/MMBtu for NOx, 0.0824 lb/MMBtu for CO, and 0.0075 lb/MMBtu for $PM_{10}/PM_{2.5}$; and for the multipoint ground flare (MPGF), HP ground flares, and emergency elevated flare with a flare minimization plan and work practice requirements to ensure a minimum 98% VOC destruction efficiency. Compliance with the facility-wide VOC limit will be demonstrated through continuous measurement of volumetric flow rate in each flare header; tested VOC

destruction efficiency (for the LP incinerator); 98% destruction efficiency for the MPGF, HP ground flares, and emergency elevated flare (and complying with minimum net heating value and maximum exit velocity requirements); records of 12-month rolling totals of gas combusted by each flare; and records of monthly 12-month rolling totals of actual VOC emissions.

The proposed plan approval addresses how the facility will minimize flaring resulting from startups, shutdowns, and unforeseeable events by operating at all times in accordance with an approved flare minimization plan. The facility will conduct a root cause analysis within 45 days after any startup, shutdown and unforeseeable flaring event.

See Response to Comment #9 regarding additional monitoring and record keeping conditions.

9. **Comment:** Commenters are concerned by changes made to the flare systems, including an increase in emissions from the HP ground flares. Emission estimates from HP ground flares have increased from 800,635 MMBtu/yr to 1,153,791 MMBtu/yr (a 44-percent increase), with an emission increase of 11.11 tpy of VOC. Additionally the multi-point ground flare utilization increases from 19,871 to 35,754 MMBtu/yr (an 80-percent increase), and from 8,760 to 15,662 for polyethylene normal operations (an 81-percent increase). Commenters are concerned with the transparency behind these changes, specifically the changes made to the intermittent vent frequencies. As changes to the vent gas composition and venting frequencies have a direct impact on flare emissions and the subsequent potential to emit, the Department must incorporate operational limitations into the draft plan approval to ensure actual emissions are not higher than reflected in the permit application. (1, 3, 77, 80 – 82)

   Response: The HP Header System consists of one elevated flare and two enclosed ground flares. As part of this application, the emissions rate from the HP flare system was updated to account for changes in the composition of the flared gas and the sweep gas rate. Sweep gas expected emissions have been corrected from the Emergency HP Elevated Flare (in the original application) to the flares which are expected to normally receive the sweep gas. Sweep gas will include methane necessary to maintain the net heating value of the flare vent gas and combustion zone to levels which ensure VOC destruction is maximized and the minimum 98% destruction efficiency for VOC is achieved. HP Ground Flares sweep gas is estimated at 327,911 MMBtu/hr, or approximately 41% of the 44% increase. MPGF sweep gas is estimated at 15,638 MMBtu/hr, or approximately 79% of the 80% increase. Both referenced heat input increases are offset by reductions to the Emergency HP Elevated Flare sweep gas and annual heat input.

   VOC emission estimates have increased due to finalization of facility design, including changes in the vent gas composition and intermittent vent frequencies provided by the licensors of the polyethylene manufacturing processes. Changes indicate higher than originally projected concentrations of VOC, and relatively lower concentrations of non-VOC (nitrogen, methane, etc.) from some vent streams; as well as increased intermittent vent frequency from some vent streams.

Gas composition at the HP Header and LP Incinerator is continuously monitored using a gas chromatograph. This data is continuously recorded and is used to track and calculate emissions from the HP flare system and LP flare system. As a result of this comment, the Department has added monitoring and recordkeeping conditions to the plan approval requiring monitoring and recording of VOC and GHG content at the HP Header and LP Header at a minimum of once every 15 minutes. VOC and GHG content measured by the gas chromatograph, or equivalent monitor, shall be used to calculate 12-month rolling total VOC and GHG emissions for all sources impacted by the gas stream.

See Response to Comment #8 regarding operational limitations.

