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October 7, 2021

HAND DELIVERY and
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Mr. Christopher M. Hogan
Chief, Major Project Management Unit
Department of Environmental Conservation
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, NY 12233-1750

RE: CPV Valley, LLC – CPV Valley Energy Center Title V and Title IV Permit Applications DEC ID 3-3356-00136/000010 & 00009— Response to August 20, 2021 Request for Information.

Dear Mr. Hogan,

As you know, Harris Beach PLLC represents CPV Valley, LLC ("Valley" or "Applicant") with respect to its applications for a Title V and IV (Phase II Acid Rain) permit (collectively, the "Application") under the Clean Air Act and Article 19 of the New York Environmental Conservation Law ("ECL") for its state-of-the-art 630-megawatt ("MW") natural gas-fired combined cycle generating station located in Wawayanda, Orange County, New York (the "Facility"). This letter serves as Valley's response to the New York State Department of Environmental Conservation's ("NYSDEC" or "Department") August 20, 2021 Request for Information.

As you know, NYSDEC issued a Notice of Revocation of Complete Application and Notice of Incomplete Application dated November 29, 2020 ("NOIA") regarding Valley's Application. In response to the NOIA, and subject to a tolling agreement, Valley submitted a report by its consultant, ICF, on March 8, 2021 (the "ICF Report") and certain supplemental information on March 30, 2021.[1] By letter dated August 20, 2021, you issued a Request for Information seeking additional information on (1) methane ("CH_4") assumptions, (2) individual greenhouse gas ("GHG") calculations displayed in carbon dioxide equivalents ("CO_2e"), (3) upstream emission factors and calculations, (4) environmental justice considerations, and (5) technical and environmental feasibility of utilizing renewable natural gas ("RNG") or hydrogen at Valley's Facility.

[1] Valley continues to reserve all rights to challenge NYSDEC's revocation of its May 2019 application completeness determination in any administrative or judicial action or proceeding.

As a preliminary matter, Valley notes that its March 8, 2021 response and March 30, 2021 supplemental response to the NYSDEC's November 29, 2020 NOIA triggered a 60-day review period for NYSDEC to determine whether additional application deficiencies exist or make a new application completeness determination under 6 NYCRR § 621.6 (c) (1). Using a conservative accrual date from Valley's submission of the later March 30, 2021 response, that 60-day period expired on July 1, 2021. Since no NOIAs were issued in the 60-day period between March 30, 2021 and July 1, 2021, 6 NYCRR § 621.6 deems the application complete by operation of law.[2] For this reason, Valley considers NYSDEC's August 20, 2018 letter to have been issued under 6 NYCRR § 621.14 (b). Regarding NYSDEC's August 20, 2021 Request for Information, Valley's responses are below.

Valley Responses to NYSDEC August 20, 2021 Request for Information

NYSDEC Request 1. *The ICF report does not appear to have included methane (CH_4) in the assumptions (see pp. 21). If methane was included in the calculations, the report should be revised to reflect that fact. If methane was not included in the assumptions, the analysis must be revised to include it. Just as with other GHGs, emissions of CH_4 must be reported in terms of carbon dioxide equivalents (CO_2e) based on the 20-year global warming potential (GWP20) values in 6 NYCRR Section 496.5.*

Valley Response to Request 1.

CH_4 was included in the ICF Report on page 21 specifying that the "tables below present the impact of the Facility on Statewide GHG (CO_2, CH_4, N_2O) emissions." NYSDEC Staff confirmed at the September 14, 2021 technical conference that this information was provided. Supplemental Tables 4-8, 4-9, and 4-10 annexed hereto as **Attachment 1** provide data for each individual GHG emitted is reported in CO_2e using the Global Warming Potential-20 ("GWP20") standards.

NYSDEC Request 2. *The ICF report does not include any tables of GHG emissions (either tons/year or CO_2e). The permit application does include calculations for CO_2, but it does not appear to include CH_4 or N_2O. The ICF report must be revised to provide that information, displayed for each individual GHG emitted and collectively, again reported in CO_2e (GWP20) for all GHGs as required by the Climate Act.*

Valley Response to Request 2.

The March 8, 2021 ICF Report includes tables that show the Facility's impact on Statewide GHG emissions (*see* ICF Report § 4.2). Reductions in direct and upstream GHG emissions are set

[2] To the extent NYSDEC takes a contrary position on the status of Valley's application completeness status, Valley reserves all rights to challenge such determination in any administrative or judicial action or proceeding.

forth in Table 4-8. Increases in direct and upstream GHG emissions are set forth in Table 4-9. Net impacts on Statewide GHG emissions are set forth in Table 4-10. In response to NYSDEC Request 2, ICF identified the pollutants individually (CO_2, CH_4, and N_2O), and the data for each individual GHG emitted is reported in CO_2e (GWP20) as set forth in the Supplemental Tables 4-8, 4-9, and 4-10 annexed hereto as **Attachment 1**.

NYSDEC Request 3. *The ICF report mentions that it used DEC-provided factors for upstream emissions, but does not specify the factors or calculations. The ICF report should be updated to include a table showing all upstream calculations so they can be verified by DEC.*

Valley Response to Request 3.

The NYSDEC factors used for upstream emissions are specified in Appendix A-5 of the March 8, 2021 ICF Report. ICF did not utilize alternative emissions factors for calculating upstream emissions and relied solely on NYSDEC's February 2021 Interim Draft Emission Factors. Annexed hereto as **Attachment 2** is a February 4, 2021 email from NYSDEC Staff (Maureen A. Leddy) requesting use of the NYSDEC's emission factors and a copy of the entire document that Staff provided to ICF. Upstream emissions calculations (increases, reductions, and net impact) are set forth in ICF Report § 4.2 and Tables 4-8, 4-9, 4-10 and the Supplemental Tables 4-8, 4-9, and 4-10 annexed hereto as **Attachment 1**.

NYSDEC Request 4. *CPV should address the requirements of Section 7(3) of the Climate Act, regarding potential impacts to disadvantaged communities, including reductions in GHG emissions and co-pollutants. To the extent the facility impacts a Potential Environmental Justice Area (PEJA), as identified by the DEC Office of Environmental Justice (see https://www.dec.ny.gov/public/911.html for more information about PEJAs), please calculate the co-pollutant emissions from each GHG source and discuss any alternatives or mitigation measures that will be used to reduce the impact of those emissions on the facility's neighbors. If CPV concludes that existing measures are sufficient to mitigate these impacts, that should be discussed as well.*

Valley Response to Request 4.

CLCPA § 7 (3) requires, in part, that in considering or issuing permits, State agencies shall not disproportionately burden disadvantaged communities. Valley understands that the NYSDEC has not yet finalized its position on how "disadvantaged communities" are to be identified or what may "disproportionately burden" such a community. In reviewing all permit records for draft and final Title V permits issued since the CLCPA has been in effect, Valley has not identified any other applicants for such permits that were required to undertake and provide an analysis "regarding potential impacts to disadvantaged communities, including reductions in GHG emissions and co-pollutants." When this issue was discussed during the September 14, 2021

technical conference, Staff advised Valley to use existing standards for an Environmental Justice ("EJ") analysis as a guide.

As the NYSDEC is aware, the Facility has been operating since early 2018 under a combined Air State Facility Permit ("ASF") and a pre-construction Prevention of Significant Deterioration ("PSD") permit. Prior to starting operations, the Facility underwent a full coordinated environmental review, with the Town of Wawayanda Planning Board acting as the State Environmental Quality Review Act ("SEQRA") Lead Agency and NYSDEC as an Involved Agency. The Lead Agency prepared both a draft environmental impact statement ("DEIS") and a final draft environmental impact statement ("FEIS") for the project, culminating in the adoption of a SEQRA Findings Statement and issuance of a special use permit and site plan approval in May 2013. The Lead Agency SEQRA Findings Statement and Adoption Resolution is already part of the permit record and annexed hereto as **Attachment 3** for convenience.

EJ issues are discussed, in part, in the Facility's DEIS at § 7.5 and FEIS § 4.1.16. The EJ analysis considered disproportionate adverse human health and environmental impacts on minority and low-income populations using methodologies based upon the NYSDEC EJ Policy (CP-29, Environmental Justice and Permitting, Mar. 19. 2003) and federal guidance documents prepared by the United States Environmental Protection Agency ("USEPA") for use in preparing a National Environmental Policy Act ("NEPA") environmental justice analysis. Methodology for identifying the appropriate study area is discussed in DEIS § 7.5.2, which included a 2+ mile radius from the Facility's location. Valley implemented an Enhanced Public Participation Plan in accordance with NYSDEC's EJ Policy as set forth in DEIS § 7.5.3 and DEIS Appendix 1-B. The substantive EJ analysis included consideration of all potential GHG co-pollutants, including impacts of CO, SO_2, PM-10, and NO_2 (DEIS § 7.5.4.1). The EJ analysis also considered whether traffic and transportation impacts (DEIS § 7.5.4.2), noise impacts (DEIS § 7.5.4.3) and visual impacts (DEIS § 7.5.4.4) would have a disproportionate effect on EJ communities within the study area.

In the Findings Statement, the Lead Agency concluded that "[b]ased on the EIS Documents, the Planning Board's findings are that positive socioeconomic impacts will result from the project with no adverse EJ impacts" (Findings Statement at 34). The Lead Agency's conclusion was first based on its finding that the project's EJ analysis was conducted "consistent with the principles set forth in Executive Order 12898, entitled 'Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations' and NYSDEC Policy CP-29" (Findings Statement at 37). Further, the Lead Agency determined that the EJ analysis demonstrated that (1) the "potential air emission concentrations did not cause violations of the National Ambient Air Quality Standards ("NAAQS") within the EJ study area, and therefore are not adverse"; (2) that the use of hazardous materials such as "oil, aqueous ammonia, and other chemicals at the Project site would not result in a disproportionate or adverse impact to the identified potential EJ area"; and (3) that noise and visual impacts within the study area "are not considered adverse or disproportionate" (Findings Statement at 37-38). Finally, the Lead Agency also determined that "[b]ecause of the socioeconomic benefits arising from the Project, and the

avoidance of impacts to any identified EJ areas, no specific mitigation measures are warranted" (Findings Statement at 38). The Lead Agency's findings and conclusions are supported by the SEQRA record, which fully address Staff's questions regarding potential impacts to disadvantaged communities.

NYSDEC Request 5. *The ICF Report assumes that CPV would convert to burning renewable natural gas (RNG) or hydrogen to comply with the Climate Act's requirement for zero emission electricity generation by 2040. CPV should include a discussion about the technical and environmental feasibility of utilizing RNG or hydrogen at the facility. In addition, CPV should address other potential measures CPV intends to take to comply with the Climate Act's zero-emission by 2040 requirement, if utilizing RNG or hydrogen is not feasible or compliant, including potentially ceasing operations.*

Valley Response to Request 5.

Valley provided a complete discussion on the technical and environmental feasibility of utilizing RNG or hydrogen at the Facility to NYSDEC Staff in the March 30, 2021 supplemental submission, which Staff admitted that it had not reviewed prior to the September 14, 2021 technical conference. Valley's March 30, 2021 supplemental submission is annexed hereto as **Attachment 4** for convenience.

To the extent that the NYSDEC seeks assurances that Valley intends to comply with the Climate Act's zero-emission by 2040 requirement even if utilizing RNG or hydrogen is not feasible or compliant, Valley agrees to accept a permit condition similar to those incorporated into Title V draft permits for other power generation facilities (annexed hereto as **Attachment 5**) that the NYSDEC has recently issued. The CLCPA condition incorporated into other drafts permits requires that:

> Within 120 days of the issuance of this permit, the facility owner or operator shall prepare, and submit to the Department for approval, a site-specific greenhouse gas mitigation plan in accordance with Section 7(2) of the Climate Leadership and Community Protection Act, Chapter 106 of the Laws of 2019. At a minimum, the plan shall propose an acceptable mitigation strategy or strategies for reducing the greenhouse gas emissions generated by and associated with the facility's operations.
>
> Such strategies may include, but are not limited to: (1) limitations on the amount of fossil fuel fired at the facility (measured on a 12-month rolling total basis); (2) limitations on the facility's fuel load equivalent hours of operation (measured on a 12-month rolling total basis); (3) a protocol for future alternative fuel testing; (4) a specific schedule for the future transition to alternative fuels; and/or (5) a legally enforceable commitment to cease operations at the facility by a date certain.

> For the purposes of this requirement, greenhouse gas emissions include direct and upstream emissions associated with the operation of all fossil fuel fired stationary emission sources at the facility on a potential to emit basis. The plan shall also propose a schedule for the implementation of each mitigation measure identified as feasible in the plan.
>
> The facility owner or operator shall update the plan with each subsequent application for renewal of this permit, or upon request by the Department, whichever is first.
>
> Failure to provide an approvable site-specific greenhouse gas mitigation plan shall be grounds for enforcement action and/or the suspension or revocation of this permit as described in 6 NYCRR Section 201-1.12 and 6 NYCRR Section 621.13.

Such a condition, if incorporated into Valley's permit, adequately addresses the NYSDEC's concern with compliance with the CLCPA today and in the future.

Conclusion

Valley's prior submissions and above responses fully satisfy NYSDEC's August 20, 2021 Request for Information. Since Valley's application is deemed complete as a matter of law and NYSDEC has already exceeded its maximum allowable 18-month review period (*see* 6 NYCRR § 621.10 [a] [5], 6 NYCRR § 201-6.2 [c]; ECL § 19-0311 [2] [i]), Valley requests that NYSDEC immediately process the above information and issue the Facility a final permit.

Very truly yours,

HARRIS BEACH PLLC

Javid Afzali

cc: M. Sanza, Esq. (mark.sanza@dec.ny.gov)
J. Binder, Esq. (jonathan.binder@dec.ny.gov)

Attachment 1

ICF Supplemental Tables

Supplement to March 8, 2021 Report –

Greenhouse Gas Analysis for CPV Valley Energy Center Title V Permit Application

October 7, 2021

Prepared for:
Competitive Power Ventures

Prepared by:
ICF

Supplemental Table 4-8: Amount of GHG Emissions from other NYS generators displaced by the Facility

Impact (thousand short tons) (CO2e)	Effluent	2025	2030	2040 (RNG)	2050 (RNG)	2040 and 2050 (Hydrogen)
Reduction in direct GHG emissions through displacement of other generators	CO2	2,008	1,081	522	759	0
	N2O	2	1	1	1	0
Reduction in upstream emissions due to reduced fuel consumption of displaced generators	CO2	428	235	0	0	0
	CH4	1,160	638	0	0	0
	N2O	1	1	0	0	0
Total [B]		**3,599**	**1,956**	**522**	**760**	**0**

Supplemental Table 4-9: Impact of the Facility on GHG Emissions in NYS

Impact (thousand short tons) (CO2e)	Effluent	2025	2030	2040 (RNG)	2050 (RNG)	2040 and 2050 (Hydrogen)
Increase in direct GHG emissions in NYS from generation by the Facility	CO2	1,839	1,007	500	716	0
	N2O	1	1	0	0	0
Increase in upstream GHG emissions from operation of the Facility	CO2	428	234	0	0	0
	CH4	1,159	635	0	0	0
	N2O	1	1	0	0	0
Total [A]		**3,428**	**1,877**	**500**	**717**	**0**

Supplemental Table 4-10: Net Impact on Statewide GHG Emissions from operation of the Facility

Impact (thousand short tons) (CO2e)	Effluent	2025	2030	2040 (RNG)	2050 (RNG)	2040 and 2050 (Hydrogen)
Net reduction in GHG emissions [C] = [A] - [B]	CO2	-170	-75	-22	-43	0
	CH4	-1	-3	0	0	0
	N2O	-1	-1	0	0	0
	Total	**-172**	**-79**	**-22**	**-43**	**0**

Attachment 2

NYSDEC Preliminary Emission Factors

From: Leddy, Maureen A (DEC) <Maureen.Leddy@dec.ny.gov>
Sent: Thursday, February 4, 2021 3:05 PM
To: datwood@cpv.com; Chaurey, Ananya; Daniel Jerke; Javid Afzali; Gene Kelly; Sherman Knight; Hogan, Chris M (DEC); Hagell, Suzanne E (DEC); Lanzafame, Mark R (DEC); Cronin, Michael P (DEC); Carbone, Alyssa N (DEC); Jennings, Mike (DEC)
Cc: Rose, Judah; Katsigiannakis, George; Binder, Jonathan A (DEC)
Subject: RE: ICF CPV Valley Title V Analysis Assumptions Documents
Attachments: Fuel emission factors CLCPA 02.04.2021.pdf

Thanks for sending the information on emissions calculations. We have had a chance to review and have the following feedback:

- Include combustion emissions from RNG
- Exclude upstream emissions from RNG
- We request the use of the attached emission factors for upstream emissions

DEC staff have been working on developing a set of emissions factors for calculating the upstream emissions. This document has just become available and is a work-in-progress that will continue to be refined as we go through the annual inventory process. If you choose to utilize alternative emissions factors for calculating upstream emission you must include a justification statement.

Thanks so much
Maureen

Maureen Leddy
518-817-2897

From: Don Atwood <datwood@cpv.com>
Sent: Thursday, February 04, 2021 11:27 AM
To: Chaurey, Ananya <Ananya.Chaurey@icf.com>; Daniel Jerke <djerke@cpv.com>; Javid Afzali <JAfzali@harrisbeach.com>; Gene Kelly <GKelly@harrisbeach.com>; Sherman Knight <sknight@cpv.com>; Hogan, Chris M (DEC) <chris.hogan@dec.ny.gov>; Leddy, Maureen A (DEC) <Maureen.Leddy@dec.ny.gov>; Hagell, Suzanne E (DEC) <suzanne.hagell@dec.ny.gov>; Lanzafame, Mark R (DEC) <mark.lanzafame@dec.ny.gov>; Cronin, Michael P (DEC) <michael.cronin@dec.ny.gov>; Carbone, Alyssa N (DEC) <alyssa.carbone@dec.ny.gov>; Jennings, Mike (DEC) <mike.jennings@dec.ny.gov>
Cc: Rose, Judah <Judah.Rose@icf.com>; Katsigiannakis, George <George.Katsigiannakis@icf.com>
Subject: RE: ICF CPV Valley Title V Analysis Assumptions Documents

NYSDEC and NYS Climate Team:

As we discussed on our call on Tuesday 02/02, the NYSDEC and NYS Climate Team were going to review the requested information distributed by ICF Tuesday evening 02/02 (email below) and were going to identify whether they would be able to provide comments and sign off on the assumptions for ICF's analysis by COB today 02/04, or would advise us otherwise today. Can the NYSDEC and NYS Climate Team confirm whether they are going to maintain the COB 02/04

schedule as the Valley team is working towards various deadlines to provide the requested information for our Title V permit application related to the CLCPA. Please advise further. Regards.

Competitive Power Ventures

Don Atwood
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From: Chaurey, Ananya <Ananya.Chaurey@icf.com>
Sent: Tuesday, February 2, 2021 8:34 PM
To: Don Atwood <datwood@cpv.com>; Daniel Jerke <djerke@cpv.com>; Javid Afzali <JAfzali@harrisbeach.com>; Gene Kelly <GKelly@harrisbeach.com>; Sherman Knight <sknight@cpv.com>; chris.hogan@dec.ny.gov; maureen.leddy@dec.ny.gov; suzanne.hagell@dec.ny.gov; mark.lanzafame@dec.ny.gov; michael.cronin@dec.ny.gov; alyssa.carbone@dec.ny.gov; mike.jennings@dec.ny.gov
Cc: Rose, Judah <Judah.Rose@icf.com>; Katsigiannakis, George <George.Katsigiannakis@icf.com>
Subject: ICF CPV Valley Title V Analysis Assumptions Documents

DEC Team:

Please find attached two documents that cover the open items from our call this morning. The revised assumptions book includes some more detail on the environmental regulations modeled (2nd tab) and the direct emission rates by fuel type (last tab). The second document details ICF's assumptions regarding upstream emissions. The upstream emissions summary is derived from a renewable natural gas study ICF conducted for the American Gas Foundation (AGF) and can be found at this link.

Please let us know if you have any questions.

Best Regards,
ICF Team

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Preliminary Interim Draft Emission Factors for Use by State Agencies and Project Proponents

NYSDEC Version 02/2021

The preliminary emission factors provided in Table 1 and 2, below, represent presumptive and generic (non source-specific) factors that can be applied to the high heating content[1] of fossil fuels. The emission factors included in this document are being provided on an interim basis to facilitate ongoing reviews and assessments by State agencies and project proponents. These values should be considered interim draft values, as they are subject to change.

Pursuant to the Climate Leadership and Community Protection Act (Climate Act), the Department is required to issue an initial Statewide Greenhouse Gas Emissions Report by January 1, 2022, and thereafter to update the report on an annual basis.[2] This report will include information regarding upstream emissions associated with the extraction, production, and transmission of fossil fuels, along with information relating to fugitive emissions associated with fossil fuels. The Department is currently engaged with its State partners in the development of the initial report and will be seeking stakeholder input in 2021 regarding the methodology and analysis used in determining Statewide greenhouse gas emissions. Therefore, the preliminary emission factor values in both Table 1 and Table 2 may change as a result of that process.

Overall, the emission factors presented in this document are a work in progress, subject to future stakeholder comment, and will be subject to a continual improvement process that will update the values over time as additional information becomes available. Additional fuels and emission sectors may be added as analysis continues. These factors do not include the direct emissions resulting from the combustion of the fuel.

Finally, the values provided in Table 1 and 2 are intended to be presumptive, meaning that a State agency or project proponent may use a different value in a given context, provided that a different value is supported by appropriate justification and analysis.

[1] Select high heating values from https://www.epa.gov/sites/production/files/2020-04/documents/ghg-emission-factors-hub.pdf have been included in this document Appendix A. Project sponsors should identify if they are using different energy content, particularly if the energy content is provided by the fuel supplier.

[2] Chapter 106 of the Laws of 2019; Environmental Conservation Law (ECL) § 75-0105.

Table 1. Current Upstream and Out-of-State Emission Factors for Imported Fossil Fuels

These factors reflect greenhouse gas emissions associated with the extraction, production, and transmission of fossil fuels imported into New York State for the most recent year available, or 2018.[3] This does not include extraction, production, or transmission of fuels within New York State.

	Greenhouse gas emission rate (g/mmbtu)*			
Fuel Type**	**CO_2**	**CH_4**	**N_2O**	**CO_2e (20 yr GWP)+**
Natural Gas	11,913	384	0.136	44,205
Diesel/ Distillate Fuel	15,164	121	0.258	25,375
Coal	3,279	397	0.103	36,650
Kerosene/Jet Fuel	10,071	109	0.170	19,270
Gasoline (E85)	5,097	33	0.085	7,905
Gasoline***	18,349	119	0.306	28,459
LPG	17,295	121	0.270	27,553
Petroleum Coke	11,612	112	0.204	21,096
Residual Fuel	11,799	111	0.194	21,184
Asphalt and Road Oil	8,487	105	0.128	17,325

*Sums or products may not match due to independent rounding. Units in grams(g) can be converted to pounds by dividing by 453.6.

** Users may wish to adjust the specified emission factors for blended fuels

*** The gasoline emission factors represent 100% fossil fuel content gasoline, equivalent to gasoline blend stock, if evaluating blends with oxygenates (e.g., ethanol) these blends can be apportioned to the fraction of emissions associated with the energy fraction of the blend that is from fossil fuels (e.g. E85 is a blend of ethanol and gasoline estimated here to have the energy content of approximately 28% gasoline and 72% ethanol).

+ CO_2e is calculated by multiplying the mass of each gas by its global warming potential(GWP) and adding the products together(CO_2 GWP is 1, CH_4 GWP is 84, N_2O GWP is 264).

Sources: Emission factors are derived from the same sources used for 6 NYCRR Part 496[4], but for the most recent year available (2018). This analysis was conducted by Eastern Research Group on behalf of NYSERDA and NYSDEC using Department of Energy fuel data and lifecycle analysis tools. The lifecycle models used were the Argonne National Laboratory's "Greenhouse gases, Regulated Emissions, and Energy use in Transportation" (GREET) model for imported petroleum products and the National Energy Technology Laboratory (NETL) models for imported coal and natural gas. For natural gas, the leakage rates from Alzarez et al. (2018)[5] were also used to address additional fugitive methane sources.

[3] For purposes of accounting for Statewide greenhouse gas emissions under the Climate Act, consideration of upstream and out-of-state emissions is focused on the "greenhouse gases produced outside of the state that are associated with the . . . extraction and transmission of fossil fuels imported into the state." ECL § 75-0101(13).

[4] NYSDEC. 2020. Regulatory Impact Statement, 6 NYCRR Part 496.

[5] Alvarez,R.A., et al. 2018. Assessment of methane emissions from the U.S. oil and gas supply chain. Science.361: 186-188.

Table 2. Current Downstream In-State Emission Factors for Natural Gas/RNG Distribution

These factors reflect fugitive emissions within New York State associated with fuel throughput for the most recent year available, or 2018.

