

October 29, 2024

Via E-Mail

NYSDEC, Division of Environmental Permits  
625 Broadway, 4th Floor  
Albany, NY 12233-1750  
Attn: Karen Gaidasz, Bureau Director, Bureau of Energy Project Management

Re: **Mitigation Assessment**  
Iroquois Gas Transmission System, L.P.  
Enhancement by Compression (ExC) Project  
Dover Compressor Station 3-1326-00211/00001  
Athens Compressor Station 4-1922-00049/00004

Dear Ms. Gaidasz:

Iroquois Gas Transmission System, L.P.'s ("Iroquois") currently has pending with the New York State Department of Environmental Conservation ("NYSDEC") applications for modifications to the Air State Facility permits for its Dover Compressor Station located at 186 Dover Furnace Road, Dover Plains, New York 12522 and its Athens Compressor Station located at 915 Schoharie Turnpike, Athens, New York 12015 (collectively, the "Permit Modifications") associated with the proposed Enhancement by Compression Project ("ExC Project" or the "Project"). In accordance with Section 7(2) of the Climate Leadership and Community Protection Act ("CLCPA"), Iroquois performed an assessment of greenhouse gas ("GHG") emission mitigation measures that could be implemented as part of the Project.

Attached hereto as Attachment A is Iroquois' Project Mitigation Plan. The Mitigation Plan describes the mitigation measures that Iroquois proposes to implement if the Permit Modifications are granted and the Project is placed into service. The Mitigation Plan also includes the estimated GHG and co-pollutant emissions reductions that are anticipated from each of the proposed mitigation measures. Attached hereto as Attachment B is a schedule summarizing the anticipated costs associated with each proposed mitigation measure.

As part of Iroquois' assessment of mitigation measures, it also identified certain measures that would not be feasible to implement at part of the Project. Iroquois' assessment of the measures determined not to be feasible is attached hereto as Attachment C.

As set forth in the Mitigation Plan, Iroquois has proposed measures that will achieve significant GHG and co-pollutant emission reductions. Those measures demonstrate a significant commitment by Iroquois to develop the Project in a manner consistent with the CLCPA's goals and objectives. As such, Iroquois respectfully requests that NYSDEC approve the Mitigation Plan.

Respectfully submitted,  
**IROQUOIS PIPELINE OPERATING COMPANY**  
**As Agent For**  
**IROQUOIS GAS TRANSMISSION SYSTEM, L.P.**

By:   
Name: Michael Kinik  
Title: Director, Field Operations

**ATTACHMENT A**

**ENHANCEMENT BY COMPRESSION (EXC) PROJECT**

**MITIGATION PLAN**

# MITIGATION PLAN

**Applicant:**

Iroquois Gas Transmission System, LP

**Facility:**

Enhancement By Compression (ExC) Project

**NYSDEC Application Numbers:**

Dover Compressor Station 3-1326-00211/00001  
Athens Compressor Station 4-1922-00049/00004

**Submitted to:**

New York State Department of Environmental Conservation  
Division of Environmental Permits  
625 Broadway  
Albany, NY 12233-1750

**Prepared by:**

Iroquois Gas Transmission System, LP

**Date:**

October 29, 2024

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## 1.0 INTRODUCTION

This mitigation plan (“Mitigation Plan”) has been prepared by Iroquois Gas Transmission System, LP (“Iroquois”) for Iroquois’ proposed Enhancement by Compression Project (the “ExC Project” or the “Project”). The Project requires modifications to the New York State Department of Environmental Conservation (“NYSDEC”) Air State Facility permits for the Dover Compressor Station located at 186 Dover Furnace Road, Dover Plains, New York 12522 and the Athens Compressor Station located at 915 Schoharie Turnpike, Athens, New York 12015 (collectively, the “Project Permits”).<sup>1</sup> The purpose of this Mitigation Plan is to describe the air mitigation measures proposed by Iroquois to reduce greenhouse gas (“GHG”) and co-pollutant emissions that could result from the Project.

As part of the Project’s development, National Environmental Policy Act (“NEPA”) review performed by the Federal Energy Regulatory Commission (“FERC”) and the NYSDEC’s permit application review, Iroquois assessed numerous GHG and co-pollutant mitigation measures. The sections below describe the mitigation measures that Iroquois is proposing for the Project.