Miscellaneous

10. **Comment:** Table 18 of the PA-04-00740C Review Memo lists increases in emissions resulting from the Plan Approval PA-04-00740C, including PM-filterable (+ 3.3 tons per year (tpy)), PM_{10} (+ 4.9 tpy), PM2.5 (+ 4.7tpy), SOx (+ 1.4tpy), Hazardous Air Pollutants (HAPs) (+ 1.5tpy), Ammonia (+ 2 tpy) and CO_2e (+ 55,353 tpy). Our analyses have raised concern about the large releases of ozone-causing pollutants and known cancer drivers, including formaldehyde and acetaldehyde (Hazardous Air Pollutants), from the Shell Petrochemical Facility. We ask that the DEP deny any plans to increase emissions from this plant to protect public health. This is especially prudent considering the Facility is located in a region where air quality may already put residents' health at risk, according to the American Lung Association. (78)

    Response: This plan approval application proposes a reduction in potential to emit for the ozone-precursor pollutants NOx and VOCs. Particle pollution from this facility will be minimized by the application of BACT for PM, PM_{10} as well as LAER for $PM_{2.5}$. Shell's PSD air quality analysis demonstrates that it will not cause or contribute to air pollution in violation of the NAAQS for PM_{10}. Shell has obtained $PM_{2.5}$ ERCs as offsets to its potential to emit and all required ERCs have been incorporated into the Plan Approval.

    The Department recognizes that Beaver County is included in the Pittsburgh metropolitan statistical area as part of the Pittsburgh-New Castle-Weirton, PA-OH-WV area. However; American Lung Association's State of the Air 2019 and 2020 report also independently grades Beaver County as "B" for Particle Pollution 24-hour (24-hour $PM_{2.5}$) and "Pass" for Particle Pollution Annual (annual $PM_{2.5}$). The same report shows that the annual number of days designated as orange (unhealthy for sensitive groups), or worse, for 24-hour $PM_{2.5}$ for Beaver County was 1 day in 2015-2017 and 1 day in 2016-2018. The same report shows that the concentration of annual $PM_{2.5}$ for Beaver County was 9.5 $\mu g/m^3$ in 2015-2017 and 9.1 $\mu g/m^3$ in 2016-2018 (the annual standard is 12 $\mu g/m^3$). The State of the Air 2019 report can be found at https://www.stateoftheair.org/assets/sota-2019-full.pdf. The State of the Air 2020 report can be found at https://www.stateoftheair.org/assets/SOTA-2020.pdf.

    Also see Response to Comments #5, #20, #21, and #22.

11. **Comment:** The original permit application called for three (3) 700 BHP emergency fire water pumps. Plan Approval PA-04-00740C calls for the removal of one of those pumps in its entirety and for the remaining two to be reduced from 700 BHP to 488 BHP. Commenters are concerned that such a large decrease in fire water pump capacity raises concerns for the fire suppression and safety systems at the facility, especially when they are combined with an overall increase in process capacity. (1, 3, 77, 78, 80 – 82)

    Response: Shell informed the Department of January 7, 2021 that the number of diesel engine and horsepower reductions reflect the final design of the Fire Water System. A fire design case was run to determine water needs to fight a fire and the required number of engines needed to supply that volume of water. Note that in addition to the two Fire Water diesel engines, there is an electric driven Fire Water pump being installed as part of the Fire Water System Design.

    In the original design, diesel Fire Water pump engines were to be located at the Wastewater Treatment Plant area near the river at the lowest elevation in the plant. The new design has the Fire Water pumps at the top of the hill (higher elevation) by the office building thus requiring less head / horsepower to move water downhill to lower portions of the main process facility. The location of the Fire Water pumps at the highest elevation at the facility determined the final horsepower needs for the Fire Water pumps.

    This air quality plan approval is protective of human and environmental health as approved. The Department does recognize that the potential does exist for unforeseen events or malfunctions that may result in an emergency situation at an industrial site of this scale. Department field staff perform facility-wide compliance inspections and complaint response on a periodic or as-needed basis; however Shell will in almost all cases be in position as the first identifier of any problems occurring at the facility whether related to air quality or otherwise. Responses to any problems or events at the facility which pose an immediate threat to the public would be coordinated between Shell and local emergency services such as the Center and Potter Townships and Beaver County Emergency Management Agencies as well as the Department's Environmental Emergency Response Team and the Pennsylvania Emergency Management Agency as necessary.