	Greenhouse gas emission rate (g/mmbtu)			
Fuel Type	**CO_2**	**CH_4**	**N_2O**	**CO_2e (20 yr GWP)**
Natural Gas/RNG	n/a	23	n/a	1,932

Source: Emission factor generated by summing emissions from natural gas distribution reported in NYSERDA (2019) New York State Oil and Gas Sector Methane Emission Inventory and dividing by energy content of natural gas consumed in residential, commercial, and industrial sectors of New York as reported by EIA.

Appendix A. High Heating Value of Select Fuels Per Unit of Mass or Volume

Fuel	High Heating Value (mmbtu)	Volume or Mass unit
Natural Gas/RNG*	0.001026	Standard cubic foot
Diesel/Distillate Fuel	0.138	U.S. gallon
Coal	21.39	Short Ton
Kerosene/Jet Fuel	0.135	U.S. gallon
Gasoline E85**	0.095	U.S. gallon
Gasoline	0.125	U.S. gallon
LPG	0.092	U.S. gallon
Petroleum Coke	0.143	U.S. gallon
Residual Fuel	0.145	U.S. gallon
Asphalt and Road Oil	0.158	U.S. gallon

*RNG is assumed to be pipeline quality gas and equivalent energy content to pipeline natural gas. Raw landfill gas has substantially different energy content per standard cubic foot.

**E85 is assumed to have the energy content of approximately 28% gasoline and 72% ethanol.

Attachment 3

Valley SEQRA Findings Statement

A RESOLUTION OF THE PLANNING BOARD OF THE TOWN OF WAWAYANDA ORANGE COUNTY, NEW YORK, ACCEPTING AND ADOPTING THE FINDINGS STATEMENT IN THE APPLICATION OF THE CPV VALLEY ENERGY CENTER

WHEREAS, the Town of Wawayanda Planning Board is Lead Agency for the SEQRA Review of the CPV Valley Energy Center application; and

WHEREAS, the Town of Wawayanda Planning Board has given due consideration to the DEIS and FEIS, and information derived from other documents, public hearings and meetings during the course of the SEQRA review process; and

WHEREAS, a Findings Statement has been prepared pursuant to and as required by 6 NYC44 Part 617; and

WHEREAS, the Planning Board has reviewed the Findings Statement and the Planning Board and its consultants have determined that the Findings Statement is ready for acceptance and adoption; and

WHEREAS, the Planning Board, upon its independent examination and consultation with its consultants and counsel, has concluded that the Findings Statement is consistent with the social, economic and other essential considerations of the proposed action; considers reasonable alternatives; considers mitigation measures specified in the DEIS and FEIS seeking to avoid or minimize adverse environmental impacts to the maximum extent practicable.

NOW, THEREFORE, BE IT RESOLVED that the Planning Board of the Town of Wawayanda accepts and adopts the Findings Statement of CPV

Valley Energy Center in accordance with the requirements of 6 NYCRR Part 617 and hereby authorizes the filing of same.

DATED: May 23, 2012

Motion by: Barbara Parsons

Seconded by: Daniel Long

Ayes: 7

Nays: 0

Abstentions: 0

Town of Wawayanda Planning Board
State Environmental Quality Review
Findings Statement

This Findings Statement is based on the information contained in the Draft Environmental Impact Statement (DEIS), the Additional Studies, and Final Environmental Impact Statement (FEIS) prepared for the CPV Valley Energy Center Project (Project) (collectively, the EIS Documents) and as set forth below, the independent review of the EIS Documents conducted by the Planning Board and its consultants and advisors. The Project applicant is CPV Valley, LLC (CPV Valley).

The Town of Wawayanda Planning Board (Planning Board) has relied upon the advice, technical review, and counsel of its outside environmental and engineering consultants, McGoey, Hauser & Edsall Consulting Engineers, C.T. Male, ARC Engineering and Construction, George M Janes & Associates, Greenplan and The Hudson Group, and of its outside legal counsel, Bavoso, Plotsky & Onofry. These consultants and counsel have reviewed the EIS Documents and the associated record developed with respect to those documents, and have advised the Planning Board with respect to the identification of environmental and other impacts of the Project, the potential significance of such impacts, and the availability and sufficiency of potential measures to avoid, minimize, and mitigate such impacts to the maximum extent practicable. The Planning Board has conducted its own thorough review of the EIS Documents, the public comments received on the EIS Documents, the record created with respect to the EIS Documents and the results of the consultants' and counsel's review of that record. These Findings are based upon the review of the entire record by the Board, its consultants and its counsel. The Planning Board paid

particular attention to the comments on the DEIS, and placed an emphasis on assuring that substantive comments were addressed in the FEIS and in these Findings.

These Findings are made by the Town of Wawayanda Planning Board acting as Lead Agency pursuant to Article 8 of the Environmental Conservation Law, The State Environmental Quality Review Act and 6 New York Code of Rules and Regulations Part 617.

Lead Agency: Town of Wawayanda Planning Board

Address: Town of Wawayanda

80 Ridgebury Hill Road

Slate Hill, NY 10973

Name of Action: CPV Valley Energy Center Project

Applicant: CPV Valley, LLC

Description of Action: The proposed CPV Valley Energy Center will be located on an approximate 21.25 acre portion of a total 122 acre site parcel of open land in the northeast portion of the Town of Wawayanda. The broader 122 acre site parcel is bounded by Interstate-84 (I-84) to the south, Route 17M on the east, and Route 6 to the north and west. The approximate 21.25 acre development footprint is located in the southwest quadrant of the broader site. The development site parcel is currently undeveloped land used previously for agricultural purposes, including the growing of hay and corn, and wooded areas. There is a private cemetery (Cooley Cemetery) located

on the far northwestern corner of the Project site, which will not be impacted by the Project.

The Project consists of a combined-cycle facility (Facility) capable of generating a peak of approximately 630[1] megawatts (MW) of electricity, although the output of the Facility will vary depending on actual ambient conditions. Approximately 365 MW of this power will be produced using two F Class combustion turbine generator sets. Exhaust heat from the combustion turbines will be sent to heat recovery steam generators (HRSGs) to produce steam to drive a steam turbine generator. The HRSGs will include a natural gas-fired "duct burner" (supplemental firing system). The duct burners will allow for additional electrical production during select periods. Exhaust steam from the steam turbine will be cooled (i.e., condensed) and then returned to the HRSG using an air-cooled condenser. Air-cooled condensing will be employed to minimize water use and eliminate potential cooling tower plume impacts.

For environmental purposes, the Project will be equipped with state-of-the-art emissions control technology; including selective catalytic reduction (SCR) technology to control oxides of nitrogen (NO_x) and an oxidation catalyst to control carbon monoxide (CO) and volatile organic compound (VOC)

[1] CPV Valley, LLC is listed as queue position 251 in the NYISO Interconnection Queue and has a maximum summer output ("SP (MW)") rating of 678 MW. The output of the facility varies depending on weather conditions. The 678 MW output represents the facility's maximum summer net output @ 85°F.

emissions. To control the NO_x emissions from the Facility, the combustion turbines also will be equipped with an advanced dry low NO_x combustion system. The dry low NO_x combustion system will limit NO_x formation by controlling the combustion process through optimization of the air and fuel mixture. When the combustion turbines are operating on ultra-low sulfur light distillate oil, water injection will also be used to control NO_x emissions. The CO emissions from the combustion turbines (and duct burners) will be reduced using an oxidation catalyst (also referred to as a CO catalyst). Exhaust gases from the turbines will be passed over a catalyst bed where excess air oxidizes the CO to carbon dioxide (CO_2).

Natural gas will be used as the primary fuel with ultra-low sulfur distillate oil serving as a back-up fuel for reliability purposes. Use of the back-up fuel will be limited to the equivalent of 720 hours per year, per turbine, so that the Facility can reliably support the electrical system in the event that natural gas supplies are needed to meet residential heating or other demands. To accommodate short-term operation on ultra-low sulfur distillate oil, the proposed Project will include a 965,000 gallon fuel oil storage tank and associated off-loading facilities.

The Project will interconnect with the New York Power Authority's (NYPA) 345-kilovolt (kV) transmission system, which is located less than 1 mile north of the Project site. The Facility's new 345 kV gas insulated switchgear (GIS)

switchyard will be located adjacent to the NYPA transmission lines. In addition to the electrical substation facilities to be located adjacent to the NYPA transmission lines, the electrical interconnection will include underground transmission lines that will extend easterly along the Project site parallel to I-84 towards Route 17M. At the eastern portion of the site, the underground transmission line route will turn and extend north paralleling Route 17M in the New York State Department of Transportation (NYSDOT) Route 17M right-of-way.

Process water requirements for the Facility will be met through use of treated effluent from the City of Middletown Sewage Treatment Plant. Treated effluent currently discharged to the Wallkill River will be filtered and chlorinated for reuse as process makeup water. Process water discharge will be conveyed back to the City of Middletown Sewage Treatment Plant. Potable water will be obtained through an interconnection to the municipal system along Route 6.

Location: Town of Wawayanda, Orange County, NY

Jurisdiction: Special Use Permit and Site Plan Review

Contact: Barbara Parsons, Planning Board Chairperson

80 Ridgebury Hill Road

Slate Hill, NY 10973

Date FEIS Filed: February 8, 2012

Procedural Summary

On March 10, 2008 a Full Environmental Assessment Form (EAF) addressing the proposed power generation Project was submitted by CPV Valley, LLC to the Planning Board. The formal submittal of the EAF initiated the SEQRA process for the subject action. A solicitation of Lead Agency status was forwarded to involved agencies by the Wawayanda Planning Board on May 8, 2009. On June 11, 2008, the Planning Board formally assumed the role of Lead Agency, and, in that role, issued a positive declaration on June 25, 2008 requiring the preparation of a DEIS.

On October 8, 2008, the EIS Scope was approved by the Planning Board. The DEIS was submitted to the Planning Board on November 18, 2008. After review by the Planning Board and its consultants, any revision to address their comments, the DEIS was accepted as complete on February 23, 2009. Upon acceptance of the DEIS, copies of that document (along with a copy of the public notice) were distributed to all interested and involved agencies and made available to the public at the Town of Wawayanda Town Hall, Goshen Library and Historical Society, City of Middletown, Middletown Thrall Library and the Wallkill Town Hall. The entire DEIS was posted to the Project website (www.cpvvalley.com) and a link provided on the Town of Wawayanda's website (www.townofwawayanda.com) to facilitate public review and comment on the document. The public comment period ran from February 23, 2009 to April 22, 2009, and was subsequently extended through May 14, 2009. A public hearing was held by the Planning Board in its capacity as Lead Agency at the Wawayanda Town Hall on April 8, 2009.

To provide greater detail regarding specific aspects of the Project, some additional studies were performed at the request of the Planning Board. The studies included seasonally dependent ecological field surveys, a more detailed visual impact assessment of the above ground electric transmission lines, and preparation of a technical memorandum on the visible plume analysis and secondary formation of fine particulate matter ($PM_{2.5}$), which responded to specific comments on the DEIS (Additional Studies). The Additional Studies were documented in the following reports:

- *Spring and Summer 2009 Ecological Field Survey Report*, which provides the results and assessment of the seasonally dependent ecological surveys;

- Technical Memoranda regarding comments on the Visible Plume and Secondary Formation of Fine Particulate Matter ($PM_{2.5}$); and

- Technical Memorandum regarding the visual assessment further analyzing the impacts of the above ground electric transmission line.

The Additional Studies were submitted to the Planning Board, and the Planning Board held a public comment period on the Additional Studies from March 8, 2010 through March 22, 2010. A Responsiveness Summary was subsequently prepared as part of the FEIS to address all substantive comments received on the DEIS (Section 4 of the FEIS) and the Additional Studies (Section 5 of the FEIS).

A proposed FEIS was prepared initially by CPV Valley. The proposed FEIS was reviewed by the Planning Board and its consultants. The FEIS was revised and ultimately accepted as

complete by the Planning Board on February 8, 2012, and thereafter noticed, filed and distributed as required under 6 NYCRR Section 617.12.

Facts and Conclusions Relied Upon To Support Decision

The EIS Documents fully describe the Project, its environmental setting, and its potential environmental impacts, including a summary of permits and approvals, as presented in Section 1.5 of the DEIS. The EIS Documents also demonstrate the public need for the Project and the socioeconomic benefits that it will provide, which benefits include, among others approximately 660 construction jobs, 25-30 direct jobs during operation, and a new source of revenue for the community and state through the construction and operation of the Project. The Planning board believes that the benefits to the Town serve to balance the identified adverse environmental impacts associated with the Project, all of which have been minimized to the maximum extent practicable.

The EIS Documents identify both significant and minor adverse environmental impacts resulting from the Project. They also comprehensively discuss alternatives to the Project and measures that could avoid, minimize, or mitigate identified significant adverse environmental impacts. The Planning Board has identified measures that will ensure that environmental impacts of the Project are minimized to the maximum extent practicable. The measures are detailed in this Findings Statement, consistent with the requirements of Part 617.11 (Findings Statement).

The Planning Board recognizes the subjective nature of individual perspectives regarding potential impacts from the Project. The Planning Board and its consultants have given careful consideration to these perspectives, and spent many hours reviewing the potential impacts of the Project. The Planning Board has done so with an open mind, consistent with its obligations to assure compliance with applicable laws and regulations and to protect the interests of residents of Wawayanda, and with its broader responsibility as SEQRA lead agency.

The potential environmental impacts reviewed in the SEQRA process are summarized by topic herein. Each section presents a summary of potential significant environmental impacts, the required mitigation, and the Planning Board's related findings. As appropriate, potential environmental impacts both from the construction and operation of the Facility are addressed separately, as are the associated mitigation measures.

Purpose & Need

The Project is consistent with several of the policy objectives set forth in the 2009 New York State Energy Plan. This Plan, which is the most recent State Energy Plan, states the following five (5) policy objectives:

1. Assure that New York has reliable energy and transportation systems;

2. Support energy and transportation systems that enable the State to significantly reduce greenhouse gas emissions;

3. Address affordability concerns of residents and business caused by rising energy bills, and improve the State's economic competitiveness;

4. Reduce health and environmental risks associated with the production of energy; and

5. Improve the State's energy independence by developing in-state energy supply resources.[2]

The Energy Plan further states *"[p]roduction and use of in-state energy resources – renewable resources and natural gas – can increase the reliability and security of our energy systems, reduce energy costs and contribute to meeting climate change, public health and environmental objectives."* [3]

The addition of the Project to the generation resources of New York will enhance electric system reliability as well as increase the fuel diversity in the region. As a combined-cycle facility, the Project will be one of the most efficient methods of generating dispatchable electricity. The high efficiency of combined-cycle technology equates to less fuel consumed to produce electricity, and therefore, less emissions. The efficiency of combined-cycle technology along with the clean burning nature of natural gas provides significant reductions in greenhouse gas emissions[4] when compared to existing alternative generation

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[2] 2009 New York State Energy Plan, p. *xiii*

[3] *Id.*at p. *xiv*

[4] On April 21, 2009, the NY ISO issued a press release entitled *"Power Plant Emission Rates Improve: Double-Digit Decline in Past Decade"* This document, describes the increased efficiency of power plants as the root of the significant reductions in greenhouse gas and other pollutant emission rates in New York State. Over the ten

(Footnote continued on next page)

resources in the state, and more specifically, in the NYISO's Zone G. The Project's combined-cycle technology along with the clean burning natural gas fuel is another step towards improving New York's health and reducing environmental impacts associated with power generation.

The NYISO has confirmed that the expansion of natural gas combined-cycle power generation facilities has improved New York's air quality while reducing overall costs for the consumer[5]. The CPV Valley Energy Center will continue this trend of improved air quality and benefits to the public.

The location of the proposed Project is consistent with the State's Energy Plan to increase in-state generation and energy independence. Further, the NYISO's CARIS[6] process

year period from 1999 to 2008, SO_2 rates have dropped 77%, CO_2 rates 28%, and NO_X rates 61%. Combined cycle, natural gas facilities are by far the most efficient of the fossil fuels at generating power, and as the press release points out, "...the lower the heat rate the less fuel is required to produce the same amount of electricity.", resulting in lower emissions.
http://www.nyiso.com/public/webdocs/newsroom/press_releases/2009/Power_Plant_Emission_Rates_Improve_04212009.pdf

[5] On May 12, 2009, the NY ISO issued a press release entitled *"Wholesale Electricity Prices Drop Again: Wholesale energy price in April at a level not seen since 2002"*This document credits the more efficient natural gas facilities that have been added to the fleet for driving down wholesale energy prices. "The prices of wholesale electric energy in New York State have dropped to their lowest level since 2002..." Over a ten year period, 1999 to 2008, the system-wide heat rate has improved 21% due to the addition of the efficient fossil-fueled facilities. NYISO President and CEO Stephen G. Whitley was quoted as saying "While the latest drop in energy prices is largely attributable to lower natural gas costs, New York also has a much more efficient fleet of power plants today. Natural gas prices may go back up, but the efficiency improvements will not disappear." The economic, environmental, and reliability benefits for a natural gas facility are unlike any other power generation technology.http://www.nyiso.com/public/webdocs/newsroom/press_releases/2009/NYISO_Wholesale_Electricity_Prices_Drop_Again_05122009.pdf

[6] The NYISO released the *"2009 Congestion Assessment and Relief Integration Study, CARIS-Phase 1"*. This study evaluated the impacts of adding various resource types on the projected congestion costs from 2009 to 2018. In the study, the congestion costs for three regions of the transmission system were calculated for the ten years period. Then, the additions of generic resources were added to those regions to determine the impact on congestion costs. The analysis concluded that the addition of a generic 500MW combined-cycle in the Hudson Valley region, which includes Zone G, would provide significant congestion cost benefits. Of the three regions evaluated, the Hudson Valley region was projected to experience the greatest amount of congestion costs

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concluded that the addition of new resources located in the Hudson Valley region, which includes Zone G, would provide congestion relief and could provide economic benefits to the consumers[7]. The Project is located in Zone G.

The Project represents a significant capital investment in New York that will stimulate the local economy through construction and operational job creation. As more fully described in Section 7.4 of the DEIS, the economic stimulus provided by the Project once in operation is in excess of $23 million annually. In addition, the Project is estimated to provide an average of $2.35 million annually in additional revenues to the Town of Wawayanda, the local school district, the local fire district and Orange County through payments in lieu of taxes and other host community payments.

A. Land Use and Zoning

The CPV Valley Energy Center would be located on an approximate 21.25 acre portion of the total 122 acres of site parcel in the northeast portion of the Town of Wawayanda and approximately 0.4 miles to the boundary with the City of Middletown. The land is currently vacant and bounded by an interstate highway (I-84) and New York State roadways (Route 6 and Route 17M). It is also adjacent to a clover-leaf exit off I-84 with Route 17M. Approximately 7.0 additional acres of land within the 122 acre site parcel would be temporarily used during construction for materials lay down, equipment storage and

(estimated at $1.3 billion) over the 10-year study period. The study estimated that the location of 500 MW of combined-cycle generation in this region would create $346 million (net present value) of production cost savings.

[7] Subsequent to the FEIS being accepted as complete, the NYISO released the "*2011 Congestion Assessment and Resource Integration Study, CARIS-Phase 1*". Although analysis of this document is not included in the SEQRA record, the conclusions in the new report are consistent with those provided in the 2009 version of the report.

construction parking. The primary land use management law applicable to the Project is the Town of Wawayanda's Zoning Code. Other applicable laws and regulations include the State's Agricultural Districts Law and the Environmental Quality Review Act (SEQRA) regulations governing the designation of the Critical Environmental Areas. In addition, the City of Middletown's Zoning Ordinance will apply to the portions of the Project's electrical, process water supply, and water discharge interconnection that are located within the City.

From a land use development perspective, the CPV Valley Energy Center will occupy approximately 21.25 acres within the large 122 acre parcel. The majority of the tract on the site currently used for agricultural purposes is located within the 21.25 acre development footprint. As a result, the agricultural use will be displaced by the Project development.

The 21.25 acre development footprint is located in the southwest quadrant of the 122 acre site area. The I-84 limited access highway forms a boundary edge between the Project and open space to the south. The two lane Route 6 arterial roadway forms a similar boundary edge to the north and west. In an easterly and northeasterly direction, the areas of the site that are outside the development footprint serve as a physical buffer providing a degree of separation between the proposed physical plant from off-site land uses. Route 17-M, a four lane arterial roadway, forms the easterly edge of the broader Facility site. Highway commercial oriented land uses dominate development along Route 17M. The Facility as an industrial activity will not have any adverse impact to the highway commercial land uses.

Horizons at Wawayanda abuts the Project site to the northeast. The location of the Facility physical development in the southwest portion of the 122 acre site provides a significant

physical separation from the Horizons complex consisting of primarily tree cover along with some open crop land. Four single-family residences are located on the section of Route 6 that forms the northern boundary of the 122 acre site. One of the residences is located on the south side of Route 6. The land use setting of this residence to the south currently consists of agricultural use and open space. This setting will change with development of the energy facility. Through selective tree plantings, development of a landscaped buffer area will be incorporated.

Single-family residences located on Kirbytown Road to the north of the site have areas of tree buffer of varying density and linear thickness leading to Route 6. This tree cover and the Route 6 arterial roadway physically separate the energy facility from the Kirbytown residences. As a result of the physical separation and tree cover, the energy facility does not represent a direct physical disruption to the neighborhood appearance or functioning.

The CPV Valley Energy Facility will require construction of an electrical interconnection to the NYPA transmission lines, located less than one mile north of the site. The transmission line will be underground from the Project to the NYPA transmission lines. From the western edge of the site to the NYPA lines, the transmission lines will be underground within the unpaved portion of the Route 17M right-of-way. No permanent impacts to existing highways or commercial land uses will result from operation of the underground line.

Off site construction trenching activities of the underground electrical conduit will be relatively short in duration and would not be expected to result in significant adverse impacts to nearby land uses due to their temporary nature.

Construction of the electrical interconnect would result in some currently vacant land on-site and commercial land off-site being converted to industrial/utility use. Impacts associated with the construction of the approximate 0.9 mile utility interconnect easement would include conversion of undeveloped and forested land to a cleared 20 foot wide permanent right-of-way, although the existing ecological communities will be maintained. A total of approximately 1,450 feet of underground electrical interconnect would be installed offsite mainly in the roadway shoulder of Route 17M, with a portion south of and then north of its intersection with Route 6.

Operation of the Project would be compatible with the existing and proposed land uses within the 1-mile radius study area. Given the agricultural and open space use of the 122 acre site, no displacement of current physical land use development will result from development of the CPV Valley Energy Center.

Operation of the electrical interconnect also would be compatible with existing and proposed land uses within the 1-mile radius study area, as well as the broader region. Once constructed, the underground electrical transmission line and the water supply/wastewater pipelines will have no impacts to off-site land use development.

Through selective tree plantings on the Project site, a landscaped buffer will be constructed to minimize visual impacts of the Project on viewpoints north of the Site, along Route 6. Due to the minimal nature of impacts to nearby land uses, no specific mitigation measures are suggested for the electrical interconnect and water supply/wastewater pipelines.

B. Cultural Resources

The potential impacts on cultural resources from the construction and operation of the Project are analyzed and discussed in the EIS Documents. The impact analysis was carried out in accordance with the standards and methods contained in *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*, published by the New York Archaeological Council in 1994. The New York Office of Parks, Recreation and Historic Preservation (OPRHP), which acts as the State Historic Preservation Office (SHPO) for the State of New York, was consulted throughout the process for both guidance and concurrence.

A Phase IA and IB archaeological survey was conducted on the proposed construction impact areas of the Project site in an effort to determine if there would be a potential impact to any cultural resources eligible for inclusion in the National Register of Historic Places (NRHP).

In addition, an architectural survey, consisting of a literature search and field verification of historic resources—buildings, structures, objects, districts, and sites—50 years or older was conducted within a 1/2-mile radius, defined as the Area of Potential Effect (APE) of the Project site. The objective of these surveys was to identify historic resources listed in, determined eligible for listing, or potentially eligible for listing in the NRHP; to provide evaluations of NRHP eligibility for the surveyed resources based on the NRHP Criteria for historic significance and integrity; and to provide assessments of direct and indirect (primarily noise and visual) effects to historic resources from the Facility.

A Phase IA/IB Cultural Resource Report was submitted to the OPRHP on October 31, 2008. The Report concluded that the archaeological deposits encountered are not eligible for the National Register of Historic Places. The OPRHP responded in a letter dated December 23, 2008 concurring with the Report's findings, but recommended additional Phase 2 testing at two sites. Upon further discussion with the OPRHP reviewer, Mr. Doug Mackey, it was agreed that Phase 2 testing on the two sites would not be needed if additional shovel tests were conducted in and around the clusters of artifacts at the sites that could confirm no concentrations of subsurface artifacts in those areas.

As recommended by the OPRHP, additional field shovel testing was conducted in September, 2009 at two small areas on the Project site (A07119.000197 and A07119.000198). Consistent with the previous conclusions, these additional investigations did not identify any significant archeological resources on the Project site. The results of the September 2009 field work were submitted to the OPRHP for concurrence with the findings and determination of No Adverse Impact upon properties eligible for inclusion in the State or National Register of Historic Places. The OPRHP concurred with the conclusion, and has determined that the Project will have No Adverse Impact upon properties (historic and archeological) listed in or eligible for inclusion in the State or National Register of Historic Places as stated in their letter dated November 5, 2009.

