



# NYISO ICAP Demand Curve Reset: Gross CONE Inputs



NYISO Installed Capacity Working Group

May 19, 2020

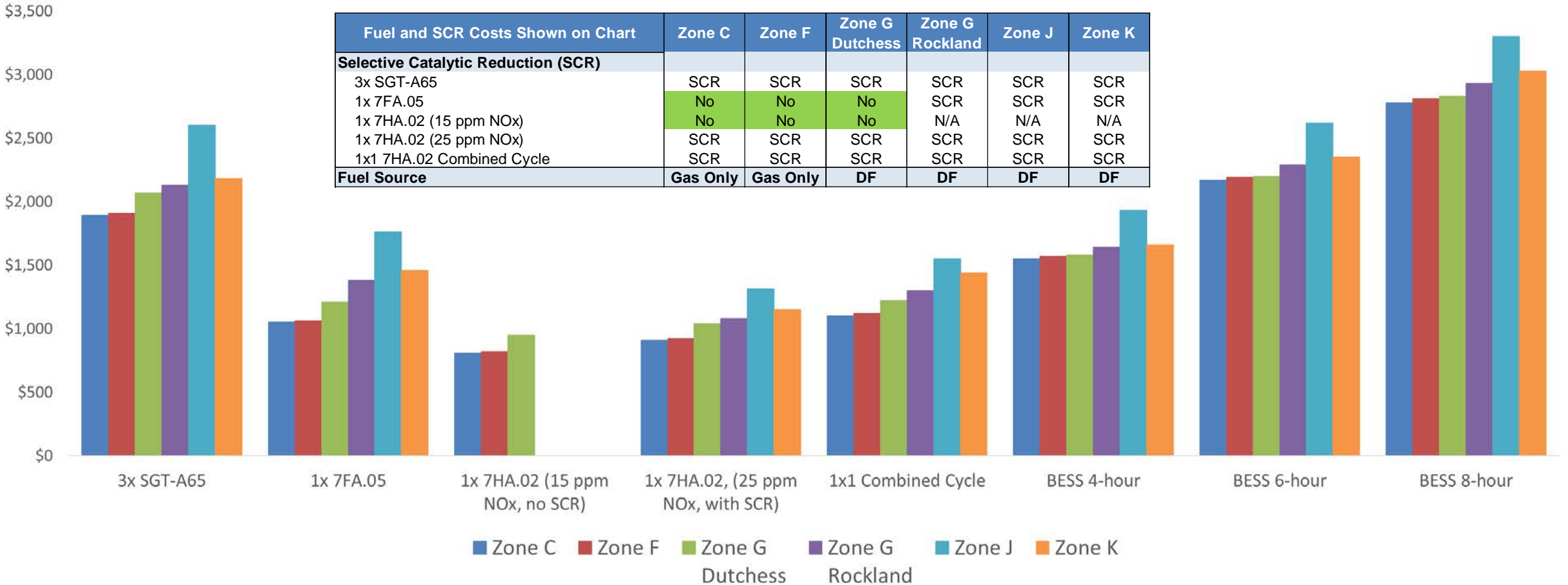
# Agenda

- ▶ Address feedback from April 22, 2020 ICAPWG meeting
- ▶ Appendix A: Calculated Annual Operating Hour Limits for Fossil Plants without Emissions Controls
- ▶ Appendix B – Appendix D: Detailed Information

# OVERVIEW OF CAPITAL COST ESTIMATES

# Capital Cost Overview – Total Cost Per kW

Total Cost Per kW - All Technologies



# Capital Cost Update Summary 1x 7F.05

1x 7F.05 <sup>2</sup>	Zone C	Zone F	Zone G Dutchess	Zone G Rockland	Zone J	Zone K	NOTES
<b>EPC Capital Cost</b>							
<b>Preliminary<sup>1</sup> EPC, \$MM</b>	<b>\$171</b>	<b>\$174</b>	<b>\$178</b>	<b>\$189</b>	<b>\$217</b>	<b>\$214</b>	
Remove SCR	(\$21)	(\$21)	(\$21)	\$0	\$0	\$0	No SCR in Zones C, F, G (Dutchess)
Add GT Building, \$MM	\$9	\$9	\$9	\$9	\$10	\$10	Noise mitigation
Add Sound Wall Allowance, \$MM	\$1	\$1	\$1	\$1	\$1	\$1	Noise mitigation
Gas Only Adjustment	(\$17)	(\$17)	\$0	\$0	\$0	\$0	Gas only for Load Zones C and F
<b>Recommended EPC Cost, \$MM</b>	<b>\$143</b>	<b>\$146</b>	<b>\$168</b>	<b>\$199</b>	<b>\$228</b>	<b>\$225</b>	
<b>Owner's Costs</b>							
<b>Preliminary<sup>1</sup> Owner's Costs, \$MM</b>	<b>\$68</b>	<b>\$68</b>	<b>\$68</b>	<b>\$69</b>	<b>\$62</b>	<b>\$62</b>	
Net Adjustment for Switchyard	\$0.0	\$0.0	\$0.0	\$0.0	\$33.0	\$0.0	NYC Scope Adjustment
Net Adjustment for Elec. Interconnection	\$0.0	\$0.0	\$0.0	\$0.0	\$7.8	\$0.0	NYC Scope Adjustment
Net Adjustment for Gas Interconnection	\$0.0	\$0.0	\$0.0	\$0.0	\$10.7	\$0.0	NYC Scope Adjustment
Remove Fuel Oil Inventory and Testing	(\$7.2)	(\$7.2)	\$0.0	\$0	\$0	\$0	Gas only for Load Zones C and F
Resultant Net BR/Contingency Adjustment	(\$1.8)	(\$1.8)	(\$0.5)	\$0.6	\$3.2	\$0.6	Percentage Change Based on Edits
<b>Recommended Owner's Cost \$MM</b>	<b>\$59</b>	<b>\$59</b>	<b>\$68</b>	<b>\$70</b>	<b>\$117</b>	<b>\$62</b>	
<b>AFUDC</b>							
<b>Preliminary<sup>1</sup> AFUDC, \$MM</b>	<b>\$17</b>	<b>\$17</b>	<b>\$17</b>	<b>\$18</b>	<b>\$20</b>	<b>\$19</b>	
<b>Recommended AFUDC, \$MM</b>	<b>\$14</b>	<b>\$14</b>	<b>\$16</b>	<b>\$19</b>	<b>\$24</b>	<b>\$20</b>	
<b>Total Cost</b>							
<b>Preliminary<sup>1</sup> Total, \$MM</b>	<b>\$256</b>	<b>\$259</b>	<b>\$264</b>	<b>\$277</b>	<b>\$298</b>	<b>\$295</b>	
<b>Recommended Total, \$MM</b>	<b>\$217</b>	<b>\$220</b>	<b>\$252</b>	<b>\$288</b>	<b>\$369</b>	<b>\$307</b>	
<i>Percent Difference, %</i>	<i>-15.3%</i>	<i>-15.2%</i>	<i>-4.4%</i>	<i>4.2%</i>	<i>23.7%</i>	<i>4.3%</i>	
<b>Recommended Total Cost, \$/kW<sup>3</sup></b>	<b>\$1,050</b>	<b>\$1,060</b>	<b>\$1,210</b>	<b>\$1,380</b>	<b>\$1,760</b>	<b>\$1,460</b>	