    Section B Condition #011 on page #13 of the proposed plan approval requires Shell to meet the requirements of Section 112(r) of the Clean Air Act, 40 CFR Part 68: Chemical Accident Prevention Provisions, Federal Chemical Safety Information, and Site Security and Fuels Regulatory Relief Act. This includes the development and implementation of an accidental release program and Risk Management Plan as applicable under those statutes and regulations. The Risk Management Plan is required to be submitted to the EPA and not the Department.

    Section C Condition #18 on page #20 of the proposed plan approval requires Shell to report malfunctions to the Department by telephone no later than one hour after discovery if it poses an imminent and substantial danger to the public health and safety or the environment. Appropriate responses to these malfunctions again would be coordinated between the Shell, local emergency services, and the Department as each situation dictates.

12. **Comment:** Shell has revised the potential to emit from liquid loadout, Source ID 304, downward from 17.81 tons per year of volatile organic compounds (VOCs) to 0.53 tons per year. While Commenters support reducing the Facility's emissions, it is important to ensure that such reductions are actual and enforceable. In the case of the reduced potential to emit from liquid loadout, the reason for the reduction is not immediately apparent. Shell handles a number of different substances in its liquid loadout—including butene, isopentane, isobutane, and C3+ refrigerant, which it added in the application for the draft plan approval—which it controls with a number of devices and practices.

    The main reason supporting the reduced potential to emit appears to be the use of low-leak couplings, whose proper emissions factor Shell did not incorporate into previous applications: "The emissions factor used assumed emissions from bleeder valves which are not present in Shell's loading configuration. Consistent with the LAER requirements established in PA-04-00740A, VOC emissions will be controlled by the use of pressurized transfer with vapor balance and low leak couplings." Although Shell updated the emissions based on these factors, there do not appear to be any changes to the terms of the draft plan approval to reflect this. That is, if Shell is relying on a specific practice, type of equipment, or calculation methodology to ensure that emissions stay below a certain number, the Department must update the draft plan approval to incorporate such assumptions as enforceable terms. (1, 3, 77, 80 - 82)

    Response: The reduction in VOC emissions resulted from the correction of an error in the calculations from PA-04-00740A. The emission factor used in PA-04-00740A assumed emissions from bleeder valves which are not present in Shell's loading configuration. VOC emissions were updated in PA-04-00740C based on vendor provided emission factors for liquid loss from low leak couplings. Group G10, Condition #006 of PA-04-00740C requires liquid loadout hoses be equipped with OPW's Drylock Dry Disconnect Coupling (or equivalent) low-leak couplings.

13. **Comment:** Changes in language to the definition of "hot steam standby" appear to remove the cap for maximum allowable firing in hot steam standby. Commenters appreciate the evaluation to achieve the minimum operating temperature for SCR in these varying operating modes for the ethane cracker unit. However, the "hot steam standby mode" should be a range of operation rather than removal of the upper-bound limitation altogether. According to the Review Memo, the language in previous Plan Approval No. PA-04-00740A reads: When the furnace is firing **at or below 50%** of the maximum allowable firing and no hydrocarbon feed is being charged to the furnace, and not operating in startup or shutdown mode. The revised language replaces "at or below" with "greater than or equal to": Hot Steam Standby – When the furnace COT is **greater than or equal to 750°C** and no hydrocarbon feed is being charged to the furnace, and not operating in decoking, startup, or shutdown mode.

    Commenters believe that this could potentially lead to standby operation at excessive temperatures which may create undue excess emissions when compared to the previous iteration of the permit. As a solution, and to preserve the operating conditions of SCR, the language should be changed to "Hot Steam Standby – When the furnace COT is **equal to 750°C and below 50% of the maximum allowable firing** and no hydrocarbon feed is being charged to the furnace, and not operating in decoking, startup, or shutdown mode." (1, 3, 77, 80 - 82)

Response: The Department agrees to including the cap for maximum allowable firing in the definition of hot steam standby; however, will maintain the furnace COT requirement at greater than or equal to 750°C**.** The hot steam standby language has been changed to the following: Hot Steam Standby – When the furnace COT is greater than or equal to 750°C, below 50% of the maximum allowable firing rate, no hydrocarbon feed is being charged to the furnace, and not operating in decoking, startup, or shutdown mode.

