Delaware Regulation 1134
Emission Banking and Trading Program
Emission Reduction Credit Audit

DRAFT June 2022

BACKGROUND:

Ground-level ozone, one of the principal components of "smog," is an air pollutant that harms human health and the environment. High levels of ozone can damage the respiratory system and cause breathing problems, throat irritation, coughing, chest pains, and greater susceptibility to respiratory infection. The Clean Air Act (CAA) requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants that are common in outdoor air, considered harmful to public health and the environment, and that come from numerous and diverse sources.

The NAAQS for ozone is currently set at 0.070 ppm (2015 8-hour ozone NAAQS), which is expected to provide protection of public health and environment (80 FR 65291)[1]. New Castle County of Delaware was designated nonattainment as a part of the Philadelphia-Wilmington-Atlantic City Marginal Nonattainment Area (NAA) under the 2015 8-hour ozone NAAQS.

The Clean Air Act requires new emission sources in non-attainment areas for ozone to offset Volatile Organic Compound (VOC) and Nitrogen Oxides (NOx) emissions, which are ozone precursors, depending on the non-attainment level for the area. The purpose for requiring offsetting emissions decreases is to allow an area to move towards attainment of the ozone NAAQS while still allowing for industrial growth.

This can be accomplished through the implementation of an emission banking and trading program, which provides incentives to make progress toward attainment of air quality standards. The 1990 CAA allows for the use of market-based approaches, including emission trading, to assist in attaining and maintaining the NAAQS, for all criteria pollutants. Emissions trading programs have two key components: a limit (or cap) on pollution, and tradable allowances equal to the limit that authorize allowance holders to emit a specific quantity (e.g., one ton) of the pollutant.

An emission reduction credit (ERC) is a credit earned by a company when it reduces its air emissions. ERCs are discrete quantities of actual emissions expressed in tons of pollutant reduced. ERCs are reductions in emissions in one place that can be used to compensate for (or offset) emission increases which occur in a non-attainment area. These reductions can be generated through the shutdown of individual pieces of equipment or entire facilities. These credits can then be sold by the companies that hold them, to offset new emissions sources.

Delaware's regulation 7 **DE Admin. Code** 1134, *Emission Banking and Trading Program* ("Regulation 1134") was developed to establish a voluntary emission banking and trading program.

[1] National Ambient Air Quality Standards for Ozone. EPA Final Rule. 80 FR 65292. October 26, 2015. https://www.govinfo.gov/content/pkg/FR-2015-10-26/pdf/2015-26594.pdf

In accordance with the Clean Air Act Section 173(c)(1)-(2), Offsets:

"(1) The owner or operator of a new or modified major stationary source may comply with any offset requirement in effect under this part for increased emissions of any air pollutant only by obtaining emission reductions of such air pollutant from the same source or other sources in the same nonattainment area, except that the State may allow the owner or operator of a source to obtain such emission reductions in another nonattainment area if (A) the other area has an equal or higher nonattainment classification than the area in which the source is located and (B) emissions from such other area contribute to a violation of the national ambient air quality standard in the nonattainment area in which the source is located. Such emission reductions shall be, by the time a new or modified source commences operation, in effect and enforceable and shall assure that the total tonnage of increased emissions of the air pollutant from the new or modified source shall be offset by an equal or greater reduction, as applicable, in the actual emissions of such air pollutant from the same or other sources in the area…"

In accordance with Section 14.0 of Regulation 1134, the Delaware Division of Air Quality (AQ) is required to conduct periodic audits of its emission banking and trading program, to ensure that the goals of the program are being met. In accordance with Section 14.3 of Regulation 1134, the audit will be legal noticed in two general circulation newspapers as well as posted on the Division's website and will include a public comment period of 30 days after publication of the notice.

DELAWARE'S COMMITMENT TO IMPROVING AIR QUALITY:

The Delaware Division of Air Quality is comprised of engineers, scientists and planners who work to protect human health and the environment. In addition to implementing a strictly regulated ERC program, Delaware AQ applies more stringent requirements on industrial sources than what is required by the CAA and federal regulations.

Emissions from any new sources must not impact the state's attainment or maintenance of health-based federal air quality standards (NAAQS) and sources are required to have an air quality permit at very low levels. Delaware's threshold for requiring these stringent levels of pollution control is lower than neighboring states. Equipment emitting more than 10 lbs pollution/day requires a permit.

AQ staff are highly trained to review the detailed permit applications and determine if the level of control the facility has proposed meets the rigorous control requirement established by state regulations. These air permits may require additional controls to minimize the impacts of emissions. In addition, the permits can include monitoring, recordkeeping and reporting requirements. AQ staff inspect facilities on a routine basis to determine compliance with state and federal requirements.