By letter dated November 4, 2011, CPV provided the OPRHP a summary of Project refinements that evolved as a result of the SEQRA and permitting processes. These include the electric interconnection (addition of the GIS building) and process water supply/return

routing alternatives (see Appendix 7B of the FEIS). The OPRHP's response dated December 13, 2011 requested more detailed information along the proposed water supply/return routing alternatives that are proposed to be located within roadway right-of-way corridors to document existing conditions and assess the potential for intact deposits to remain along these road right-of-way corridors. For any areas where the full depth of disturbance cannot be verified, additional testing may be required to help verify disturbance.

By letter dated January 9, 2012, CPV committed to provide additional information and to carry out supplemental cultural resources investigation of the routing options (or if selected the preferred options) along the Route 17M right-of-way and Dolsontown Road right-of-way. The objective will be to ascertain the extent of previous ground disturbance in the areas proposed to be utilized for the routing alternatives to determine whether installation of the water line has the potential to impact archeological resources. The work will consist of a walk-over of each route alternative, collection of street-view photographs to document disturbance along the routes, and, in areas where disturbance is not apparent, manual shovel tests to document soil profiles. Field observations will be reported in a letter to OPRHP, with a copy of the results also provided to the Town of Wawayanda. CPV Valley will complete this supplemental investigation prior to commencing construction of the water lines.

By letter dated February 1, 2012 the OPRHP stated that they have no objections to this approach or to the SEQRA process being allowed to proceed with the understanding that

such testing in advance of any actual construction be made a condition of any SEQRA finding or New York State Department of Environmental Conservation (NYSDEC) permit.

Based on prior reports and contingent upon the specific results of the supplemental investigation, it is not anticipated that there will be any impacts to NRHP-listed or eligible cultural resources as a result of construction and operation of the Project; therefore, no additional mitigation is necessary. If any changes are made to the Project, additional consultations with OPRHP may be necessary.

C. Visual Resources and Aesthetics

The most prominent features of the overall appearance of the CPV Valley Energy Center are the two exhaust stacks, air cooled condenser, and the generation building. The generation building would house the combustion turbine generators and the Heat Recovery Steam Generators (HRSG). The tallest structure will be the two exhaust stacks with a height of approximately 275 feet above grade. The highest portion of the generation building will be 113 feet above grade. The air-cooled condenser will have a height of approximately 115 feet above grade. The Project will also incorporate a 1,000,000 gallon combination raw water/fire water storage tank, a 400,000 gallon demineralized water storage tank, and a 965,000-gallon fuel storage tank and associated off-loading facilities, transfer piping, and pump systems. The Facility's combined raw and fire water storage tank will be 40 feet tall and the fuel storage tank will be 48 feet tall. The demineralized water storage tank will be 22 feet tall. Ancillary facilities, such as fuel gas compressor, maintenance building, and a

combustion turbine inlet filter would be smaller and less prominent than the aforementioned structures.

Neutral coloring will be used for project building structures. Landscaping is proposed for key vantage points on the development parcel. The Facility lighting plan is designed to meet operational requirements while minimizing to the extent possible offsite visibility. The two exhaust stacks will be lighted to meet Federal Aviation Administration (FAA) requirements. Considerations such as color, landscaping and lighting will be addressed in detail during the site plan review conducted by the Planning Board.

Visual impacts of the Project's electrical interconnect to the 345 kilovolt (kV) NYPA Marcy South system, located less than 1 mile from the site to the northeast have been avoided by placing the electric transmission lines underground from the Facility, to the point of interconnection. The GIS building will be an enclosed structure, similar in character to existing nearby structures. With a height of approximately 55 feet, the GIS building does represent a new element in the area viewshed, however, the NYPA Marcy South transmission structures represent the dominate viewshed feature.

The visual impact assessment (VIA) performed for the Project identified potential viewpoints within a 5 mile radius of the Project site for which viewshed analyses were performed, along with impact assessments and mitigation analyses. In addition, an analysis of potential stack plume visibility was also performed. Visual impact was assessed in terms of the anticipated change in visual resources, including whether there would be a change in character or quality of the view.

The analysis performed for this Project used the technical concepts and methods contained in the NYSDEC program policy entitled "Assessing and Mitigating Visual Impacts" for evaluating visual and aesthetic impacts generated from proposed facilities.

The visual impact assessment for this Project was performed using two methodologies: 1) viewshed analysis and 2) realistic photo-renderings (photosimulations). A viewshed analysis is a Geographic Information System analytical technique that allows one to determine if and where an object, such as a generating facility, is potentially visible within the visual study area. The results of the viewshed analyses are typically displayed over a USGS topographic quadrangle or aerial photograph. Photosimulations are prepared to obtain the best possible visual representation of the proposed Project in terms of size and scale within the landscape, and assist in evaluating the potential visual impact from a given vantage point. These assessments are contained in the EIS Documents.

Representative viewpoints were selected for photosimulations. The process for selecting the viewpoints for photosimulations included: 1) identification of existing visual resources within the 5-mile study area surrounding the Project site (as described in Section 5.2.3 of the DEIS); 2) determination of potential project visibility from each location identified; and 3) evaluation of potential project visibility for sensitive viewing areas and locations of representative viewer groups in the Project vicinity in accordance with the NYSDEC visual policy.

Existing visual resources and potential viewpoints identified within the Project study area included historic sites, recreational resources, residential communities, major roadways, and other areas identified by the Planning Board.

The CPV Valley Energy Center has been designed in such a way to minimize visual impacts. However, the Project will create a new visual element to the existing landscape. As previously stated, the most prominent structures associated with the Project are the two exhaust stacks; air cooled condenser, and the generation building. The tallest structure will be the two exhaust stacks with a height of approximately 275 feet above grade.

The Project will interconnect to the 345 kilovolt (kV) NYPA Marcy South system, located less than 1 mile from the site to the northeast. The interconnection would be made via a newly constructed, enclosed 345 kV GIS substation located adjacent to the existing NYPA transmission lines. The transmission line connecting the Project to the new substation will be located underground within the right-of-way of Route 17M.

The results of the viewshed analysis and field survey show that the areas with the greatest potential for views of the Project will be open areas in low lying locations and those at higher elevations where views of the site are not obscured by hills and vegetation. Views from parks, schools, and other sensitive receptors considered in the study would be very limited as a result of dense tree cover and intervening topography.

The CPV Valley Energy Center will create a new visual element in the landscape from certain viewpoints. Places where the Facility will appear large in relation to the landscape are

limited to those located very close to the site along major roadways (i.e., I-84 and Route 6) where motorists would view the Project for short periods of time while traveling. Due to the short term nature of this view by motorists, this impact is not considered to be significant.

The vapor plume from the two exhaust stacks will add to the vertical visual impact of the Facility during limited periods when temperature, relative humidity and wind speed are conducive to plume formation. The vapor plume will be a wispy light cloudy type of visual element occurring approximately 13.2 percent of the daylight hours (See Section 3.4 and appendix 3A of the FEIS). At all other times there would be no visible plume seen from the stacks. When the plume is visible, it can increase the Project's impact on visual resources, since the acuity of the human eye will notice the plume's movement and draw attention to the Project.

The Project has implemented a number of techniques to avoid and minimize off-site visual impacts. The techniques are consistent with the visual impact avoidance and mitigation tools recommended for consideration under NYSDEC's visual resources policy. These include design and siting; alternative cooling technologies; changes to the profile or size of the Facility; on-site screening and landscaping; coloring and texture of materials; maintenance during operation. In addition, the Project design also includes enclosing much of the Facility components inside buildings; minimizing stack height based on air discharge analysis; preserving the natural vegetation to the extent practicable and implementing a lighting plan that complies with Dark Sky standards and incorporates red lighting on the stacks to minimize impacts to the surrounding communities and roadways.

The CPV Valley Energy Center is sited and designed in such a way to minimize visual impacts to the maximum extent practicable. Locating the Facility at the southern center portion of the Project site was preferred as it placed the proposed Facility proximate to nearby Route 6 and I-84 and proposed and existing commercial properties along the Route 6 corridor, thereby providing for a continuation of the orderly development of the Project area by avoiding a fragmented development condition, and also providing maximum buffer from nearby visual receptors, thereby mitigating potential impacts. The air-cooling design was chosen over a wet-cooling design for a number of reasons, including its elimination of cooling tower plumes. The air-cooled condenser (ACC) height was minimized so as not to increase the height of the stacks. Preliminary modeling considered stack heights of up to 325 feet based on Good Engineering Practice stack height associated with an initial Facility design. Project design changes, including the reduction in the height of the air cooled condenser to 115 feet, reduced the Good Engineering Practice stack height to 287.5 feet. The final stack height of 275 feet for the combustion turbines was selected based on dispersion modeling that showed that this height was adequate to largely avoid increases in predicted air quality impacts that can result from the effects of building induced downwash on stacks that are below Good Engineering Practice stack height.

The electric transmission lines required to connect the Project to the existing transmission infrastructure were originally proposed to be above ground within the Project site, but based on the Planning Board's evaluation of underground alternatives, those lines are being placed underground to avoid the visual impacts associated with towers and wires of an

aboveground electrical interconnection. This change to the Project after acceptance of the DEIS responds to and resolves a number of comments on the DEIS.

The proposed Landscaping Plan is intended to enhance the appearance and natural beauty of the property, and to provide visual buffering for the surrounding areas. Various small sections of the entrance to the Project site will be graded and seeded after construction. Approximately 7.0 acres of land will be temporarily used as equipment and construction materials laydown and parking during construction. This land, as well as other land to be left as buffer outside the Facility fence line after construction will be restored to its current open space use after construction.

The existing natural vegetation, which provides large buffer areas surrounding the Facility, and proposed landscaping will help shield full views of the Facility from off site locations. Other landscaping plans include adding trees and shrubs at select areas on the site. These landscaping areas will be protected by protective barriers, curbs, or other damage control measures and from storm water runoff. The Project will incorporate measures to protect landscaping and vegetation adjacent to parking areas, loading areas and driveways. To the maximum practical extent and where applicable, mature shade trees, vegetation, and unique site features such as stone walls will be preserved. The applicant will be required to implement the final landscaping plan, and this requirement will be incorporated as an enforceable permit condition as part of the Site Plan and Special Use Permit Approval.

The buildings (i.e., doors, siding, etc.) will be painted a neutral beige color to mitigate visibility. The steel stack will be painted a neutral gray tone to complement the generation

building. Non-reflective materials will be specified, to further soften the Facility appearance and minimize the potential for glare.

Normal lighting and emergency temporary lighting customary for these types of installations will be provided throughout the Facility. The Project's proposed lighting design will minimize off-site impacts, while providing sufficient lighting to ensure worker safety during routine operations and maintenance. The site lighting will be designed according to the latest edition of the Illuminating Engineering Society (IES) Lighting Handbook and the International Dark Sky guidelines.

An FAA Determination of No Hazard to Air Navigation is required for the CPV Valley Energy Center because the stack height would be greater than 200 feet. Stack lighting will be in accordance with FAA advisory circular No. 70/7460-2 called Obstruction Marking and Lighting, a med-duel system – Chapters 4, 8 (M-Duel), &12. The FAA allows several options for the type of lighting and stack marking. The options include for example: Red Obstruction Lights, Medium Intensity Flashing White Obstruction Lights, High Intensity Flashing White Lights, Dual Lighting (red lighting for nighttime and high or medium intensity white lighting for day time and twilight). Red lighting will be used at night to mark the stacks, so as to reduce any potential impacts associated with white lights shining into homes during nighttime hours. Based on communication with FAA representatives, the red lighting for night time is typically preferred by surrounding residents and the public in general (compared to white lighting).

D. Community Services

This section discusses the Project's potential impacts to local community services, such as the school systems, transportation and emergency response services. Each community function was examined for possible impact on service and capital outlay demands. Particular attention and focus was paid to transportation/highway and emergency services, including police protection, fire, and emergency medical services. The primary service providers of community services were contacted in an effort to determine their capacity to serve and respond to the proposed Project. For each relevant community service, when necessary, an analysis was performed to assess potential impacts of the Project including any suitable mitigation measures.

Police services are provided by New York State Troopers, Troop F.

The closest fire departments to the Project are the New Hampton Fire Company (1 mile east of the Project, in Wawayanda), the Slate Hill Fire Department (2.6 miles southwest of the Project, in Slate Hill), and the City of Middletown Fire Department (2.7 miles northeast of the Project, in Middletown).

The Project's primary structures are located within the New Hampton Fire Company district, which is the closest fire department to the Project. The New Hampton Fire company is located at 5024 Route 17M in New Hampton, NY and provides fire and rescue type calls. The New Hampton Fire Company has three cars, two engines and one 3,500 gallon tanker.

The Facility is proposed to be located in the Minisink Valley Central School District. The Minisink Valley Central District has five public schools including: one high school, one middle school, one intermediate school, and two elementary schools (Town of Wawayanda, 2008). The district comprises approximately 4,700 students. The nearest school to the Project is a private school, Our Lady of Mount Carmel Elementary School. It is located on Wawayanda Avenue in Wallkill, approximately 1.3 miles north of the Project. Our Lady of Mount Carmel Elementary covers pre-kindergarten to eighth grade and has a total of 216 students. The nearest public school is the Truman Moon Elementary School, located at 53 Bedford Avenue in Middletown, approximately 1.9 miles northeast of the Project. The Truman Moon Elementary School is a primary center of approximately 400 students in kindergarten and first grade and is part of the Middletown City School District.

Hospital services in Orange County, and specifically in the vicinity of the Project, are provided by the Orange Regional Medical Center, located on East Main Street in the Town of Wallkill. Other hospitals include Saint Luke's Cornwall Hospital with campuses in Cornwall and Newburgh for a combined 183 staffed beds; Bon Secours Community Hospital in Port Jervis with 183 staffed beds; and Saint Anthony Community Hospital in Warwick with 73 staffed beds (AHD, 2008). Currently, the nearest hospital to the Project is the Orange Regional Medical Center's Horton Campus, approximately 2.7 miles northeast of the Project site.

There are no houses of worship within 1 mile of the Project site. The nearest houses of worship are the Middletown Islamic Center; located 1.1 miles East of the site, Our Lady of

Mount Carmel Catholic Church; located 1.3 miles directly north of the Project site, at 90 Eculid Avenue in Middletown, and Middletown Alliance, also located about 1.3 miles from the site to the North. Both facilities are located in Wallkill.

The construction of the CPV Valley Energy Center is expected to generate approximately 660 temporary construction jobs and 25 permanent operations jobs. Considering a worst case in which the total of 660 temporary positions were filled by workers from outside the current service area of New York State Police Troop F, the influx of project workers would represent a less than 0.07 percent increase in the population currently served by Troop F. In addition, the Project will have private security during construction, thereby requiring minimal to no police services.

Once constructed, the perimeter of the Project site will be secured with a chain link fence, sliding gates and surveillance equipment so as to permit only authorized access to the facility's service drive, structures and operations. One gate would provide access into the Project site, thereby restricting access to this area. The gate will be locked at all times with access provided by Facility personnel. The Facility security will be controlled by the Facility's operators in the control room 24 hours per day, 7 days per week, 365 days per year. All site security personnel would be equipped with communication equipment to maintain contact with construction and operations management personnel and/or the New York State Police Troop F and the New Hampton Fire, Rescue, and Emergency Services. Accordingly, any increase in the demand for police services resulting from construction and operation of the Project would be negligible.

The Facility would be equipped with fire supression systems as well as emergency fire protection backup pumping capacity. The 1,000,000 gallon raw water/fire water storage tank, of which 500,000 gallons are dedicated solely for fire protection purposes, would provide additional capacity for emergency fire fighting use. The remaining balance (up to 500,000 gallons) will be used for Facility process water, and if required, can be used for fire protection. The fire supression systems would be used only during emergencies or during periodic testing of emergency systems, as required. The use of the raw water tank would allow the Project to avoid impacting the local water distribution system for fire protection.

It is not anticipated that the Project would result in significant impacts related to fire and emergency services as the Project has been designed to provide a high level of safety and redundancy and to meet all National Fire Protection Association (NFPA), state, and local requirements. CPV Valley intends to have its Facility personnel trained as an on-site fire brigade, working cooperatively with the fire department, to function as the first line of defense in the event of a fire at the Facility. As part of this training effort, a safety orientation program and fire response plan will be in place during Project construction and operation. A Preliminary Emergency Response Plan has been established, and prior to the commencement of Project construction and operation, CPV Valley will be required, as part of the Site Plan and Special Use Permit approval, to finalize the Emergency Response Plan in consultation with the Town. Based on operational experience of similar type facilities, incidence of fire is remote due to the combination of fire protection systems incorporated in the design of the facility and operator training. The trained operating personnel on site familiar with fire safety and the on-site dedicated fire water storage help mitigate potential

cost impacts to fire and emergency services in the area. Emergency medical services are available via the hospitals and any costs of such ambulance or hospital services would be addressed by the individual users and therefore would not result in added costs to the municipality.

Consultation with the New Hampton Fire Company will continue throughout the Site Plan process and the design of the facility's fire protection system so as to address and mitigate potential impacts that may be identified. In addition, this consultation with the New Hampton Fire Company will continue through the operation phase to facilitate communication of emergency protocols, coordination of safety programs, review material storage locations on site, etc.

Due to the limited number of operational employees (approximately 25), the proposed Facility will not result in the placement of a significant number of additional students in local schools or impact the ability of local religious institutions to serve their community.

The number of construction workers and employees do not represent a significant increase in the population served by the closest hospital; therefore, the Project is not expected to impact the hospital's resources.

Although construction and operation of the Project is not expected to bring a measurable number of additional school-age children into the districts, when completed the CPV Valley Energy Center will represent a long-term source of incremental revenue for the Town of

Wawayanda and the Minisink Valley Central School District through a Payment in Lieu of Taxes (PILOT) agreement with the Orange County Industrial Development Agency (IDA).

Distributions of a percentage of the PILOT payments to the Minisink Valley Central School District will not impact school aid that the school district receives from the state. The PILOT arrangement through the IDA will allow the school district to realize its percentage distribution of the PILOT payments in addition to the school aid the district currently receives. This financial benefit without any significant increase in students resulting from the Project provides a positive economic impact for the school district. In addition, the Town of Wawayanda will also receive a percentage distribution of the PILOT payments.

E. Socioeconomics and Environmental Justice

This section assesses direct and indirect social and economic effects associated with the construction and operation of the Project, including an evaluation of the local and regional socioeconomic impacts and benefits of the construction and operation of the Project. An Environmental Justice (EJ) Analysis, which addresses potential impacts to low-income and minority populations, is contained in the EIS Documents. Based on the EIS Documents, the Planning Board's findings are that positive socioeconomic impacts will result from the project with no adverse EJ impacts.

The Project will have both direct and indirect positive economic effects on the state, town, county, and school district. These effects will commence during construction and continue throughout the operating life of the Project. The Project will result in an estimated capital

investment of approximately $900 million for the development and construction of the Facility. In the short term, benefits will include additional employment and expenditures associated with construction of the Project. It is expected that the Project would require approximately 660 employees during the peak construction months, and approximately 300 construction employees on average. Construction is expected to be completed within an estimated 26 to 29-month timeframe. It is expected that the peak construction period would last approximately four to five months. It is anticipated that the required construction labor force for the Project would be readily met with the available trades and union workforce in Orange County. In the long term, the operating Project will represent a source of additional revenue or local jurisdictions through a Payment in Lieu of Taxes (PILOT) agreement, purchases of goods and services, and the Host Community Agreement (HCA). The Project will also provide about 25 fulltime permanent jobs once the Facility is completed. All of these results should have a beneficial effect on local community and businesses.

In addition to the jobs created during construction and the wages paid to the work force, this Project is expected to have an indirect impact on the local economy through the purchase of goods and services, which will support local businesses and perhaps result in the creation of additional new jobs. An input-output (I/O) methodology model was used to determine the economic and fiscal impacts of the Project on the regional economy. The analysis was included in the DEIS and estimated that the Project's direct positive impact on Orange County and New York will result in total output of $466.5 million in the state of New York, of which $393.9 million will occur within Orange County, based on

the then current project costs, which have increased since that time. This means that these values would be greater when the project is financed and built.

The job impacts from construction activity will be large, and with indirect and induced (multiplier) impacts occurring across many industries. The construction of the Facility will result in a total job impact of 1,797 across the State of New York during each year of the construction phase of the Project. The total increase in labor incomes from construction in the State is estimated at $182.4 million.

The operation of the Facility is expected to create approximately 25 new full-time jobs. In addition, another 49 indirect and induced jobs will be created in the region as a result of the operation of the Facility and the income earned from the direct and indirect employment impacts for a total annual impact of 74 jobs in the region. Finally, 20 jobs will be created or "leak" from the region into other areas of New York as a result of CPV Valley Energy Center annual operations. The total job impacts in New York resulting from the annual Facility operations are estimated to be 94.

The total annual direct, indirect and induced income impacts (including all non-wage salary and benefits) in the region are estimated to be $5.24 million with another $940,000 of labor income increases occurring in other New York counties, for a total impact on labor income of $6.18 million. The direct and indirect labor income impacts suggest that the average annual wages resulting from Facility operations will be significantly higher than the current average annual wages in the region.

As noted in the previous section, the economic impacts to the Minisink School District and the Town are expected to be positive.

The PILOT payments will increase the revenues of the local taxing jurisdictions, and will represent a significant portion of their total tax levy. The PILOT payments will serve to off-set any minor increases in community service costs that may be associated with long-term operation and maintenance of the Project (e.g., small number of additional school children.)

An EJ analysis of the Project was conducted consistent with the principles set forth in Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" and NYSDEC Policy CP-29.

The intent of this EJ analysis was to determine whether the construction and operation of the proposed Project would have a significant adverse and disproportionate affect on an "environmental justice community."

An EJ area located in the City of Middletown, with a small portion located in Wallkill, was identified. The southwestern most point of the census block is 0.94 miles northeast from the Facility Site. The analysis demonstrates that the Project's potential air emission concentrations do not cause violations of the National Ambient Air Quality Standards (NAAQS) within the EJ study area, and therefore are not adverse. Furthermore, the maximum modeled air quality impact locations do not fall within the potential EJ areas and thus are not considered disproportionate.

Regarding hazardous materials, the use of oil, aqueous ammonia, and other chemicals at the Project site would not result in a disproportionate or adverse impact to the identified potential EJ area. The storage of fuel oil or use of aqueous ammonia or other chemicals at the Project site would comply with all local, state and federal requirements and would not jeopardize public health or impact groundwater quality. The use and/or presence of fuel oil, chemicals, and other materials is currently occurring throughout the two-mile Project study area and is not concentrated within the EJ area. The Facility would also be required to comply with NYSDEC and Town of Wawayanda noise standards at all locations within the Project study area, and therefore, would not cause any adverse impact to any EJ area.

Facility views from within the EJ area are likely to be intermittent and minimal, and limited to the top of the Project stack. Any views that do exist will be within a commercial/industrial context and visual impacts will be minimal. In addition, views of the stack would not be limited to those from within the EJ area. Therefore, visual impacts within the EJ area are not considered adverse or disproportionate.

Because of the socioeconomic benefits arising from the Project, and the avoidance of impacts to any identified EJ areas, no specific mitigation measures are warranted. Although, the PILOT and HCA are outside of the Planning Board's jurisdiction; they will provide significant socioeconomic benefits to the area.

F. Traffic and Transportation

Based on the EIS Documents, the Planning Board had determined that impacts to traffic and transportation would be minimal subject to the mitigation discussed herein

Impacts

The Project site is bounded on the north and west by U.S. Route 6, on the east by N.Y. Route 17M and on the south by Interstate 84 (I-84).

A traffic analysis of the Project is contained in the EIS Documents. The initial stage of the traffic analysis consisted of a detailed review of existing land-use, roadway, and traffic conditions near the proposed site. Existing traffic volumes were recorded in November 2007. Next, in order to identify potential Project impacts, the study estimated and analyzed future conditions and then compared them to existing conditions.

During the construction of the proposed Project, additional vehicle trips would be generated by the construction workforce, and by the delivery of equipment and materials to the Project site. Construction of the facility is expected to take approximately 26-29 months.

It is expected that the highest level of potential traffic impact would occur during the middle 4 to 5 months of the construction period, when the highest level of workers will be on-site. Any traffic impacts associated with Project construction would be temporary in nature limited to the duration of construction.

The traffic impact analysis conducted was conservative in its approach because it included 30 percent of the construction worker trips within the peak hours. As described in the EIS Documents, based on experience with other projects, most construction related trips would arrive and depart before the respective AM and PM peak commuter roadway hours. In this case, 70 percent of the workforce are expected to arrive by 7:00 AM – a full half-hour before the peak hour of the adjacent street, which was determined to be 7:30 to 8:30 AM. Similarly, most of the construction workers would have left the site by 4:00 PM – in advance of the 4:30 to 5:30 PM peak hour.