14. **Comment:** When calculating startup emissions for the combustion turbine/cogen unit Shell assumes seven (7) hours of startup emissions and what appears to be zero (0) hours of shutdown emissions. Commenters believe that this assumed 8753 hours per year of operation may be unrealistically optimistic and more time should be allocated for startup and shutdown in order to more conservatively estimate emissions from these units. (*See* Plan Approval Application pg. E4-14). Commenters also believe that not accounting for shutdown emissions was done in error and should be corrected to a non-zero estimate so shutdown emissions may be properly estimated. (1, 3, 77, 80 - 82)

    Response: Shell is estimating up to seven (7) hours annually of NOx or CO emissions greater than the normal 2 ppmv limits for each Cogen unit during startup or shutdown. The seven (7) hours include both startup and shutdown. Elevated emissions are expected during startup until the combustion turbine and exhaust reach the permissive load and/or operating temperature for controls to reduce/oxidize NOx/CO and to operate in dry low NOx mode. Shell will comply with all short term and long term limits for NOx and CO per the Plan Approval. Compliance with NOx and CO limits will be demonstrated by monitoring NOx and CO emissions through the installation and operation of NOx and CO continuous monitoring systems.

15. **Comment:** When calculating $PM_{2.5}$ emissions Shell uses non-standard methodology which potentially results in the underestimation of $PM_{2.5}$ emissions from cooling tower drift. Reisman-Frisbie estimates the size distribution of PM_{10} and $PM_{2.5}$ in the TDS of cooling tower water systems with a PM_{10} fraction of 57.2 wt. % and the $PM_{2.5}$ fraction is 0.21 wt. %. Shell should provide justification for use of the Reisman-Frisbie method as opposed to strictly using the AP-42 method. Beaver County and the Pittsburgh metropolitan area suffer from poor air quality. The Department should not loosen the provisions of the facility's permitting that protect the public's health and welfare. (1, 3, 77, 80 - 82)

    Response: This theoretical method is considered to provide realistic PM estimates for wet cooling water towers and is accepted by state agencies as well as the USEPA for calculation cooling water tower particulate matter emission. (See USEPA, Petition IV-2010-09, In the Matter of: Kentucky Syngas, pages 57-59 and Joel Reisman & Gordon Frisbie method paper – Environmental Progress, July 2002, Vol. 21, No. 2, pages 127-130).

    The AP-42 method for calculating PM emission is more conservation and "E-rated". In addition, use of the Joel Reisman & Gordon Frisbie method in the original plan approval application (PA-04-00740A) was accepted by the USEPA and subject to a comment

period at that time when the draft permit came out in 2015. Generally, AP-42 is the last factor considered for use in estimating emissions.

16. **Comment:** The changes proposed will further erode the quality of the air that residents in our region breathe. Of particular concern is the addition of harmful particulate matter ($PM_{2.5}$ and PM_{10}), volatile organic compounds, and 55,353 more tons per year of climate-change-exacerbating carbon dioxide. The proposed changes show an overall increase of 4.7 tons per year of $PM_{2.5}$, 4.9 tons per year of PM_{10}, and an increase of 55,352 tons per year of CO_2e emissions (with some reductions in NOx, CO, and VOCs). The increase in CO_2e emissions is equivalent to the emissions of 10,849 passenger vehicles' emissions driving for a full year. The increase will require the planting of over 830,307 seedlings each year, with each cohort needing to grow over 10 years in order to offset this amount of carbon every year. (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator)

    The Shell plant will add significant amounts of volatile organic compounds (VOC) to our region's already highly polluted air, as well as NOx, both of which are primary contributors to the formation of Ozone. The American Lung Association assigns Beaver County a grade of "F" for Ozone, even before this plant has come on-line. Adding more to this pollution will only worsen health problems for Beaver County residents.