1. Preliminary costs based on 2/25/2020 ICAPWG presentation

2. Zone C and Zone F are gas only. Other zones are dual fuel. Zones G (Rockland), J, and K include SCR.

3. Based on ICAP performance

# Capital Cost Update Summary 1x 7HA.02

1x 7HA.02 <sup>2</sup>	Zone C	Zone F	Zone G Dutchess	Zone G Rockland	Zone J	Zone K	NOTES
<b>EPC Capital Cost</b>							
<b>Preliminary<sup>1</sup> EPC, \$MM</b>	<b>\$238</b>	<b>\$241</b>	<b>\$244</b>	<b>\$255</b>	<b>\$289</b>	<b>\$286</b>	
Remove SCR (Use 15 ppm NOx GT)	(\$43)	(\$43)	(\$43)	\$0	\$0	\$0	No SCR in Zones C, F, G (Dutchess)
Add GT Building, \$MM	\$11	\$11	\$12	\$12	\$13	\$13	Noise mitigation
Add Sound Wall Allowance, \$MM	\$1	\$1	\$1	\$1	\$1	\$1	Noise mitigation
Gas Only Adjustment	(\$25)	(\$25)	\$0	\$0	\$0	\$0	Gas only for Load Zones C and F
<b>Recommended EPC Cost, \$MM</b>	<b>\$181</b>	<b>\$184</b>	<b>\$214</b>	<b>\$267</b>	<b>\$302</b>	<b>\$299</b>	
<b>Owner's Costs</b>							
<b>Preliminary<sup>1</sup> Owner's Costs, \$MM</b>	<b>\$81</b>	<b>\$81</b>	<b>\$81</b>	<b>\$82</b>	<b>\$73</b>	<b>\$75</b>	
Net Adjustment for Switchyard	\$0.0	\$0.0	\$0.0	\$0.0	\$33.0	\$0.0	NYC Scope Adjustment
Net Adjustment for Elec. Interconnection	\$0.0	\$0.0	\$0.0	\$0.0	\$7.8	\$0.0	NYC Scope Adjustment
Net Adjustment for Gas Interconnection	\$0.0	\$0.0	\$0.0	\$0.0	\$10.7	\$0.0	NYC Scope Adjustment
Remove Fuel Oil Inventory and Testing	(\$10.6)	(\$10.6)	\$0.0	\$0	\$0	\$0	Gas only for Load Zones C and F
Resultant Net BR/Contingency Adjustment	(\$3.3)	(\$3.3)	(\$1.4)	\$0.7	\$1.8	\$0.8	Percentage Change Based on Edits
<b>Recommended Owner's Cost \$MM</b>	<b>\$67</b>	<b>\$67</b>	<b>\$80</b>	<b>\$83</b>	<b>\$126</b>	<b>\$75</b>	
<b>AFUDC</b>							
<b>Preliminary<sup>1</sup> AFUDC, \$MM</b>	<b>\$22</b>	<b>\$22</b>	<b>\$23</b>	<b>\$24</b>	<b>\$25</b>	<b>\$25</b>	
<b>Recommended AFUDC, \$MM</b>	<b>\$17</b>	<b>\$18</b>	<b>\$21</b>	<b>\$24</b>	<b>\$30</b>	<b>\$26</b>	Percentage Change Based on Edits
<b>Total Cost</b>							
<b>Preliminary<sup>1</sup> Total, \$MM</b>	<b>\$340</b>	<b>\$344</b>	<b>\$348</b>	<b>\$360</b>	<b>\$387</b>	<b>\$385</b>	
<b>Recommended Total, \$MM</b>	<b>\$265</b>	<b>\$268</b>	<b>\$314</b>	<b>\$374</b>	<b>\$459</b>	<b>\$401</b>	
<i>Percent Difference, %</i>	-22.2%	-22.0%	-9.9%	4.0%	18.6%	4.1%	
<b>Recommended Total Cost, \$/kW<sup>3</sup></b>	<b>\$810</b>	<b>\$820</b>	<b>\$950</b>	<b>\$1,080</b>	<b>\$1,310</b>	<b>\$1,150</b>	

1. Preliminary costs based on 2/25/2020 ICAPWG presentation

2. Zone C and Zone F are gas only. Other zones are dual fuel. Zones G (Rockland), J, and K include SCR.

3. Based on ICAP performance

CAPITAL COST ESTIMATE CONSIDERATIONS -  
ELECTRIC AND GAS INTERCONNECTION FOR NYC

# Switchyard in Zone J (Recommended Assumption Unchanged from 4/22/2020 Presentation)

## ▶ Zone J: 345 kV

- 5 position ring bus for 3x SGT-A65
- 3 position ring bus for 1x 7F.05 and 1x 7HA.02
- 4 position breaker-and-a-half for 1x1 7HA.02

## ▶ Propose GIS switchgear

- GIS is consistent with stated assumptions for 2016 DCR
- Costs from 2016 DCR do not align with BMcD's experience with GIS
- Costs for 2020 DCR based on BMcD experience
- Land acre assumptions adjusted to account for GIS

Zone J Switchyard, \$MM	3x SGT-A65	1x 7F.05	1x 7HA.02	1x1 7HA.02
2020 DCR Preliminary Allowance 2/25	\$17.9	\$10.8	\$10.8	\$19.9
2020 DCR Preliminary Allowance 3/26	\$53.1	\$50.8	\$50.8	\$61.6
2020 DCR Preliminary Allowance 4/22	\$52.0	\$43.8	\$43.8	\$54.6
<b>2020 DCR Recommended Allowance</b>	<b>\$52.0</b>	<b>\$43.8</b>	<b>\$43.8</b>	<b>\$54.6</b>

\*Updates between Interim allowance and proposed allowance are due to removal of scope overlap with EPC.



# Gas Interconnection Zone J (Recommended Assumption Unchanged from 4/22/2020 Presentation)

- ▶ Assumes 1-mile pipeline plus Metering & Regulation
  - 12" for 3x SGT-A65 and 1x 7F.05
  - 16" for 1x 7HA.02 and 1x1 7HA.02
- ▶ Considered pipeline costs in Con Edison and National Grid filings
- ▶ Considered cost variability from BMcD experience in NYC
- ▶ Allowance methodology is consistent with 2016 DCR
  - 2016 DCR: \$15.6 million for all technologies
  - 2020 Recommended: \$20 million for all technologies

Zone J Gas Interconnection, \$MM	3x SGT-A65	1x 7F.05	1x 7HA.02	1x1 7HA.02
2016 DCR Allowance*	\$15.6	\$15.6	\$15.6	\$15.6
2020 DCR Preliminary Allowance 2/25	\$9.3	\$9.3	\$10.8	\$10.8
2020 DCR Preliminary Allowance 3/26**	\$14.3	\$14.3	\$17.9	\$17.9
<b>2020 DCR Recommended Allowance***</b>	<b>\$20.0</b>	<b>\$20.0</b>	<b>\$20.0</b>	<b>\$20.0</b>

\*Gas turbine selection for aeroderivative and combined cycle options were different in 2016 DCR.