## 2.0 PROPOSED MITIGATION MEASURES

### 2.1 Vent Recovery Systems

Iroquois proposes the installation of vent recovery systems (“VRS”) at the Project compressor stations. The VRS will capture and reinject into the pipeline natural gas emissions from planned blowdowns and dry compressor seal gas leakage. At the Athens Compressor Station (Units A1 and A2), the VRS is expected to result in a reduction of calculated actual emissions by 7,278 tons per year of carbon dioxide equivalents (“CO<sub>2</sub>e”), reflecting an approximately 90% reduction in natural gas emissions at that station as compared with uncontrolled levels based on historic operating conditions. At the Dover Compressor Station (Units A1 and A2), the VRS is expected to result in a reduction of calculated actual emissions by 7,004 tons per year CO<sub>2</sub>e, reflecting an approximately 90% reduction in natural gas emissions at that station as compared with uncontrolled levels based on historic operating conditions. The implementation of the VRS is anticipated to reduce total New York Project compressor station actual CO<sub>2</sub>e emissions by an estimated 14,282 metric tons per year compared to historic operating levels. Anticipated GHG and co-pollutant emission reductions resulting from the proposed Project VRS are summarized in Table 1, below.

Iroquois will conduct a feasibility study to assess whether VRS can be installed at its three other New York compressor stations (Wright, Boonville and Croghan) and will install VRS at those stations if determined to be feasible. The feasibility study will include an

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<sup>1</sup> The Project Permit applications, as supplemented, and this Mitigation Plan have been filed with NYDEC without prejudice to any rights that Iroquois now has, may have, or which it seeks to assert in the future under the Natural Gas Act (15 U.S.C. §§ 717–717z) or any other federal or state law or regulation, all of which are hereby expressly reserved.

assessment of the engineering, environmental, procurement, and financial requirements related to the installation of VRS at those three stations. Iroquois will complete the feasibility study within sixty (60) days following the Project's in-service date and such study will be provided to NYSDEC for review. If installation of VRS at these stations is determined to be feasible, Iroquois will provide NYSDEC with a proposed schedule for installation of VRS at those stations with the feasibility study. Iroquois anticipates that the GHG emissions reductions realized from VRS at those stations will be similar to those discussed above for the Project's compressor stations (i.e., an approximately 90% reduction compared to uncontrolled levels). Subject to the results of the feasibility study, the anticipated GHG and co-pollutant emission reductions resulting from non-Project compressor station VRS are summarized in Table 1, below.

## **2.2 Oxidation Catalysts (Project Turbines)**

As part of the Project, Iroquois has committed to installing oxidation catalysts ("OC") on the proposed combustion turbines and emergency generator engines. The catalysts reduce carbon monoxide ("CO") and volatile organic compounds ("VOCs"), including HAPs that also happen to be VOCs ("VOC-HAPs"). CO, VOC, and VOC-HAPs emissions are expected to be reduced by 90% as a result of the OC. As such, this mitigation measure will significantly reduce GHG and co-pollutant emissions at the Project compressor stations. Anticipated co-pollutant emission reductions resulting from the proposed Project turbine OCs are summarized in Table 1, below.

## **2.3 SoLoNOx Turbines**

Iroquois has also committed to purchasing and installing "advanced" SoLoNOx turbines for the Project instead of conventional SoLoNOx, which further reduce potential NOx emissions. The "advanced" SoLoNOx units reduce NOx emissions to 9 parts per million ("PPM") by utilizing technology enhancements within the turbine, additional external monitoring equipment, and enhanced control algorithms. At Athens, the reduction would be from 25 parts per million by volume ("PPM") to only 9 PPM (a 64% reduction). At Dover, the reduction would be from 42 parts per million by volume ("PPM") to only 9 PPM (a 79% reduction). Anticipated GHG and co-pollutant emission reductions resulting from the Project's proposed "advanced" SoLoNOx turbines are summarized in Table 1, below.

## **2.4 Non-Methane Actuators**

The proposed ExC Project facilities have been designed to incorporate the use of non-methane actuators (air or electric) for the compressor unit valves. This measure will eliminate the venting of methane when the valves are required to move during a start/stop or ESD condition. This mitigation measure is anticipated to reduce actual GHG emissions by approximately 309 tons from the Project's New York compressor stations. See Table 1, below.