    Beaver County has the following numbers of people who are vulnerable to pollution because of health risks: (See: https://www.stateoftheair.org/cityrankings/states/pennsylvania/beaver.html)

    - Pediatric Asthma: 3,113
    - Adult Asthma:13,373
    - COPD:10,199
    - Lung Cancer:105
    - Cardiovascular Disease: 14,213
    - Ever Smoker:57,941
    - Children Under 18: 31,988
    - Adults 65 & Over: 35,412
    - Poverty Estimate: 18,061
    - Non White: 17,483

    The Pennsylvania DEP may permit the Shell Petrochemical Facility to emit 516 tons of VOC annually, making it the largest source of VOC emissions in western Pennsylvania, and the third largest in the state. (12, 16, 18, 20, 77, 81-87, 280, 334, 542, 549-602)

    Response: The Department has evaluated the air contamination aspects of this proposed facility in accordance with the applicable regulations derived from the U.S. Clean Air Act and the Pennsylvania Air Pollution Control Act. The Clean Air Act required EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment and establishes two levels of national ambient air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

Per 40 CFR §81.339, Potter and Center Townships, Beaver County are currently designated as areas of attainment for all NAAQS except for Pb (2008). Additionally, Potter Township, Beaver County is designated as an area of nonattainment for SO_2 (2010). The re-designation of Beaver County attainment status for Pb and SO_2 is in progress and will likely be submitted to the USEPA in 2021. All of the Commonwealth of Pennsylvania is located in the Northeast Ozone Transport Region and is therefore treated like a moderate ozone nonattainment area.

The Department follows nonattainment new source review (NNSR) requirements for major projects in nonattainment areas. This authorization is major for ozone precursors NO_x and VOC, as well as $PM_{2.5}$. NNSR requirements have been applied to this project which include obtaining emissions offsets to reduce overall emissions in or affecting the nonattainment area and meeting the Lowest Achievable Emission Rate (LAER) for each nonattainment pollutant.

Pennsylvania has adopted the federal Prevention of Significant Deterioration (PSD) regulations for major projects in attainment (or unclassifiable) areas. This authorization is subject to PSD requirements for emissions of nitrogen dioxide (NO_2), carbon monoxide (CO), filterable particulate matter (PM), particulate matter less than 10 microns in diameter (PM_{10}), and greenhouse gas (GHG) carbon dioxide equivalents (CO_2e). PSD requirements have been applied to this project which include conducting an air quality modeling analysis and Best Available Control Technology (BACT) for each attainment pollutant. Shell's air quality analysis demonstrates that it will not cause or contribute to air pollution in violation of the NAAQS for CO, NO_2, or PM_{10}.

The methodologies to assess cancer risk employed by the Department and Shell are consistent with EPA's protocol. In this way, the Department's permitting program manages risk to human health prospectively through the review of new facilities. Both Shell's and the Department's independent inhalation risk assessments conclude that chronic cancer and noncancer risks as well as acute noncancer risks from this facility do not exceed accepted benchmarks.

Also see Response to Comments #10, #20, #21, and #22.

17. **Comment:** The updates also highlight the definitions of what constitute "startup" and "shutdown" conditions. The community needs to be alerted to these new definitions, and as part of its settlement agreement for its air permit, Shell is obligated to share emissions information with the community. The new definitions determine when, through its active and passive monitoring equipment, Shell is obligated to share information with the public. (12, 16, 18, 20, 77, 81-87, 280, 334, 542, 549-602)

    Response: "Startup" and "shutdown" conditions noted in the above comment is interpreted to be in reference to the update to the furnace startup and shutdown definitions proposed in PA-04-00740C. There is no other change to startup or shutdown referenced in the application. Shell's Settlement Agreement with EIP and CAC includes the requirements for flares and fence line monitoring. "Startup" and "shutdown" definitions of the furnaces have no impact on the sharing of emissions information with the community (which is required for the fence line monitoring program under the settlement agreement). Shell will monitor passively and actively at the fence line, and

share that information with the public, in accordance with the settlement agreement's fence line monitoring program regardless of mode of operation or definition of mode of operation for any air emission source. Shell will also report emissions from required air emission sources in their annual emission inventory regardless of mode of operation.

