EXCELSIOR ENERGY CENTER

Case No. 19-F-0299

1001.8 Exhibit 8

Electric System Production Modeling

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Exhibit 8: Electric System Production Modeling

This Exhibit will track the requirements of Stipulation 8, dated July 6, 2020, and therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) § 1001.8.

8(a) Computer-Based Modeling Tool

The analyses presented in this section of the Application were developed using a computer-based modeling tool, PROMOD IV. The Applicant consulted with the New York Department of Public Service (NYDPS) on acceptable inputs for the modeling. Public sources such as the New York Independent System Operator's (NYISO) 2019 Load & Capacity Data "Gold Book" and 2018 Phase 2 Congestion Assessment and Resource Integration Study (CARIS) were used to develop acceptable input data for the simulation analyses. This data includes output modeling for the proposed Excelsior Energy Center (Project) that were used in calculating the projected emissions predicted to be displaced by the Project from other operating generating facilities.

ICF Resources, LLC (ICF) performed the modeling using the PROMOD IV platform for a security constrained unit commitment (SCUC) and security constrained economic dispatch (SCED) simulation of the Northeast U.S. power market. The Project is in Zone B of the NYISO power market. Two scenarios were considered for simulation, a Base Case and a Change Case. The Base Case represents market conditions without the proposed Project and the Change Case includes the Project. Based upon consultations with NYDPS, the first full year of operation for the Facility, 2023, was analyzed for this study. The study assessed the impact of the Facility's operation on statewide and regional emission levels, the NYISO zonal power market, and dispatch of existing must-run resources.

The full Excelsior Solar electric system production model report is included as Appendix 8-1 and contains confidential information. Therefore, the Applicant is seeking the requisite trade secret and confidential commercial information protection for this information pursuant to Public Officers Law (POL) Sections 89(5) and 87(2)(d), 16 NYCRR § 6-1.3, other applicable laws, and/or a protective order as necessary.

(1) Estimated Statewide and Regional Levels of SO_2, CO_2, and NO_x

The Project is expected to reduce emissions of sulfur dioxide (SO_2), nitrogen oxides (NOx), and carbon dioxide (CO_2) from the power sector in New York in 2023. Table 8-1 below represents the estimated reduction in emissions.

Table 8-1. Statewide Emissions with and without Excelsior Energy Center

Item	Without Project (Tons)	With Project (Tons)	Reduction in Emission (Tons)	Reduction in Emission (%)
SO_2	961	854	(107)	-11.13
NO_x	7,338	7,265	(73)	-0.99
CO_2	26,962,690	26,757,258	(205,432)	-0.76

(2) Estimated Prices for NYISO Zones

In NYISO Zone B, the average annual price in the Change Case (with Project) is expected to be $31.2/Megawatt Hour (MWh) and in the Base Case (without Project) is expected to be $32.1/MWh. The Project, therefore, is expected to decrease the wholesale load-weighted LMP in Zone B by approximately $0.92/MWh in 2023. Modeling also showed that production costs in New York State were reduced by $14.2 million, or 0.5%, with the Project (Table 8-3).

Table 8-2. Annual NYISO Zonal Energy Prices

Zone	Annual Prices With Project ($/MWh)			Annual Prices Without Project ($/MWh)		
	Minimum	Maximum	Average	Minimum	Maximum	Average
A	-51.5	179.5	27.8	-35.0	179.7	27.5
B	-36.2	204.2	31.2	-33.6	949.3	32.1
C	-31.6	192.1	35.1	-27.0	195.4	35.3
D	-30.7	175.0	34.4	-27.0	178.2	34.4
E	-31.6	186.3	35.8	-27.7	189.4	35.9
F	-33.0	191.5	38.1	-28.6	195.3	38.1
G	-34.1	197.7	39.8	-29.1	199.5	39.8
H	-34.4	197.3	40.5	-29.8	199.2	40.5
I	-34.5	197.0	40.6	-29.9	198.9	40.5
J	-34.8	198.1	41.5	-30.2	200.1	41.4
K	-34.6	199.6	42.6	-30.0	201.7	42.6