## **2.5 Fuel Use Restrictions**

As part of its initial application materials, Iroquois proposed a maximum annual fuel use limit of ninety-one and one-half percent (91.5%) for the Brookfield Compressor Station's proposed Project turbines. During NYSDEC's permit processing, Iroquois evaluated implementing the 91.5% maximum annual fuel use limit for the Project's turbines at Dover and Athens. The implementation of a fuel use limitation at the Project's compressor stations introduces the potential risk that Iroquois would be unable to fulfill its contractual obligations to provide firm transportation service to the Project Shippers. However, the 91.5% maximum annual fuel use restriction achieves the appropriate balance between the resulting GHG PTE reduction benefits and the risk assumed by Iroquois that it will be unable to satisfy its contractual obligations. Any additional fuel use restriction raises the potential risk that, during the 20-year contract period, Iroquois would be unable to satisfy its contractual obligations to the Project Shippers and thereby potentially negatively affect supply to the downstate region. However, the GHG PTE reductions that would result from the aforementioned 91.5% mitigation measure are significant, equaling approximately 6,708.5 tons from the New York Project compressor stations.<sup>2</sup> See Table 1, below.

## **2.6 NOx Emission Limits**

Iroquois has agreed to a lower NOx limit for the proposed turbine at the Athens Compressor Station. Currently, the draft permit for the proposed turbine at the Dover Compressor Station specifies a NOx limit 3.04 lbs/hr, which corresponds to 9 PPMV. Although a similar limit is not specifically included in the Athens draft permit, Iroquois agrees to limit NOx emissions for the proposed Athens turbine to 3.07 lbs/hr, which would be equivalent to 9 PPMV.

This mitigation measure is anticipated to reduce GHG PTE emissions by approximately 36 tons of CO<sub>2</sub>e per year. See Table 1, below.

## **2.7 Additional Fugitive Emissions Monitoring**

Iroquois also assessed the feasibility of implementing additional fugitive emission monitoring at the New York Project compressor stations. Currently, in accordance with NYSDEC's Part 203 regulations ("Part 203"), Iroquois performs bi-monthly inspections, at least 45 days apart (i.e., six surveys per year), at the New York Project compressor stations. After the Project is placed in service, Iroquois will implement six additional surveys at each New York Project compressor station, which would be scheduled to be offset from the Part 203 surveys (i.e., 12 fugitive emissions surveys per year). Following the additional ExC Project fugitive emissions surveys, a leak repair schedule will be implemented in accordance with a schedule reflected in the Project permits for leaks detected during such interim fugitive emissions surveys. This additional monitoring and repair will help reduce methane emissions.

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<sup>2</sup> Includes reductions from Athens, Dover and Brookfield compressor station fuel use restrictions.



This mitigation measure is anticipated to reduce actual GHG emissions by approximately 73 tons of CO<sub>2</sub>e per year from the Project's New York compressor stations. See Table 1, below.

## **2.9 Project Emissions Mitigation Fund**

In addition to the mitigation measures proposed by Iroquois as part of the Project, Iroquois also proposes to establish a GHG Mitigation Fund. The GHG Mitigation Fund would be established within sixty (60) days following the Project being placed in service (subject to NYSDEC approval of the programs/projects, as further discussed below). The GHG Mitigation Fund would be used to support GHG reduction projects/programs and include efforts to promote DAC benefits. Such projects/programs could include, but not necessarily be limited to, contributions towards the installation/development of municipal public electric vehicle charging stations and/or electric vehicle incentives, grants for residential installations/conversions to electric heat pumps, roof top solar installations for towns and municipalities, residential battery backup systems, or other clean energy programs offered by NYSDEC or New York State Energy Research and Development Authority ("NYSERDA"). Iroquois will work with the NYSDEC to coordinate and implement the GHG Mitigation Fund programs/projects in a manner acceptable to NYSDEC. Within eight (8) months following NYSDEC's issuance of Project Permits, Iroquois will submit a Mitigation Fund Plan to NYSDEC for approval, which will detail the projects and/or programs to which Iroquois intends to contribute and its allocation of funding across such projects and/or programs.

Iroquois proposes a total Project Emissions Mitigation Fund commitment of \$[3,500,000].<sup>3</sup> One-half of this total fund amount would be contributed by Iroquois within sixty (60) days following the Project being placed into service (subject to NYSDEC approval, as discussed above). The second half of the proposed funding would be contributed on or prior to the first anniversary of the Project in-service date. The programs will thereafter continue until the GHG Mitigation Fund is exhausted. Any amendment sought by Iroquois to the Mitigation Fund Plan will be submitted to DEC for prior approval.