\*\*Interim proposed allowance for zone J (1 mile) matched the proposed allowance for other zones (5 miles)

\*\*\*Zone J allowance of \$5 mil for M&R station plus \$15 mil per mile allowance for 12" or 16" pipe

# Electrical Interconnection Load Zone J (Recommended Assumption Updated from 4/22/2020 Presentation)

- ▶ Length (unchanged): 1 mile at 345 kV
- ▶ Recommended Adjustment
  - 4/22/2020: BMcD proposed a cost estimate based on overhead line, which was consistent with assumption from the 2016 DCR.
  - After further consideration of stakeholder feedback, BMcD is recommending to adjust its assumption to be based on an underground line
    - Considered underground transmission system in NYC
    - Considered BMcD experience with permitting and planning in NY
    - Considered a shorter assumed length, but recommend maintaining 1-mile assumption, which is consistent with the 2016 DCR and reflecting the overall “generic” site considerations for the cost estimates

Electrical Interconnection, \$MM	Zone J
2020 DCR Preliminary Allowance 2/25	\$5.2
2020 DCR Preliminary Allowance 3/26	\$11.0
2020 DCR Preliminary Allowance 4/22	\$8.9
<b>2020 DCR Recommended Allowance</b>	<b>\$13.0</b>

O&M COST: NYC LAND LEASE COSTS  
CONSIDERATIONS

# Land Lease Cost Assumption in Zone J (Recommended Assumption Unchanged from 4/22/2020 Presentation)

- ▶ BMcD proposes \$270,000 per acre
  - Based on escalating lease costs used in 2016
  - Escalated using the Gross Domestic Product Implicit Price Deflator (GDPDEF)
  - Approximately 9% escalation 2015 - 2020
- ▶ BMcD considered appraisal data provided by certain stakeholders
- ▶ BMcD also reviewed land valuations found in public tax records
- ▶ The range of land valuations did not suggest a reliable trend to warrant changing the land lease cost assumption.

APPENDIX A: ANNUAL OPERATING HOUR LIMITS  
FOR UNCONTROLLED FOSSIL PEAKING PLANTS

# Annual Operating Hour Limits

- ▶ The table below provides the applicable annual operating hour limits that would apply to fossil peaking plant options for Load Zones C, F, and G (Dutchess) without selective catalytic reduction (SCR) emissions controls

Operating Hours Limits - Natural Gas	C	F	G- Dutchess
	Moderate	Moderate	Moderate
GE 7F.05	2500	2500	2500
GE 7HA.02 15 ppm NOx	1055	1055	1055
GE 7HA.02 25 ppm NOx	N/A*	N/A*	N/A*

\*SCR required per NSPS KKKK

Operating Hours Limits - Ultra Low Sulfur Fuel Oil	C	F	G- Dutchess
	Moderate	Moderate	Moderate
GE 7F.05	465	465	465
GE 7HA.02 15 ppm NOx	312	312	312
GE 7HA.02 25 ppm NOx	N/A*	N/A*	N/A*

\*SCR required per NSPS KKKK

# APPENDIX B: PERFORMANCE ESTIMATES

# Performance Estimates: 3x SGT-A65

3x Siemens SGT-A65	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>Spring-Fall (ISO) Performance</b>						
Ambient Temperature, °F	59.0	59.0	59.0	59.0	59.0	59.0
Relative Humidity, %	60%	60%	60%	60%	60%	60%
Net Plant Output, kW	184,700	184,700	184,800	184,800	184,900	184,900
Net Plant Heat Rate, Btu/kWh (HHV)	9,430	9,430	9,430	9,430	9,420	9,420
Heat Input, MMBtu/h (HHV)	1,740	1,740	1,740	1,740	1,740	1,740
<b>ICAP Performance</b>						
Ambient Temperature, °F	90.0	90.0	90.0	90.0	90.0	90.0
Relative Humidity, %	70%	70%	70%	70%	70%	70%
Net Plant Output, kW	158,600	158,600	158,700	158,700	158,700	158,700
Net Plant Heat Rate, Btu/kWh (HHV)	9,730	9,730	9,730	9,730	9,720	9,720
Heat Input, MMBtu/h (HHV)	1,540	1,540	1,540	1,540	1,540	1,540



# Performance Estimates: 1x 7F.05

1x GE 7F.05	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>Spring-Fall (ISO) Performance</b>						
Ambient Temperature, °F	59.0	59.0	59.0	59.0	59.0	59.0
Relative Humidity, %	60%	60%	60%	60%	60%	60%
Net Plant Output, kW	219,800	221,000	221,900	221,900	223,000	223,100
Net Plant Heat Rate, Btu/kWh (HHV)	10,160	10,160	10,160	10,160	10,160	10,160
Heat Input, MMBtu/h (HHV)	2,260	2,270	2,280	2,280	2,300	2,300
<b>ICAP Performance</b>						
Ambient Temperature, °F	90.0	90.0	90.0	90.0	90.0	90.0
Relative Humidity, %	70%	70%	70%	70%	70%	70%
Net Plant Output, kW	207,100	208,200	209,100	209,100	210,200	210,200
Net Plant Heat Rate, Btu/kWh (HHV)	10,360	10,360	10,360	10,360	10,360	10,360
Heat Input, MMBtu/h (HHV)	2,170	2,180	2,190	2,190	2,210	2,210

# Performance Estimates: 1x 7HA.02 (25 ppm)

1x GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>Spring-Fall (ISO) Performance</b>						
Ambient Temperature, °F	59.0	59.0	59.0	59.0	59.0	59.0
Relative Humidity, %	60%	60%	60%	60%	60%	60%
Net Plant Output, kW	359,500	361,400	362,900	362,900	364,800	364,900
Net Plant Heat Rate, Btu/kWh (HHV)	9,340	9,340	9,340	9,340	9,340	9,340
Heat Input, MMBtu/h (HHV)	3,400	3,420	3,430	3,430	3,450	3,450
<b>ICAP Performance</b>						
Ambient Temperature, °F	90.0	90.0	90.0	90.0	90.0	90.0
Relative Humidity, %	70%	70%	70%	70%	70%	70%
Net Plant Output, kW	343,700	345,600	347,000	347,000	348,800	348,800
Net Plant Heat Rate, Btu/kWh (HHV)	9,460	9,460	9,460	9,460	9,460	9,460
Heat Input, MMBtu/h (HHV)	3,290	3,310	3,320	3,320	3,340	3,340

# Performance Estimates: 1x 7HA.02 (15 ppm)

1x GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess
<b>Spring-Fall (ISO) Performance</b>			
Ambient Temperature, °F	59.0	59.0	59.0
Relative Humidity, %	60%	60%	60%
Net Plant Output, kW	340,400	342,200	343,500
Net Plant Heat Rate, Btu/kWh (HHV)	9,340	9,230	9,340
Heat Input, MMBtu/h (HHV)	3,180	3,160	3,210
<b>ICAP Performance</b>			
Ambient Temperature, °F	90.0	90.0	90.0
Relative Humidity, %	70%	70%	70%
Net Plant Output, kW	326,700	328,500	329,900
Net Plant Heat Rate, Btu/kWh (HHV)	9,490	9,380	9,490
Heat Input, MMBtu/h (HHV)	3,100	3,080	3,130