There are a few instances when construction-related traffic would cause deterioration in Level of Service (LOS) at a study location. The drop in LOS is generally moderate and will be temporary in nature, lasting only during the 4 to 5 months of peak construction activity. Thereafter, conditions will return to pre-construction levels.

Construction involving crossing of Route 6 or Route 17M will utilize directional drilling to minimize the potential for traffic disruption. Construction involving use of roadway right-of-way will be conducted generally during off-peak hour periods with associated informational signing, safety barriers, and police officer control. With construction utilizing the unpaved portion of the roadway rights-of-way, no rerouting of traffic is anticipated. CPV will provide the necessary Maintenance and Protection of Traffic plans for work in the public roadway right-of-way associated with construction of the off-site utility work and obtain necessary permits. Requirements of the NYSDOT will be met. If required by NYSDOT, State Police

traffic officer control, paid by the Project applicant, will be utilized at the intersection of Route 6 and Kirbytown Road, and the Facility site access drive.

Operation

Under full time, post construction operating conditions, at all locations and under both AM and PM peak hour traffic conditions, the impacts from the proposed Project will be negligible in that no LOS would change as a result of the traffic generated by the proposed Facility, compared to the "no build" scenario. The Project site entrance has been located so as to provide sight distances that meet or exceed applicable standards to ensure safe ingress and egress to and from the Project site. Therefore, no additional mitigation measures are necessary.

G. Air Quality

The CPV Valley Energy Center will not result in any significant adverse impacts to air quality. The Project will not only be required to comply with a variety of state and federally issued regulations and guidelines, but it is also designed to be one of the most efficient and clean power generation facilities in New York. The Project is designed to utilize natural gas, as well as state of the art, highly efficient gas turbines in a combined cycle configuration. It will also employ highly effective emission control equipment, including an SCR to control NO_x and an oxidation catalyst to control CO and VOC emissions, at the Facility. These design characteristics play an important role in minimizing and avoiding potential adverse impacts.

The dispersion modeling and other analyses that have been performed demonstrate that not only will the Project comply with all of the various air permitting requirements, but its maximum air quality impacts, both alone and in combination with those of other existing source emissions, will be substantially smaller than the federal and State ambient air quality standards that were established to:

- Protect both public health, with an adequate margin of safety for sensitive individuals such as those with respiratory illnesses, the elderly and children, and public welfare (e.g. flora, flauna and property), and

- Prohibit air pollutant concentration increases that are excessive, which effectively keeps cleaner air clean.

The CPV Valley Energy Center is considered a major stationary source that will be located in an attainment area for a regulated air pollutant, and therefore it is subject to the Clean Air Act's requirement for a Prevention of Significant Deterioration (PSD) permit review. The Project is subject to PSD review for NO_x, CO, particulate matter sized 10 and 2.5 microns or smaller (PM_{10} and $PM_{2.5}$, respectively), and sulfur dioxide (SO_2). The Project is subject to Best Available Control Technology (BACT) and ambient air quality impact compliance demonstration requirements for these applicable PSD pollutants. The Project will also be located in an area that is non-attainment for ozone and $PM_{2.5}$, which means that it is subject to the Clean Air Act's non-attainment new source review program if certain of its potential emissions (of precursor pollutants) exceed a designated yearly threshold. Since the Project's potential emissions exceed the yearly threshold for NO_x and VOC, the Project is required to

meet Lowest Achievable Emission Reduction Rate (LAER) limits and acquire emission offsets at a ratio of 1.15 to 1 for those pollutants. This means the Facility will offset 1.15 times more than what it will actually emit, resulting in a net air quality benefit.

The Project has submitted an application for regulatory agency review in conjunction with the federal and State PSD and non-attainment new source review requirements and process.

The Project will utilize natural gas as the main fuel for generating electricity, and will incorporate an SCR system to limit NO_x emissions. The combustion turbines will also be equipped with an advanced dry low NO_x combustion system. The dry low NO_x combustion system will limit NO_x formation by controlling the combustion process through optimization of the air and fuel mixture. Water injection will be used to control NO_x emissions when the combustion turbines are operating on ultra-low sulfur light distillate oil. The CO emissions from the combustion turbines (and duct burners) will be reduced using an oxidation catalyst (also referred to as a CO catalyst). Exhaust gases from the turbines will be passed over a catalyst bed where excess air will oxidizes the CO. The oxidation catalyst system will greatly decrease CO concentrations. The Facility will incorporate oil as a backup fuel for situations when natural gas use may be curtailed, but under those circumstances the Facility will use ultra-low sulfur distillate to further reduce any emissions associated with the Project.

Maximum predicted Project impacts at identified sensitive receptors within a radius of 5 miles from the Project were determined using typical modeling procedures, with impacts based on the results of a single year of meteorological data. For each combination of

pollutant and averaging period, the year for which the Project had overall predicted maximum impacts was used for the modeling to predict impacts at the sensitive receptors. Receptors representing historic parks, other parks, golf courses, public nature preserves, conservation easements, cemeteries, churches, fire stations, hospitals, nursing homes, police stations, schools, pre-schools, and other recreational areas within 5 miles were identified and included as receptors for the modeling. Maximum Project impacts were predicted for nitrogen dioxide (NO_2), CO, PM_{10}, and SO_2. All predicted impacts were well below the concentration levels that were established by EPA to protect public health and welfare, and to prevent excessive air pollutant concentration increases, respectively.

New (or revised) NAAQS and PSD increments became applicable to the Project after November 2008. The new (or revised) NAAQS pertain to NO_2, SO_2 and lead (Pb). The new PSD increments pertain to $PM_{2.5}$. The new standards are much more stringent than the ones that applied to those air pollutants in 2008. Supplemental dispersion modeling analyses performed in 2012 and included in the FEIS (Section 3.3.2 and Appendix 3B) demonstrate that the Project and its state-of-the-art air pollutant emission controls are more than adequate to ensure compliance with the new NAAQS and PSD increments.

The Project will not result in any significant adverse impacts to air quality, therefore no mitigation is necessary. The Project will provide an annual summary of fuel use and emissions data to the Town.

H. Noise

A detailed noise assessment of the proposed Project was conducted. The assessment included an ambient noise monitoring program, conducted during the leaf-off season when no insect noise was present (January 28-29, 2008) and a computer noise modeling study. The ambient program was conducted in order to quantify the existing noise environment, including during winter late night hours when ambient noise levels are typically lowest. The computer modeling study included Project source specific noise emission data, as provided by the proposed equipment manufacturers. The modeling conducted included topographic features, and was conservative in that no credit was taken for tree cover or any intervening off site structures that would act to reduce noise levels. Design noise control measures, including enclosing most major sources inside buildings, acoustical specifications for building walls, and noise limits for the air cooled condensers, were included in the model.

The resulting calculated Facility noise levels were compared to minimum late night ambient noise levels from each noise monitoring location in order to determine if any increases in noise would occur, and if so, whether those increases would be below NYSDEC's noise impact screening criterion. The criterion establishes increases in noise of 6 dBA and greater to have the potential for an adverse impact. The Town of Wawayanda noise requirement that noise generated is no greater than 65 dBA at a distance of 100 feet from the Project lot line was also analyzed. The EIS Documents demonstrate the Project noise levels would be in compliance with both the NYSDEC criterion and the Town of Wawayanda noise ordinance,

and that no additional mitigation measures are necessary beyond those proposed in the EIS Documents.

Noise Impacts of Project Operation

Based on the EIS Documents, the noise analysis revealed that no increases in noise from operation of the Project would be expected at any of the noise monitoring locations, with the lone exception being at the Uhlig Road location, where an increase of 4 dBA was projected, which is below the NYSDEC impact criterion. The Town of Wawayanda noise standard will be complied with. A review of this analysis reveals that Project noise levels would be below 65 dBA even within the Project lot line, and are well below 65 dBA 100 feet from the lot line. Accordingly, no significant noise impacts are anticipated due to Project operation, and the Project noise levels would be in compliance with the Town of Wawayanda noise ordinance.

The design of the Facility includes the following noise attenuation features:

- Locating major Facility sources, including the combustion turbines, Heat Recovery Steam Generators (HRSGs), steam turbine and ancillary sources within buildings;
- Building walls will be designed to provide a nominal 20 dBA attenuation of interior noise;
- HRSG exhaust stack silencers;
- Acoustically treated building ventilation louvers; and

- An air cooled condenser (ACC) with a noise specification not to exceed 59 dBA at a distance of 100 meters from the edge of the ACC.

- No additional measures are necessary to mitigate operational noise.

Noise Impacts of Project Construction

Construction equipment utilized will differ from phase to phase. In general, heavy equipment (bulldozers, dump trucks, cement mixers) will be used during excavation and concrete pouring activities. Noise is generated during construction primarily from diesel engines, which power the equipment. Exhaust noise usually is the predominant source of diesel engine noise.

Construction equipment is not generally operated continuously, nor is the equipment always operated simultaneously. There will therefore be times when no equipment is operating and noise will be at ambient levels. Also, it should be noted that the construction noise levels modeled are those, which would be experienced for people outdoors. A building (house) will provide significant attenuation for those who are indoors. Sound levels can be expected to be up to 27 dBA lower indoors with the windows closed. Even in homes with the windows open, indoor sound levels can be reduced by up to 17 dBA (USEPA, 1978). Construction noise will also be temporary in nature. As such, no adverse or long term noise impacts from construction noise are anticipated.

Calculated construction noise levels were shown to be below measured average noise levels at all locations. Therefore no additional mitigation measures are required. However, the

Project will nonetheless make use of functional mufflers on all equipment engine exhausts. Further, construction activities are currently scheduled to occur primarily during daytime hours. In addition, noise compliance monitoring will be done during construction and operation subject to final "Noise Compliance Testing Protocol" that is subject to the review and finalization by the Planning Board during the Site Plan approval process.

I. Soil, Geology and Seismology

The topography of the Project Site is nearly flat, with a gentle slope decreasing from west to east. The elevation change is approximately 10 feet.

Based on the preliminary geotechnical analysis in the EIS Documents, the unconsolidated material at the Project Site is suitable to support the proposed Facility. Construction of the Project will require the excavation of soils and the reworking of the unconsolidated surficial material. Site preparation would require heavy equipment for grading and excavation. This would include excavators, bulldozers, graders, front-end loaders, concrete trucks, and dump trucks. This will not impact the geologic setting. Foundations will be shallow and deep, depending upon the requirements of the specific equipment building structure component. The surficial geology at the CPV Valley Energy Center consists of coarse to fine gravel and/or sand, and silts, clays, and oxidized fine sand and gravel. The depth to bedrock is 52 to 80 feet below ground surface. The soils are not contaminated chemically or physically and should be suitable for multiple uses on or offsite. Foundation construction will be completed with standard construction techniques and no blasting of bedrock is anticipated.

Prevention of contamination to soils due to operation of the Facility will be accomplished in part by development and implementation of the best management practices incorporated in the Storm Water Pollution Prevention Plan (SWPPP) that will be consistent with local and NYDEC permits.

Sediment and erosion of soils will be mitigated during construction with common engineering controls. Excavation and grading for the proposed facilities will include re-working to promote good site drainage and runoff control. Given the flat topography that exists at the Project Site, some excavation and fill activity will likely be needed to achieve a site level suitable for construction. Where necessary soils unsuitable as structural fill will be removed from the Project Site. It is anticipated that unsuitable soils will be recycled offsite for landscaping or non-engineering grade fill.

Due to the relatively shallow groundwater at the Project Site, dewatering will likely be required to support foundation construction at select locations. Groundwater will be brought down approximately 1 foot below the proposed sub-grade, prior to excavating to final subgrade. The groundwater will be maintained at that level until the subgrade is prepared and concrete placed in order to minimize disturbance of the ground. This will be temporary and will only be a localized condition. Erosion and sediment control will be installed to prevent impacts to soil and exposed surficial materials.

Guidelines established for agricultural soil removal and restoration will be followed as the site is developed. NYS Department of Agriculture and Markets farm land reclamation notes will be added to the site plan, making these procedures a condition of the site plan approval

for the project. Implementation of the Agriculture and Markets guidelines is a mitigation measure that will be undertaken by the applicant to assure conservation of the agricultural soil resource.

The methods proposed for stripping, stockpiling and stabilizing the agricultural soil profiles are in accordance with NYS Department of Agriculture and Markets and NYSDEC guidelines.

Soils and surface topography will be re-established to original conditions following the installation of the water/wastewater lines and electrical interconnect. Cut material not suitable for re-use as backfill will be recycled off-site.

A third party environmental inspector will be present during construction. The inspector will be trained to screen cut material for evidence of contamination. If contaminated soils are identified, they will be stockpiled separately and sampled for chemical parameters required by the licensed receiving facility permit. The environmental inspector will be paid for by CPV Valley.

Erosion and sediment controls will be maintained throughout construction and during post-construction restoration. Vehicle exits will be designed to prevent unconsolidated surface materials from being transported to offsite local roadways.

Given that soil nutrients and agricultural chemicals are bound on the soil colloid fraction, and that the exposure period will be shorter in duration than the agricultural tillage cycle, releases from the site related to this temporary use are expected to be less than those associated with the planting of row crops or re-seeding the hay crop.

Operation

During operation, commonly used oils (e.g., fuel oil, lube oil) and chemicals (e.g., aqueous ammonia, water treatment chemicals) will be utilized. The state of the art storage and containment facilities proposed will be operated with management plans to prevent a release to the environment. The mitigation measures to protect geologic resources, as well as other resources, are addressed as part of the *Spill Prevention and Contingency Plan*.

Based upon the above analysis, significant adverse impacts on soils and geology are not anticipated, and mitigation measures in addition to the avoidance, minimization and mitigation measures proposed in the EIS Documents are not required.

J. Water Resources & Infrastructure

Several advanced technologies and sound water resources management policies and practices have been incorporated into the Facility's overall design to minimize impacts to water resources during construction and operation. These include:

- Use of combined-cycle technology for power generation, thereby increasing the overall water and fuel efficiency of the Facility when compared to traditional steam electric generating plants;

- Selection of an air-cooled condenser to dissipate heat, thereby eliminating the need for large volumes of water for cooling purposes;

- Reuse of tertiary treated effluent from the City of Middletown's Sewage Treatment Plant to satisfy process makeup requirements for power generation, thereby minimizing water withdrawals from the municipal water supply systems or ground or surface waters;

- Use of inlet air cooling to enhance the overall performance characteristics of the combustion turbines during the peak summer electrical demand season, thereby decreasing reliance on older generating assets within the Lower Hudson River Basin that require large amounts of water for cooling purposes (i.e., existing facilities currently using surface waters of the State in once-through cooling systems);

- Development of best management practices (BMPs), including both structural and non-structural controls, to ensure the proper storage, handling and management of fuel oils, lubricants, transformer oils, water treatment additives and boiler additives; and

- Development of an erosion and sediment control plan to ensure that applicable site specific controls are in place and properly maintained throughout the construction process.

Potential impacts to groundwater resources, wetlands, and surface waters have each been analyzed. In order to reduce the energy of stormwater during construction, flow within temporary swales will be interrupted by a series of stone check dams. The effects of

stormwater runoff will also be controlled through the use of temporary filter fencing installed to protect areas downgradient of construction activity.

Sedimentation/detention basins, properly sized and located, have been included in the Project design. The purpose of the basins is threefold. In addition to providing a controlled location for sediment deposition and retention, the basins will provide storage volume to compensate for that lost through development of the site and will serve to limit peak flows of stormwater runoff to levels which do not exceed current or pre development peak discharge rates (for the 100 year design storm). As the basins are multi-functional (i.e., sedimentation and treatment as well as stormwater detention), they have been designed to control runoff during the 100 year storm event. Removal of accumulated sediments contained within the basins will be performed as needed. The SWPPP included in the EIS Documents details the pre and post developmental drainage conditions as well as the stormwater runoff model and calculations used in development of the basin design. In addition to limiting the peak rate of stormwater discharge, the stormwater management facilities provide the required Water Quality Volume (WQV) for stormwater treatment, as well as the regulatory Channel Protection volume, designed to protect receiving waters from high velocity discharges that would damage or overtop stream banks.

The impacts to water resources include those related to the construction of the Project and the respective interconnects, as well as the long term use of process water and discharge of treated stormwater. These impacts fall into three categories: Impacts attributed to construction of the Project, which will be minimized and mitigated by the design features,

including erosion and sediment control, wetland creation, etc., incorporated in the SWPPP, impacts attributed to operation of the Facility's stormwater management system, which will be minimized and mitigated through the maintenance and operation of a system that meets all regulatory guidelines at the time of construction, and impacts related to the long term use of process water for cooling are expected to be minimal. The use of process water from the City of Middletown Sewage Treatment Plant will have no impact on water resources in general, or on the operation of the Sewage Treatment Plant in particular.

Considering the resource evaluation and analyses prepared for the Project, it is anticipated that construction and operation of the proposed action will have a negligible cumulative impact on water resources. Additionally, the Project should not generate significant negative impacts to water supply or quality in the aquifer or surface waters.

Proper sequencing of construction activities represents a key element in the Project's Construction CSWPPP. BMPs for sediment and erosion control would be implemented early in the construction process and prior to the start of major earthwork activities. These include installation of stabilized construction entrances and installation of silt fencing. Temporary sedimentation basins and diversion swales would also be used as construction progresses. In addition, procedures for the stabilization of soil stockpiles and for protecting catch basins would be implemented on an as needed basis.

All stormwater management, treatment, erosion and sediment control measures proposed for the CPV Valley site have been designed in accordance with the April 2008 *New York State Stormwater Management Design Manual (SMDM)*, NYSDEC's Division of Water TOG

5.1.8 and 5.1.10 and NYSDEC's *Better Site Design, April 2008*[8]. Further, in accordance with Article 17 of the Environmental Conservation Law (which mandates SPDES permit authorization for stormwater discharges associated with construction activity), a comprehensive erosion and sediment control/stormwater management plan is required for the proposed development. The plan under development will detail the erosion and sediment control measures to be utilized on-site during the construction phase.

The project SWPPP has been developed in accordance with NYSDEC guidelines, and the site plans include design measures to minimize and mitigate the effects of these pollutants, given the increase in impervious area brought about by implementation of the proposed project. All stormwater generated by the completed project is treated for quality enhancement in accordance with prevailing guidelines. Current NYSDEC pond and outlet designs have been developed to mitigate impacts from paved areas, and, by definition, are the accepted method for controlling pollution from paved surfaces. These measures, depicted on the Site Plans, and detailed in the SWPPP to be maintained on-site during construction, conform to New York State's Guidelines for Urban Erosion and Sediment Control, particularly the 2008 New York State SMDM and the New York Standards and Specifications for Erosion and Sediment Controls. The stormwater management plan and all proposed control measures shall comply with the requirements of current NYSDEC regulations under ECL Article 17, Titles 7 and 8 as well as 6NYCRR Parts 700-705. All relevant

[8] Pursuant to NYSDEC DOW -1.2.5: *New York State Stormwater Design Manual 2010 Update Transition Policy*, the SWPPP for the Project may comply with the 2008 Design Manual because CPV Valley made applications to governmental entities prior to March 1, 2011, which included a preliminary SWPPP, developed using the 2008 version of the Design Manual.

conditions of the SPDES General Permit will be met, including the SMDM requirements for Runoff Reduction and Green Infrastructure, which provide for increased groundwater recharge in the vicinity around newly developed sites.

No significant impacts to surface waters and wetlands are anticipated from construction of the Project. The Facility has incorporated mitigation and avoidance measures into its construction plans, therefore, no additional mitigation is necessary.

Operation

The Project will use an air cooled condenser for heat dissipation to minimize both water supply and wastewater discharge requirements. The Facility's process makeup water requirements will be addressed using tertiary treated effluent from the City of Middletown Sewage Treatment Plant. Process wastewater will be discharged to the City of Middletown Sewage Treatment Plant. The City of Middletown Sewage Treatment Plant currently discharges treated effluent to the Wallkill River. Potable water for on-site staff and visitors would be obtained from the municipal water distribution system. Sanitary wastewater will be discharged to the City of Middletown Sewage Treatment Plant via the town sewer system. Stormwater runoff from construction and operation would discharge to on-site wetlands, which ultimately drain to Monhagen Brook.

The Project site area will be covered in gravel, except for designated roads, tanks, and buildings, and will be approximately 23 percent impervious (i.e., approximately 8 acres will

be impervious). The switchyard area and area beneath the air cooed condenser will be covered with crushed rock.

Potential groundwater impacts attributable to the proposed Project are related to the storage of fuel oil and ammonia, process water usage, and stormwater runoff from the Project site.

Mitigation measures proposed to reduce/eliminate potential water quantity and quality impacts include:

- Aboveground fuel storage to facilitate leak detection will be provided, with secondary containment capable of containing 110 percent of the tank contents. A leak detection system will be incorporated into this containment area.

- Ammonia tanks to be underlain and surrounded by a concrete dike for containment, maintenance and leak detection.

- The proposed detention ponds will incorporate measures to provide stormwater treatment in accordance with the 2003 NYSDEC Manual, revised in 2008 and 2010.

- Water quality inlets in heavily trafficked areas of the site will serve to remove sediments from the stormwater stream.

- No de-icing chemicals will be used on site roadways or parking areas.

- The site will not use pesticides or herbicides for site maintenance.

In order to mitigate the potential impacts, such as the increased surface water runoff, peak rate of discharge, and erosion and sedimentation, the preliminary site plan for the Facility includes a series of structural and non-structural stormwater management and erosion control measures. These measures, along with the other design features, adequately mitigate the potential impacts identified.

Facility operation requires the use and storage of oil and hazardous materials (OHM), such as natural gas, fuel oil, and aqueous ammonia. These are well known and have been safely used by commercial and industrial facilities throughout New York State in a wide range of applications, including electric power generation. The majority of the OHM required to support operations would be consumed in the electrical generation process or recycled offsite. The Facility design incorporates a number of features to mitigation potential impacts associated with the release of these materials, including locating major processing equipment indoors, installing indoor storage areas for water treatment chemicals in the water treatment buildings, stores chemicals, used oils and other lubricants in designated storage enclosures within the gas turbine building, the maintenance warehouse and the water demineralization building (the enclosures would be constructed with an impervious, chemically resistant pad on which to place portable containers), proper labeling and handling procedures, hazardous materials training programs for employee, and proper truck unloading procedures.

All piping, fittings and connections associated with the transfer of oil or hazardous materials would be fabricated, constructed and installed in a manner that would prevent the escape of any potentially toxic materials to the ground, ground water or surface waters.

As part of final design and in accordance with New York State regulations, a Spill Prevention, Control, and Countermeasures Plan (SPCC Plan) would be prepared for the Facility with as-built drawings. The SPCC Plan will be subject to the review and approval of NYSDEC.

An emergency response plan also will be developed to detail procedures to prevent a release of OHM to the environment and to direct response actions at the Facility in the event of an emergency. The plan will evolve as part of final design and construction, ultimately completed using as-built plans and implemented with Facility staff.

The Facility will acquire process water from the City of Middletown Sewage Treatment Plant (STP), and will return the discharge back to the headworks of the STP. Due to the minimal volumes of process water required for operation and relatively unchanged characteristics of the discharge water, no impacts associated with the Facility's process water are anticipated.

The impact avoidance, minimization, and mitigation measures proposed in the EIS Documents minimize adverse impacts to the maximum extent practicable; therefore, no additional mitigation measures are necessary.

K. Ecology

The NYSDEC list of Species of Greatest Conservation Need, NYS Comprehensive Wildlife Strategy (NYSDEC, 2008) was consulted and reviewed with respect to the potential

occurrence of these species or their habitat on-site and any potential impacts associated with project construction.

The CPV Valley Energy Center would be located on approximately a 21.25 acre portion of 122 acres of open land comprising the site, consisting primarily of agricultural cropland, hayfield, and small portions of adjacent federal jurisdictional wetlands. An additional 7 acres of land, primarily old field and hayfields, within the 122 acre parcel would be temporarily disturbed during construction for materials lay down, equipment storage, and construction parking.

As a result of the CPV Valley Energy Center project construction, permanent impacts will occur to 21.25 acres of cropland/row crop ecological community and permanent filling of 0.33 acres of Federal jurisdictional wetlands. The Facility has been designed to minimize and/or avoid impacts to wetlands to the maximum extent practicable. The layout and footprint of the Facility is focused on the upland portions of the site; however small fringe wetland areas within the fields, adjacent drainage ditches, and broad swale along I-84 containing invasive species common reed (*Phragmitis sp.*) could not be entirely avoided. Permanent wetland impacts of Federal jurisdictional wetlands, as a result of the main facility footprint are 0.246 acres. For construction laydown/parking areas, approximately 7 acres of Successional old field and hayfield will be temporarily impacted, and will be restored upon completion of construction. Approximately 0.09 acres[9] of wetland, including

[9] Although the amount of permanent wetland impacts may vary slightly during the Site Plan approval process, the identified mitigation area exceeds the required amount of mitigation and will sufficiently offset any additional

(Footnote continued on next page)

a temporary bridge across Carpenter Creek, will be temporarily impacted to provide access to the laydown areas.