Some additional examples of AQ's efforts to improve air quality in Delaware include, but are not limited to:

- Continuous development and revision of state regulations to reduce air pollution in all communities
- Programs to reduce vehicle and diesel emissions, promoting clean fuel and alternative vehicle use
- Strict 'open burning' policies throughout the state of Delaware
- Close collaboration with neighboring states and the EPA, ensuring all matters related to air pollution are handled in an efficient and timely fashion, keeping in line with (if not exceeding) federal regulations

EMISSION OFFSETS:

In Delaware the generated ERCs are used to fulfill two emission offset requirements, Nonattainment New Source Review and Coastal Zone Act Program, as detailed below.

Nonattainment New Source Review

Major stationary sources of air pollution and major modifications to major stationary sources are required by the Clean Air Act to a obtain an air pollution permit before commencing construction. The process is called new source review (NSR) and is required whether the major source or modification is planned for an area where the NAAQS are exceeded (non-attainment areas). Permits for sources in attainment areas are referred to as prevention of significant air quality deterioration (PSD) permits; while permits for sources located in non-attainment areas are referred to as Non-attainment Area (NAA) permits. The entire program, including both PSD and NAA permit reviews, is referred to as the NSR program.

Non-attainment New Source Review (NNSR) requires new major sources, or major modifications at existing sources, within non-attainment areas to offset the annual emissions increase from the new source or modification and to provide a net air quality benefit. (7 **DE Admin. Code** 1125, or "Regulation 1125"). Emissions offset by NNSR are based upon non-attainment area classification severity, using a ratio, which is specified in Section 2.0 of Regulation 1125.

The EPA revised the 1-hour ozone NAAQS to an 8-hour NAAQS of 0.080 ppm (62 FR 38856)[2] in 1997, and again revised the ozone NAAQS to an 8-hour NAAQS of 0.075 ppm in 2008 (73 FR 16436)[3]. Under the 1997 8-hour ozone NAAQS, the entire state of Delaware was designated a part of the Philadelphia moderate NAA. Under the 2008 8-hour ozone NAAQS, New Castle County was designated a part of the Philadelphia marginal NAA, while Sussex County was designated a standalone marginal NAA. Therefore, Delaware continued to be subject to the CAA requirements through the 1997 and 2008 ozone NAAQS due to its inclusion in a non-attainment area.

[2] National Ambient Air Quality Standards for Ozone. EPA Final Rule. 62 FR 38856. July 18, 1997. https://www.govinfo.gov/content/pkg/FR-1997-07-18/pdf/97-18580.pdf
[3] National Ambient Air Quality Standards for Ozone. EPA Final Rule. 73 FR 16436. March 27, 2008. https://www.govinfo.gov/content/pkg/FR-2008-03-27/pdf/E8-5645.pdf

On April 30, 2004 (84 FR 23857)[4], EPA designated all three Delaware counties as moderate nonattainment under the 1997 8-hour ozone NAAQS, as part of the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE nonattainment area. EPA granted the area a 1-year extension of its attainment date (from 2010 to 2011) on January 21, 2011 (76 FR 3840)[5]. On March 26, 2012, EPA determined that the area had attained the 8-hour ozone NAAQS by its attainment date and also that it qualified for a clean data determination, which suspended most CAA air quality planning requirements based on air quality monitoring data showing that the area met the NAAQS for the most recent three prior years. Therefore, the area was never formally redesignated to attainment prior to EPA's revocation of the 1997 8-hour NAAQS on March 6, 2015 (44 FR 12264)[6], effective April 6, 2015.

Classifications from the 1979 1-hr ozone standard still apply as the most stringent:

- Kent Co. - Severe under 1-hr standard; requires 1.3:1 offsets for nitrogen oxides (NOx) and volatile organic compounds (VOC)
- New Castle Co. - Severe under 1-hr standard; requires 1.3:1 offsets for NOx and VOC
- Sussex Co. - Marginal under 1-hr standard (but considered Moderate since Delaware is part of the Ozone Transport Region, or OTR); requires 1.15:1 offsets for NOx and VOC

Per the Clean Air Act Section 173(c)(1)-(2), Offsets, emission offsets may be obtained from a non-attainment area which 1) is equal or higher in classification; and 2) contributes to non-attainment in the area.