# Performance Estimates: 1x1 7HA.02 CC (Informational Only)

1x1 Combined Cycle GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>Spring-Fall (ISO) Performance</b>						
Ambient Temperature, °F	59.0	59.0	59.0	59.0	59.0	59.0
Relative Humidity, %	60%	60%	60%	60%	60%	60%
Net Plant Output, kW	520,400	532,900	535,000	535,000	536,800	537,600
Net Plant Heat Rate, Btu/kWh (HHV)	6,300	6,300	6,300	6,300	6,310	6,300
Heat Input, MMBtu/h (HHV)	3,280	3,360	3,370	3,370	3,390	3,390
<b>Incremental Duct Fired Performance with Evaporative Coolers @ Spring / Fall</b>						
Incremental Duct Fired Output, kW	99,900	100,400	99,400	99,400	99,800	104,400
Incremental Heat Rate, Btu/kWh (HHV)	8,850	8,830	8,830	8,830	8,810	8,860
Incremental Heat Input, MMBtu/h (HHV)	880	890	880	880	880	920
<b>ICAP Performance</b>						
Ambient Temperature, °F	90.0	90.0	90.0	90.0	90.0	90.0
Relative Humidity, %	70%	70%	70%	70%	70%	70%
Net Plant Output, kW	495,100	498,500	500,600	500,600	502,200	502,500
Net Plant Heat Rate, Btu/kWh (HHV)	6,410	6,400	6,400	6,400	6,410	6,410
Heat Input, MMBtu/h (HHV)	3,170	3,190	3,200	3,200	3,220	3,220
<b>Incremental Duct Fired Performance with Evaporative Coolers @ Spring / Fall</b>						
Incremental Duct Fired Output, kW	103,800	104,200	103,200	103,200	102,900	107,700
Incremental Heat Rate, Btu/kWh (HHV)	8,530	8,540	8,550	8,550	8,600	8,530
Incremental Heat Input, MMBtu/h (HHV)	890	890	880	880	880	920

# APPENDIX C: RECOMMENDED CAPITAL COST ESTIMATES

# Capital Cost: 3x SGT-A65

3x Siemens SGT-A65	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$213</b>	<b>\$216</b>	<b>\$231</b>	<b>\$240</b>	<b>\$261</b>	<b>\$258</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$67</b>	<b>\$68</b>	<b>\$75</b>	<b>\$76</b>	<b>\$124</b>	<b>\$64</b>
Owner's Project Development	\$0.4	\$0.4	\$0.4	\$0.4	\$0.5	\$0.4
Owner's Operational Personnel Prior to COD	\$0.4	\$0.4	\$0.4	\$0.4	\$0.6	\$0.5
Owner's Engineer	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Project Management	\$1.1	\$1.1	\$1.1	\$1.1	\$1.5	\$1.2
Owner's Legal Costs	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Start-up Engineering and Commissioning	\$0.3	\$0.3	\$0.3	\$0.3	\$0.4	\$0.3
Construction Power and Water	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Permitting and Licensing Fees	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Switchyard	\$17.1	\$17.1	\$17.1	\$17.1	\$52.0	\$9.3
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$6.5
Gas Interconnection and Reinforcement	\$14.3	\$14.3	\$14.3	\$14.3	\$20.0	\$14.3
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.1	\$0.1	\$0.1	\$0.4	\$0.4	\$0.4
Political Concessions & Area Development Fees	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Startup/Testing (Fuel & Consumables)	\$0.7	\$0.7	\$2.6	\$2.6	\$2.6	\$2.6
Initial Fuel Inventory	\$0.0	\$0.0	\$4.2	\$4.2	\$4.2	\$4.2
Site Security	\$0.6	\$0.6	\$0.6	\$0.6	\$0.8	\$0.6
Operating Spare Parts	\$3.1	\$3.1	\$3.1	\$3.1	\$3.1	\$3.1
Builders Risk Insurance (0.45% of EPC Costs)	\$1.0	\$1.0	\$1.0	\$1.1	\$1.2	\$1.2
Owner's Contingency (5% for Screening)	\$13.4	\$13.5	\$14.6	\$15.0	\$18.3	\$15.4
<b>AFUDC, 2020 MM\$</b>	<b>\$20</b>	<b>\$20</b>	<b>\$21</b>	<b>\$22</b>	<b>\$27</b>	<b>\$23</b>
EPC Portion	\$14.9	\$15.1	\$16.2	\$16.8	\$18.3	\$18.1
Non-EPC Portion	\$4.7	\$4.7	\$5.2	\$5.3	\$8.7	\$4.5
<b>Total Project Costs, 2020 MM\$</b>	<b>\$300</b>	<b>\$303</b>	<b>\$328</b>	<b>\$338</b>	<b>\$412</b>	<b>\$346</b>
<b>CAPITAL COST ADD / DEDUCT FOR GAS ONLY</b>						
Capital Costs, 2020 MM\$	\$11.3	\$11.3	(\$11.3)	(\$11.3)	(\$12.3)	(\$12.3)
Owner's Costs, 2020 MM\$	\$7.0	\$7.0	(\$7.0)	(\$7.0)	(\$7.1)	(\$7.1)
<b>CAPITAL COST ADD / DEDUCT TO REMOVE SCR/CO</b>						
Capital Costs, 2020 MM\$	(\$17.1)	(\$17.1)	(\$17.1)	(\$17.1)	(\$20.4)	(\$20.4)
Owner's Costs, 2020 MM\$	(\$0.9)	(\$0.9)	(\$0.9)	(\$0.9)	(\$1.1)	(\$1.1)

# Capital Cost: 1x 7F.05

1x GE 7F.05	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$143</b>	<b>\$146</b>	<b>\$168</b>	<b>\$199</b>	<b>\$228</b>	<b>\$225</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$59</b>	<b>\$59</b>	<b>\$68</b>	<b>\$70</b>	<b>\$117</b>	<b>\$62</b>
Owner's Project Development	\$0.4	\$0.4	\$0.4	\$0.4	\$0.5	\$0.4
Owner's Operational Personnel Prior to COD	\$0.4	\$0.4	\$0.4	\$0.4	\$0.6	\$0.5
Owner's Engineer	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Project Management	\$1.1	\$1.1	\$1.1	\$1.1	\$1.5	\$1.2
Owner's Legal Costs	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Start-up Engineering and Commissioning	\$0.3	\$0.3	\$0.3	\$0.3	\$0.4	\$0.3
Construction Power and Water	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Permitting and Licensing Fees	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Switchyard	\$10.3	\$10.3	\$10.3	\$10.3	\$43.8	\$5.6
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$6.5
Gas Interconnection and Reinforcement	\$14.3	\$14.3	\$14.3	\$14.3	\$20.0	\$14.3
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.2	\$0.2	\$0.2	\$0.3	\$0.3	\$0.3
Political Concessions & Area Development Fees	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Startup/Testing (Fuel & Consumables)	\$0.8	\$0.8	\$3.1	\$3.1	\$3.1	\$3.1
Initial Fuel Inventory	\$0.0	\$0.0	\$4.9	\$4.9	\$4.9	\$4.9
Site Security	\$0.6	\$0.6	\$0.6	\$0.6	\$0.8	\$0.6
Operating Spare Parts	\$5.5	\$5.5	\$5.5	\$5.5	\$5.5	\$5.5
Builders Risk Insurance (0.45% of EPC Costs)	\$0.7	\$0.7	\$0.8	\$0.9	\$1.0	\$1.0
Owner's Contingency (5% for Screening)	\$9.7	\$9.8	\$11.2	\$12.8	\$16.4	\$13.7
<b>AFUDC, 2020 MM\$</b>	<b>\$14</b>	<b>\$14</b>	<b>\$16</b>	<b>\$19</b>	<b>\$24</b>	<b>\$20</b>
EPC Portion	\$10.0	\$10.2	\$11.7	\$14.0	\$16.0	\$15.7
Non-EPC Portion	\$4.1	\$4.2	\$4.8	\$4.9	\$8.2	\$4.4
<b>Total Project Costs, 2020 MM\$</b>	<b>\$217</b>	<b>\$220</b>	<b>\$252</b>	<b>\$288</b>	<b>\$369</b>	<b>\$307</b>
<b>CAPITAL COST ADD / DEDUCT FOR GAS ONLY</b>						
Capital Costs, 2020 MM\$	\$16.9	\$16.9	(\$16.9)	(\$16.9)	(\$20.1)	(\$20.1)
Owner's Costs, 2020 MM\$	\$8.5	\$8.5	(\$8.5)	(\$8.5)	(\$8.6)	(\$8.6)
<b>CAPITAL COST ADD / DEDUCT TO REMOVE SCR/CO</b>						
Capital Costs, 2020 MM\$	\$20.6	\$20.6	\$20.6	(\$20.6)	(\$24.0)	(\$24.0)
Owner's Costs, 2020 MM\$	\$1.1	\$1.1	\$1.1	(\$1.1)	(\$1.3)	(\$1.3)