The routing of the underground electric transmission line has also been optimized to avoid wetlands. The electrical transmission line extending east from the Facility will be placed underground, reducing the right-of-way clearing requirements to further reduce impacts to forested wetlands. Given siting constraints such as extensive wetlands around the site and the ability to site the transmission line in the roadway, the on-site underground electrical transmission line option will consist of an underground duct bank containing insulated, three phase conductors, and up to three precast concrete manholes approximately 20 feet long by 9 feet wide by 8.5 feet deep in dimension (540 square feet each, for a total of 1,620 square feet [0037 acres]).

The on-site underground electrical transmission route would follow the same general route as the originally proposed overhead route. The construction corridor will occur within approximately 2,077 linear feet of wetlands (240 linear feet of which are currently forested). Use of a 75 foot construction corridor would result in approximately 3.56 acres of temporary construction impacts. Approximately 0.46 acres of permanent impacts will occur to wetlands in the form of conversion of forested to non-forested vegetation. This arrangement results in a reduction from the above ground option that consisted of a 130 foot right-of-way width resulting in approximately 6.2 acres of temporary wetland impacts, and 0.92 acres of permanent impacts to wetlands in the form of conversion of forested to

impacts. To the extent the permanent wetland impacts are reduced, the mitigation amount will remain in excess of amounts required.

non-forested vegetation. A permanent corridor of 20 feet will be maintained for the electric transmission line within the site proper (i.e., from the switching station to the crossing of Carpenter Creek at Route 17M).

The underground duct bank for the electrical transmission line will cross the two streams; an unnamed tributary to Carpenter Creek (NYSDEC Class B, south of where it joins Carpenter Creek and Carpenter Creek itself where it crosses Route 17M. These crossings will result in 600 square feet (0.01 acre) of temporary impact to the stream and its banks. Open cut construction methods will be used. Following construction, the trenched areas and the disturbed corridor will be re-graded, stabilized, and re-vegetated. The stream bed and banks will also require restoration to pre-existing grades, with bank stabilization measures and monitoring to prevent soil erosion. The Freshwater Wetlands Permit issued by NYSDEC and the Nationwide Permit issued by the U.S. Army Corps of Engineers (ACOE) will address the construction of the underground electrical transmission line. Wetland and stream restoration monitoring will be implemented according to permit conditions.

The riser poles at the GIS building site location in Middletown would permanently impact approximately 0.05 acres of wetlands. Given the pre-existing disturbed conditions of the wetland area and the developed nature of the area, the impacts associated with the pole installation are considered to be insignificant. The process water supply/return lines will be routed to avoid impact wetlands.

A wetland mitigation plan has been prepared in accordance with the NYSDEC and ACOE Joint Application review process and associated mitigation standards, in which both the

permanent "fill" impacts and "forest conversion" impacts associated with the project will be compensated on the site. Wetland fill impacts will be compensated for on the site by creating a wetland replacement area, subject to the review and approval of NYSDEC and the ACOE. The wetlands will be replaced on site on a greater than 2:1 ratio, resulting in the creation of 0.80 replacement acres[10]. This wetland replication area will also provide enhanced wildlife habitat functions for the site. Conversion of forested wetlands to non-forested wetlands within the electrical interconnect will be compensated by creating a permanent forested buffer along Carpenter Creek where there are currently fields in agricultural use. The NYSDEC SPDES General Permit for Stormwater will contain conditions that will further protect wetland resources, including a provision for a Stormwater Pollution Prevention Plan. The additional field studies for the site included study of the resource value of the existing vernal pools. The vernal pools were found to have "low" (Tier III) overall biological quality according to the assessment manual, "Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States" (Calhoun and Klemens, 2002), which was recommended by the Town's DEIS consultant. Construction of the Facility and the transmission line will avoid and not have direct impacts on the vernal pools.

In response to ecological comments received on the DEIS, supplemental studies were conducted for plant species of conservation concern, summer roosting habitat for the

[10] Although the amount of permanent wetland impacts may vary slightly during the Site Plan approval process, the identified mitigation area exceeds the required amount of mitigation and will sufficiently offset any additional impacts. To the extent the permanent wetland impacts are reduced, the mitigation amount will remain in excess of amounts required

Indiana bat, and potential turtle habitat species complexes. As summarized in Section 3.2 of the FEIS no significant impacts on ecological resources have been identified for either Facility construction or operation.

Although the limited amount of wetlands impacts are unavoidable, the optimization of the Facility's design and layout have significantly minimized, the impacts, to the maximum extent practicable.

Impacts to wildlife habitat will be minimized due to utilization of agricultural fields for the majority of the proposed Facility. Losses of forested habitat will be minimized through the southern routing of the electrical interconnect, selection of an underground construction methodology, maintenance of only a 20 foot wide permanent electrical corridor, and the use of roadway shoulders where possible. No impacts to Federal or State listed Threatened or Endangered species are anticipated. By locating the electrical interconnect route in a corridor requiring the least amount of tree removal, losses of potential forested summer roosting habitat of the Indiana bat will be minimized. The water/wastewater line route will use existing roadways, non-forested areas, and existing overland utility corridors to minimize use of any new overland routes/corridors.

No significant impacts to Federal or State listed Threatened or Endangered species are anticipated; therefore no further mitigation is warranted. However, based on recommendations made during agency reviews, several large trees in the vicinity of the wetland mitigation area that are in continuum with the adjacent forested area, and that could potentially provide summer roosting habitat for Indiana bat, will be preserved and

integrated into the mitigation area. In addition, all tree clearings shall be conducted between the dates of November 15 and March 31 to further protect the federally listed endangered Indiana Bat.

L. Community Character

The EIS Documents evaluated the impacts on the community character of the area in the vicinity of the Project. Community character is defined as:

- The built environment which may include historic buildings, development and land-use patterns, architectural landscape, roads, sidewalks, and visual character. The natural, or "un-built" environment often encompasses stream corridors, open spaces, farms, geographical features, critical habitats, and air and water quality. The interaction between the built and un-built environment is also an element of community character.

- The social and cultural characteristics of a community can include those attributes that reflect its overall quality of life (i.e., quality of schools, poverty and crime rates, demographics, etc.) and represent its cultural resources (i.e., hospitals, museums, social gatherings, local arts, community activities, etc.).

- The community's economic environment may include the number and quality of jobs, unemployment rates, type of business, and presence and/or vitality of a downtown area.

The Town of Wawayanda is a rural-suburban community located in western Orange County, New York. The Town was incorporated in 1849, and its roots lie in agriculture due to its acres of fertile "black dirt" located in the floodplain around the Wallkill River. The Town encompasses a mix of small-town, suburban and rural settings and is home to several historic hamlets. According to the Town's Comprehensive Plan, Wawayanda has been experiencing significant growth pressures since before 2000 as neighboring areas to the east and south continued to accommodate the movement of populations outward from the New York City metropolitan area. Residential development has largely been incremental. There is a large amount of vacant land primarily due to environmental constraints such as poor soil conditions for development, wetlands, floodplains and steep slopes. Since 2000, the Town's population has continued to increase due to its proximity to transportation, highways and its affordability relative to other communities. (Saratoga, 2006).

The Town of Wawayanda's most recent Comprehensive Plan was adopted in August, 2006. It places emphasis on appropriate economic development together with preservation and protection of natural and community resources. The plan sets forth environmental, cultural, and agricultural priorities. The Town of Wawayanda's most recent Comprehensive Plan centers around four major themes: promoting economic development and diversity, maintaining and supporting Wawayanda's rural character, protecting natural resources and open space, and cultivating a sense of community.

With respect to industrial development, the Town's Comprehensive Plan seeks to channel commercial and industrial uses into designated zones. The Project site and surrounding area is proposed to be within a Mixed Commercial Zone. This targeted area was created based on a set of environmentally-based criteria, existing land use and zoning, current land use planning principles, and residents' preferences.

The area has seen some recent developments along this corridor, including a project directly northeast of the Project site, the Horizons at Wawayanda. This housing development consists of several large three story buildings. Across the street from the Project site, a large warehouse with building heights of 35-40 feet was recently built, the Pannatonni project. Just west of the Project site along Route 6 is the New York Department of Transportation (NYDOT) facility which has some large buildings, including a very tall shed and cell tower. North of Kirbytown Road runs an abandoned railroad bed and the NYPA right-of-way and electric transmission lines and towers that are as high as 130 feet.

The primary focus of the Route 17M corridor centers on automotive and commercial uses while the Route 6 corridor is more diversified and includes more industry and a large-scale dairy operation, Elvree Farms, with closely massed large scale buildings and several silos up to 85 feet in height. Other industrial uses that set the tone for this portion of Route 6 include the Thruway Authority/NYSDOT maintenance facility, which has several large buildings, salt sheds, and a 180 foot cell tower, Eason's Auto Body, Thermo King, and the Tetz facility which houses a concrete batch plant, a crushing and screening plant, and truck/equipment repair facilities.

The community character during construction of the Project would be affected only relatively close to the Project site as a result of traffic and noise. However, such impacts would be relatively minor and temporary, and will be mitigated (e.g., by offsetting construction work day hours from peak traffic periods on local roads, use of noise attenuation measures on construction equipment). The construction workforce is not expected to result in any required in-migration of workers, and thus no temporary impacts to community character are expected from the need to accommodate such workers in homes in the area or provide municipal services to these workers.

As the Project will not result in any discernible in-migration of workers, it will not have an effect on the character of the area in terms of changing the number or type of people living in the area, or affecting costs associated with additional school enrollment or other town services. As well, traffic impacts during operation will be negligible compared to existing traffic volumes. Other environmental factors such as changes in noise levels, air emissions, and water impacts will generally not be discernible, and will not affect community character. Visual impacts could result in minor changes to the character of the area in limited locations that are both very close to the Project and have a view of the Project, as the landscape at the Project site would change from open/agricultural land to industrial. However, the extent of visibility is limited due to topography, trees, and structures in the area, and due to the undergrounding of the electrical interconnection. Thus overall, the Project would not change the community character of the area except in limited locations very close to the Project site where views exist.

With respect to positive impacts, the significant revenues going to the Town of Wawayanda, and more specifically the Minisink Valley Central School District, will allow the Town to improve its services to residents, and the school district to improve the general quality and character of its school system. Additionally, 25 jobs will be created for operation of the Project. CPV expects all 25 positions to be filled locally.

As stated previously, the Project site is located within an area specifically targeted for mixed commercial use, and will be consistent with the uses currently authorized in that area, as well as futures use proposed under the Comprehensive Plan.

The Project would aid in economic development and diversity by broadening the community's revenue base and creating stable new jobs in the energy industry. The siting of the Project allows economic development without threatening the goals of the other themes in the Town's Comprehensive Plan. One of the recommendations in the Town's plan is to balance commercial and industrial growth in the town's three school districts.

Relative to scale and size, portions of the Facility will be higher than the existing structures in the area, including the generation building (113 feet), Air Cooled Condensers (115 feet), and the Facility stacks (275 feet). The Facility's placement at the southern center portion of the Parcel helps to mitigate visual effects of the Facility structures from residential areas to the north of the site.

The Facility's combustion turbine stacks are the most visually prominent feature. One way to minimize stack height is to limit the height of nearby structures that determine the Good

Engineering Practice stack height. Preliminary modeling considered stack heights of up to 325 feet based on Good Engineering Practice stack height associated with an initial Facility design. Project design changes, including the reduction in the height of the air cooled condenser to 115 feet, reduced the Good Engineering Practice stack height to 287.5 feet. The final stack height of 275 feet for the combustion turbines was selected based on modeling that showed that this height was adequate to largely avoid increases in predicted impacts that can result from the effects of building induced downwash on stacks that are below Good Engineering Practice stack height.

The proposed landscaping plan is intended to enhance the appearance and natural beauty of the historical agricultural use of the existing property, and to enhance property values in the surrounding areas. Various small sections of the entrance to the Project site will be graded and seeded after construction. Land outside the Facility fence line will be left as buffer after construction and will be restored to its current open space use.

Other landscaping plans include adding trees and shrubs in areas on the site. To the maximum practical extent and when applicable, mature shade trees, vegetation, and unique site features such as stone walls will be preserved. A buffer area will be placed along the Route 6 boundary; and one shade tree (minimum caliper of three inches at four feet) will be planted for each 40 feet of lot frontage.

The natural vegetation, large buffer areas surrounding the Facility, and proposed landscaping will help shield full views of the Facility from off site locations. The exterior architectural treatment of the buildings (i.e., windows, doors, siding, etc.) will be painted a

neutral beige color to reduce visibility. The steel stack will be painted a neutral gray tone to complement the generation building. Non-reflective materials will be specified, where feasible, to further soften the Facility appearance and minimize the potential for glare.

The proposed transmission line interconnect will consist of an underground duct bank configuration routing within a 20-foot wide right-of-way. The underground alignment will basically parallel I-84. It will then parallel Route 17M and cross Route 6, eventually connecting to NYPA's Marcy South 345 kV right-of-way electric transmission system. The transmission line was placed underground to mitigate visual impacts and to avoid any change to the character of the area.

The Project will not have significant adverse impacts on the character of the surrounding community because it will not generate significant operational traffic, it is a use consistent with the existing and planned future character of the surrounding area, its visual impacts will be small given the landscaping and screening features incorporated into the Project design, its noise impacts will comply with applicable criteria, and it will not burden community services. The following are some of the Project attributes that will allow the Facility to blend with the existing community character:

- The Facility's placement at the southern center portion of the Parcel helps to mitigate visual effects of the Facility structures from residential areas to the north of the site.

- Various small sections of the entrance to the Project site will be graded and seeded after construction. Land outside the Facility fence line will be left as buffer after construction and will be restored to its current open space use.

- To the maximum practical extent and when applicable, mature shade trees, vegetation, and unique site features such as stone walls will be preserved. A buffer area will be placed along the Route 6 boundary; and one shade tree (minimum caliper of three inches at four feet) will be planted for each 40 feet of lot frontage.

- The exterior architectural treatment of the buildings (i.e., windows, doors, siding, etc.) will be painted a neutral beige color to reduce visibility. The steel stack will be painted a neutral gray tone to complement the generation building. Non-reflective materials will be specified, where feasible, to further soften the Facility appearance and minimize the potential for glare.

Based upon the analysis above, no additional mitigation for impacts to community character are required.

Unavoidable Adverse Impacts

As discussed previously, the proposed Project will result in significant long-term economic and other benefits to the Town of Wawayanda, the local school districts, special districts, Orange County, as well as the state as whole. When fully operational, the Project is capable of

providing a peak of approximately 630[11] MW of highly efficient, low cost electric power generation. The development of the site is consistent with the Town's zoning and comprehensive plan.

Despite the positive effects anticipated as a result of the Project, its construction and operation will necessarily result in certain unavoidable adverse impacts to the environment. The majority of the adverse environmental impacts associated with the Project will be temporary, and will result from construction activities. Site preparation (e.g., clearing, grading), and construction of the facility (including the electrical interconnection and water and sewer connections) will have short-term and localized adverse impacts on the soil, water, agricultural, and ecological resources of the site. This construction will also have short-term impacts on the local transportation system, air quality, and noise levels. These impacts will largely result from the movement and operation of construction equipment and vehicles, which will occur during the construction of the Project. The level of impact to each of these resources has been described in the EIS Documents. They will generally be localized and/or of short duration.

Long-term unavoidable impacts associated with operation and maintenance of the Project include visibility of the stacks and air emissions from Project operation. While the presence of the stacks will result in a change in perceived land use from some viewpoints, their overall contrast with the landscape will likely be low to moderate in most locations. Although the project will be a source of new air emissions, the air impact analyses demonstrate that those

[11] CPV Valley, LLC is listed as queue position 251 in the NYISO Interconnection Queue and has a maximum summer output ("SP (MW)") rating of 678 MW. The output of the facility varies depending on weather conditions. The 678 MW output represents the facility's maximum summer net output @ 85°F.

emissions will not create any significant adverse impacts. Project development will also result in an increased level of sound at some receptor locations within the study area, a minor loss of cropland/row crop ecological community, the conversion of Red Maple-hardwood swamp to non-forested wetlands, and the conversion of upland Beech-maple mesic forest to non-forested upland. As described in the EIS Documents, these impacts are not considered significant.

Although adverse environmental impacts will occur, they will be minimized through the use of various general and site-specific avoidance and mitigation measures, as described in the herein. With the incorporation of these mitigation measures, the Project is expected to result in positive, long-term overall impacts that will offset the adverse effects that cannot otherwise be avoided.

Alternatives

The EIS Documents described and evaluated a range of alternatives to the proposed Project. These alternatives included alternate sites, fuels, electric and gas interconnect routing, air emission control technologies, condenser cooling technologies, designs, equipment selections, and water supply options. The discussion of alternatives was principally contained in Section 19 of the DEIS, and in the related sections of the FEIS and Responses to Comments. The no action alternative was also evaluated.

Alternative Project Sites

As a private applicant without the power of eminent domain, CPV Valley is only required to consider reasonable alternative sites that are under its control. Nonetheless, CPV Valley did

conduct an alternate site screening analysis which concluded that the proposed Project Site is the preferred site. Further, and in any event, there are no suitable alternative sites under the control of CPV Valley.

Based upon the discussion in the EIS Documents, the Planning Board finds that all practicable alternatives have been reviewed and analyzed in the EIS Documents and that, with the Project changes described in the FEIS, there are no practicable alternatives to the Project that would avoid or minimize adverse environmental impacts to a greater extent.

Alternative Electrical Interconnection Routing

Three alternate routings for the electrical interconnection were considered in the DEIS. For all of the alternatives, the first segment of the route, on the Project Site, would be the same up to the eastern Project Site boundary at Route 17M. Alternative 1 would continue north from that boundary along the western shoulder of Route 17M to the NYPA 345 kV line right-of-way. Alternative 2 follows the same route to the Project Site boundary, but would then continue east beneath Route 17M, cross beneath a culverted section of a stream flowing from the site, and then continue via underground conduits to the east, crossing Sunrise Park Drive and a second culverted section of the stream. From there, Alternative 2 would continue east across Monhagen Brook to a set of tie-in structures at the existing NYPA lines. Alternative 3 would share most of its route with Alternative 2, but would cross Sunrise Park Drive at more of an angle to the northeast, and then would immediately cross Monhagen Brook east of the Sunrise Park Drive. All of the alternatives included evaluation of both overhead and underground routing configurations.

After consultation with ACOE, NYSDEC and NYISO and the other involved transmission owners, and consideration of the comments on the DEIS, CPV proposed to utilize Alternative 1 with an underground arrangement that exits the site and travels along the west side of Route 17M, and terminates at the new 345 kV GIS substation adjacent to NYPA's Marcy South transmission right-of-way, just north of the intersection of NY Routes 6 and 17M. Based upon its consideration of the EIS Documents, the Board finds that this proposed alternative is the one best suited for the Project and the community, and will avoid and minimize adverse environmental impacts to the maximum extent practicable.

Alternative Gas Line Routing

The Project's natural gas fuel will transported to the Project via the Federal Energy Regulatory Commission (FERC) regulated Millennium Pipeline. The Project will interconnect to the existing Millennium Pipeline by a new 7 to 8 mile long gas transmission line, which would require approval from FERC. An alternative option of obtaining natural gas transportation service through Orange and Rockland Utilities, Inc. (O&R) was evaluated in the DEIS, which would have require the construction of a new 2 to 3 mile natural gas transmission line, which would require approval from the New York State Public Service Commission (PSC) under Public Service Law Article VII.

Section 17.5 of the DEIS provided a discussion of both alternatives. A map level and literature review of the potential environmental impacts to wildlife, wildlife habitats, wetlands, water bodies and resources, groundwater soils, vegetation, cultural resources and land use along the potential routing options was conducted. Details of the corridor level map and literature

review study are presented in Appendix 17-A of the DEIS. Routing options evaluated were anticipated to have relatively minimal environmental impacts and minimal cumulative environmental impacts with respect to the proposed Project.

CPV Valley has reached an agreement with Millennium Pipeline for the construction of the natural gas lateral connecting the Project to the pipeline. Millennium Pipeline has identified potential routes for the connecting pipe. The routes were evaluated based on utilization of existing rights-of-way and minimization of environmental impacts. The final routing will be the responsibility of Millennium Pipeline and will undergo its own separate environmental review and approval process.

Alternative Cooling Technologies

CPV Valley proposes to utilize air-cooled condensers to cool the exhaust from the steam turbine. Four alternatives to using an air-cooled condenser were evaluated in the EIS Documents: once-Through Cooling; mechanical draft (wet) cooling towers; hybrid (wet/dry) cooling towers; and natural draft cooling towers. For the reasons described in the EIS Documents, the Planning Board determines that use of an air-cooled condenser will avoid and minimize adverse environmental impacts to the maximum extent practicable.

Alternative Air Emissions Control Technologies

The proposed Facility design incorporates the use of SCR. SCR is an add-on NO_x control technique that is placed in the exhaust stream following the gas turbine/duct burner. SCR involves the injection of ammonia (NH3) into the exhaust gas stream upstream of a catalyst

bed. On the catalyst surface, NH3 reacts with NO_x contained within the flue gas to form nitrogen gas (N2) and water (H2O). Other air emissions control technologies evaluated in the EIS Documents included Selective Non-Catalytic Reduction (SNCR); XONON™; and SCONOX™. The Planning Board finds that, for the reasons described in the EIS Documents, use of SCR will avoid and minimize adverse environmental impacts to the maximum extent practicable.

Alternative Facility Designs

The EIS Documents evaluated a number of alternatives to the Project that would have resulted in a project of a smaller or larger generating capacity. The alternatives investigated included different turbine technologies, including "G" class turbines and a Siemens Westinghouse V84.3 steam turbine, and a project configuration without duct firing. The Planning Board agrees with the conclusions in the EIS Documents that use of the "F" technology with duct firing will provide the most cost-efficient facility, and will avoid and minimize adverse environmental impacts to the maximum extent practicable.

Alternate Site Layouts

The EIS Documents considered a number of potential site layouts on the 122 acre parcel. Locating the Facility at the south central portion of the 122 acre parcel was preferred for three reasons. First, it placed the proposed Facility proximate to nearby Route 6 and I-84 and proposed industrial properties; thereby providing for a continuation of the orderly development of the Project area by avoiding a fragmented development condition. Second, it placed the Project further away from nearby visual receptors in an effort to mitigate potential

visual impacts. Third, the location minimizes impacts to wetlands and vegetated habitats. The Planning Board concurs that the proposed layout will avoid and minimize adverse environmental impacts to the maximum extent practicable.

Alternate Stack Heights

The EIS Documents included evaluation of several ways to minimize the visibility of the proposed Facility, including changes to the Facility profile and size. The Facility's combustion turbine stacks are the most visually prominent feature. One way to minimize stack height is to limit the height of nearby structures that determine the Good Engineering Practice stack height. Preliminary modeling considered stack heights of up to 325 feet based on Good Engineering Practice stack height associated with an initial Facility design. Project design changes, including the reduction in the height of the air cooled condenser (ACC) to 115 feet, reduced the Good Engineering Practice stack height to 287.5 feet. The final stack height of 275 feet for the combustion turbines was selected based on modeling that showed that this height was adequate to largely avoid increases in predicted impacts that can result from the effects of building induced downwash on stacks that are below Good Engineering Practice stack height.

For the reasons described in the EIS Documents, the Planning Board finds that the 275 foot stacks will minimize adverse visual impacts, and enable the Project to blend with the surrounding area as much as possible.

Alternative Water Supply Option

CPV Valley proposes to utilize Treated Effluent from City of Middletown Sewage Treatment Plant for its process make-up water. The EIS Documents also considered the use of ground water, surface waters, and existing municipal potable water supplies for make-up water. Use of ground water and surface waters were found to be technically viable; however, existing municipal water supplies would not be able to meet the facilities make-up water needs. For the reasons described in the EIS Documents, the Planning Board determines that the proposed use of effluent from the City of Middletown Sewage Treatment Plant will avoid and minimize adverse environmental impacts to the maximum extent practicable.

Cumulative Impacts

Cumulative impacts potentially created by construction and operation of the Project are thoroughly evaluated in the EIS Documents. The evaluation focused on the projects for which sufficient location, layout, and design information was available to carry out a meaningful analysis. Based upon its review of the EIS Documents, and its knowledge of new land uses and developments proposed in the Town and the area near the Project Site, the Planning Board finds that the EIS Documents thoroughly analyzed the degree to which the impacts of the Project may have cumulative impacts with such other projects. Further, the Planning Board agrees with, and adopts the cumulative impact conclusions reached in, the EIS Documents, and finds that the Project will not cause or contribute to any significant adverse cumulative environmental impacts.

Certification of Findings To Approve

The Town of Wawayanda Planning Board has considered the relevant environmental impacts, facts and conclusions disclosed in the EIS Documents and other pertinent information, and has weighed and balanced relevant environmental impacts with social, economic and other considerations.

Having considered the information and the facts and conclusions relied upon to meet the requirements of 6 NYCRR 617.11, the Town of Wawayanda Planning Board certifies that:

1) The requirements of 6 NYCRR Part 617 have been met; and

2) Consistent with social, economic, and other essential considerations from among the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable.

