Pennsylvania
Department of
Environmental Protection

MEMO

TO Sean Wenrich, P.E. SCW
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THROUGH Andrew W. Fleck AWF
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Bureau of Air Quality

DATE September 5, 2025

RE Trajectory Analysis to Support Emission Reduction Credits Use and Transfer
Homer City Generation, L.P.
Homer City Generation Project
Homer City Generating Station Site
Black Lick Township and Center Township, Indiana County

MESSAGE:
The Pennsylvania Department of Environmental Protection's (DEP) Air Quality Modeling and Risk Assessment Section has completed its technical review of the trajectory analysis submitted by Homer City Generation, L.P. (Homer City) to provide supplemental support for the use and transfer of emission reduction credits (ERC) for its proposed Homer City Generation Project. Homer City proposes to construct and operate an electric power generation facility at the Homer City Generating Station site in Black Lick Township and Center Township, Indiana County.

The DEP's technical review concludes that Homer City's trajectory analysis provides supplemental support for the use and transfer of ERCs, required for its proposed increased emissions of volatile organic compounds (VOC) associated with its project, from ERC-

generating facilities located in Pennsylvania and New York. The DEP's summary of Homer City's trajectory analysis is attached.

If you have any questions regarding Homer City's trajectory analysis, you may contact me (droble@pa.gov, 717.705.7689) or Andrew Fleck (afleck@pa.gov, 717.783.9243).

Attachment

cc: Viren Trivedi, BAQ/Permits
Lori McNabb, NWRO/Air Quality
Matthew Williams, NWRO/Air Quality/Facilities Permitting
David Balog, NWRO/Air Quality/New Source Review

DEP Summary of Trajectory Analysis to Support Emission Reduction Credits Use and Transfer
Homer City Generation, L.P.
Homer City Generation Project
Homer City Generating Station Site
Black Lick Township and Center Township, Indiana County
September 5, 2025

I. Background

The Pennsylvania Department of Environmental Protection (DEP) received a trajectory analysis on August 12, 2025, from Homer City Generation, L.P. (Homer City) to provide supplemental support for the use and transfer of emission reduction credits (ERC) for its proposed Homer City Generation Project, to construct and operate an electric power generation facility at the Homer City Generating Station site in Black Lick Township and Center Township, Indiana County.[1] The trajectory analysis was conducted by AECOM, on behalf of Homer City. The DEP received a revised trajectory analysis from Homer City on September 4, 2025.[2]

II. Regulatory Requirements

Homer City's proposed project is subject to the New Source Review (NSR) regulations codified in Subchapter E of 25 *Pa. Code* Chapter 127. Homer City's proposed project has the potential to emit at least 50 tons per year (tpy) of volatile organic compounds (VOC), which are precursors to ozone, and is subject to the NSR requirements for ERC use and transfer codified in 25 *Pa. Code* § 127.208.

Homer City's calculated increased emissions of VOC associated with its project is 320.9 tpy and, accounting for an emission offset ratio codified in 25 *Pa. Code* § 127.210, Homer City is required to obtain 369.035 tpy of ERCs for its increased emissions of VOC. To this end, Homer City proposes the use and transfer of ERCs for its increased emissions of VOC from the ERC-generating facilities listed in Table 1:

Table 1: ERC-Generating Facilities and VOC ERCs

Facility	Location	VOC ERCs (tpy)
INDSPEC	Butler County (PA)	199.54
Mack Trucks Macungie	Lehigh County (PA)	81.00
Ball Metal Beverage	Orange County (NY)	46.08
Bemis Hazleton	Luzerne County (PA)	24.18
Huntley Power	Erie County (NY)	21.11
Homer City	Indiana County (PA)	11.30
Dunkirk Power	Chautauqua County (NY)	7.90
Cambria Cogen	Cambria County (PA)	6.70

[1] Letter (Evaluation of Emission Reduction Credit Use for Homer City Generation, 1750 Power Plant Rd, Homer City, PA) from Jeffrey Connors, AECOM to Sean Wenrich, DEP/BAQ/Permits/New Source Review. August 12, 2025.
[2] Letter (Evaluation of Emission Reduction Credit Use for Homer City Generation, 1750 Power Plant Rd, Homer City, PA) from Jeffrey Connors, AECOM to Sean Wenrich, DEP/BAQ/Permits/New Source Review. September 4, 2025.

At the request of the DEP, Homer City conducted a trajectory analysis to provide supplemental support for the use and transfer of ERCs for its increased emissions of VOC.

III. Trajectory Analysis

A. Model Selection

Homer City's trajectory analysis utilized the National Oceanic and Atmospheric Association's (NOAA) Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model.[3] The HYSPLIT model can compute simple air parcel trajectories and is extensively used in the atmospheric sciences community. A common application of the HYSPLIT model is a back-trajectory analysis to determine the origin of air masses and establish source-receptor relationships.

B. Model Options

The HYSPLIT model was executed separately for each month from March 2024 through October 2024, consistent with the U.S. Environmental Protection Agency's (EPA) defined ozone season for Pennsylvania,[4] with the following configuration:

- Meteorology: North American Mesoscale (NAM) Forecast System, 12-kilometer resolution;
- Source Location: 40.51422 degrees North, -79.19401 degrees West;
- Archived meteorological file: Varies by month;
- Trajectory direction: Backward;
- Total run time: 48 hours;
- Number of days to calculate trajectory frequencies: 30 days;
- Trajectory frequency grid resolution: 1.0 x 1.0 degrees;
- Trajectory starting interval: six (6) hours; and
- Level 1 height: 500 meters above ground level.

IV. Confirmation of Model Results

The DEP confirmed Homer City's trajectory analysis results by executing the HYSPLIT model using a similar model configuration. The DEP also executed the HYSPLIT model with the following changes to the configuration: a level 1 height of 100 and 500 meters, each with a trajectory frequency grid resolution of 0.5 x 0.5 degrees and a trajectory starting interval of three (3) hours. The DEP confirmed that air parcels are transported from the areas of the ERC-generating sources in Pennsylvania and New York to the Homer City area during the ozone season months.

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[3] NOAA's Air Resources Laboratory website: https://www.arl.noaa.gov/hysplit/.

[4] Ozone season defined in 40 CFR § 51.1100(n) and ozone monitoring season defined in 40 CFR Part 58, Appendix D, Section 4.1(i).

V. Conclusion

The DEP's technical review concludes that Homer City's trajectory analysis provides supplemental support for the use and transfer of ERCs, from the ERC-generating facilities located in Pennsylvania and New York, required for its proposed increased emissions of VOC associated with its project.