# Capital Cost: 1x 7HA.02 (25 ppm NOx)

1x GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$224</b>	<b>\$227</b>	<b>\$257</b>	<b>\$267</b>	<b>\$302</b>	<b>\$299</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$69</b>	<b>\$69</b>	<b>\$82</b>	<b>\$83</b>	<b>\$126</b>	<b>\$75</b>
Owner's Project Development	\$0.4	\$0.4	\$0.4	\$0.4	\$0.5	\$0.4
Owner's Operational Personnel Prior to COD	\$0.4	\$0.4	\$0.4	\$0.4	\$0.6	\$0.5
Owner's Engineer	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Project Management	\$1.1	\$1.1	\$1.1	\$1.1	\$1.5	\$1.2
Owner's Legal Costs	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Start-up Engineering and Commissioning	\$0.3	\$0.3	\$0.3	\$0.3	\$0.4	\$0.3
Construction Power and Water	\$0.6	\$0.6	\$0.6	\$0.6	\$0.7	\$0.6
Permitting and Licensing Fees	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Switchyard	\$10.3	\$10.3	\$10.3	\$10.3	\$43.8	\$5.6
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$6.5
Gas Interconnection and Reinforcement	\$17.9	\$17.9	\$17.9	\$17.9	\$20.0	\$17.9
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.1	\$0.1	\$0.1	\$0.4	\$0.4	\$0.4
Political Concessions & Area Development Fees	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Startup/Testing (Fuel & Consumables)	\$1.2	\$1.2	\$4.5	\$4.5	\$4.5	\$4.5
Initial Fuel Inventory	\$0.0	\$0.0	\$7.2	\$7.2	\$7.2	\$7.2
Site Security	\$0.6	\$0.6	\$0.6	\$0.6	\$0.8	\$0.6
Operating Spare Parts	\$6.5	\$6.5	\$6.5	\$6.5	\$6.5	\$6.5
Builders Risk Insurance (0.45% of EPC Costs)	\$1.0	\$1.0	\$1.2	\$1.2	\$1.4	\$1.4
Owner's Contingency (5% for Screening)	\$14.0	\$14.1	\$16.2	\$16.7	\$20.4	\$17.9
<b>AFUDC, 2020 MM\$</b>	<b>\$21</b>	<b>\$21</b>	<b>\$24</b>	<b>\$24</b>	<b>\$30</b>	<b>\$26</b>
EPC Portion	\$15.7	\$15.9	\$18.0	\$18.7	\$21.2	\$21.0
Non-EPC Portion	\$4.8	\$4.8	\$5.7	\$5.8	\$8.8	\$5.3
<b>Total Project Costs, 2020 MM\$</b>	<b>\$313</b>	<b>\$317</b>	<b>\$362</b>	<b>\$374</b>	<b>\$459</b>	<b>\$401</b>
<b>CAPITAL COST ADD / DEDUCT FOR GAS ONLY</b>						
Capital Costs, 2020 MM\$	\$25.4	\$25.4	(\$25.4)	(\$25.4)	(\$30.2)	(\$30.2)
Owner's Costs, 2020 MM\$	\$12.5	\$12.5	(\$12.5)	(\$12.5)	(\$12.7)	(\$12.7)



# Capital Cost: 1x 7HA.02 (15 ppm NOx)

1x GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$181</b>	<b>\$184</b>	<b>\$214</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$67</b>	<b>\$67</b>	<b>\$80</b>
Owner's Project Development	\$0.4	\$0.4	\$0.4
Owner's Operational Personnel Prior to COD	\$0.4	\$0.4	\$0.4
Owner's Engineer	\$1.0	\$1.0	\$1.0
Owner's Project Management	\$1.1	\$1.1	\$1.1
Owner's Legal Costs	\$1.0	\$1.0	\$1.0
Owner's Start-up Engineering and Commissioning	\$0.3	\$0.3	\$0.3
Construction Power and Water	\$0.6	\$0.6	\$0.6
Permitting and Licensing Fees	\$1.0	\$1.0	\$1.0
Switchyard	\$10.3	\$10.3	\$10.3
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0
Gas Interconnection and Reinforcement	\$17.9	\$17.9	\$17.9
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.4	\$0.4	\$0.4
Political Concessions & Area Development Fees	\$0.5	\$0.5	\$0.5
Startup/Testing (Fuel & Consumables)	\$1.2	\$1.2	\$4.5
Initial Fuel Inventory	\$0.0	\$0.0	\$7.2
Site Security	\$0.6	\$0.6	\$0.6
Operating Spare Parts	\$6.5	\$6.5	\$6.5
Builders Risk Insurance (0.45% of EPC Costs)	\$0.8	\$0.8	\$1.0
Owner's Contingency (5% for Screening)	\$11.8	\$11.9	\$14.0
<b>AFUDC, 2020 MM\$</b>	<b>\$17</b>	<b>\$18</b>	<b>\$21</b>
EPC Portion	\$12.7	\$12.9	\$15.0
Non-EPC Portion	\$4.7	\$4.7	\$5.6
<b>Total Project Costs, 2020 MM\$</b>	<b>\$265</b>	<b>\$268</b>	<b>\$314</b>
<b>CAPITAL COST ADD / DEDUCT FOR GAS ONLY</b>			
Capital Costs, 2020 MM\$	\$25.4	\$25.4	(\$25.4)
Owner's Costs, 2020 MM\$	\$12.5	\$12.5	(\$12.5)