## **2.10 DAC Benefit Program Funding**

The Project Emissions Mitigation Fund discussed above would be in addition to the Disadvantaged Community ("DAC") benefit program funding that Iroquois will provide in accordance with the Public Participation Plan ("PPP") Certification prepared for the Project. The PPP Certification includes Iroquois' commitment to provide \$1.5 Million for: (i) a grant program to benefit DACs located near the Project Compressor Stations, (ii) the installation of electric vehicle charging stations in the towns of Dover and Athens, and (iii) a heat pump incentive program that would, at a minimum, match the heat pump incentive payments offered by the local electric distribution companies in the nearby DACs. The DAC benefit program funding would be allocated at follows:

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<sup>3</sup> This Project Emissions Mitigation Fund is in addition to the \$1,500,00 DAC benefit program funding proposed by Iroquois in its Public Participation Plan Certification submitted separately to NYSDEC and discussed in Section 2.10, below.

- **Grant Program:** The total amount of funding for this Program would be \$600,000, allocated as follows: \$150,000 to the Town of Athens, \$150,000 to the Village of Athens, and \$300,000 to the Town of Dover.
- **Electric Vehicle Charging Stations:** The amount of funding for the proposed Electric Vehicle Charging Station Grant Program is \$200,000, allocated as follows: \$50,000 to the Town of Athens, \$50,000 to the Village of Athens, and \$100,000 to the Town of Dover.
- **Heat Pump Program:** The Heat Pump Program funding would be \$700,000, split equally, with \$350,000 allocated to the Census Tract 36039080900 (Athens Village) and \$350,000 allocated to Census Tract 36027040003 (Wingdale).

Within eight (8) months following NYSDEC’s issuance of Project Permits, Iroquois will submit a DAC Benefit Fund Plan to NYSDEC detailing the programs to which Iroquois intends to contribute and its allocation of funding across such projects and/or programs. Within 60 days of the Project in-service date, Iroquois will establish and fully fund the DAC Benefit Program.

### **3.0 Proposed Air Emissions Mitigation Measure Benefits**

Iroquois’ current planned mitigation within New York would result in significant GHG emission reductions. The proposed mitigation would result in actual and potential annual GHG emission reductions of approximately 15,820 and 52,347 tons, respectively. When also accounting for the anticipated emissions reductions from the VRS at Iroquois’ three other New York compressor stations that would be subject to the result of the feasibility, the actual and potential annual GHG emission reductions would be approximately 30,887 and 111,052 tons, respectively.

The proposed mitigation would also result in actual and potential annual co-pollutant emissions reductions of approximately 8.57 and 31.8 tons, respectively. When also accounting for the anticipated emissions reductions from the VRS at Iroquois’ three other New York compressor stations that would be subject to the result of the feasibility, the actual and potential annual co-pollutant emission reductions would be approximately 11 and 34 tons, respectively.

A summary of GHG and co-pollutant emissions reduction benefits that would result from the Project’s proposed mitigation measures is included in Table 1, below.<sup>4</sup>

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<sup>4</sup> Table 1 does not include the GHG and co-pollutant emissions reductions that would result from the mitigation measures that Iroquois has proposed for the Connecticut components of the Project. However, those GHG and co-pollutant emission reductions benefits of the Project are being submitted to NYSDEC under separate cover such that NYSDEC can account for such reductions in accordance with ECL 75-0101(13), which provides that “statewide greenhouse gas emissions” include out of state emissions associated with the transmission of natural gas into the state.