This Statement Is Not Complete Until Authorized As Follows:

Adopted By Resolution: May 23rd 2012

Chairperson: Barbara Paterson

Attachment 4

Valley March 30, 2021 Supplemental Submission

CPV Valley Energy Center
50 Braintree Hill Office Park
Suite 300
Braintree, MA 02184

March 30, 2021

Transmitted via email to chris.hogan@dec.ny.gov

Mr. Christopher M. Hogan
Chief, Major Project Management Unit
Department of Environmental Conservation
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, NY 12233-1750

Re: CPV Valley, LLC – CPV Valley Energy Center
Title V and IV Permit Applications
DEC ID 3-3356-00136/000010 & 00009
First Supplemental Response to November 29, 2020 Notice of Revocation of Complete Application and Notice of Incomplete Application

Dear Mr. Hogan:

As you know, CPV Valley, LLC ("Valley" or "Applicant") seeks permits under Title V and IV of the Clean Air Act and Article 19 of the New York Environmental Conservation Law ("ECL") (collectively, the "Application") for the Valley Energy Center ("Facility"). By letter dated March 8, 2021, Valley submitted a response to the New York State Department of Environmental Conservation's ("NYSDEC" or "Department") Notice of Revocation of Complete Application and Notice of Incomplete Application dated November 29, 2020 ("NOIA") regarding Valley's Application. Valley's March 8, 2021 submission included a report prepared by ICF demonstrating why NYSDEC's issuance of a Title V permit would not interfere with the Statewide greenhouse gas ("GHG") emission limits established in the Climate Leadership and Community Protection Act Section 7 [2] (Chapter 106 of the Laws of 2019) (the "CLCPA"), ECL Article 75, and recently promulgated at 6 NYCRR Part 496 (eff. December 30, 2020). This letter is intended to supplement Valley's March 8, 2021 submission and provide information related to the technical feasibility of using renewable natural gas ("RNG") and hydrogen sourced using renewable energy ("green hydrogen") at the Facility.[1]

As part of its report, ICF also assessed consistency with the state's long-term energy targets of a zero-emissions statewide electric system by 2040. ICF's modeling and conclusions presumed that RNG and/or green hydrogen would be CLCPA-compliant

[1] Valley reserves all rights to challenge NYSDEC's revocation of its May 2019 application completeness determination in any administrative or judicial action or proceeding.

zero-emissions fuel sources able to be used beyond 2040 to meet the statewide electric system targets. The ICF report set forth assumptions regarding combustion of RNG resulting in zero GHG emissions, and provided an evaluation of the economic feasibility and anticipated adequacy of RNG / green hydrogen supply.[2] Technical feasibility of using RNG or green hydrogen at the Facility, however, was outside the scope of ICF's report. As discussed herein, and based on the current state of knowledge concerning these evolving technologies, potential future use of RNG and/or green hydrogen could be technologically feasible should Valley be required to use such fuels to remain CLCPA compliant beyond 2040.

Green Hydrogen

Green hydrogen is a zero emission fuel produced through the process of electrolysis, which uses renewable energy to split water molecules into their elemental components. Hydrogen produced as a result of electrolysis can then be stored and combusted by dispatchable energy resources to produce electricity when it is needed.

The Facility uses two Siemens F-class combustion turbine generators ("CTG") model SGT6-5000F/W501F and employs state-of-the-art emissions control technology. These CTGs use Siemens Energy's Dry Low Emission ("DLE") combustion technology that can currently burn up to 15% hydrogen with no or minimal upgrades and up to 30% hydrogen if retrofitted with currently available technology. Included herein as **Attachment 1** is a Siemens Energy hydrogen White Paper detailing current hydrogen capabilities of Siemens' gas turbines (Attachment 1 § 2, Figure 3, pgs. 8-9). By 2030, Siemens anticipates that its large gas turbine DLE systems will be capable of running on 100% hydrogen (Attachment 1 § 3, pg. 12; Attachment 1 § 5, Figure 20, pg. 19). This will be accomplished by using various technology enablers such as incorporating modified or new burner designs into the existing turbines (Attachment 1 § 5, pgs. 18-19).

As a global power systems leader in designing a new generation of turbines and engines to run on hydrogen, Siemens Energy's efforts to obtain its 2030 goals are exemplified by present day efforts. For example, Siemens Energy is supplying two gas turbine packages that will eventually operate on 100% hydrogen for the Leipzig Süd district heating power plant in Germany[3] and has committed to having gas turbines capable of running on 100% hydrogen with DLE technology across its gas turbine portfolio.[4] While Valley cannot commit to using green hydrogen at this time, the

[2] ICF's analysis regarding market expectations, supply, and economic feasibility of RNG and green hydrogen is consistent with a similar report ICF prepared in support of a Title V application for the Danskammer Energy Center ("Danskammer Report") (NYSDEC ID: 3-3346-00011/00017) to which Department Staff had brought to Valley's attention during a technical conference (*see* Case 18-F-0325, Application of Danskammer Energy, LLC, Fourth Supplement to the Application [Dec. 22, 2020] [Item No. 126] (available at http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=56697&MNO=18-F-0325). To the extent that there are overlapping questions related to statewide renewable fuel market economics, availability, or other similar issues that are not plant specific that NYSDEC requires in order to perform its CLCPA § 7 analysis, Valley adopts such information and respectfully refers Staff to the Danskammer Report for such information.

[3] See https://fuelcellsworks.com/news/leipzig-will-soon-be-able-to-heat-with-hydrogen-thanks-to-siemens-award-winning-turbines/.

[4] See https://www.worldenergy.org/assets/downloads/Siemens_Commitment.pdf.

information herein and in the attachments shows the current and future conversion potential to operate on green hydrogen by 2040.

Renewable Natural Gas

RNG is a pipeline compatible gaseous fuel derived from biomass or other renewable sources that after conditioning, can be up to 99% methane. The process of capturing RNG does not create new carbon emissions, but rather, recycles carbon that was already in circulation and which would have resulted in the emission of GHGs absent conversion to RNG. New York considers biogas from sources like landfill and manure digestion to be Main Tier Eligible Electric Generation Sources, which are the primary sources used to reach state Renewable Portfolio Standards ("RPS").[5] While RNG is not included as a qualified "renewable energy system" under the CLCPA, the New York State Department of Public Service ("NYSDPS"), the agency responsible under the CLCPA for implementing a program to achieve the 2030 and 2040 statewide electric system goals, has already recognized GHG reductions and the climate change benefits of RNG.[6]

RNG is considered suitable for many end-use applications and considered suitable for inclusion in general pipeline systems. While RNG production may require new interconnections to pipelines, RNG supply does not necessarily require additional natural gas system infrastructure, such as transmission and distribution pipes. RNG can be transported in existing natural gas pipelines, compressed and dispensed at existing compressed natural gas stations, or used by conventional natural gas burning end users.[7]

Importantly, because RNG is in effect methane that is sourced from biomass or other renewable sources (rather than geological natural gas), it can be transported to power plants such as Valley's Facility using existing natural gas infrastructure and used directly in Valley's CGTs with little to no modifications. As such, use of RNG is technically feasible at the Facility.

If RNG is either deemed a CLCPA compliant fuel or otherwise permitted for use because of its neutral or GHG reducing impacts, the Facility, being one of the most efficient and cleanest power plants currently operating in the region, is well positioned to aid the state in meeting its CLCPA targets while ensuring grid reliability.

Future Reliance on Renewable Fuels

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[5] See https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Standard/Renewable-Portfolio-Standard.

[6] Case 15-E-0302, Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard, Draft Supplemental Environmental Impact Statement [Issued Feb. 23 2016] [Item No. 84], 5-55 (available at http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=48235&MNO=15-E-0302) ("Closed-loop cycles [where biomass is grown from land solely dedicated to the production of energy resources] are generally carbon neutral because the carbon released during combustion is equivalent to the carbon absorbed while the biomass is grown. Open-loop cycles [where biomass resources are typically byproducts of other activities] result in GHG emissions reductions because the combustion process produces primarily CO2 while natural biomass decay produces CO2 and methane. Methane has more global warming potential than CO2; decreases in methane production result in a lifecycle reduction of greenhouse gases.").

[7] U.S. E.P.A, An Overview of Renewable Natural Gas from Biogas, July 2020, § 3.0 (available at https://www.epa.gov/sites/production/files/2020-07/documents/lmop_rng_document.pdf).

To date, neither NYSDEC nor the PSC have fully developed their CLCPA regulations and programs, and as such, there is no applicable regulation or other guidance as to whether RNG or green hydrogen would be deemed a zero GHG emission resource. Future possible regulation or guidance could include (a) installation of electric power generation resources that reduce GHG emissions by displacing older inefficient plants, (b) allowing such generation resources to operate beyond 2040 by using fuels that are in fact carbon-neutral or GHG reducing (even if not included within the technical definitions of the CLCPA), (c) modifying program requirements (as allowed under the CLCPA), or (d) ceasing operations unless the PSC determines that the resource is necessary for grid reliability. While ultimately these pathways are within the purview of PSC and/or NYSDEC programs implementing the CLCPA, and would be based on future changes in technology and infrastructure, the Facility is well positioned to operate within any of the above potential scenarios, reduce GHG emissions from the state electrical system, and be consistent with the CLCPA future targets.

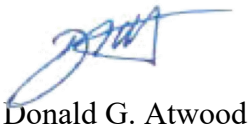
To that end, Valley is willing to support green hydrogen research and development by undertaking a multi-year study after its Application is approved and permits are granted with appropriate permit conditions[8] that examines feasibility of using green hydrogen at the Facility and further assessing hydrogen's commercial and economic viability for use at the Facility.

Conclusion

Based on the information herein and Valley's prior submissions, it is technically feasible for the Facility to use or be converted to use alternative emissions-free fuels such as RNG or green hydrogen, if and when such sources become commercially and economically available in the future market place. Valley's Application is therefore consistent with the State's long-term targets for renewable and zero emission electricity required under the CLCPA, and the Facility will continue to operate complementarily with existing and future intermittent renewable resources and offer reliability for the unforeseeable needs of the grid in the long term.

Thank you for your continuing attention Valley's Application.

Very truly yours,



Donald G. Atwood
Asset Manager Representative

[8] *See e.g.* Air Title V Facility for Edgewood Energy LLC (Permit No. 1-4728-03244/00005) (eff. 10/14/2020) condition 51 (stating "[p]ursuant to The New York State Climate Leadership and Community Protection Act (CLCPA) and Article 75 of the Environmental Conservation Law, emission sources shall comply with regulations to be promulgated by the Department to ensure that by 2030 statewide greenhouse gas emissions are reduced by 40% of 1990 levels, and by 2050 statewide greenhouse gas emissions are reduced by 85% of 1990 levels") (available at https://www.dec.ny.gov/dardata/boss/afs/permits/147280324400005_r2.pdf).

SIEMENS
Ingenuity for life

Hydrogen power with Siemens gas turbines

Reliable carbon-free power with flexibility

Today, gas turbines play a vital role in addressing the threat of global warming and making energy greener. Gas turbines are in the category of the cleanest fossil-fuel based power generation solutions and are ideally suited to manage the intermittency of increasing renewable loads by providing reliable and on-demand power. Gas turbines will remain an even more important element in power grids as electrification trends toward full decarbonization and the hydrogen economy starts to unfold.

By burning hydrogen as a fuel, either through co-firing or complete displacement of natural gas, gas turbines can provide low-carbon or even carbon-free power solutions. Gas turbines play another key role in enabling a smooth transition from fossil to decarbonized power systems because they provide highly flexible and dispatchable generation to support grids largely dominated by intermittent renewable power. These capabilities make gas turbines ideally suited to helping to meet the World Energy Council's trilemma of secure, affordable and environmentally sustainable energy.

In the future, increasing use of hydrogen fuels will enable the conversion of thousands of gas turbine operating units worldwide into reliable and environmentally sustainable decarbonization agents. Therefore, owners of existing gas turbine power plants and the ones soon to be developed can be confident of their plants' roles in supporting the future energy transition.

Karim Amin

Chief Executive Officer – Generation
Siemens Energy

Thorbjörn Fors

Chief Executive Officer – Oil & Gas
Siemens Energy

Table of contents

1. Why use hydrogen as a fuel for gas turbines?

The need for hydrogen to de-carbonize power generation

Global warming, caused by anthropogenic emissions such as carbon dioxide and methane, threatens to disrupt the ecosystems on which we all depend. In October 2018, the Intergovernmental Panel on Climate Change (IPCC) released a special report that details the impacts of global warming of 1.5 °C and higher above pre-industrial levels. Revising their original target of keeping global warming below 2°C, the IPCC warned that warming above 1.5 °C is not sustainable in the long-term. Instead the IPCC now recommends reducing the target for global temperature increases to just 1-1.5 °C until the end of the century [1].

The IPCC's previous target of limiting the global temperature rise to no more than 1.5 °C required targeting annual global emissions in the 25–30 gigatons (Gt) carbon dioxide (CO_2) equivalent per year range by 2030 [1], but in 2018 annual worldwide emissions reached 33.1 Gt CO_2 [2]. The energy sector is a major contributor to global greenhouse emissions with a share of approximately 36% across advanced economies while the remaining 64% are emitted from other sectors such as industry, mobility and residential [2].

For the last few decades the focus for reducing the carbon emissions in the energy sector has been on the development of renewable generation using wind and solar energy. While renewables do not produce carbon emissions, they introduce a high level of intermittency due to changing weather conditions and variations in solar irradiation. This is often coupled with mismatches between the demand and supply of energy. While demand-side management can play a large role in handling these mismatches, supply management through curtailment of renewables during times of oversupply, energy storage, and providing backup power with conventional fossil fuel plants is also required. In recent years, a variety of storage options have emerged allowing short-term storage during the day as well as long-term storage through whole seasons. While batteries are well-suited to help manage the daily peak shift from mid-day to evenings, thermal and chemical solutions are more suitable to store energy for longer periods.

Of the conventional fossil-fuel generation technologies gas turbines are the cleanest option. The use of natural gas fired open cycle gas turbines, instead of coal power plants, reduces specific carbon emission by 25% to 50%[1]. Additional reductions of carbon emissions can be achieved by converting simple cycle units to combined cycle power plants which yields another 20% to 23% reduction[2]. Compared to separately producing electricity in a combined cycle plant and producing heat in a fossil-fuel fired boiler, cogeneration of heat and power in combined heat and power plants further reduces the specific CO_2 emissions. The total energy efficiency of modern gas turbines with cogeneration can reach 85% [3].

Carbon neutrality is becoming a key long-term goal for countries and organizations. The European Union (EU) has set an example by aiming to reach this goal by 2050 [4] but switching to natural gas power generation and improving efficiencies are only the first steps. In the long term, displacement of natural gas fuel with hydrogen (H_2) is a viable means of enabling carbon neutral power plant operation as hydrogen combustion produces no CO_2. Additionally, blending natural gas and hydrogen can substantially lower carbon emissions. For hydrogen mixtures the relationship between CO_2 reduction and hydrogen content is non-linear because the hydrogen molecule has 2.5 times the energy content of methane by mass, but one third on a volumetric basis. CO_2 emissions scale by hydrogen mass content in the fuel, while typically hydrogen and natural gas mixtures are defined on a volumetric basis, as in Figure 1.

Substituting natural gas with hydrogen over time means that investments in gas power plants today will have long-term viability, as mixing hydrogen into the natural gas stream for gas turbine operation will help plants remain eligible for capacity mechanisms. For example, as of July 4, 2019 the EU is limiting new power plants to less than 550 grams of CO_2 per kilowatt hour (gCO_2/kwh) to participate in the capacity mechanisms of the internal market and restricting the participation of legacy plants by 2025[3][5].

[1] Assumptions: coal emissions 750-1000 gCO_2/kwh; simple cycle gas turbines emissions 490-565 gCO_2/kWh for operation on 100% methane

[2] Assuming combined cycle gas turbine emissions range 305-395 gCO_2/kWh

[3] As of July 1, 2025, units that began operation before July 4, 2019 will be required to emit less than 550 gCO_2/kWh of electricity and less than 350 kilograms CO_2 of fossil fuel origin on average per year per installed kilowatt hour electric in order to qualify for the capacity mechanisms [5].

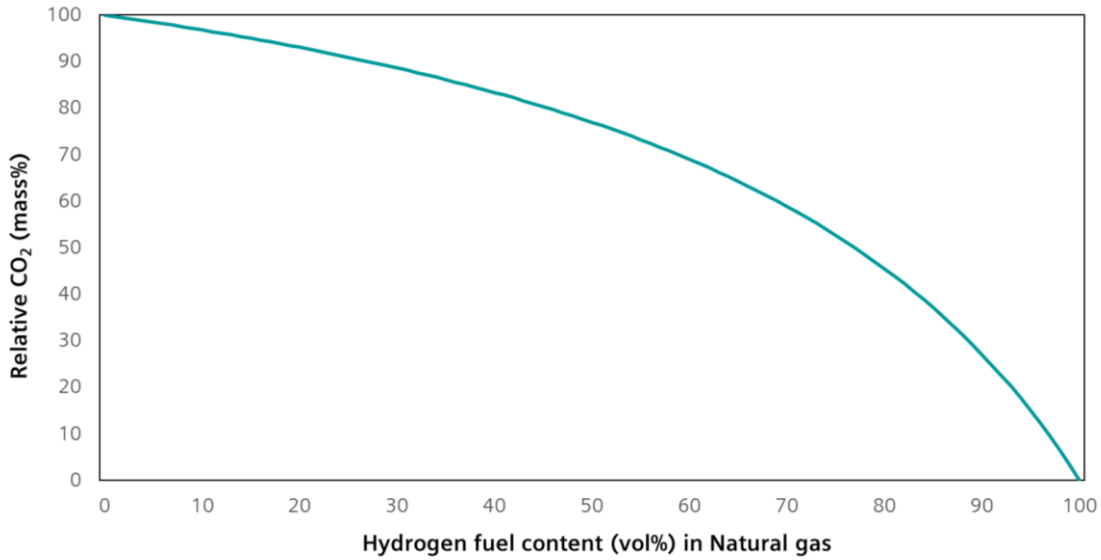


Figure 1: Hydrogen volume percentage (vol%) in the fuel versus the relative CO_2 emissions from the combustion process[4]

As noted in Figure 1, in order to reach a 50% reduction in CO_2 emissions by mass, approximately 80 vol% hydrogen fuel content is needed. The amount of hydrogen required to operate large gas turbines at this level of hydrogen fuel mixture is not economically viable today, but for smaller gas turbines these hydrogen levels are within reach, especially when considering hydrogen flare gases from petrochemical sources. With smaller amounts of hydrogen in the fuel it is still possible to make significant emission reductions. For example, adding only 10 vol% hydrogen in the fuel will reduce CO_2 emissions by 2.7%, which would result in a reduction of 1.26 million metric tons of CO_2 for a reference 600 megawatt (MW) combined cycle power plant that runs for 6000 hours a year at an average 60% efficiency.

This hydrogen fuel blending not only lowers CO_2 emissions of gas turbines, it also ensures that the gas turbines can participate in electricity storage and re-electrification. Hydrogen can serve as a chemical storage vehicle by being produced through electrolysis during times of excess renewable energy generation and then used to fuel gas turbines or sold to other industries, as shown in Figure 2. In addition to electrolysis, new technologies are being developed to produce hydrogen from renewable sources[5].

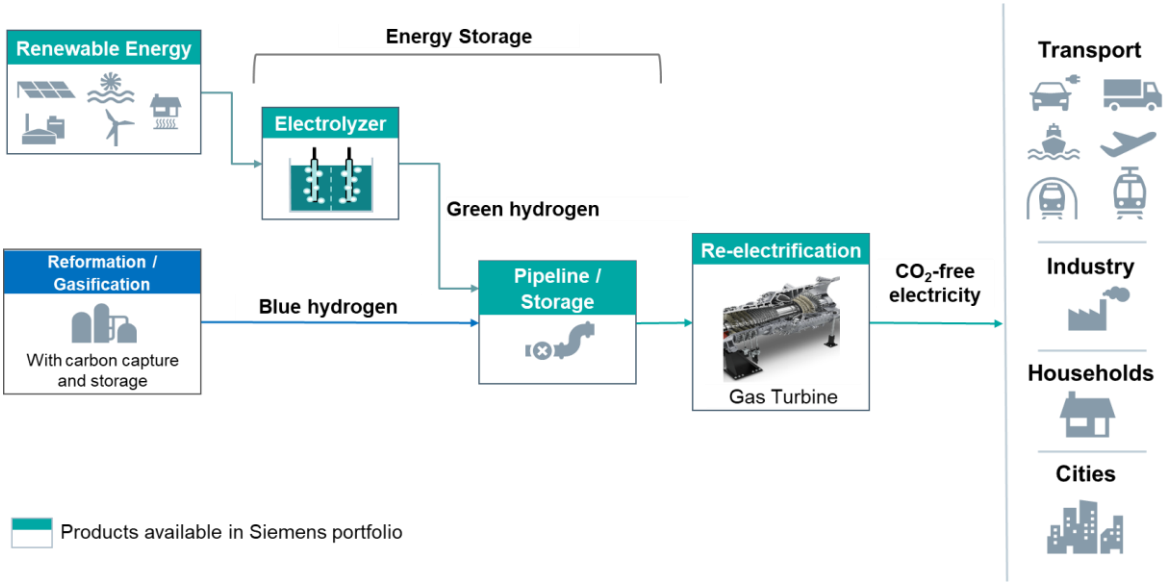


Figure 2: Example of the integration of technologies to produce and use hydrogen

[4] Assumes 100% combustion efficiency

[5] An example is the U.S. Department of Energy's Lawrence Berkeley National Laboratory and the Joint Center for Artificial Photosynthesis (JCAP) artificial photosynthesis device called a hybrid photoelectrochemical and voltaic (HPEV) cell which produces electricity and from sunlight and water [6].

The impact of hydrogen gas turbines on the power sector

In January 2019, the EUTurbines industry association members committed to developing gas turbines capable of operating on 100% hydrogen by 2030 [7]. This shows the gas turbine industry's commitment to decarbonization and will make it possible to use gas turbines for completely carbon emissions-free operation.

The use of hydrogen in gas turbines has several benefits to the power sector. For operators, the use of hydrogen fuels reduces the carbon emissions of existing generation plants. It allows these facilities to participate in low carbon energy markets and prevents stranded assets due to regulations on emissions reductions. For the grid, gas turbines operating on hydrogen fuel or hydrogen fuel mixtures are dispatchable and flexible generation capacity available to keep the grid stable. For the power sector, continuing to use the huge installed fleet of gas turbines avoids capital costs and CO_2 emissions associated with building new facilities to support the intermittent renewable energy market. Gas turbines in combined heat and power arrangements in industrial applications can provide steam and heat that would otherwise need to be substituted by electric heaters or biomass plants.

Where does the hydrogen come from?

The source of the hydrogen should be considered when assessing its impacts on carbon emissions in power generation applications. Hydrogen production can be classified according to its carbon footprint:

Green Hydrogen

Hydrogen production with zero associated CO_2 emissions, such as electrolysis using electricity from 100% renewable sources. Emerging technologies may also be classified as green if there are no CO_2 emissions associated with the electricity required for the process.

Blue Hydrogen

CO_2 capture systems are fitted to the hydrogen production technology and the CO_2 sequestered in underground aquifers, depleted oil and gas fields, or used in industry (ex: Food & Beverage) to produce higher value products. CO_2 capture is not 100% efficient, so some CO_2 will always be released to the atmosphere.

Black / Grey / Brown Hydrogen

CO_2 is produced during the hydrogen production process and released to atmosphere. To date, more than 90% of the worldwide hydrogen is supplied via this route. However, in combination with power generation the associated CO_2 emissions with generating hydrogen this way is equal to or greater than the avoided emissions from burning natural gas in a gas turbine.

Application paths for gas turbines

There are three distinct application paths emerging for gas turbines related to operation on 100% hydrogen or hydrogen-natural gas blends.

Hydrogen blended into natural gas network

Hydrogen produced from any source (green, blue or grey) is injected into the existing natural gas network. In this scenario, any consumer (industrial, commercial or domestic) will now be required to operate gas-fired equipment using natural gas with a hydrogen content. This may pose a challenge to many consumers and investment would be required to have all connected hardware able to run with hydrogen in the fuel. The hydrogen percentage could vary depending on the purity of the hydrogen, the injection frequency (continuous or intermittent), the complexity of the network, and the distance of the consumer from the point of injection. This would bring even more challenges to today's consumers connected to the gas grid.

In some cases, it has been proposed that consumers of high amounts of gas operate on higher hydrogen concentrations than other users. This would require the construction of dedicated hydrogen pipelines capable of transporting pure hydrogen. Hence, an alternative option to hydrogen blended into the existing pipeline is a second pipeline installed specifically for hydrogen to run in parallel to the natural gas lines.

High pressure transmission pipelines are unlikely to exceed 25 vol% hydrogen due to concerns over leakage through seals and welds, and hydrogen embrittlement of steel pipes. Older gas networks built for town or city gas, e.g. old German town gas pipes, can accept hydrogen contents up to 50%. Cross-linked polyethylene (XLPE) pipes used in low pressure natural gas distribution systems appear to be suitable for up to 100% hydrogen [8]. Plans are also being made to allow transportation of pure hydrogen in liquid form by ship to allow worldwide trading, in case underwater pipelines are not an option [9].