Coastal Zone Act Program

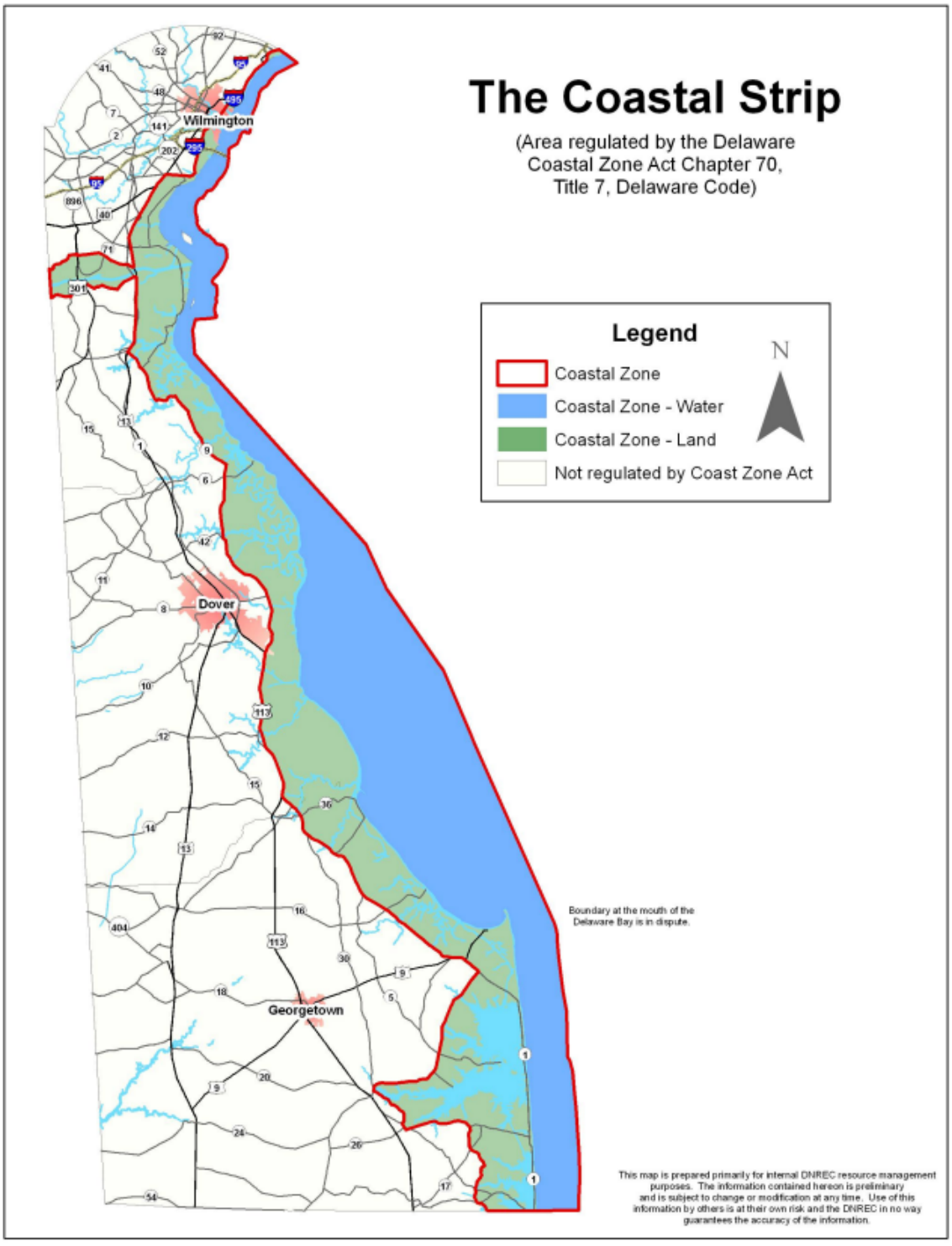
The Coastal Zone Act (CZA) Program regulates new and existing manufacturing and heavy industrial activities in Delaware's Coastal Zone, which generally runs the length of the state along the Delaware River, the Delaware Bay, the Inland Bays and the Atlantic Ocean, as shown in **Figure 1**.

[4] Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas With Deferred Effective Dates. EPA Final Rule. 84 FR 23857. April 30, 2004. https://www.govinfo.gov/content/pkg/FR-2004-04-30/pdf/04-9152.pdf

[5] Approval of One-Year Extension for Attaining the 1997 8-Hour Ozone Standard for the Delaware, Maryland, and Pennsylvania Portions of the Philadelphia-Wilmington-Atlantic City Moderate Nonattainment Area. EPA Final Rule. 76 FR 3840. January 21, 2011. https://www.govinfo.gov/content/pkg/FR-2011-01-21/pdf/2011-1262.pdf

[6] Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements. EPA Final Rule. 44 FR 12264. March 6, 2015. https://www.govinfo.gov/content/pkg/FR-2015-03-06/pdf/2015-04012.pdf

Figure 1 – The Delaware Coastal Zone Map



Delaware's Coastal Zone Act (CZA) was passed in 1971. The intent was to "strike the correct balance between" introducing new industry to the state and protecting the state's environment, natural beauty, and outdoor recreation opportunities. The CZA provides to the Secretary of the Department of Natural Resources and Environmental Control (DNREC) and the Coastal Zone Industrial Control Board the authority to promulgate regulations to carry out the requirements contained within the Act. DNREC's Coastal Zone Program was developed to accomplish two key goals:

1) Promote improvement of the environment within the Coastal Zone and
2) Providing existing and new industries in Delaware's Coastal Zone with the flexibility necessary to stay competitive and to prosper.

In accordance with 7 **DE Admin. Code** 101, *Regulations Governing Delaware's Coastal Zone*, Section 9.0; projects that will result in negative environmental impact require an offset proposal for a project that benefits Delaware:

" 9.1.1 Any application for a permit for an activity or facility that will result in any negative environmental impact shall contain an offset proposal for a project that benefits Delaware. Offset projects shall more than offset the negative environmental impacts associated with the proposed project or activity requiring a permit, including on an annual basis, if applicable. The applicant shall propose an offset project that is clearly and demonstrably more beneficial to the environment in Delaware than the harm done by the negative environmental impacts associated with the proposed project."