Table 8-3. Production Cost Summary

Production Costs (millions $)			
Zone	**Base Case**	**Change Case – Excelsior**	**Cost Savings**
NYCA	**2,714**	**2,700**	**(14.2)**
NY-F	607	606	(1.5)
NY-GHI	335	332	(2.4)
NY-J	738	734	(3.8)
NY-K	147	146	(1.0)
NY-AB	141	139	(2.4)
NY-CDE	745	743	(3.1)
Non-NY	**41,886**	**41,880**	**(5.9)**

(3) Estimated Capacity Factor

[redacted] The annual peak and off-peak generation and capacity factors are shown in Table 8-4. A detailed generation summary by month can be seen in Table III-5 of the ICF Assessment Report in Appendix 8-1.

(4) Estimated Megawatt (MW) Output Capability Factors

[redacted] The monthly peak and off-peak generation and capacity factor are shown in Table 8-4. The average annual production output is also provided in Table 8-4.

Table 8-4. Monthly Peak and Off-Peak Generation and Capacity Factors for the Excelsior Energy Center – 2023

Month	On-Peak Dispatch		Off-Peak Dispatch	
	Average Output (MWh)	Capacity Factor (%)	Average Output (MWh)	Capacity Factor (%)
January	[redacted]	[redacted]	[redacted]	[redacted]
February	[redacted]	[redacted]	[redacted]	[redacted]

Table 8-4. Monthly Peak and Off-Peak Generation and Capacity Factors for the Excelsior Energy Center – 2023

Month	On-Peak Dispatch		Off-Peak Dispatch	
	Average Output (MWh)	Capacity Factor (%)	Average Output (MWh)	Capacity Factor (%)
March	[redacted]	[redacted]	[redacted]	[redacted]
April	[redacted]	[redacted]	[redacted]	[redacted]
May	[redacted]	[redacted]	[redacted]	[redacted]
June	[redacted]	[redacted]	[redacted]	[redacted]
July	[redacted]	[redacted]	[redacted]	[redacted]
August	[redacted]	[redacted]	[redacted]	[redacted]
September	[redacted]	[redacted]	[redacted]	[redacted]
October	[redacted]	[redacted]	[redacted]	[redacted]
November	[redacted]	[redacted]	[redacted]	[redacted]
December	[redacted]	[redacted]	[redacted]	[redacted]
Annual	[redacted]	[redacted]	[redacted]	[redacted]

Note: Peak hours are the hours between 7:00am – 11:00pm Eastern Time (Mon – Fri). The remaining hours are categorized as off-peak (including holidays and weekends).

(5) Estimated Average Annual and Monthly Production Output

See Table 8-4.

(6) Estimated Production Curve over an Average Year

The estimated production curve for the Project over an average year is shown in Figure III-1 of the Assessment Report in Appendix 8-1. Trade secret and confidential commercial information protection will be sought for the data and it will also be provided confidentially to NYDPS under separate cover.

(7) Estimated Production Duration Curve over an Average Year

The estimated production duration curve for the Project over an average year is shown in Figure III-2 of the Assessment Report in Appendix 8-1. Trade secret and confidential commercial information protection will be sought for the data and it will also be provided confidentially to NYDPS under separate cover.

(8) Estimated Energy Dispatch of Existing Must-Run Resources

The Project is estimated to have minimal or no impact on existing must-run generating resources in New York.

Table 8-5. Dispatch of Must-Run Resources With and Without Excelsior Energy Center

Generation Type	Base Case (GWh)	Change Case with Project (GWh)
Wind	[redacted]	[redacted]
Hydroelectric	[redacted]	[redacted]
Nuclear	[redacted]	[redacted]
Solar	[redacted]	[redacted]
Thermal	[redacted]	[redacted]

8(b) Digital Copies of Inputs Used in Simulations Above

Digital copies of all inputs and outputs used in the simulations required in 16 NYCRR § 1001.8(a) are confidential and will be provided confidentially to NYDPS under separate cover and trade secret protection.