# Capital Cost: 1x1 7HA.02 CC (Informational Only)

1x1 Combined Cycle GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$512</b>	<b>\$524</b>	<b>\$569</b>	<b>\$611</b>	<b>\$696</b>	<b>\$690</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$106</b>	<b>\$107</b>	<b>\$122</b>	<b>\$125</b>	<b>\$177</b>	<b>\$131</b>
Owner's Project Development	\$3.5	\$3.5	\$3.5	\$3.5	\$4.6	\$3.9
Owner's Operational Personnel Prior to COD	\$2.4	\$2.4	\$2.4	\$2.4	\$3.1	\$2.6
Owner's Engineer	\$2.6	\$2.6	\$2.6	\$2.6	\$3.4	\$2.9
Owner's Project Management	\$4.8	\$4.8	\$4.8	\$4.8	\$6.2	\$5.3
Owner's Legal Costs	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Owner's Start-up Engineering and Commissioning	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Sales Tax	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Construction Power and Water	\$1.5	\$1.5	\$1.5	\$1.5	\$2.0	\$1.7
Permitting and Licensing Fees	\$1.0	\$1.0	\$1.0	\$1.0	\$1.3	\$1.1
Switchyard	\$18.9	\$18.9	\$18.9	\$18.9	\$54.6	\$18.9
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$11.0
Gas Interconnection and Reinforcement	\$17.9	\$17.9	\$17.9	\$17.9	\$20.0	\$17.9
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.2	\$0.2	\$0.2	\$1.2	\$1.2	\$1.2
Political Concessions & Area Development Fees	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Startup/Testing (Fuel & Consumables)	\$1.2	\$1.2	\$5.5	\$5.5	\$5.5	\$5.5
Initial Fuel Inventory	\$0.0	\$0.0	\$7.2	\$7.2	\$7.2	\$7.2
Site Security	\$1.1	\$1.1	\$1.1	\$1.1	\$1.4	\$1.2
Operating Spare Parts	\$6.5	\$6.5	\$6.5	\$6.5	\$6.5	\$6.5
Builders Risk Insurance (0.45% of EPC Costs)	\$2.3	\$2.4	\$2.6	\$2.8	\$3.1	\$3.1
Owner's Contingency (5% for Screening)	\$29.4	\$30.1	\$32.9	\$35.1	\$41.6	\$39.1
<b>AFUDC, 2020 MM\$</b>	<b>\$43</b>	<b>\$44</b>	<b>\$48</b>	<b>\$52</b>	<b>\$61</b>	<b>\$58</b>
EPC Portion	\$35.8	\$36.7	\$39.8	\$42.8	\$48.8	\$48.3
Non-EPC Portion	\$7.4	\$7.5	\$8.5	\$8.8	\$12.4	\$9.2
<b>Total Project Costs, 2020 MM\$</b>	<b>\$661</b>	<b>\$675</b>	<b>\$739</b>	<b>\$788</b>	<b>\$935</b>	<b>\$879</b>
<b>CAPITAL COST ADD / DEDUCT FOR GAS ONLY</b>						
Capital Costs, 2020 MM\$	\$25.4	\$25.4	(\$25.4)	(\$25.4)	(\$30.2)	(\$30.2)
Owner's Costs, 2020 MM\$	\$13.5	\$13.5	(\$13.5)	(\$13.5)	(\$13.8)	(\$13.8)

# Capital Cost: BESS 4-Hour

200 MW BESS (4-Hour)	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$251</b>	<b>\$253</b>	<b>\$256</b>	<b>\$265</b>	<b>\$281</b>	<b>\$279</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$40</b>	<b>\$40</b>	<b>\$40</b>	<b>\$40</b>	<b>\$79</b>	<b>\$32</b>
Owner's Project Development	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Owner's Operational Personnel Prior to COD	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Owner's Engineer	\$0.2	\$0.2	\$0.2	\$0.2	\$0.3	\$0.2
Owner's Project Management	\$0.4	\$0.4	\$0.4	\$0.4	\$0.5	\$0.4
Owner's Legal Costs	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Owner's Start-up Engineering and Commissioning	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Land	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Construction Power and Water	\$0.5	\$0.5	\$0.5	\$0.5	\$0.6	\$0.5
Permitting and Licensing Fees	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3
Switchyard	\$10.3	\$10.3	\$10.3	\$10.3	\$43.8	\$5.6
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$6.5
Gas Interconnection and Reinforcement	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Political Concessions & Area Development Fees	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Startup/Testing (Fuel & Consumables)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Initial Fuel Inventory	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Site Security	\$0.4	\$0.4	\$0.4	\$0.4	\$0.5	\$0.4
Operating Spare Parts	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8
Builders Risk Insurance (0.45% of Construction Costs)	\$1.1	\$1.1	\$1.2	\$1.2	\$1.3	\$1.3
Owner's Contingency (5% for Screening Purposes)	\$13.8	\$14.0	\$14.1	\$14.6	\$17.2	\$14.8
<b>AFUDC, 2020 MM\$</b>	<b>\$20</b>	<b>\$21</b>	<b>\$21</b>	<b>\$21</b>	<b>\$25</b>	<b>\$22</b>
EPC Portion	\$17.6	\$17.7	\$17.9	\$18.6	\$19.7	\$19.6
Non-EPC Portion	\$2.8	\$2.8	\$2.8	\$2.8	\$5.6	\$2.2
<b>Total Project Costs, 2020 MM\$</b>	<b>\$311</b>	<b>\$313</b>	<b>\$316</b>	<b>\$327</b>	<b>\$386</b>	<b>\$333</b>

# Capital Cost: BESS 6-Hour

200 MW BESS (6-Hour)	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$359</b>	<b>\$362</b>	<b>\$366</b>	<b>\$380</b>	<b>\$402</b>	<b>\$400</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$46</b>	<b>\$46</b>	<b>\$47</b>	<b>\$47</b>	<b>\$87</b>	<b>\$39</b>
Owner's Project Development	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Owner's Operational Personnel Prior to COD	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Owner's Engineer	\$0.2	\$0.2	\$0.2	\$0.2	\$0.3	\$0.3
Owner's Project Management	\$0.4	\$0.4	\$0.4	\$0.4	\$0.5	\$0.5
Owner's Legal Costs	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Owner's Start-up Engineering and Commissioning	\$0.1	\$0.1	\$0.1	\$0.1	\$0.2	\$0.2
Land	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Construction Power and Water	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Permitting and Licensing Fees	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3
Switchyard	\$10.3	\$10.3	\$10.3	\$10.3	\$43.8	\$5.6
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$6.5
Gas Interconnection and Reinforcement	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Political Concessions & Area Development Fees	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Startup/Testing (Fuel & Consumables)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Initial Fuel Inventory	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Site Security	\$0.4	\$0.4	\$0.4	\$0.4	\$0.6	\$0.5
Operating Spare Parts	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1
Builders Risk Insurance (0.45% of Construction Costs)	\$1.6	\$1.6	\$1.7	\$1.7	\$1.8	\$1.8
Owner's Contingency (5% for Screening Purposes)	\$19.3	\$19.5	\$19.6	\$20.3	\$23.3	\$20.9
<b>AFUDC, 2020 MM\$</b>	<b>\$28</b>	<b>\$29</b>	<b>\$29</b>	<b>\$30</b>	<b>\$34</b>	<b>\$31</b>
EPC Portion	\$25.1	\$25.4	\$25.6	\$26.6	\$28.2	\$28.0
Non-EPC Portion	\$3.2	\$3.2	\$3.3	\$3.3	\$6.1	\$2.7
<b>Total Project Costs, 2020 MM\$</b>	<b>\$433</b>	<b>\$437</b>	<b>\$441</b>	<b>\$457</b>	<b>\$523</b>	<b>\$470</b>