Such an approach will require regulators to redefine the permissible specifications for "pipeline quality" natural gas. As different approaches (blended vs. pure hydrogen) might be used in different regions, gas turbines must therefore be able to operate in the future on any fuel gas from 100% natural gas to the maximum hydrogen content permissible on the pipeline network.

Hydrogen 'peakers'

Renewable electricity or electricity from other zero carbon sources could be used to generate hydrogen in times of electricity oversupply, which is then stored until needed. Up to 100% hydrogen can then be burned in peaking or intermittent operation gas turbine power plants to provide zero or low carbon electricity and compensate for insufficient amounts of renewable electricity, thus providing sustainable backup power.

100 percent hydrogen baseload operation

Dedicated hydrogen production facilities could be created to fuel baseload or flexible baseload power plants, or combined heat and power facilities. This would allow zero carbon gas turbine-based power generation to provide the required electricity in networks with low renewables penetration or lack of other sources of zero carbon electricity. Within the next few years, blue hydrogen facilities are the most likely production sources for utility-scale 100% hydrogen applications because of the high amount of fuel required for large gas turbines.

2. Siemens hydrogen capability

Siemens gas turbine hydrogen capability

Siemens gas turbines can operate on high percentages of hydrogen fuel, with the specific capability of a unit depending on the gas turbine model and the type of combustion system. See Figure 3 for the "high-hydrogen options" across the portfolio for new unit applications that are available on specific request. For installed units the capabilities are given in the gas turbine manual. Higher hydrogen mixtures for those existing power plants and options for upgrading are discussed in Section 5.

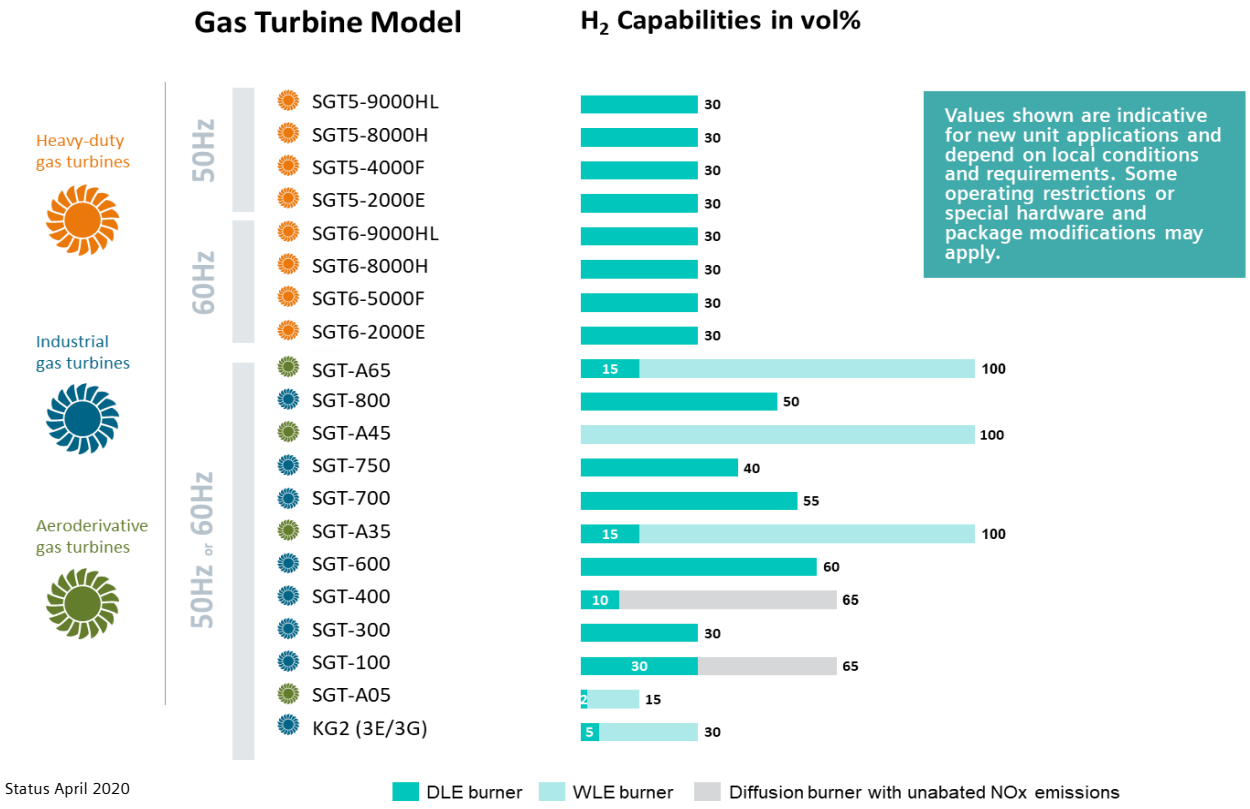


Figure 3: Siemens gas turbine portfolio hydrogen capability (available as "high-hydrogen" options) for new unit applications

Siemens gas turbine hydrogen operating experience

Siemens fleet experience with high hydrogen content fuels is extensive, with more than 55 units around the world amassing 2.5 million operating hours since the 1960s. High hydrogen gas turbine applications have been built for a range of industries and span the power range of the Siemens gas turbine portfolio. Experience has been gained on unabated diffusion flame, Wet Low Emissions (WLE), and Dry Low Emissions (DLE) combustion technologies. With this experience Siemens has gained a high confidence in managing hydrogen on a plant level and within our gas turbine systems.

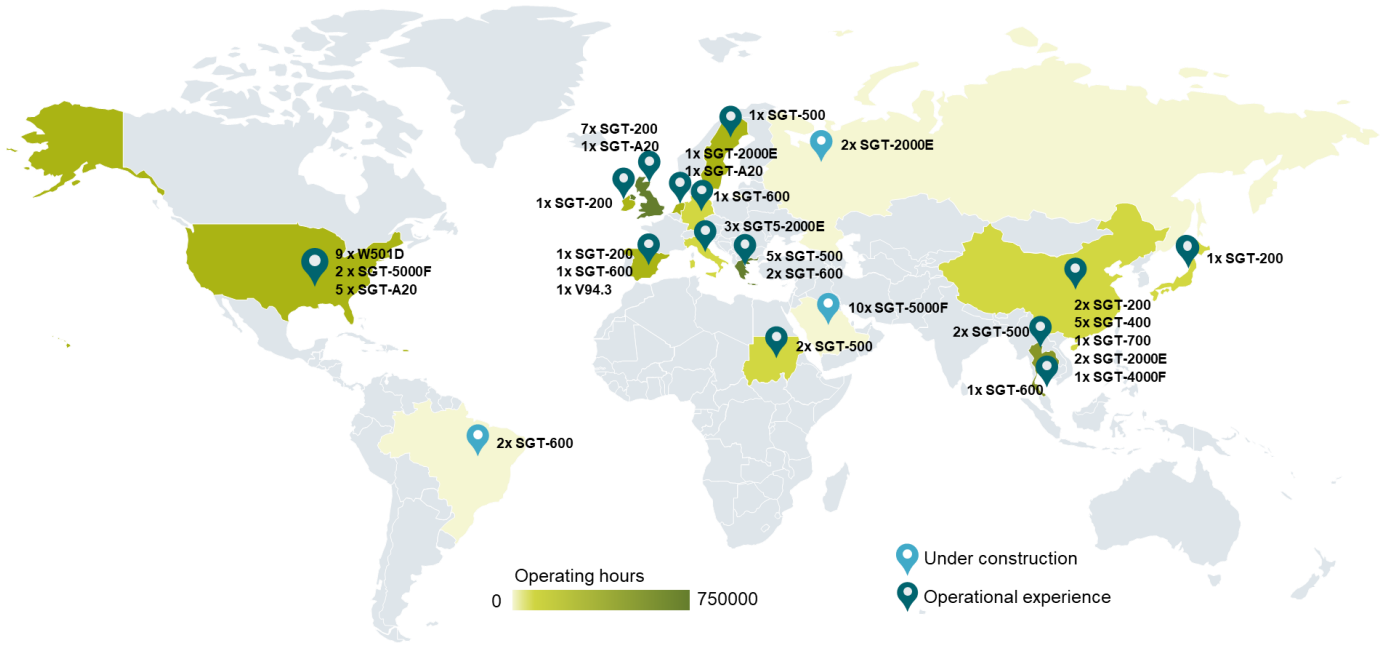


Figure 4: Siemens' high-hydrogen fleet experience

3. Hydrogen combustion

Hydrogen combustion fundamentals

Hydrogen differs from hydrocarbon fuels by its combustion characteristics, which pose unique challenges for gas turbine combustion systems designed primarily for natural gas fuels. Flame temperatures for hydrogen under adiabatic and stoichiometric conditions are almost 300 °C higher than for methane. Hydrogen's laminar flame speed is more than three times that of methane and the autoignition delay time of hydrogen is more than three time lower than methane, as shown in Figure 5 for flame temperatures of 1600 °C. With these characteristics hydrogen is a highly reactive fuel and controlling the flame to maintain the integrity of the combustion system and reach the desired level of emissions is a formidable challenge for research and development teams.

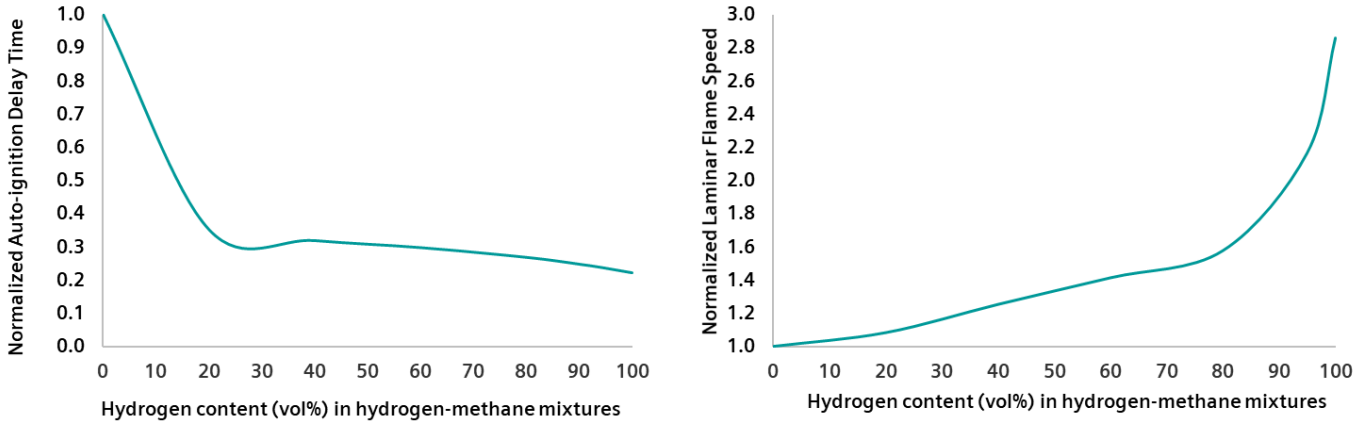


Figure 5: Hydrogen's impact on auto-ignition delay and flame speed for hydrogen-methane mixtures[6]

Dry Low Emission (DLE) combustion technology

In dry low emissions combustion systems, fuel and air are mixed prior to combustion in order to precisely control flame temperature which, in turn, allows the control of the rates of chemical processes that produce emissions such as nitrogen oxides (NO_x). The relative proportions of fuel and air is one of the driving factors for NO_x but also for flame stability. Hydrogen's higher reactivity poses specific challenges for the mixing technology in DLE systems:

- Higher flame speeds with hydrogen increase the risk of the flame burning closer to the injection points, travelling back into mixing passages or burning too close to liner walls leading to damage (see example in Figure 6). This risk increases as the hydrogen content in the fuel is increased and with increasing combustion inlet and flame temperature
- Hydrogen's lower auto-ignition delay compared to methane increases the likelihood of igniting the fuel in the mixing passages leading to damage
- Changes to thermoacoustic noise patterns because of the different flame heat release distribution can reduce the life of combustion system components

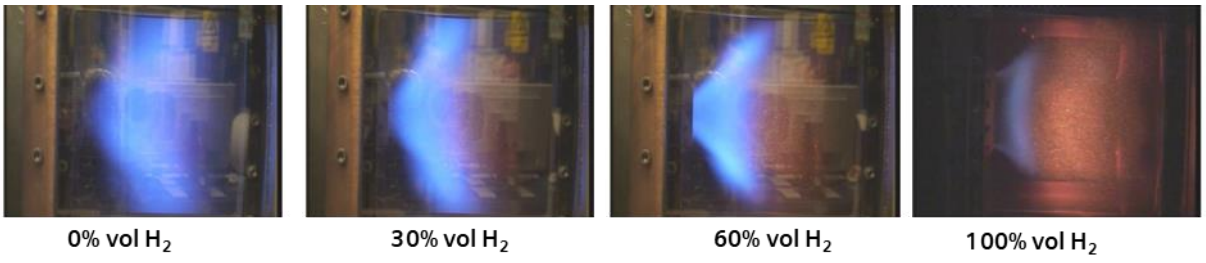


Figure 6: Flame position changes with increasing hydrogen fuel content, showing the most compact flame at 100% hydrogen. Also note how the 100% hydrogen flame is not as luminous as the natural gas flame.

[6] Produced with Chemkin using the GRI 3.0 Mechanism. Conditions: inlet temperature 450 °C, inlet pressure 20 bar, Adiabatic flame temperature 1600 °C

Siemens DLE combustion systems generally use swirl stabilized flames combined with lean premixing to achieve low NO_x emissions without dilution of the fuel. The acceptable fuel fraction of hydrogen depends on the specific combustion system design and engine operating conditions. Hardware and control system changes are required for higher hydrogen fuel contents to allow the systems to operate safely, meet NO_x emissions limits and manage varying fuel compositions. Siemens is in the process of extending the hydrogen capability of its DLE systems, with more details provided in the following sections.

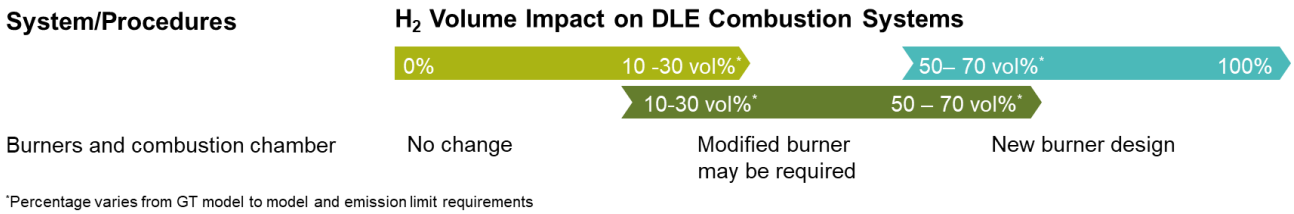


Figure 7: Hydrogen fuel volume impacts on DLE combustion systems

Non-DLE combustion technology

Non-DLE technology uses diffusion flames or partially premixed flames. There are several advantages and disadvantages associated with non-DLE systems:

- In general, these systems handle a large envelope of fuel compositions and 100% hydrogen is possible on various Siemens non-DLE gas turbines
- Diffusion flames require dilution to control NO_x emissions, which are driven by high flame temperatures. Hydrogen has higher flame temperatures compared to natural gas, which mean NO_x emission will be higher without abatement. Dilution is achieved by the introduction of nitrogen (N_2), steam, or water into the flame:
  - Nitrogen dilution has the advantage of often being available at the plant as a byproduct of gasification processes. Using the nitrogen produced as a biproduct to dilute the fuel reduces plant operating costs.
  - Steam dilution is significantly more efficient than nitrogen dilution in terms of emission reduction and in combined cycle or Combined Heat and Power (CHP) configurations steam dilution has a relatively small plant efficiency impact.
  - Injection of water into the combustor reduces the combustion flame temperature, thereby reducing NO_x and has the added benefit of boosting power output of the gas turbine.
- For single shaft gas turbines, surge margin can be a challenge with diluted high-hydrogen fuels due to changes in the balance of volumetric flow between the compressor and turbine. This can be managed by compressor and / or turbine modifications

Large gas turbines

DLE technology

Around the beginning of this century, gasification processes were developed to convert coal or refinery residues via gasification and carbon monoxide (CO) shift reaction into CO_2 and hydrogen. Following conversion, CO_2 is removed prior to feeding the syngas to the gas turbine. These Carbon Capture and Storage (CCS) syngases, like hydrogen, are characterized by a very high reactivity, as the thermal input to combustion is almost completely from hydrogen. Significant development of these processes occurred during the 2000s and 2010s with governmental support (EU, United States Department of Energy (US DOE) [10], and German Federal Ministry for Economic Affairs and Energy (BMWi) [11]). One of the central focus areas of these governmentally funded programs was research and development of combustion technology for DLE systems in large gas turbines, with the goal of substantially reducing or eliminating dilution in order to maximize plant efficiency. While CCS-gasification plants are not yet commercially viable, the related research into highly reactive hydrogen fuel combustion fuels has contributed to the development of future pure hydrogen capable DLE technology.

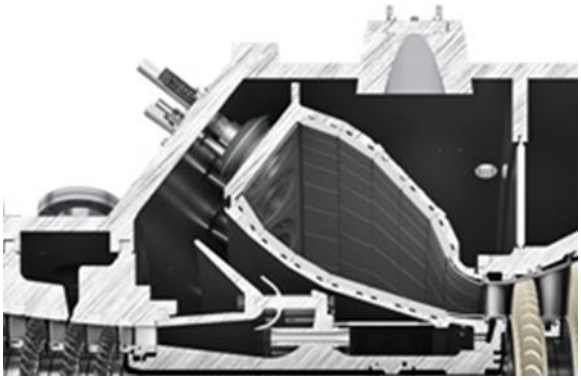


Figure 8: 4000F annular combustion chamber

Siemens' heavy-duty large gas turbines, SGT5/6-2000E and SGT5/6-4000F, use the HR3 burner design. Based on a hybrid burner concept, the HR3 has a central pilot swirler and a concentric diagonal swirler with gas injection through the swirler vanes (SFI). The SGT6-5000F and SGT5/6-8000H use Ultra-Low NO_x Platform Combustion System (ULN/PCS) systems which integrate SFI technology into a premixed pilot and concentrically arranged main swirlers. These burners combined have accumulated many millions of operating hours and offer a wide range of fuel flexibility including the capability to run on mixtures of natural gas and up to 30 vol% hydrogen. The latest SGT5/6-9000HL engines use the advanced combustion for efficiency (ACE) system, which is also capable to run on up to 30 vol% hydrogen. By 2030, the large gas turbine DLE systems are targeted to be capable of running on 100% hydrogen.

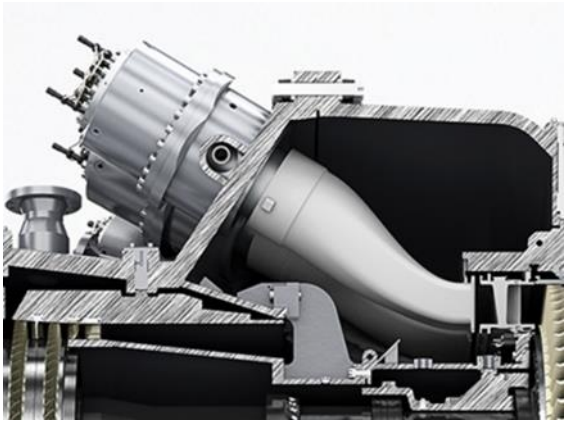


Figure 9: SGT-5000F combustion system

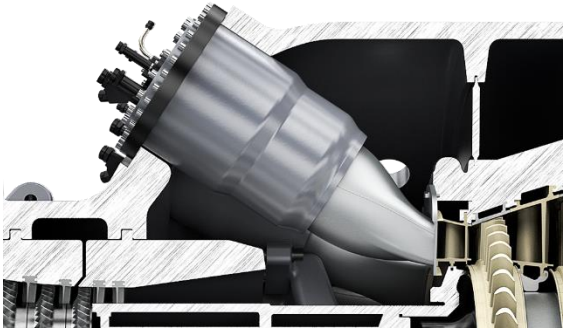


Figure 10: SGT5/6-9000HL combustion system

Siemens has recently sold a 2000E utility scale gas turbine to a customer in the petrochemical industry, with the requirement to run on up to 27 vol% hydrogen starting in 2020. This extension of the Siemens standard capability was achieved through incremental and retrofittable changes to the geometry of the burners to improve flashback resistance at higher hydrogen contents. It was tested and validated through a high-pressure combustion test at engine conditions. Validation testing has indicated that NO_x emissions will not exceed 50 mg/Nm³ during both operation on natural gas and with the hydrogen fuel mixture.

Non-DLE Technology

Since the early 1990s, Siemens' has gained experience operating its large gas turbine products employing non-DLE combustion technology on hydrogen fuel mixtures, specifically in applications of gasification processes with different feedstocks (coal, waste from the petrochemical industry, and biomass) and waste gases from steel mills (coke oven and blast furnace gases) [12]. These synthetic gases (syngas) are mixtures of varying composition, but typically have significant fractions of hydrogen and CO, as well as inert gases (N_2, CO_2, steam).

Medium industrial gas turbines

DLE technology

Figure 11: 3rd generation DLE combustion system

The SGT-600, 700 and 800 use 3rd generation DLE technology with a cylindrical duct downstream of a conical swirler for optimal premixing. Over the last decade, further development and testing of the burner has steadily improved its hydrogen capability. Rig and engine testing over the last three years has cleared 60 vol% hydrogen on the SGT-600, 55 vol% on the SGT-700, and 50% on the SGT-800. The SGT-600 has run an engine test with close to 80 vol% hydrogen, and a variant of the 3rd generation DLE burner, that is used in all three engines, has been recently tested at the Siemens Clean Energy Center in Berlin with up to 100% hydrogen fuel at engine-like conditions. This significant achievement was enabled by additive manufacturing which allowed for more efficient combustion system aerodynamics.

The SGT-750 engine is equipped with the 4th generation DLE burner. The 4th generation burner has a central premixed pilot with radial main swirler, contrasting it from the HR3 burner which uses a diagonal swirler. The 4th generation burner has been tested for various fuel compositions including hydrogen-methane mixtures and the SGT-750 has proven operation up to 40 vol% hydrogen fuel [13].

Siemens has recently sold two SGT-600, for a project in Brazil that will be commissioned to operate on 60 vol% hydrogen.

Non-DLE technology

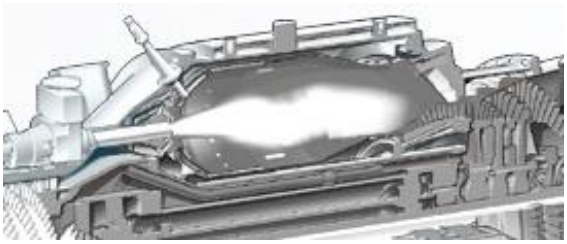


Figure 12: SGT-500 Non-DLE combustion system

Siemens has gained extensive experience with high-hydrogen fuels on SGT-500 and SGT-600 industrial gas turbines burning refinery fuel gases with up to 90 vol% hydrogen content. For example, 10 SGT-500 units in the field have gathered more than 800,000 combined operating hours on high-hydrogen fuels using non-DLE systems since 1979.

Aeroderivative gas turbines

DLE technology

The Siemens aero-derivative engines, specifically the SGT-A35 and SGT-A65, see Figure 13, use axially staged DLE burners with radial swirlers in the primary stage and secondary non-swirling premixing ducts axially downstream, which are stabilized by the hot gases from the primary stage. Axial staging is commonly used in multi-shaft engines to ensure optimal operability for all powers and conditions and to minimize thermo-acoustics as the heat release profile through the combustor can be varied for a given constant power. The SGT-A35 and SGT-A65 combustion systems have the capability to run with up to 15 vol% hydrogen today, and the A05 is capable of 2%.

Figure 13: SGT-A65 DLE combustion system

Non-DLE technology

Non-DLE systems in the Siemens aeroderivative gas turbine family are adapted from aerospace engine applications. These systems can operate on both gas and liquid fuels, with NO_x controlled by using water injection to reduce flame temperature. The SGT-A65 and SGT-A45 share the Phase V combustion system, while the SGT-A35 uses the Phase II combustion system. The SGT-A65, SGT-A45 and SGT-A35 non-DLE engines are all capable of operating on 100% hydrogen. The A05 is capable of 15 vol% hydrogen with a non-DLE system with water injection.

The SGT-A20 has significant experience operating on high-hydrogen fuels (up to 78 vol%) in petrochemical applications. Rig testing of the SGT-A65 and SGT-A45 combustion system has been conducted to understand the emissions characteristics of hydrogen-methane mixtures and pure hydrogen with water dilution.