Companies have historically used AQ's ERCs as an option to fulfill the CZA requirements for project offsets.

EMISSION REDUCTION CREDITS:

In Delaware, ERCs are created via requirements specified in 7 **DE Admin. Code** 1134, Section 8.5:

"Prior to certifying an emission reduction, the Department will make the following adjustments to both the ozone season and non-ozone season emission reductions that are submitted to the Department for certification:

8.5.1 Credit for all emission reductions, except any reductions generated by shutdowns or generated prior to October 6, 1997, will be reduced by the value of 10% of the total reductions to provide a net air quality benefit.

8.5.2 Credit for emission reductions generated by shutdowns will be reduced by the value of 50% of the total reductions. 25% of the total reductions will be retired to provide a net air quality benefit and 25% will be held in a separate account by the Delaware Department of State, Division of Small Business, for economic development purposes after certification by the Department pursuant to 8.6 of this regulation.

8.5.3 Credit for reductions generated before October 6, 1997 will be adjusted by a discount factor relating to the uncertainty of the emission estimation method used. The amount of the discount will be determined by the Department on a case-by-case basis. Factors that the Department will take into consideration in determining the uncertainty of the emission estimation method used include the nature of the reduction, the validity of the baseline data, and any previous review or inspection of relevant test methods by the Department. The Department will then reduce the adjusted amount by the value of 10% to provide a net air quality benefit."

ERCs do not have an expiration date and they are retired after use. They are only created for NOx and VOC, both of which are ozone precursors. Regulation 1134 specifies the various components of a typical banking system: qualifying emission reductions, quantifying emission reductions, certifying ERCs, banking and accounting of ERCs, and trading and use of ERCs.

In accordance with Regulation 1134, Section 8.5; for partial facility shutdowns, credit for emission reductions are reduced by the value of 10% of the total reductions to provide a net air quality benefit. For total facility shutdowns, 50% of the created ERCs are allotted to the applicant; 25% are allotted to the Division of Small Business for future economic development purposes; and 25% are immediately retired to provide a net air quality benefit. AQ tracks the creation, transfer, and use of ERCs. AQ does not own or sell credits. ERCs are created at the voluntary request by an applicant. Such requests must be submitted within 1 year after the emission reduction occurs.

ERCs are broken down into "ozone season" and "non-ozone season" for every calendar year. In Regulation 1134, ozone season is defined as the period between April 1 and October 31. Non-ozone season would then be the period between November 1 and March 31.

Certification of Credits

7 **DE Admin. Code** 1134, Section 4.0 sets the guidelines for generating an Emission Reduction Credit:

"4.1 An emission reduction is valid as an ERC only after certification by the Department. Emission reductions generated for the purpose of creating ERCs must meet, at a minimum, all of the following criteria:

4.1.1 The reductions must be created from decreases of VOC or NOx emissions;

4.1.2 The emissions must be included in the 1990 or subsequent emission inventory;

4.1.3 The reductions must have occurred after January 1, 1991;

4.1.4 The emission reduction must be equal to or greater than one ton per year; and

4.1.5 The reductions must be real, surplus, permanent, quantifiable, and enforceable."

In accordance with 7 **DE Admin. Code** 1134, Section 4.0, facilities that would like to create ERCs from shutdowns of facilities and/or equipment are required to submit an application for certification of an emission reduction to AQ. AQ reviews each application to determine if the reductions are real, surplus, permanent, quantifiable, and enforceable as defined in Section 2.0 of Regulation 1134:

"Real (reductions) means reductions in actual emissions released into the atmosphere."

"Surplus (reductions) means actual emission reductions below the baseline (see 6.0 of this regulation) not required by regulations or proposed regulations, and not used by the source to meet any state or federal regulatory requirement.[7]"

"Enforceable means any standard, requirement, limitation or condition established by an applicable federal or state regulation or specified in a permit issued or order entered thereunder, or contained in a SIP approved by the Administrator of the U.S. Environmental Protection Agency (EPA), and which can be enforced by the Department and the Administrator of the EPA."

"Permanent (reductions) means that the actual emission reductions submitted to the Department for certification have been incorporated in a permit or a permit condition or, in the case of a shutdown, the permit to operate for the emission unit or units has been voided."

"Quantifiable (reductions) means that the amount, rate and characteristics of emission reductions can be determined by methods that are considered reliable by the Department and the Administrator of the EPA."

[7] In order to establish the amount of an emission reduction that is surplus and thus eligible for credit, an ozone season and a non-ozone season emission baseline must be established for each emission unit or units associated with a particular emission reduction. The formula for calculation of the ozone season and non-ozone season emission baselines can be found in 7 **DE Admin. Code** 1134, Section 6.3.