# Capital Cost: BESS 8-Hour

200 MW BESS (8-Hour)	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>EPC Project Capital Costs, 2020 MM\$</b>	<b>\$467</b>	<b>\$471</b>	<b>\$476</b>	<b>\$494</b>	<b>\$524</b>	<b>\$521</b>
<b>Owner's Costs, 2020 MM\$</b>	<b>\$53</b>	<b>\$53</b>	<b>\$53</b>	<b>\$54</b>	<b>\$94</b>	<b>\$46</b>
Owner's Project Development	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Owner's Operational Personnel Prior to COD	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Owner's Engineer	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3
Owner's Project Management	\$0.5	\$0.5	\$0.5	\$0.5	\$0.6	\$0.5
Owner's Legal Costs	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Owner's Start-up Engineering and Commissioning	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
Land	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Construction Power and Water	\$0.6	\$0.6	\$0.6	\$0.6	\$0.7	\$0.6
Permitting and Licensing Fees	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3	\$0.3
Switchyard	\$10.3	\$10.3	\$10.3	\$10.3	\$43.8	\$5.6
Electrical Interconnection and Deliverability	\$11.0	\$11.0	\$11.0	\$11.0	\$13.0	\$6.5
Gas Interconnection and Reinforcement	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
System Deliverability Upgrade Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Emission Reduction Credits	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Political Concessions & Area Development Fees	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1	\$0.1
Startup/Testing (Fuel & Consumables)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Initial Fuel Inventory	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Site Security	\$0.5	\$0.5	\$0.5	\$0.5	\$0.7	\$0.6
Operating Spare Parts	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5
Builders Risk Insurance (0.45% of Construction Costs)	\$2.1	\$2.1	\$2.1	\$2.2	\$2.4	\$2.3
Owner's Contingency (5% for Screening Purposes)	\$24.7	\$25.0	\$25.2	\$26.1	\$29.4	\$27.0
<b>AFUDC, 2020 MM\$</b>	<b>\$36</b>	<b>\$37</b>	<b>\$37</b>	<b>\$38</b>	<b>\$43</b>	<b>\$40</b>
EPC Portion	\$32.7	\$33.0	\$33.3	\$34.6	\$36.6	\$36.4
Non-EPC Portion	\$3.7	\$3.7	\$3.7	\$3.8	\$6.6	\$3.2
<b>Total Project Costs, 2020 MM\$</b>	<b>\$556</b>	<b>\$561</b>	<b>\$566</b>	<b>\$587</b>	<b>\$661</b>	<b>\$607</b>

# APPENDIX D: RECOMMENDED O&M ESTIMATES

# O&M Estimate: 3x SGT-A65

3x Siemens SGT-A65	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - LABOR, 2020\$MM/Yr	\$0.90	\$1.00	\$1.30	\$1.30	\$1.70	\$1.50
Fixed O&M Cost - OTHER, 2020\$MM/Yr	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10
Site Leasing Allowance, 2020\$/MM/Yr	\$0.3	\$0.3	\$0.3	\$0.3	\$3.2	\$0.4
Property Insurance Allowance, 2020\$MM/Yr	\$1.3	\$1.3	\$1.4	\$1.4	\$1.6	\$1.6
<b>LEVELIZED MAJOR MAINTENANCE COSTS</b>						
Major Maintenance Cost, 2020\$/GT-hr	\$190	\$190	\$190	\$190	\$190	\$190
Major Maintenance Cost, 2020\$/GT-start	N/A	N/A	N/A	N/A	N/A	N/A
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - GAS OPERATION</b>						
Total Variable O&M Cost, 2020\$/MWh	\$10.07	\$9.95	\$9.85	\$9.85	\$10.17	\$9.72
Water Related O&M, \$/MWh	\$8.35	\$8.22	\$8.12	\$8.12	\$8.44	\$7.99
SCR Related Costs, \$/MWh	\$0.82	\$0.83	\$0.83	\$0.83	\$0.83	\$0.83
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - FUEL OIL OPERATION</b>						
Total Variable O&M Cost, 2020\$/MWh	\$10.20	\$10.00	\$9.90	\$9.90	\$10.21	\$9.79
Water Related O&M, \$/MWh	\$8.20	\$8.10	\$8.00	\$8.00	\$8.28	\$7.86
SCR Related Costs, \$/MWh	\$1.00	\$1.00	\$1.00	\$1.00	\$1.03	\$1.03
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90

# O&M Estimate: 1x 7F.05

1x GE 7F.05	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - LABOR, 2020\$MM/Yr	\$0.90	\$1.00	\$1.30	\$1.30	\$1.70	\$1.50
Fixed O&M Cost - OTHER, 2020\$MM/Yr	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10
Site Leasing Allowance, 2020\$/MM/Yr	\$0.3	\$0.3	\$0.3	\$0.3	\$3.2	\$0.4
Property Insurance Allowance, 2020\$MM/Yr	\$0.9	\$0.9	\$1.0	\$1.2	\$1.4	\$1.3
<b>LEVELIZED MAJOR MAINTENANCE COSTS</b>						
Major Maintenance Cost, 2020\$/GT-hr	\$350	\$350	\$350	\$350	\$350	\$350
Major Maintenance Cost, 2020\$/GT-start	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - GAS OPERATION</b>						
Total Variable O&M Cost, 2020\$/MWh	\$1.48	\$1.48	\$1.48	\$1.48	\$1.50	\$1.48
Water Related O&M, \$/MWh	\$0.00	\$0.00	\$0.00	\$0.00	\$0.02	\$0.00
SCR Related Costs, \$/MWh	\$0.58	\$0.58	\$0.58	\$0.58	\$0.57	\$0.57
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90	\$0.90	\$0.91	\$0.91
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - FUEL OIL OPERATION</b>						
Total Variable O&M Cost, 2020\$/MWh	\$8.80	\$8.80	\$8.80	\$8.80	\$9.17	\$8.79
Water Related O&M, \$/MWh	\$7.10	\$7.10	\$7.10	\$7.10	\$7.48	\$7.11
SCR Related Costs, \$/MWh	\$0.80	\$0.80	\$0.80	\$0.80	\$0.79	\$0.79
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.89

All options shown with SCR O&M, but this O&M component can be removed if SCR is not included (applicable for Load Zones C, F, G (Dutchess County))



# O&M Estimate: 1x 7HA.02 (25 ppm NOx)

1x GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - LABOR, 2020\$MM/Yr	\$0.90	\$1.00	\$1.30	\$1.30	\$1.70	\$1.50
Fixed O&M Cost - OTHER, 2020\$MM/Yr	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50
Site Leasing Allowance, 2020\$/MM/Yr	\$0.3	\$0.3	\$0.3	\$0.3	\$3.2	\$0.4
Property Insurance Allowance, 2020\$MM/Yr	\$1.3	\$1.4	\$1.5	\$1.6	\$1.8	\$1.8
<b>LEVELIZED MAJOR MAINTENANCE COSTS</b>						
Major Maintenance Cost, 2020\$/GT-hr	\$600	\$600	\$600	\$600	\$600	\$600
Major Maintenance Cost, 2020\$/GT-start	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - GAS OPERATION</b>						
Total Variable O&M Cost, 2020\$/MWh	\$1.37	\$1.37	\$1.36	\$1.36	\$1.39	\$1.36
Water Related O&M, \$/MWh	\$0.00	\$0.00	\$0.00	\$0.00	\$0.02	\$0.00
SCR Related Costs, \$/MWh	\$0.47	\$0.46	\$0.46	\$0.46	\$0.48	\$0.46
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - FUEL OIL OPERATION</b>						
Total Variable O&M Cost, 2020\$/MWh	\$10.88	\$10.88	\$10.90	\$10.90	\$11.44	\$10.90
Water Related O&M, \$/MWh	\$9.28	\$9.28	\$9.30	\$9.30	\$9.83	\$9.30
SCR Related Costs, \$/MWh	\$0.70	\$0.70	\$0.80	\$0.80	\$0.70	\$0.80
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90	\$0.90