18. **Comment:** Multiple comments received requested a public hearing for the proposed plan approvals. (1-75, 77, 80-82)

    Response: A template letter was received by commenters requesting a public hearing and an extension of the public comment period. In addition to the template letter, some commenters requested that either a public hearing be held, or the public comment period be extended. As a result of these requests, the Department granted additional time to accept public input. The commenters who requested an extension of the public comment period were informed via email that the Department would accept comments until November 16, 2020. The Department also posted a statement on the regional website stating that comments would be accepted until November 16, 2020. The majority of comments received after the time extension was posted did not request a public hearing.

19. **Comment:** Multiple comments received requested an extension of the public comment period by at least 30 days. (1-75, 77, 80-82)

    Response: Public comments were accepted until November 16, 2020, to allow additional time to review the plan approval application and supporting documents. Commenters who requested an extension to the public comment period were informed via email that the Department would accept comments until November 16, 2020. The Department also posted a statement on the regional website that "DEP will accept written comments on draft plan approvals 04-00740B and 04-00740C until November 16, 2020. Additionally, all comments received to date have been addressed in this document.

20. **Comment:** Multiple comments received requested to deny the permit due to emission increases. (12, 16, 18 - 21, 77, 79, 81-602)

    Response: The activities authorized by the plan approval were reviewed under the applicable requirements of the Clean Air Act, Air Pollution Control Act and regulations promulgated under them. Potential emissions from this facility will be minimized by the application of BACT for NO_2, CO, PM, PM_{10}, and CO_2e; LAER for NO_x, VOC, and $PM_{2.5}$; and BAT for all air contaminants. Shell's air quality analysis demonstrates that it will not cause or contribute to air pollution in violation of the NAAQS for any pollutant for which there is a requirement to model (CO, NO_2, or PM_{10}). The Shell Facility's potential emissions of SO_2 are less than the significant emission rate (SER) codified in 40 CFR § 52.21(b)(23)(i) and are therefore considered insignificant. The DEP estimated ozone formation due to the Shell Facility's potential emissions of ozone precursors, i.e., 329 tons per year (tpy) of nitrogen oxides (NO_X) and 517 tpy of volatile organic compounds (VOC). The 8-hour ozone impact due to the Shell Facility's emissions of ozone precursors is calculated to be less than the EPA's recommended 8-hour O_3 SIL of 1 ppb. For comparison, the 8-hour O_3 NAAQS is 70 ppb. Furthermore, the Department's

independent inhalation risk assessment concludes that chronic cancer and noncancer risks as well as acute noncancer risks do not exceed the Department's benchmarks.

21. **Comment:** Multiple comments received expressed concern over potential impacts to climate change. (13, 17, 76, 78, 149)

    Response: This facility is subject to BACT for CO_2e which includes regulation of carbon dioxide and methane emissions. Potential emissions from this facility will be minimized by the application of BACT for CO_2e. Review of this plan approval application has been conducted accordingly and this requirement has been satisfied. Carbon dioxide and methane emissions from future projects at this or any other facility will be evaluated in accordance with applicable air quality rules and regulations at that time. This may include a case-by-case PSD analysis for greenhouse gas emissions as appropriate. At this time, there is no NAAQS for greenhouse gases. See Response to Comment #20.

    One aspect of this project of particular note to this comment is that Shell will be recovering and utilizing hydrogen generated during the ethane cracking process as fuel for the furnaces. Recovered hydrogen is expected to constitute nearly 50% of the fuel requirements of the furnaces and will result in less CO_2e than if the furnaces combusted natural gas alone.

22. **Comment:** Multiple comments received expressed concern over potential impacts to human health. Specific concerns include pediatric and adult asthma, cardiovascular disease, lung cancer, childhood leukemia, risks to young children, and birth defects. (1-74, 76, 80-82, 93, 146)

    Response: The Department has evaluated the air contamination aspects of this proposed facility in accordance with the applicable regulations derived from the U.S. Clean Air Act and the Pennsylvania Air Pollution Control Act. The Clean Air Act required EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment and establishes two levels of national ambient air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

    Per 40 CFR §81.339, Potter and Center Townships, Beaver County are currently designated as areas of attainment for all NAAQS except for Pb (2008). Additionally, Potter Township, Beaver County is designated as an area of nonattainment for SO_2 (2010). The re-designation of Beaver County attainment status for Pb and SO_2 is in progress and will likely be submitted to the USEPA in 2021. All of the Commonwealth of Pennsylvania is located in the Northeast Ozone Transport Region and is therefore treated like a moderate ozone nonattainment area. Recent air quality monitoring in Beaver County shows no violations of the NAAQS.