Table 1 lists all facilities/businesses contributing to the Total Certified ERCs, starting from the most recent activity:

Table 1 – Individual Facility/Business ERC Contributions in Delaware

Facility/Business Name and Activity Date	VOC (tons)		NOx (tons)	
	Ozone Season	Non-Ozone Season	Ozone Season	Non-Ozone Season
Transfer of all ERCs from Formosa to Veolia 9/11/19	-	-	-	-
Formosa Shutdown 5/21/19:	**26**	**21**	**14**	**14**
Held by Formosa	13	11	7	7
Held by Division of Small Business	7	5	4	3
Retired by DNREC	6	5	3	4
Transfer of all ERCs from Chemours to Diamond State Port Corporation 5/15/18	-	-	-	-
Chemours Edge Moor Shutdown 12/28/17:	**68**	**48**	**18**	**13**
Held by Chemours	34	24	9	7
Held by Division of Small Business	17	12	5	3
Retired by DNREC	17	12	4	3
Kaneka Shutdown 1/29/04:	**11**	**7**	**3**	**1**
Held by DCI	4	2	1	1
Held by Division of Small Business	2	2	1	0
Retired by DNREC	3	2	1	0
Used by Uniqema under Coastal Zone Regulations	2 -- 1 from DCI and 1 from DEDO	1 from DCI	0	0

Facility/Business Name and Activity Date	VOC (tons)		NOx (tons)	
	Ozone Season	Non-Ozone Season	Ozone Season	Non-Ozone Season
DuPont Holly Run Shutdown:	**0**	**0**	**13**	**9**
Held by DuPont	0	0	0	0
Held by Division of Small Business	0	0	3	2
Retired by DNREC	0	0	3	2
Used by DuPont as part of Red Lion NOX Compliance Program	0	0	7 from DuPont	5 from DuPont
Metachem Shutdown:	**31**	**21**	**36**	**27**
Held by Division of Small Business	23	16	27	20
Retired by DNREC	8	5	9	7
Lafarge Shutdown:	**7**	**4**	**45**	**28**
Held by Lafarge	3	2	0	0
Held by Division of Small Business	2	1	11	7
Retired by DNREC	2	1	11	7
Used in Main Channel Deepening			23 from Lafarge	14 from Lafarge
VPI Mirrex Shutdown:	**12**	**8**	**3**	**1**
Held by VPI	6	4	1	1
Held by Division of Small Business	3	2	1	0
Retired by DNREC	3	2	1	0
Chrysler Shutdown 10/12/10:	**233**	**156**	**17**	**40**
Held by 1734 LLC	117	78	9	20
Held by Division of Small Business	58	39	4	10
Retired by DNREC	58	39	4	10
Calpine Switch to Gas:	**0**	**0**	**181**	**128**
Held by Calpine	0	0	27	19
Retired by DNREC	0	0	17	12
Used by Garrison Energy Center, LLC	0	0	81	57
Used by Hay Road Energy Center Compressor Upgrade	0	0	56	40

Facility/Business Name and Activity Date	VOC (tons)		NOx (tons)	
	Ozone Season	Non-Ozone Season	Ozone Season	Non-Ozone Season
NRG Energy Center	**0**	**0**	**135**	**163**
Held by NRG	0	0	121	147
Retired by DNREC	0	0	14	16
NRG Indian River	**3**	**2**	**370**	**266**
Held by NRG	3	2	333	239
Retired by DNREC	0	0	37	27
Total Certified:	**391**	**267**	**835**	**690**

Current Bank totals are determined by subtracting Delaware's Total Used/Retired ERCs from all available Total Certified Credits. **Table 2** breaks these totals down further:

Table 2 – Certified, Used, Retired and Bank ERCs

Retired/Used by	VOC (tons)		NO_X (tons)	
	Ozone Season	Non-Ozone Season	Ozone Season	Non-Ozone Season
Total Certified:	**391**	**267**	**835**	**690**
Retired	**-97**	**-66**	**-104**	**-88**
From Division of Small Business, Used by FujiFilm (December 2021)	-1	0	-1	-1
From Division of Small Business, Used by ArgoRefiner (2020)	-1	-1	0	-1
Used by Veolia (September 2019)	-9	-9	-3	-2
From Division of Small Business, Used by Essential Minerals (2018)	0	-2	0	-1
From Division of Small Business, Used by NALCO (2016)	0	0	0	-1
From Division of Small Business, Used by MAGCO (2016)	0	0	0	-3
From Division of Small Business, Used by Green Recovery Technologies (2015)	-1	-1	-4	-3
From Division of Small Business, Used by TECHMER (2015)	-4	-4	0	0
From Division of Small Business, Used by CRODA (2014)	-3	-1	-2	-1
From Division of Small Business, Used by MAGCO (2009)	0	0	-8	-5
From Division of Small Business, used by Grantham Lane Associates(2009)	0	0	-1	-1
From Division of Small Business, Used by Tapeta under Coastal Zone Regulations (2007)	-1	0	-3	-2
From Division of Small Business, Used by Voight and Schweitzer under Coastal Zone Regulations (2007)	0	0	-4	-3
From DCI /Division of Small Business(VOC 1-nonozone), Used by Uniqema under Coastal Zone Regulations (2004)	-2	-1	0	0