**Table 1: Proposed NY GHG and Co-Pollutant Mitigation <sup>5</sup>**

<b>Proposed Mitigation</b>	<b>Annual GHG<sup>6</sup> Actual Emissions Reductions (Metric Tons Per Year)</b>	<b>Annual GHG<sup>5</sup> PTE Emissions Reductions (Metric Tons Per Year)</b>	<b>Annual Co-Pollutant (CO, VOC and VOC-HAPs) Actual Emissions Reductions (Metric Tons Per Year)</b>	<b>Annual Co-Pollutant (CO, VOC and VOC-HAPs) PTE Emissions Reductions (Metric Tons Per Year)</b>
VRS (Project Compressor Stations) <sup>7</sup>	14,281.9	40,890.1	2.621	7.973
Oxidation Catalysts (Project Turbines)	0.0	0.0	5.891	23.627
Advanced SoLoNOx (9 ppm) Turbines (Project Compressor Stations) <sup>8</sup>	1,156.8	4,640.0	0.005	0.020
Non-Methane Valve Actuators <sup>9</sup>	309.0	0.0	0.048	0.000
Fuel Use Restriction <sup>10</sup>	0.0	6,708.5	0.000	0.185
NOx Limit (Athens)	0	35.6	0	0
Additional Fugitive Emissions Monitoring	73.0	73.0	0	0
<b>Project Total (NY)</b>	<b>15,820.7</b>	<b>52,347.2</b>	<b>8.57</b>	<b>31.8</b>
VRS (Non-Project NY Compressor Stations)	15,067.2	58,704.8	2.436	2.436
<b>Project Total (NY) with Non-Project Compressor Station VRS</b>	<b>30,887.90</b>	<b>111,052.00</b>	<b>11.006</b>	<b>34.236</b>

<sup>5</sup> The Project Emissions Mitigation Fund and Project DAC Benefit Fund are not included in this table since the actual emissions reductions to be realized from each will depend upon the projects/programs that are pursued using the respective funding.

<sup>6</sup> GHG represented as carbon dioxide equivalents using 20 year global warming potential.

<sup>7</sup> The anticipated GHG and co-pollutant emission reductions tabulated here include all compressor station units (existing and proposed). Iroquois' April 29, 2022 RFAI Response only included the anticipated emission reductions from the proposed units.

<sup>8</sup> Includes Athens A2 and Dover A2.

<sup>9</sup> Includes non-venting unit and station valves on Athens A2 and Dover A2. Iroquois' April 29, 2022 RFAI Response only included the anticipated emission reductions from the unit valves; this table includes emission reductions anticipated from the station valves, as well.

<sup>10</sup> Includes reductions from Athens A2 and Dover A2 project turbines fuel use restrictions.

The foregoing clearly demonstrates that the Project, as proposed, includes a significant amount of GHG and co-pollutant emissions mitigation.

## **4.0 Conclusion**

As set forth above, Iroquois has performed a thorough assessment of mitigation measures that could be implemented for the Project. Based on that assessment, Iroquois has proposed measures that will achieve significant GHG and co-pollutant emission reductions. These mitigation measures represent a significant commitment by Iroquois to develop the Project in a manner that helps to achieve the State's CLCPA goals and objectives. As such, Iroquois respectfully requests that NYSDEC approve this Mitigation Plan.

**ATTACHMENT B**

**ENHANCEMENT BY COMPRESSION (EXC) PROJECT  
ESTIMATED COST OF PROPOSED MITIGATION MEASURES**

<b>Proposed GHG and Co-Pollutant Mitigation Cost (NY Mitigation)</b>		
<b>Proposed Mitigation</b>	<b>Estimated Design, Installation/ Construction Cost</b>	<b>Estimated Maintenance Cost (Annual)</b>
VRS (Project Compressor Stations) <sup>1</sup>	\$9,000,000	\$10,314
Oxidation Catalysts	\$2,400,000	\$100,000
Advanced SoLoNOx (9ppm) Turbines (Project Compressor Stations) <sup>2</sup>	\$540,000	\$157,680
Non-Methane Valve Actuators <sup>3</sup>	\$1,280,000	\$5,762
Fuel use Restriction <sup>4</sup>	\$7,500	\$10,500
NOx Limits <sup>5</sup>	\$10,000	\$4,200
Additional Fugitive Emissions Monitoring <sup>6</sup>	\$4,000	\$27,400
Project Emissions Mitigation Fund	[\$3,500,000]	--
DAC Benefit Program Funding	[\$1,500,000]	--
<b>Project Total (NY)</b>	<b>\$18,241,500</b>	<b>\$315,856</b>
VRS (Non-Project NY Compressor Stations) <sup>7</sup>	\$12,000,000	\$13,752
<b>Project Total (NY) with Non-Project Compressor Station VRS</b>	<b>\$30,241,500</b>	<b>\$329,608</b>

<sup>1</sup> Includes VRS installed at Athens (Units A1, A2, and station) and Dover (Units A1, A2, and station). Total cost assumes \$1.5 million per unit. Maintenance is estimated at 6 hours per year of inspection/testing (including leak surveys), 12.26 hours total of repairs (99.99% reliability), and \$14,400 for materials.