    Shell's source impact analyses demonstrate that the Shell Facility's emissions would not cause or contribute to air pollution in violation of the NAAQS for CO, NO_2, or PM-10. The Shell Facility's potential emissions of SO_2 are less than the significant emission rate

(SER) codified in 40 CFR § 52.21(b)(23)(i) and are therefore considered insignificant. Furthermore, the DEP submitted a SIP revision for the Beaver, PA nonattainment area to the EPA in October 2017 that included air dispersion modeling of the Shell Facility's potential SO_2 emissions that resulted in impacts that were less than the EPA's recommended 1-hour SO_2 significant impact level (SIL), which is set at 4% of the 1-hour SO_2 NAAQS.

Both Shell's and the Department's independent inhalation risk assessments conclude that chronic cancer and noncancer risks as well as acute noncancer risks from this facility do not exceed accepted benchmarks. A follow-up inhalation risk assessment is also required based upon the final as-built design parameters of the air contamination sources within 180 days of product in tank (commercial product production).

23. **Comment:** Comments received expressed concern over potential negative impact on air quality and sacrificing the region's air quality in return for more jobs. (9, 76, 79, 422)

    Response: See Responses to Comments #10, #20, #21, and #22.

24. **Comment:** Comments received expressed concern over plastic production from the Shell facility and the potential for plastic pollution. (9, 76, 79, 281)

    Response: End use and disposal of plastic produced by Shell and used by the public is beyond the scope of this plan approval application.

25. **Comment:** Comment received expressed concern over potential negative impact on property values in the region. (9)

    Response: There are no regulations under the Pennsylvania Air Pollution Control Act and the Federal Clean Air Act that identify acceptable or unacceptable levels of impact on property value associated with the physical location of a facility. As such the Department does not have the legal authority to consider potential economic impacts on property value due to this facility's location during review of this plan approval application.

26. **Comment:** Comments received express that the Department must obey Pennsylvania Constitution Article I Section 27 which states:

    "The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people." (11, 204)

    Response: The Department agrees that Article I Section 27 of the Pennsylvania Constitution must be satisfied.

1) Significant statutory and regulatory requirements have been established to protect the Commonwealth's air quality consistent with the requirements of Article I, Section 27. This air quality plan approval meets these applicable statutory and regulatory requirements and is protective of human and environmental health. Compliance with the constitution, statute and regulations is shown by, among other things, the plan approval application, the iterative review undertaken by the Department as described in the review memoranda, special conditions of the plan approval, and consideration of public comments. In response to public comments received regarding incorporating 40 CFR Part 63 Subpart YY flare standards in the plan approval, the Department imposed conditions that will require the Low Pressure Header System and High Pressure Header System comply with 40 CFR Part 63 Subpart YY. This Air Quality plan approval is a modification of the underlying plan approval, which was developed and issued after a comprehensive, robust and coordinated review process with other programs administered by the Department, the U.S. EPA, and other state and local agencies and trustees. The plan approval and permits previously issued by the Department were themselves the subject of extensive public outreach, and are now administratively final. The opportunity for comments and input was specifically provided to Potter Township, Center Township, and Beaver County. The Townships and County, fellow Article I Section 27 trustees, submitted no concerns to the Department regarding this plan approval.

2) Environmental incursions have been reduced to a minimum by various measures including plan approval requirements that go beyond minimum regulatory requirements. Examples of items that minimize environmental impacts include but are not necessarily limited to the following:

   - A new VOC LAER standard for equipment leaks to be established by this project.
   - Utilization of hydrogen as fuel supplanting additional natural gas combustion.
   - Inhalation risk assessment results which are below the Department's benchmarks.
   - Site remediation undertaken by Shell for historical metals contamination.
   - Shell's efforts to mitigate noise, visible light, and traffic impacts.
   - Excess electricity generation for use by the grid by modern controlled combined cycle turbines.
   - Installation of carbon canisters controlling on-site-use higher capacity diesel fuel storage tanks.
   - Malfunction reporting requirements exceed the Department's normal criteria.
   - Visible stack emission, fugitive emission, and potentially objectionable odor observation requirements exceed the Department's normal criteria.