Retired/Used by	VOC (tons)		NOX (tons)	
	Ozone Season	**Non-Ozone Season**	**Ozone Season**	**Non-Ozone Season**
From Division of Small Business, Used by Ion Power under Coastal Zone Regulations (2004)	-1	0	0	0
*From the Baltimore, Maryland Severe Nonattainment Area, Used by RecyClean Plastics under Coastal Zone Regulations (2002)**	0	0	-1	-1
*From the Baltimore, Maryland Severe Nonattainment Area, Used by Printpack under Coastal Zone Regulations (2001)**	-23	-12	-2	-1
Used by DuPont as part of Red Lion NOx Compliance Program	0	0	-7	-5
From Lafarge; used in Main Channel Deepening	0	0	-23	-14
From Division of Small Business; used by CRODA	-3	-1	-2	-1
From Division of Small Business; used by PBF	-11	-16	0	0
Used by Garrison Energy Center, LLC	0	0	-81	-57
Used by Hay Road Energy Center Compressor Upgrade	0	0	-56	-40
Total Retired/Used	**-157**	**-114**	**-302**	**-231**
Total In Bank	**234**	**153**	**533**	**459**

*These ERCs were purchased from Maryland but were applied to a project that was located in Delaware. Therefore, the potential emissions that were offset were originated from Delaware.

The current status of all ERCs certified by the Department pursuant to 7 **DE Admin. Code** 1134, Emission Banking and Trading Program, since its inception are shown in **Table 3**:

Table 3 - The current ERCs in Delaware, as of 12/31/21.

Held By	VOC (tons)		NO_X (tons)	
	Ozone Season	Non-Ozone Season	Ozone Season	Non-Ozone Season
1734 LLC	117	78	9	20
Calpine	0	0	27	19
Delaware City Industries (DCI)	4	2	1	1
Diamond State Port Corporation	34	24	9	7
DuPont	0	0	0	0
Lafarge	3	2	0	0
NRG Energy Center	0	0	121	147
NRG Indian River	3	2	333	239
Veolia	4	2	4	5
VPI	6	4	1	1
Division of Small Business	86	51	31	22
Total Currently in Delaware's Bank (12/31/21)	**257**	**165**	**536**	**461**

PROGRAM EVALUATION:

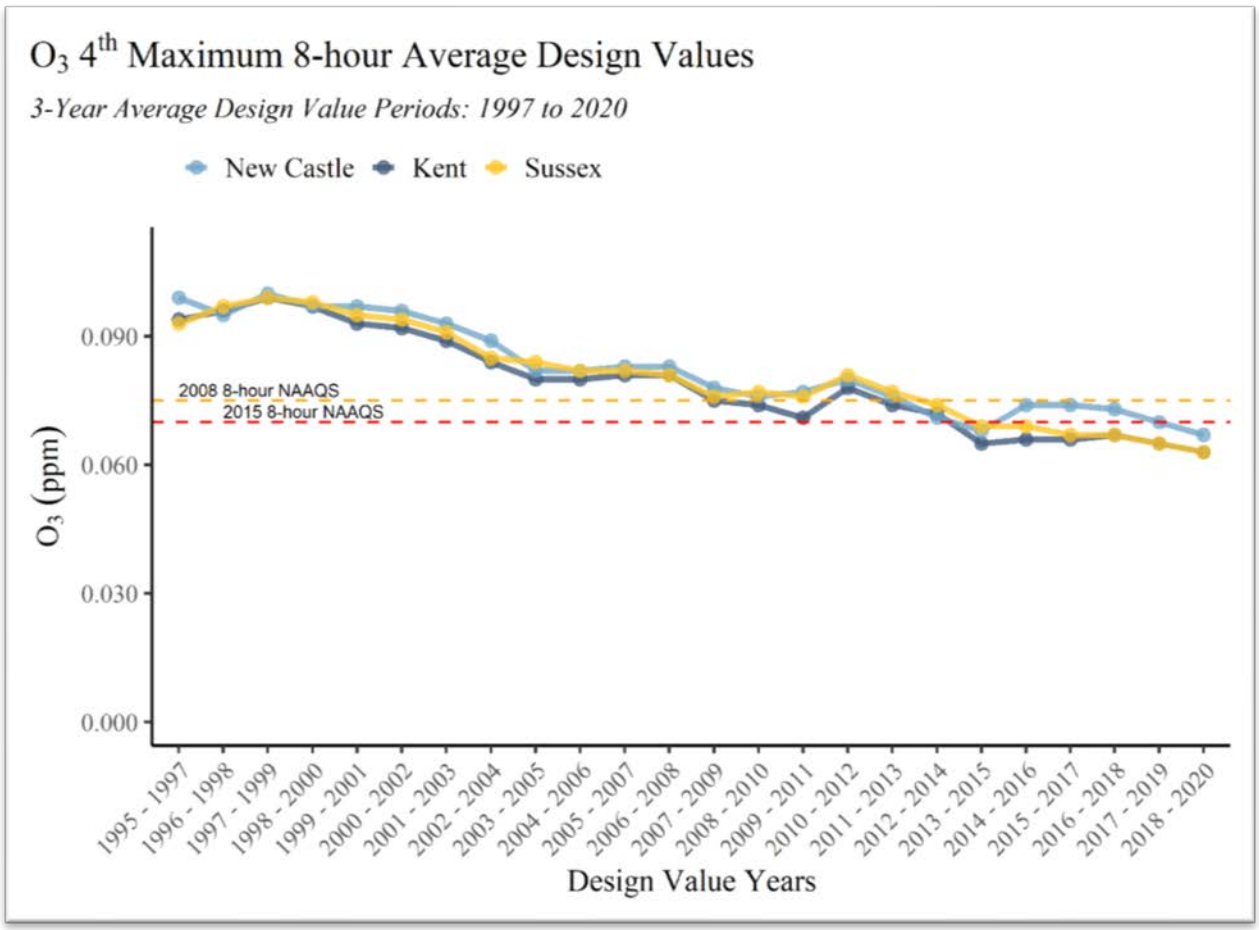
As part of the ERC program audit, AQ is required to evaluate the effectiveness of the program, as specified in Regulation 1134, Section 14.2:

> *"The Department shall conduct an audit of the emission banking and trading program within three years from October 6, 1997, and every three years thereafter to ensure that the program is achieving the goals specified in 1.0 of this regulation. The audits will evaluate whether the emission banking and trading program:*
>
> > *14.2.1 Is consistent with the maintenance of NAAQS and does not interfere with Reasonable Further Progress (RFP) towards attainment of NAAQS;*
> >
> > *14.2.2 Requirements for monitoring, record keeping, reporting and enforcement have resulted in a sufficiently high level of compliance; and*
> >
> > *14.2.3 Has caused any localized adverse effects to the public health, safety or welfare or the environment."*

14.2.1: Consistent with NAAQS

As shown below in **Figure 2**, ozone levels in Delaware have steadily declined since 1997. In addition, the most recent ozone levels for 2020 are below the 2015 8-hour ozone NAAQS of 0.070 ppm (80 FR 65292)[8]. The continued decrease in ambient ozone concentrations demonstrates that the offset program is consistent with the maintenance of NAAQS.

Figure 2 – County Level Ozone Values in Delaware



14.2.1: Does Not Interfere with Reasonable Further Progress (RFP) towards attainment of NAAQS

Reasonable further progress means incremental reductions in emission of an air pollutant which are sufficient to provide for attainment of the NAAQS. Every three years, Delaware conducts an emissions inventory which is an accounting of the amount of pollutants discharged into the atmosphere. These inventories included the calculation of VOCs and NOx air emissions. Actual VOC and NOx missions from facilities are reported directly to AQ. Therefore, once a company has shut down there will be no more emissions from that facility and/or unit in the inventory.

[8] Ibid. 1.

Changes in emissions over time can be analysed by looking at differences between individual inventories. For the purposes of the 1997 8-hour Ozone NAAQS, the Clean Air Act requires a demonstration that areas classified moderate and above, demonstrate Reasonable Further Progress (RFP) towards attainmetn of the NAAQS by achieving at least a 15% emissions reduction of VOCs and NOx[9].

Delaware developed a 2002 Base Year Inventory for the purposes of calculating Reasonable Further Progress for the for the Delaware portion of the Philadelphia 1997 8-hour ozone moderate non-attainment area (75 FR 2452)[10] **(Tables 4 and 5)**.

Table 4 - 2002 Base Year VOC Emissions by Source Sector[11]

Source Sector	Summer Season Weekday[12] (TPD)			
	Kent	New Castle	Sussex	State Total
Point	0.49	9.42	13.35	23.26
Non-point	5.75	20.02	7.31	33.08
On-road	5.45	16.98	9.95	32.38
Non-road	5.17	12.24	9.36	26.77
All Sectors	**16.86**	**56.66**	**39.97**	**115.49**

Table 5 - 2002 Base Year NOx Emissions by Source Sector[13]

Source Sector	Summer Season Weekday[14] (TPD)			
	Kent	New Castle	Sussex	State Total
Point	5.06	44.09	24.95	74.10
Non-point	0.45	1.95	0.77	3.17
On-road	13.97	36.56	18.50	69.03
Non-road	15.02	24.62	13.15	52.79
All Sectors	**34.50**	**107.22**	**57.37**	**199.09**

[9] Approval and Promulgation of Air Quality Implementation Plans; Delaware; Reasonable Further Progress Plan, 2002 Base Year Inventory, Reasonably Available Control Measures, Contingency Measures, and Transportation Conformity Budgets for the Delaware Portion of the Philadelphia 1997 8-Hour Ozone Moderate Nonattainment Area. EPA Proposed Rule. 75 FR 2452. January 15, 2010. https://www.govinfo.gov/content/pkg/FR-2010-01-15/pdf/2010-745.pdf

[10] Ibid. 5.