<sup>2</sup> Includes Athens A2 and Dover A2. Total assumes estimated \$270,000 additional per unit. Maintenance estimate is the annual replacement cost of the advanced SoLoNOx, performed approximately every 30,000 hours.

<sup>3</sup> Includes non-venting unit and station valves on Athens A2 and Dover A2. Assumes actuators ranging from \$90,00 to \$230,000 each. Maintenance is estimated at 2 hours per year of inspection/testing, 12.26 hours total of repairs (99.99% reliability), and \$6,000 for materials.

<sup>4</sup> Includes reductions from Athens A2 and Dover A2 project turbines fuel use restrictions. Cost includes design of controls and monitoring software, maintenance includes annual monitoring and reporting labor by internal employees and consults.

<sup>5</sup> Capital cost includes design of control and monitoring software, maintenance includes annual monitoring and reporting by internal employees and consultants.

<sup>6</sup> Capital cost includes procedure and track software updates. Maintenance costs include the contractor/consultant services to perform the additional six (6) surveys per year and internal costs to repair leaks.

<sup>7</sup> Includes VRS installed at Iroquois' Croghan Compressor Station (Units A1, A2, and station), Boonville Compressor Station (Units A1 and station), and Wright Compressor Station (Units A1, A2, and station). Total cost assumes \$1.5 million per unit. Maintenance is estimated at 6 hours per year of inspection/testing (including leak surveys), 7 hours total of repairs (99.99% reliability), and \$8,300 of materials.

**ATTACHMENT C**

**ENHANCEMENT BY COMPRESSION (EXC) PROJECT**

**ASSESSMENT OF MITIGATION MEASURES DETERMINED TO BE UNFEASIBLE**

**Iroquois Gas Transmission System, L.P.  
Enhancement by Compression (ExC) Project**

**Mitigation Measures Determined to be Unfeasible**

As part of the ExC Project’s development and permit processing, Iroquois Gas Transmission System, L. P. (“Iroquois”) evaluated numerous air pollutant emissions mitigation measures. The measures determined to be feasible are included in Iroquois’ Project Mitigation Plan. Iroquois’ evaluation also revealed that certain mitigation measures would not be practical or feasible for the Project. The sections below further describe those mitigation measures and the rationale for excluding them from the Project.

Electric Motor-driven Compressor Units

The feasibility of using electric motor-driven compressor units in lieu of the proposed natural gas-fired compressor units at the Project compressor stations was evaluated but, as explained further below, this measure was rejected after considering environmental, cost, reliability and Project schedule impacts that would result if it was implemented.<sup>1</sup>

Although technically feasible, use of electric-powered compressor units would increase the overall Project footprint and associated environmental impacts. Electric-powered compressors would require the installation of electric transmission, distribution and substation improvements. Installing electric-driven compressors at the Project compressor stations would result in approximately 39 acres of environmental impacts (disturbance of soils, wetlands, waterbodies, land use, and visual) and would result in impacts on new landowners from construction and operation of the required electric system improvements.<sup>2</sup> The additional Project footprint may also require the acquisition of third-party owned property rights.

As part of its FERC application materials, Iroquois estimated that electric motor-driven compression would cost between \$25 - \$30 million<sup>3</sup> for the required electric service improvements at each compressor station, rendering this alternative cost prohibitive for the Project. On March 30, 2022, Eversource Energy advised Iroquois that electric transmission and distribution upgrades that would be required for electric-driven compressors at the Brookfield compressor station would cost significantly more than what Iroquois had estimated – approximately \$45 - \$50 million - further evidencing that this alternative would be cost prohibitive for the Project. Electric motor-driven compression would also result in a less reliable power source to the Project compressors, which could interfere with Iroquois’ ability to provide service during electric service interruptions.

For all of the foregoing reasons, electric motor-driven compressors were determined not to be a feasible mitigation measure.

Use of RNG and/or Hydrogen to Power Project Turbines

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<sup>1</sup> FERC, Enhancement by Compression Project Environmental Assessment, CP20-48 (filed September 30, 2020) at Section C.5.

<sup>2</sup> *Id.*

<sup>3</sup> Iroquois, Resource Report 10: Alternatives, CP20-48 (filed Feb. 3, 2020) at Section 10.6.1.