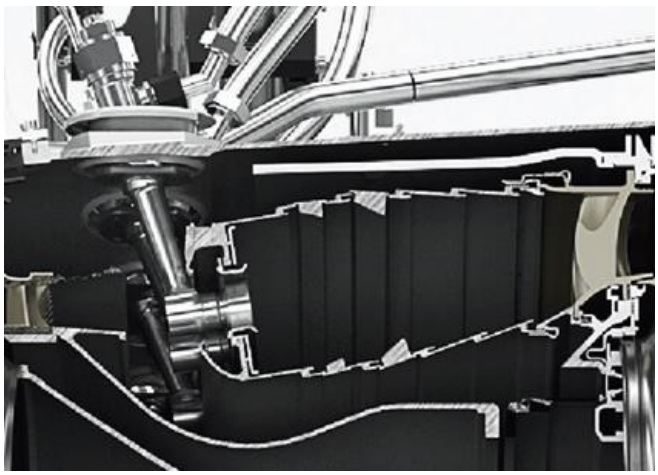


Figure 14: SGT-A65 and A45 Non-DLE combustion system

Small industrial gas turbines

DLE technology

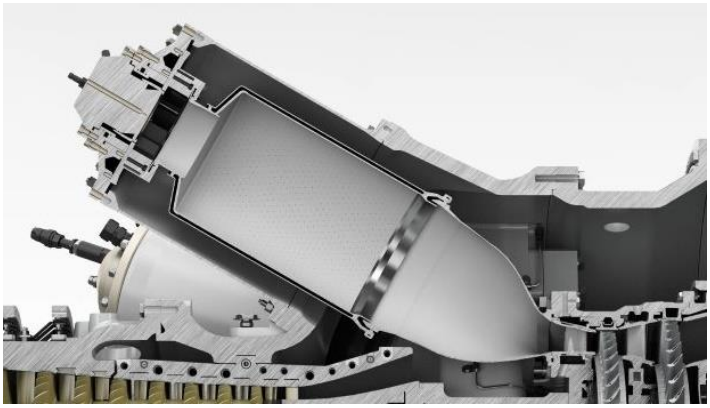


Figure 15: SGT-400 DLE combustion system

Siemens small industrial gas turbines SGT-100, 200, 300 and 400 use G30 burner technology, a proven radial swirler premixing design which has gone through significant fuel flexibility programs, driven by petrochemical customer demand. This combustor technology has the ability to burn mixtures of hydrogen and methane up to 30 vol% on the SGT-100 and 300, which is being further developed for increased hydrogen fractions through the Siemens hydrogen roadmap. The SGT-400 combustion system has been developed to run on up to 10 vol% hydrogen [14].

Non-DLE technology

The SGT-200 and SGT-400 with non-DLE combustion systems have over 1 million operating hours in coke oven gas applications, which are characterized by high hydrogen (50-65 vol%) content, and significant amounts of carbon dioxide and carbon monoxide. The SGT-200 has refinery gas experience with contents of hydrogen up to 85 vol% with more than 800,000 operating hours.

Summary

Over the last few decades, hydrogen capability in the Siemens' gas turbine portfolio has been developed to meet customer and project demands. These demands have differed significantly across the portfolio and the proven capabilities clearly reflect this. The higher capabilities, for example in the industrial gas turbine portfolio, were driven by demand from the industrial and petrochemical sector. We now see demand rising in the energy sector for high-hydrogen capabilities due to the drive toward energy decarbonization. Siemens is answering this demand with a development roadmap as shown in section 5.

4. Upgrading Siemens gas turbines for higher hydrogen operation

What about the installed fleet of Siemens gas turbines?

The hydrogen capability for existing gas turbines is always communicated with the gas turbine manual. If higher hydrogen fuel contents are desired, please check with your Siemens point of contact. Siemens will clarify if higher contents are possible without any further changes to the system and if service overhaul times would be affected.

For medium size industrial gas turbines, the standard capability is up to 15 vol%, but it depends on the package design as well as local certification requirements. An analysis needs to be conducted on the existing site to identify which components need to be changed to be able to use a higher mix of hydrogen. The industrial gas turbines today with 3rd generation DLE system (standard for all new unit SGT-700 and SGT-800 and an option for SGT-600) have a high capability to burn hydrogen with levels of 50-60 vol%. Upgrading existing units to these levels is also possible.

For gas turbines with WLE systems the hydrogen fuel capability will be driven by the certification standard of package systems and will usually be around 25 vol%, depending on local rules. However, a check by Siemens should always be conducted, to clarify certification requirements and any impacts on service overhaul times. It is also possible to increasing the hydrogen capability of these units with an upgrade.

Can I upgrade my gas turbine power plant?

High-hydrogen fuels not only pose challenges for the combustion system of the gas turbine, but the package and plant as well. The package design must be checked to make sure all components and systems are capable of safely running with higher hydrogen contents in the fuel. Upstream of the combustion system, hydrogen fuels can require changes to component materials, pipe sizes, as well as sensors and safety systems. Downstream, the exhaust path including the HRSG must be evaluated. Varying exhaust gas properties can impact heat transfer and corrosion rates, possibly impacting the life of components. We recommend a plant specific FEED study to analyze all factors and develop the most appropriate solution.

For the Siemens fleet, certain upgrades are available for hydrogen operation. For example, for Siemens' gas turbines SGT-2000E and SGT-4000F, the H_2DeCarb upgrade package is available for higher hydrogen contents. This upgrade package needs to be adapted to each project specifically. The SGT-2000E with this upgrade package can operate with up to 30 vol% hydrogen fuel, while the SGT-4000F can operate on up to 15 vol% hydrogen fuel. For other machines in the Siemens fleet, upgrades to higher hydrogen contents can be requested based on a project specific pre-study.

The effort to upgrade a Siemens gas turbine package for higher hydrogen content depends highly on the age of the gas turbine and the status of the installed auxiliary package and power plant. To implement a hydrogen upgrade for our customers, we use the process defined in Figure 16.

Figure 16: Process for assessment, definition and implementation of hydrogen upgrades.

There are several physical properties of pure hydrogen and natural gas-hydrogen mixtures that need to be considered. Hydrogen's lower density will lead to higher volumetric flow rates, higher flow velocities and/or higher skid edge pressures, requiring a review of gas fuel skid capacities. For example, as the amount of hydrogen in the fuel mixture increases, the required fuel volume flow will increase up to three times when comparing natural gas to pure hydrogen at the same pressure.

Hydrogen is a smaller molecule than methane, which will result in higher leakage rates, and therefore appropriate plant modifications are required. Additionally, hydrogen's wider flammability range and low ignition energy makes it more likely that fuel leaks could ignite. The number of connections in the gas system, package ventilation design, and gas detection systems must be assessed for suitability for high-hydrogen fuel operation, both with respect to material suitability and explosion risks. For example, a change to stainless steel might be needed to prevent embrittlement and enclosed electrical components may need to meet specific certification requirements (ex: International Electrotechnical Commission (IEC) gas groups IIC and IIB+H_2). For the flame detection in the package enclosure a combination of ultraviolet (UV) and infrared (IR) detectors might be required.

Combustion control systems may require modification to adapt to the changes in fuel properties when increasing the hydrogen content in the fuel. Depending on the concentration and engine configuration, the use of additional thermocouples may be required which would be monitored by the control system to avoid flashback.

The scope of an upgrade package is related to the target amount of hydrogen in the fuel and the specific technical requirements for the application. For higher hydrogen contents, the development of an upgrade package may have to balance between the scope of the modification and resultant performance levels. For example, with DLE systems in some cases the primary zone temperature might need to be reduced in order to keep the NO_x level emissions compliant. Upgrade measures may be able to compensate for the performance impact due to reduced overall combustion temperature. In the end, the decision on what specific measures should be implemented on an existing unit always depends on the site-specific configuration of the gas turbine and its surrounding systems.

We are continuously working on improving our upgrade packages to ensure that owners of Siemens gas turbines can upgrade their assets for higher hydrogen fuels if economically feasible.

5. Technology enablers and Siemens roadmap toward 100 % hydrogen gas turbines

Siemens technology enablers for high-hydrogen operation

Siemens is employing several key enablers to further develop the hydrogen capability of its gas turbines.

High fidelity Computational Fluid Dynamics (CFD)

Advanced CFD tools allow Siemens' combustion engineers to run analyses on fuel burners to identify the key design measures needed to increase a combustion system's hydrogen fuel capabilities. Combustion CFD tools provide engineers with a clearer picture of the flame structure, as demonstrated on the SGT-800 fuel injector study in Figure 17. The tools are calibrated for Siemens designs and verified through years of combustion development and verification testing allowing reliable evaluation of design options in the early phases of a project. With increasing share of hydrogen, thermo-acoustics of the flame changes as explained in section 3. To account for this effect, Siemens is engaged with universities to implement the latest advances from the research community into our tool suite, to take those effects into account during early stages of the design process.

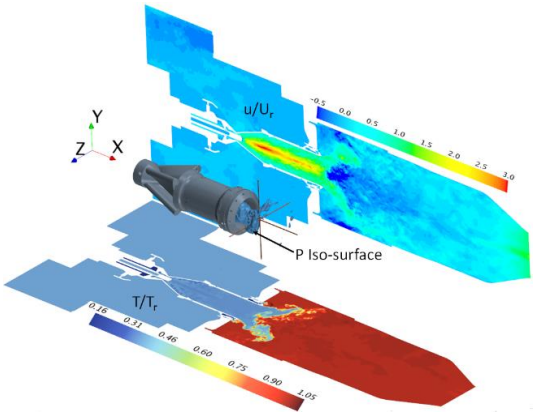


Figure 17: CFD flow field overview from a study of SGT-800 3rd generation burner with high-hydrogen fuels [15]

High pressure combustion testing

Despite of all the advances that were made in past years in the area of CFD, combustion today is still a complex field. Testing our combustion systems at pressure and temperature conditions is therefore still an important part of our design process. All new developments undergo rigorous testing to ensure safe operation at the customer site. The Clean Energy Center in Berlin is Siemens' facility for high pressure (35 bar) combustion tests, see Figure 18. The facility supports testing of components and systems for the whole Siemens gas turbine portfolio – from large gas turbines down to small industrial designs – and allows for a wide variety of fuels to be tested. In 2019, hydrogen testing capability was added to ensure we will be able to support the increased demand of hydrogen applications. With this in-house capability Siemens ensures new knowledge is shared across our fleet and timely support is provided to customer projects for special fuels like hydrogen.

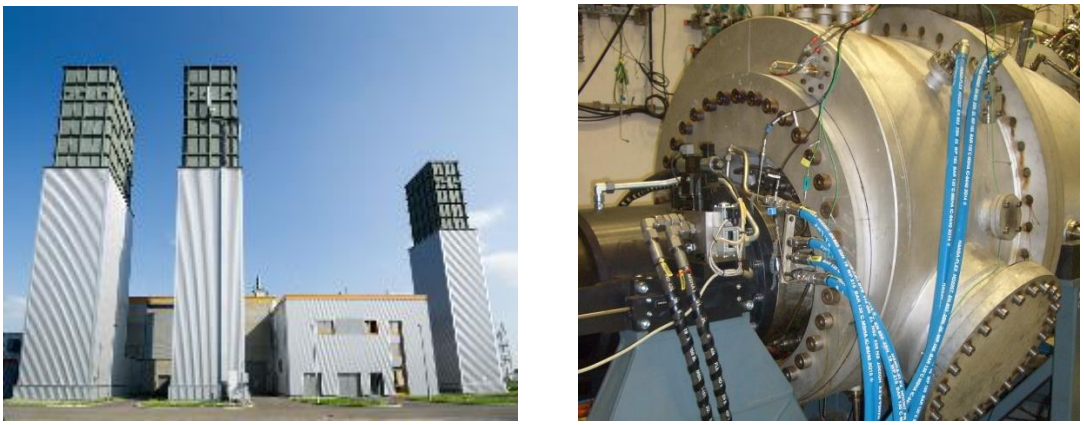


Figure 18: Clean Energy Center facilities for high pressure combustion tests, Berlin, Germany

Additive manufacturing

Siemens' additive manufacturing technology enables the integration of innovative design features and allows technology validation time to be accelerated by up to 75%. This allows a faster response to changing customer needs. As shown in Figure 19, additive manufacturing is supporting the development of combustion technology that can overcome the challenges of hydrogen applications by allowing the creation of complex cooling features and fuel routing that would not previously have been possible [16]. These features are vital when it comes to ensuring stable combustion of hydrogen.

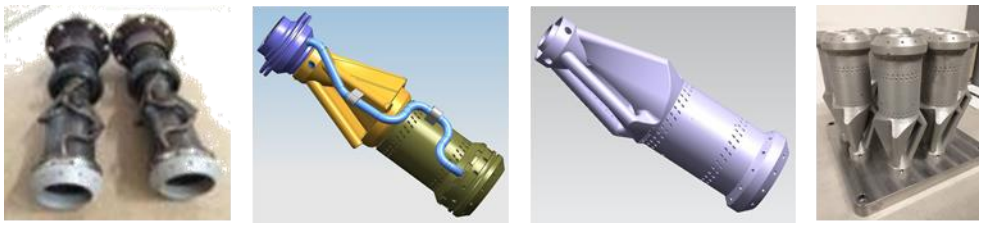


Figure 19: Fuel burner design progressions from welded (far left) to SLM additive manufacturing (far right) for 3rd generation DLE burner

Hydrogen roadmap for Siemens gas turbines

Finally, our 100% hydrogen gas turbine program combines extensive technology development for industrial and utility power generation applications. Since the 1960s, Siemens has gained experience with high-hydrogen fuels on non-DLE combustion systems. Beginning in the early 2000s Siemens has invested in the development of DLE hydrogen combustion technology. By 2030, Siemens intends to have gas turbines with the capability of operating on 100% hydrogen fuel with DLE technology available across our gas turbine portfolio. To achieve this target, we are continuously developing the necessary technologies and implementing these new designs into our product portfolio. Siemens' aeroderivative gas turbines are available to run on 100% hydrogen fuel with WLE combustion systems today. Based on the availability of hydrogen in the different sectors, we will push our hydrogen technology forward to ensure that customer needs are met.

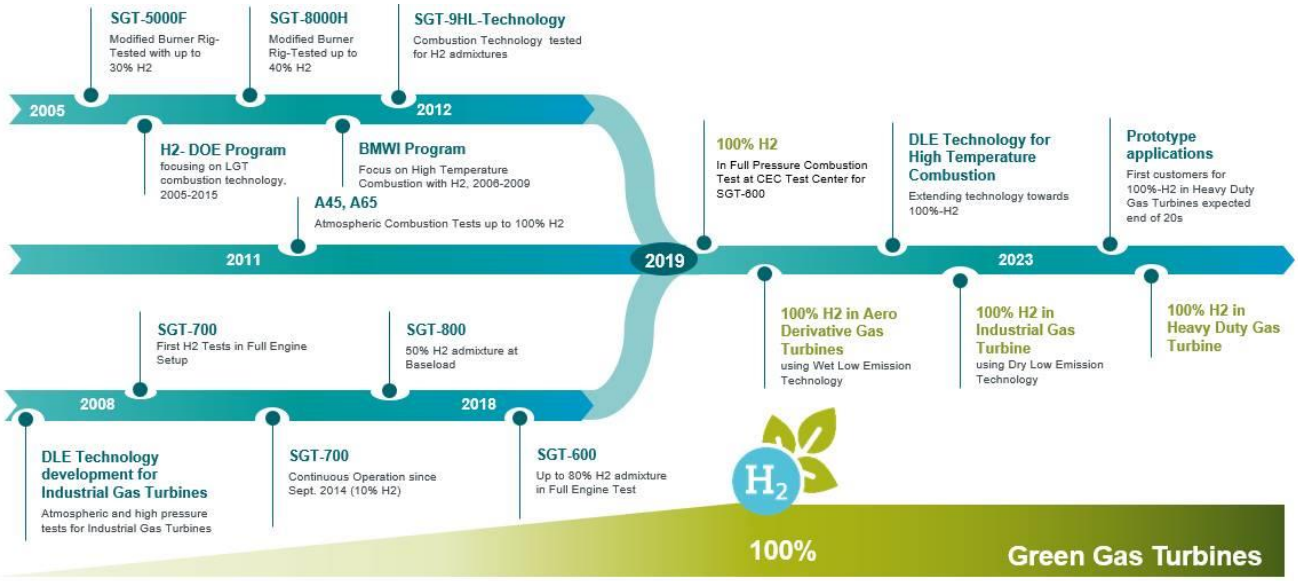


Figure 20: Siemens 100% hydrogen gas turbine roadmap

Abbreviations

BMWi	Bundesministerium für Wirtschaft und Energy (German Federal Ministry for Economic Affairs and Energy)
CCS	Carbon Capture and Storage
CFD	Computational Fluid Dynamics
CHP	Combined Heat and Power
CO	Carbon Monoxide
CO_2	Carbon Dioxide
DLE	Dry Low Emissions
DOE	Department of Energy
EU	European Union
G30	Name of Combustion System
HR	Hybrid Burner
HPEV	Hybrid Photoelectrochemical and Voltaic
H_2	Hydrogen
IPCC	International Panel on Climate Change
NO_x	Nitrogen Oxides
N_2	Nitrogen
PCS	Platform Combustion System
UK	United Kingdom
ULN	Ultra-Low NO_x
US	United States
XLPE	Cross-linked polyethylene

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Attachment 5

Permit Conditions

Facility DEC ID: 3334600011

PERMIT
Under the Environmental Conservation Law (ECL)

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Permit Type: Industrial SPDES - Surface Discharge
Permit ID: 3-3346-00011/00002
Effective Date: Expiration Date:

Permit Type: Air Title V Facility
Permit ID: 3-3346-00011/00017
Mod 0 Effective Date: 04/09/2020 Expiration Date: 04/08/2025

Mod 1 Effective Date: Expiration Date:

Permit Type: Title IV (Phase II Acid Rain)
Permit ID: 3-3346-00011/00027
Effective Date: Expiration Date:

Permit Issued To:DANSKAMMER ENERGY LLC
994 RIVER RD
NEWBURGH, NY 12550

Contact: JOHN MCGAHAN
994 RIVER RD
NEWBURGH, NY 12550

Facility: DANSKAMMER GENERATING STATION
994 RIVER RD
NEWBURGH, NY 12550

Contact: JOHN MCGAHAN
994 RIVER RD
NEWBURGH, NY 12550

Description:
Danskammer Energy, LLC (Danskammer Energy) is proposing to construct an approximately 536-megawatt (MW) primarily natural gas fired 1-on-1 combined cycle power facility (Danskammer Energy Center) on land at the site of its existing Danskammer Generating Station in the Town of Newburgh, Orange County, New York. The Station's existing generators will be retired once the combined cycle plant is complete. The proposed Danskammer Energy Center will result in a new modern energy center through installation of state-of-the-art power generation equipment. The proposed Project (combustion turbine) will be primarily fueled by natural gas with ultra-low sulfur diesel (ULSD) as a backup fuel for up to the full load equivalent of 720 hours per year.

The Danskammer Energy Center will consist of one (1) Mitsubichi M501JAC combustion turbine at the proposed project site. Hot exhaust gases from the combustion turbine will flow into one (1) heat recovery steam generator (HRSG). The HRSG will be equipped with a natural gas fired duct burner. The HRSG will produce steam to be used in the steam turbine. Upon

the statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Condition 4: Permit modifications, suspensions or revocations by the Department
Applicable State Requirement: 6 NYCRR 621.13

Item 4.1:
The Department reserves the right to exercise all available authority to modify, suspend, or revoke this permit in accordance with 6NYCRR Part 621. The grounds for modification, suspension or revocation include:

a) materially false or inaccurate statements in the permit application or supporting papers;
b) failure by the permittee to comply with any terms or conditions of the permit;
c) exceeding the scope of the project as described in the permit application;
d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

****** Facility Level ******

Condition 1-1: Site-specific greenhouse gas mitigation plan
Applicable State Requirement: ECL 75-0107 (1)

Item 1-1.1:
Within 120 days of the issuance of this permit, the facility owner or operator shall prepare, and submit to the Department for approval, a site-specific greenhouse gas mitigation plan in accordance with Section 7(2) of the Climate Leadership and Community Protection Act, Chapter 106 of the Laws of 2019. At a minimum, the plan shall propose an acceptable mitigation strategy or strategies for reducing the greenhouse gas emissions generated by and associated with the facility's operations.
Such strategies may include, but are not limited to: (1) limitations on the amount of fossil fuel fired at the facility (measured on a 12-month rolling total basis); (2) limitations on the facility's fuel load equivalent hours of operation (measured on a 12-month rolling total basis); (3) a protocol for future alternative fuel testing; (4) a specific schedule for the future transition to alternative fuels; and/or (5) a legally enforceable commitment to cease operations at the facility by a date certain.
For the purposes of this requirement, greenhouse gas emissions include direct and upstream emissions associated with the operation of all fossil fuel fired stationary emission sources at the facility on a potential to emit basis. The plan shall also propose a schedule for the implementation of each mitigation measure identified as feasible in the plan.
The facility owner or operator shall update the plan with each subsequent application for renewal of this permit, or upon request by the Department, whichever is first.
Failure to provide an approvable site-specific greenhouse gas mitigation plan shall be grounds for enforcement action and/or the suspension or revocation of this permit as described in 6 NYCRR Section 201-1.12 and 6 NYCRR Section 621.13.

Facility DEC ID: 8573600004

PERMIT
Under the Environmental Conservation Law (ECL)

IDENTIFICATION INFORMATION

Permit Type: Title IV (Phase II Acid Rain)
Permit ID: 8-5736-00004/00016
Effective Date: Expiration Date:

Permit Type: Air Title V Facility
Permit ID: 8-5736-00004/00017
Effective Date: Expiration Date:

Permit Issued To:GREENIDGE GENERATION LLC
590 PLANT RD
PO BOX 187
DRESDEN, NY 14441-0187

Contact: DALE IRWIN
GREENIDGE GENERATION LLC
590 PLANT RD PO BOX 187
DRESDEN, NY 14441-0187
(315) 536-3423

Facility: GREENIDGE STATION
590 PLANT RD
DRESDEN, NY 14441

Contact: DALE IRWIN
GREENIDGE GENERATION LLC
590 PLANT RD PO BOX 187
DRESDEN, NY 14441-0187
(315) 536-2359

Description:
The Facility is a primarily natural gas-fired electric generating plant, with a generating capacity of approximately 107 megawatts (MW) with a maximum heat input which is limited to 1,117 BTUs per hour. While the Department is making a draft Title V and Title IV permit available for public review and comment, the Department has not made a tentative or final determination to issue any final permit for the Facility. The Title V and Title IV renewal applications request renewal of the existing permits, with revisions limited to: removal of the diesel fire pump permit conditions, because the diesel fire pump has been taken out of service and removed from the Facility; and a request for minor revisions to the monitoring requirements for particulate emissions (PM-10, PM-2.5 and Particulates), which include the use of a flowmeter for the Facility to demonstrate continuous compliance with the existing PM-10, PM-2.5, and Particulates permit conditions.

Condition 4: Permit modifications, suspensions or revocations by the Department
Applicable State Requirement: 6 NYCRR 621.13

Item 4.1:
The Department reserves the right to exercise all available authority to modify, suspend, or revoke this permit in accordance with 6NYCRR Part 621. The grounds for modification, suspension or revocation include:

a) materially false or inaccurate statements in the permit application or supporting papers;
b) failure by the permittee to comply with any terms or conditions of the permit;
c) exceeding the scope of the project as described in the permit application;
d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

****** Facility Level ******

Condition 5: Site-specific greenhouse gas mitigation plan
Applicable State Requirement: ECL 75-0107 (1)

Item 5.1:
Within 120 days of the issuance of this permit, the facility owner or operator shall prepare, and submit to the Department for approval, a site-specific greenhouse gas mitigation plan in accordance with Section 7(2) of the Climate Leadership and Community Protection Act, Chapter 106 of the Laws of 2019. At a minimum, the plan shall propose an acceptable mitigation strategy or strategies for reducing the greenhouse gas emissions generated by and associated with the facility's operations.
Such strategies may include, but are not limited to: (1) limitations on the amount of fossil fuel fired at the facility (measured on a 12-month rolling total basis); (2) limitations on the facility's fuel load equivalent hours of operation (measured on a 12-month rolling total basis); (3) a protocol for future alternative fuel testing; (4) a specific schedule for the future transition to alternative fuels; and/or (5) a legally enforceable commitment to cease operations at the facility by a date certain.
For the purposes of this requirement, greenhouse gas emissions include direct and upstream emissions associated with the operation of all fossil fuel fired stationary emission sources at the facility on a potential to emit basis. The plan shall also propose a schedule for the implementation of each mitigation measure identified as feasible in the plan.
The facility owner or operator shall update the plan with each subsequent application for renewal of this permit, or upon request by the Department, whichever is first.
Failure to provide an approvable site-specific greenhouse gas mitigation plan shall be grounds for enforcement action and/or the suspension or revocation of this permit as described in 6 NYCRR Section 201-1.12 and 6 NYCRR Section 621.13.

Condition 6: Submission of application for permit modification or renewal-REGION 8 HEADQUARTERS
Applicable State Requirement: 6 NYCRR 621.6 (a)