# O&M Estimate: 1x 7HA.02 (15 ppm NOx)

1x GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess
<b>FIXED O&amp;M COSTS</b>			
Fixed O&M Cost - LABOR, 2020\$MM/Yr	\$0.90	\$1.00	\$1.30
Fixed O&M Cost - OTHER, 2020\$MM/Yr	\$1.50	\$1.50	\$1.50
Site Leasing Allowance, 2020\$/MM/Yr	\$0.3	\$0.3	\$0.3
Property Insurance Allowance, 2020\$MM/Yr	\$1.1	\$1.1	\$1.3
<b>LEVELIZED MAJOR MAINTENANCE COSTS</b>			
Major Maintenance Cost, 2020\$/GT-hr	\$600	\$600	\$600
Major Maintenance Cost, 2020\$/GT-start	\$16,200	\$16,200	\$16,200
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - GAS OPERATION</b>			
Total Variable O&M Cost, 2020\$/MWh	\$0.90	\$0.90	\$0.90
Water Related O&M, \$/MWh	\$0.00	\$0.00	\$0.00
SCR Related Costs, \$/MWh	\$0.00	\$0.00	\$0.00
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - FUEL OIL OPERATION</b>			
Total Variable O&M Cost, 2020\$/MWh	\$10.18	\$10.18	\$10.18
Water Related O&M, \$/MWh	\$9.28	\$9.28	\$9.28
SCR Related Costs, \$/MWh	\$0.00	\$0.00	\$0.00
Other Consumables and Variable O&M, \$/MWh	\$0.90	\$0.90	\$0.90

# O&M Estimate: 1x1 7HA.02 CC (Informational Only)

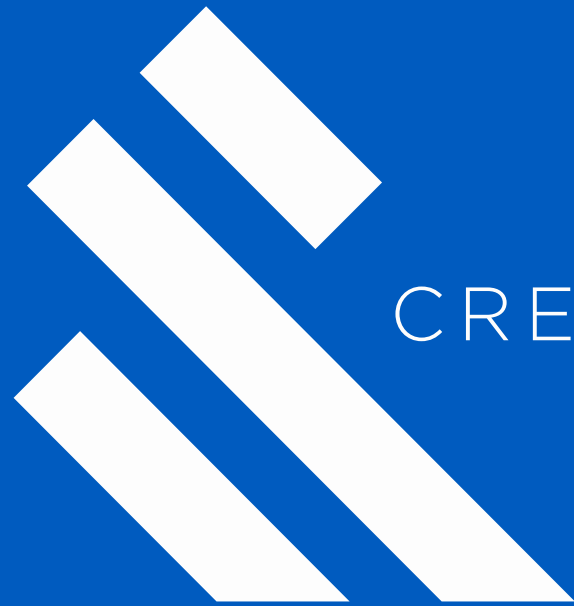
1x1 Combined Cycle GE 7HA.02	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - LABOR, 2020\$MM/Yr	\$2.8	\$3.1	\$4.1	\$4.1	\$5.3	\$4.7
Fixed O&M Cost - OTHER, 2020\$MM/Yr	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1
Site Leasing Allowance, 2020\$/MM/Yr	\$0.7	\$0.7	\$0.7	\$0.7	\$7.3	\$0.8
Property Insurance Allowance, 2020\$MM/Yr	\$3.1	\$3.1	\$3.4	\$3.7	\$4.2	\$4.1
<b>LEVELIZED CAPITAL MAINTENANCE COSTS</b>						
Major Maintenance Cost, 2020 \$/GT-hr	\$600	\$600	\$600	\$600	\$600	\$600
Major Maintenance Cost, 2020 \$/start	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - GAS OPERATION</b>						
Total Variable O&M Cost, 2020 \$/MWh	\$1.55	\$1.55	\$1.55	\$1.55	\$1.57	\$1.54
Water Related O&M (\$/MWh)	\$0.01	\$0.01	\$0.01	\$0.01	\$0.03	\$0.01
SCR Related Costs, \$/MWh	\$0.32	\$0.32	\$0.32	\$0.32	\$0.32	\$0.32
Other Consumables and Variable O&M (\$/MWh)	\$1.22	\$1.22	\$1.22	\$1.22	\$1.22	\$1.21
Incremental Duct Fired Variable O&M, 2020 \$/MWh (excl)	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60	\$0.60
Water Related O&M (\$/MWh)	\$0.03	\$0.03	\$0.03	\$0.03	\$0.06	\$0.03
SCR Reagent, \$/MWh	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13	\$0.13
Other Consumables and Variable O&M (\$/MWh)	\$0.44	\$0.44	\$0.44	\$0.44	\$0.41	\$0.44
<b>NON-FUEL VARIABLE O&amp;M COSTS (EXCLUDES MAJOR MAINTENANCE) - FUEL OIL OPERATION</b>						
Total Variable O&M Cost, 2020 \$/MWh	\$1.70	\$1.70	\$1.70	\$1.70	\$2.09	\$1.72
Water Related O&M (\$/MWh)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.40	\$0.02
SCR Related Costs, \$/MWh	\$0.50	\$0.50	\$0.50	\$0.50	\$0.46	\$0.48
Other Consumables and Variable O&M (\$/MWh)	\$1.20	\$1.20	\$1.20	\$1.20	\$1.23	\$1.22

# O&M Estimates: BESS (4, 6, and 8 Hour)

200 MW BESS (4-Hour)	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - Assumes LTSA with Integrator/OEM, 2020\$/MM/Yr	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0
Site Leasing Allowance, 2020\$/MM/Yr	\$0.3	\$0.3	\$0.3	\$0.3	\$2.4	\$0.3
Property Insurance Allowance, 2020\$/MM/Yr	\$1.5	\$1.5	\$1.5	\$1.6	\$1.7	\$1.7
<b>CAPACITY AUGMENTATION (Modeled as VARIABLE O&amp;M COSTS)</b>						
Capacity Augmentation (via LTSA) for 20 Years Levelized, 2020 \$/MWh	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00

200 MW BESS (6-Hour)	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - Assumes LTSA with Integrator/OEM, 2020\$/MM/Yr	\$1.2	\$1.2	\$1.2	\$1.2	\$1.2	\$1.2
Site Leasing Allowance, 2020\$/MM/Yr	\$0.3	\$0.3	\$0.3	\$0.3	\$3.2	\$0.4
Property Insurance Allowance, 2020\$/MM/Yr	\$2.2	\$2.2	\$2.2	\$2.3	\$2.4	\$2.4
<b>CAPACITY AUGMENTATION (Modeled as VARIABLE O&amp;M COSTS)</b>						
Capacity Augmentation (via LTSA) for 20 Years Levelized, 2020 \$/MWh	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00

200 MW BESS (8-Hour)	ZONE C	ZONE F	ZONE G - Dutchess	ZONE G - Rockland	ZONE J	ZONE K
<b>FIXED O&amp;M COSTS</b>						
Fixed O&M Cost - Assumes LTSA with Integrator/OEM, 2020\$/MM/Yr	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5
Site Leasing Allowance, 2020\$/MM/Yr	\$0.4	\$0.4	\$0.4	\$0.4	\$4.1	\$0.5
Property Insurance Allowance, 2020\$/MM/Yr	\$2.8	\$2.8	\$2.9	\$3.0	\$3.1	\$3.1
<b>CAPACITY AUGMENTATION (Modeled as VARIABLE O&amp;M COSTS)</b>						
Capacity Augmentation (via LTSA) for 20 Years Levelized, 2020 \$/MWh	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00	\$12.00



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