Iroquois evaluated the feasibility of using RNG and/or H<sub>2</sub> to power the Project's turbines at the Athens, Dover and Brookfield compressor stations.<sup>4</sup> While Iroquois foresees that the use of RNG and H<sub>2</sub> may play a role in the decarbonization of natural gas, this mitigation measure was determined to be *currently* unfeasible. The Project Shippers are beginning to develop and evaluate projects that would introduce RNG and/or H<sub>2</sub> into their natural gas distribution systems. However, it is currently projected that there will be insufficient sources of RNG and/or H<sub>2</sub> to power the Project's turbines on a timeline that is consistent with the Project's planned in-service date. Additionally, unless incorporated into Iroquois' pipeline natural gas mix, the use of RNG and/or H<sub>2</sub> to power the compressor stations would require additional equipment or infrastructure to deliver and store those alternative fuels, which would expand the Project footprint and likely increase potential environmental impacts. This mitigation measure would also add significant unbudgeted capital and operational costs to the Project, estimated to be approximately \$100 million. For all of the foregoing reasons, powering the Project's turbines using RNG and/or H<sub>2</sub> is not currently considered to be a viable option. However, if economically priced and operationally compatible supplies of RNG and green H<sub>2</sub> become widely available, Iroquois will consider the efficacy of introducing these alternative fuels to power the Project's turbines.

#### Incorporation of RNG and/or Hydrogen into Iroquois' Pipeline

For many of the same reasons discussed above, while Iroquois anticipates that the integration of RNG and H<sub>2</sub> into its pipeline gas mixture may play a role in the decarbonization of the natural gas that it transports and Iroquois will continue to assess the feasibility of incorporating RNG and/or H<sub>2</sub> into its pipeline gas mixture, *currently* this mitigation measure is not deemed to be feasible and thus could not be implemented on a timeframe consistent with Iroquois' anticipated Project in-service date. Incorporation of RNG and H<sub>2</sub> into Iroquois' pipeline gas mix would require further source assessment of those alternative fuel gases to ensure that there is a continuous and abundant available supply. Also, the operational implication of those alternative fuel gases on Project compressor stations, pipeline equipment, and LDC distribution systems requires further evaluation. Furthermore, this mitigation measure would likely require amendments to Iroquois' FERC natural gas tariff. Thus, while Iroquois foresees that the introduction of RNG and H<sub>2</sub> into its pipeline could reduce the future carbon intensity of natural gas, this mitigation measure could not be implemented in the timeframe required to achieve the desired Project in-service date. However, as the supplies of RNG and green H<sub>2</sub> become widely available and operational compatibility with compressor station equipment is further studied, Iroquois will continue to assess the efficacy of introducing these alternative fuels into its pipeline system.

#### Reduce Project Contract Terms

Iroquois also considered reducing the Project's 20-year contracts terms with the Project Shippers. Implementation of this measure would reduce actual anticipated Project direct emissions and PTE GHG emissions for each year that the contract terms were reduced. However, this measure would impair Iroquois' ability to provide the Project's firm capacity to the Project Shippers during the

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<sup>4</sup>See *e.g.*, Iroquois Response to NYSDEC January 13, 2022 Request for Additional Information, April 29, 2022, at 19. Iroquois reviewed the utilization of hydrogen and RNG on its system based on research performed by INGAA and others, which concluded that the transport of either fuel on an interstate natural gas pipeline requires further evaluation.

entire period of need identified and supported by the Project Shippers. The Project Shippers advised Iroquois that they anticipate that Project need will continue throughout the entire 20-year contract terms. In fact, in its Initial Gas System Long-Term Plan, dated May 31, 2024,<sup>5</sup> National Grid stated that its “Downstate New York...Design Day gas demand will increase approximately 0.8% per annum, from 2,876 MDth/day in the winter of 2024/2025 to 3,549 MDth/day in the winter of 2049/2050.” Accordingly, this mitigation measure is not practicable without negatively affecting supply to the region and the reliability of service to the Project Shippers’ customers. For that reason, this mitigation measure was deemed not to be feasible.