[11] Ibid. 4.

[12] The 2002 Base Year Inventory for the 1997 8 hour Ozone Non-attainment Area for the purposes of determining Reasonable Further Progress were calculated for Summer Season Weekdays: weekdays in June, July, and August.

[13] Ibid. 4.

[14] Ibid 4.

In **Tables 6 and 7**, a reduction of 15% was applied to the 2002 Base Year Inventory data, to calculate the 15% RFP reduction.

Table 6 - 2002 VOC Emissions – Reasonable Further Progress, 15% Reduction

Source Sector	Summer Season Weekday (TPD)			
	Kent	New Castle	Sussex	State Total
Point	0.42	8.01	11.35	19.78
Non-point	5.66	17.02	6.21	28.89
On-road	5.37	14.43	8.46	28.26
Non-road	5.09	10.40	7.96	23.45
All Sectors	**16.54**	**49.86**	**33.98**	**100.38**

Table 7 - 2002 NOx Emissions – Reasonable Further Progress, 15% Reduction

Source Sector	Summer Season Weekday (TPD)			
	Kent	New Castle	Sussex	State Total
Point	4.30	37.48	21.21	62.99
Non-point	0.38	1.66	0.65	2.69
On-road	11.87	31.08	15.73	58.68
Non-road	12.77	20.93	11.18	44.88
All Sectors	**29.32**	**91.15**	**48.77**	**169.24**

The 2002 Base Year Inventory totals were also compared to inventory data from the most recent Emissions Inventory in 2017 **(Tables 8 and 9),** to determine what percentage change in emissions has occurred between 2002 and 2017. As shown in **Tables 8 and 9**; there has been an overall decrease in emissions from 2002-2017 of 54.46% for VOCs and 67.31% for NOx.

Table 8 - 2017 VOC Emissions by Source Sector[15]

Source Sector	Annual (TPD)				
	Kent	New Castle	Sussex	State Total	Total % Decrease from 2002
Point	0.27	2.05	0.20	2.52	
Non-point	3.58	9.01	6.30	18.90	
On-road	2.24	5.94	3.57	11.74	
Non-road	3.87	6.15	9.41	19.43	
All Sectors	**9.97**	**23.15**	**19.48**	**52.59**	**54.46%**

Table 9 - 2017 NOx Emissions by Source Sector[16]

Source Sector	Annual (TPD)				
	Kent	New Castle	Sussex	State Total	Total % Decrease from 2002
Point	0.42	6.86	0.65	7.92	
Non-point	1.13	3.95	2.55	7.63	
On-road	5.10	14.07	8.14	27.31	
Non-road	5.17	8.64	8.42	22.23	
All Sectors	**11.82**	**33.52**	**19.75**	**65.09**	**67.31%**

To determine if the 15% RFP reduction has been achieved, the total statewide inventory for 2017 (**Tables 8 and 9**) was added to the tons of banked ERCs that are still available for use, adjusted to Tons Per Day (Table 3), and compared to the total statewide 15% RFP tons in **Tables 6 and 7.** For both VOCs and NOx, the 2017 totals + the total ERCs available were below the calculated 15% RFP in **Tables 6 and 7**:

VOC

$$\text{2017 total (52.59 TPD)} + \frac{\text{Total ERCs}}{365}\left(\frac{257+165}{365}\right) = \textbf{53.75 TPD} \leq \text{15\% RFP } (\textbf{100.38 TPD})$$

NOx

$$\text{2017 total (65.09 TPD)} + \frac{\text{Total ERCs}}{365}\left(\frac{536+461}{365}\right) = \textbf{67.82 TPD} \leq \text{15\% RFP } (\textbf{169.24 TPD})$$

[15] 2017 Annual emissions are used for comparison to the 2002 data, since 7 DE Admin. Code 1134 applies to the entire year, not just Summer Season Weekdays.
[16] Ibid. 14.

14.2.2: Program Compliance

Facilities that would like to create ERCs from shutdowns of facilities and/or equipment are required to submit an application for certification of an emission reduction to AQ. AQ then reviews the request to determine if it is true, accurate and complete. To ensure that the ERCs are permanent, AQ conducts inspections to ensure that facilities are permanently shut down. Periodic inspections of operating facilities ensure that specific pieces of equipment are permanently rendered inoperable, or removed from the site.

14.2.3 Effects to the Public Health, Safety or Welfare or the Environment

As shown in **Figure 2**, the most recent ozone levels for 2020 are below the 2015 8-hour ozone NAAQS of 0.070 ppm. Therefore, Delaware is currently meeting the current health based ozone NAAQS.

CONCLUSION

This report shows that the program, as outlined by 7 DE Admin Code 1134, is meeting the goals listed in sections 1.0 and 14.2 of the regulation. The Division of Air Quality does not recommend any changes to the regulation at this time.