3) Finally, the project's plan approval appropriately considers environmental impacts, which will be controlled in accordance with the constitution, the statute and regulations which are applicable to this project. The project will exceed minimum regulatory requirements and will not jeopardize human health and safety. In addition, the project will result in remediation of existing contamination at the project site. The project will also have direct environmental benefits, including:

   - Responsible demolition and remediation of an industrial brownfield site, which will include asbestos removal and on-site air and water monitoring during remediation.

- Offsetting of any emissions potential increases of non-attainment criteria pollutants pursuant to Nonattainment New Source Review provisions, and baseline actual emissions of these pollutants.
- Generation of electricity at Shell's on-site cogeneration plant with lower emissions per unit of electricity generated than average for this region.
- Greater reduction of fugitive gas emissions by a new Leak Detection And Repair standard for equipment leaks which is considered more stringent than any other LDAR program currently achieved in practice.
- Reducing carbon based emissions (CO_2, CO, VOC, HAP, and PM) by combusting the hydrogen byproduct generated from the ethane cracking process compared to combusting additional natural gas (or other carbon-derived) fuel.

The project also will create employment and revenue, make a valuable product, and bring new industry to the Commonwealth.

Thus, issuance of the plan approval is in complies with the Department's duties under Article I, Section 27.

27. **Comment:** Comments received expressed concern over potential negative impact relating to aesthetics. (11, 79)

Response: There are no regulations under the Pennsylvania Air Pollution Control Act and the Federal Clean Air Act that regulate aesthetics. The facility will be required to meet all visible emission limitations in the plan approval.

Also see Response to Comment #26

28. **Comment:** Multiple comments received expressed concern over water quality impacts due to facility construction and/or operation. Specific concerns also include impacts to water quality due to fracking and drilling. (6, 13, 17, 76, 79)

Response: Evaluation of potential water quality impacts due to this project (and other projects in Pennsylvania) are being conducted by other agencies through the relevant permitting processes. Review of this air quality plan approval application is conducted within the scope of the authority granted to the Department under the Pennsylvania Air Pollution Control Act and the Federal Clean Air Act. Water quality is protected through regulations under authorities including the Safe Water Drinking Act, Pennsylvania's Clean Streams Law, and Federal Clean Water Act. These statues and regulations promulgated under them are implemented by other parts of the agency that focus on these laws (e.g. the Department's Office of Water Management and Bureau of Safe Drinking Water and Bureau of Point and Non-Point Source Management).

Shell Comments

29. **Comment:** Draft Plan Approval, Page 5, Section A, Plan Approval Inventory List, Source ID 101, 102, and 103 (Combustion Turbine / Duct Burner Unit #1, #2, #3) lists

the capacity/throughput as 664 MMBtu/hr for each unit. The new capacity/throughput should be listed as 715.4 MMBtu/hr for each Combustion Turbine/Duct Burner Unit. (604)

Response: The capacity/throughput of each Combustion Turbine/Duct Burner Unit in the Plan Approval Inventory List has been changed as requested.

30. **Comment:** The Fire Water Pump Diesel Storage Tank capacity for each is 572 gallons, not 1,849 gallons each as indicated on Table 7, page 28 of the Review Memo. (604)

    Response: This change will be memorialized through this comment response document.

31. **Comment:** Once issued, the Plan Approval contact for the permit and responsible official will be: Kimberly J. Kaal, Environmental Manager, Attorney-in-Fact. (604)

    Response: The Department will update the plan approval contact and responsible official as requested.

32. Department initiated revision – Section C Condition #035 of the draft plan approval will be revised as follows:

    The Owner/Operator shall conduct an inhalation risk assessment for the Facility based upon the final as-built design parameters of the air contamination sources. The inhalation risk assessment shall be conducted in accordance with the protocol previously submitted to the Department on January 7, 2015, which has already been approved. The inhalation risk assessment shall be submitted to the Department within 180 days of product in tank (commercial product production).