### Selective Catalytic Reduction

Iroquois assessed the feasibility of incorporating selective catalytic reduction (“SCR”) at its Project compressor stations to reduce NOx emissions. The addition of SCR at the Project compressor stations would alter the footprint of the Project and thus, would require additional analysis at FERC, and may necessitate additional permits or further modifications to existing NYSDEC permits. This additional review and/or obtaining new or modified NYSDEC permits would not be consistent with the current proposed Project in-service date. Expansion of the Project footprint may also affect wetlands and other valuable natural resources. Moreover, incorporation of SCR at the Project compressor stations would require trucking ammonia canisters into these communities, which may not only require additional environmental review, but would add truck traffic and could present additional health and safety concerns to the nearby communities. Accordingly, Iroquois determined that, at this time, the addition of SCR to the Project compressor stations is neither practicable nor feasible.

### Natural Gas Fuel Cells

Iroquois evaluated the use of natural gas fuel cells as an alternative power generation technology for the Dover and Athens compressor stations. For the reason set forth below, the use of natural gas fuel cells would not be practical.

The demand for natural gas fluctuates depending on numerous factors. When natural gas demand increases, a compressor may need to be started and become fully operational within 10 to 15 minutes to ensure supply meets demand requirements. As such, Iroquois’ natural gas driven compressors cycle on and off. Unlike Iroquois’ compressors, natural gas fuel cells operate best when base loaded – that is to be started with a matched load and operate continuously and uninterrupted. Natural gas fuel cells can take up to an hour to become 100% operational. Accordingly, these operational restrictions would not be compatible with Iroquois’ operations.

Additionally, natural gas fuel cells typically have an output voltage of 480 volts. Due to the high horsepower requirements of the ExC compressors – 12,000 HP – which is the equivalent of approximately 9 MW of electrical power, a service voltage of 115,000 volts would need to be maintained. Iroquois is unaware of a fuel cell manufacturer that can offer this voltage requirement and do so at a steady state during a variety of operating load conditions.

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<sup>5</sup> PSC Case No. 24-G-0248.

## Oxidation Catalysts (Non-Project Turbines)

In addition to installing OC on the proposed Project turbines, as part of the NYSDEC permitting process, Iroquois further assessed the feasibility of installing OC on the existing turbines at the Athens and Dover compressor stations. For the following reasons, this mitigation was determined not to be feasible.

Introduction of a foreign object, such as an oxidation catalyst (“OC”), within the exhaust flow of a gas turbine disrupts the exhaust flow pattern, which can result in increased noise levels. To address the increase in noise, exhaust silencers are installed downstream of OC to achieve an acceptable noise level. The complexity of combustion turbine systems and their ancillary equipment generally requires an acoustical engineer to fully analyze the acoustical emissions and determine whether the expected sound levels require noise mitigation.<sup>6</sup> During the preliminary design of the proposed ExC facilities, Iroquois’ design engineers evaluated the noise impacts for the proposed turbines (which include OC). That evaluation determined that multiple stage silencing was required in the exhaust stacks of the proposed turbines.<sup>7</sup> Based on the results of that analysis, the same conclusion can be drawn that similar noise silencing would be required if OC was to be added to the existing units. The additional noise mitigation will necessitate modifications to the location and height of the emissions stacks. These changes will alter the Project limits of disturbance at the Athens and Dover Compressor Stations. At Athens, in particular, it is possible that these changes would impact the NYSDEC wetland buffer located adjacent to the Project footprint. These additional changes to the Project footprint and emissions stacks, as well as potential wetland buffer impacts, would likely implicate additional FERC and NYSDEC assessment/permitting. That additional review would be inconsistent with the Project’s proposed timeline and in-service date. Additionally, construction of the new stacks would likely require an extended outage on the existing engines, which could impact Iroquois’ existing customers that are not serviced by the ExC Project - this could be a potential concern of the FERC, which reviews any negative impacts to existing customers as part of its certification process.

For all of these reasons, this mitigation measure was determined not to be feasible.

## Conclusion

As stated above, Iroquois performed a thorough assessment of mitigation measures that could be implanted as part of the Project. The measures determined to be feasible are set forth in the Project’s Mitigation Plan. For the reasons set forth above, certain mitigation measures were determined to be unfeasible.

Dated: October 21, 2024.

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<sup>6</sup> Giampaolo, Tony, “Gas Turbine Handbook: Principles and Practices - 3rd Edition”, The Fairmont Press, Inc., Page 145.

<sup>7</sup> Athens Compressor Station Preconstruction Sound Survey and Noise Impact Analysis (associated with the Enhancement by Compression Project), Hoover & Keith, Inc., December 13, 2019 (Rev. 1)