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Independent System Operator

Climate Change Impact and Resilience Study - Phase II

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Background and Overview

Background

- **The combination of changes to New York's climate, changes to power sector supply, and demand from climate-focused law and policy may introduce new reliability considerations for the New York grid**
  - New York's Climate Leadership and Community Protection Act (CLCPA) directs that:
    - By 2030, 70% of all electricity in the state will be provided by renewable resources ("70 x 30")
    - By 2040, the statewide electrical demand system will be "zero-emissions;" meaning that 100% of all electricity be provided by carbon-dioxide free resources ("100 x 40")
  - These requirements will increase reliance on weather-dependent renewable resources
  - Trends towards electrification of heating and transportation may significantly impact the quantity and shape of electricity demand
  - Both demand and supply may be affected by impacts from climate change

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Objectives

- **Phase II of the Climate Change Study will examine various scenarios that could potentially occur on the electric system due to climate change**
- **The study will use an hourly, deterministic evaluation tool for the purpose of considering various potential impacts on the electric grid due to climate change**
  - The study will not be an extensive reliability study and will not include Resource Adequacy or Transmission Security
  - The study will examine whether the Bulk Power System is able to serve load and meet reserve requirements under a variety of conditions
- **The study will use a pipe and bubble type model**
- **The year of study will be 2040**
  - The generation mix will be based on the NYS Climate Leadership and Community Protection Act which is 100% zero-emissions by 2040 (“100 x 40”)
  - All generation will be modeled as zero-emissions

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Model Overview

- Modeling Year: 2040
- Three modeling periods: Winter, Summer, and Off-peak
- Proposed modeling time frame: 30 days per period
- Quantitative deterministic model – "stacking order" analysis
  - Not a production cost or transmission security modeling exercise
- Resource starting assumptions consistent with 2019 CARIS Phase 1 "70x30" case, adjusted for potential 2040 conditions
- Hourly electric demand during normal conditions based on Climate Impact Phase I load forecasts, which adjust for increases in:
  - Behind the meter PV
  - Electric vehicle demand
  - Energy efficiency
  - Heating and cooling electrification
- Model compares hourly generation and storage discharge to hourly load plus reserves, accounting for inter-zonal transmission constraints

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Load Levels

- **Based on NYISO Climate Change Impact Study Phase I performed by Itron**
- **Reference Case**
  - 0.7 degrees F per decade increase in average New York state temperatures
  - Increases in energy efficiency over 2019 levels
  - Increases in electric vehicle charging load over 2019 levels
- **CLCPA Case**
  - 0.7 degrees F per decade increase in average New York state temperatures
  - Increases in energy efficiency (more extensive than Reference Case)
  - Increases in electric vehicle charging load (more extensive than Reference Case)
  - Increases in residential and commercial building electrification

	Dates	Summer 7/1/2040 - 7/30/2040	Winter 1/1/2040 - 1/30/2040	Shoulder 4/1/2040 - 4/30/2040
Reference Case	Peak Load (MW)	38,666	28,010	23,507
	Total Energy (GWh)	19,013	14,111	11,385
CLCPA Case	Peak Load (MW)	48,589	57,144	27,060
	Total Energy (GWh)	22,476	27,322	12,497

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Case Development

Case Development

- Cases were developed for analysis which incorporate two Phase I Itron 2040 load forecasts (the “Reference Case” and the “CLCPA Case”)
- Two cases were developed during this Phase II Study and two were developed as part of the Grid in Transition (GIT) study. Thus, the four cases analyzed are:
  - CCP2-Reference
  - CCP2-CLCPA
  - GIT-Reference
  - GIT-CLCPA
- Each case includes in the resource sets a generic resource, the role of which is to identify the attributes of any additional resources that may be needed to avoid or reduce Loss of Load Occurrences (LOLO). These resources are identified as dispatchable and emissions-free resources (DE Resources), and may include technologies under development or yet to be developed.

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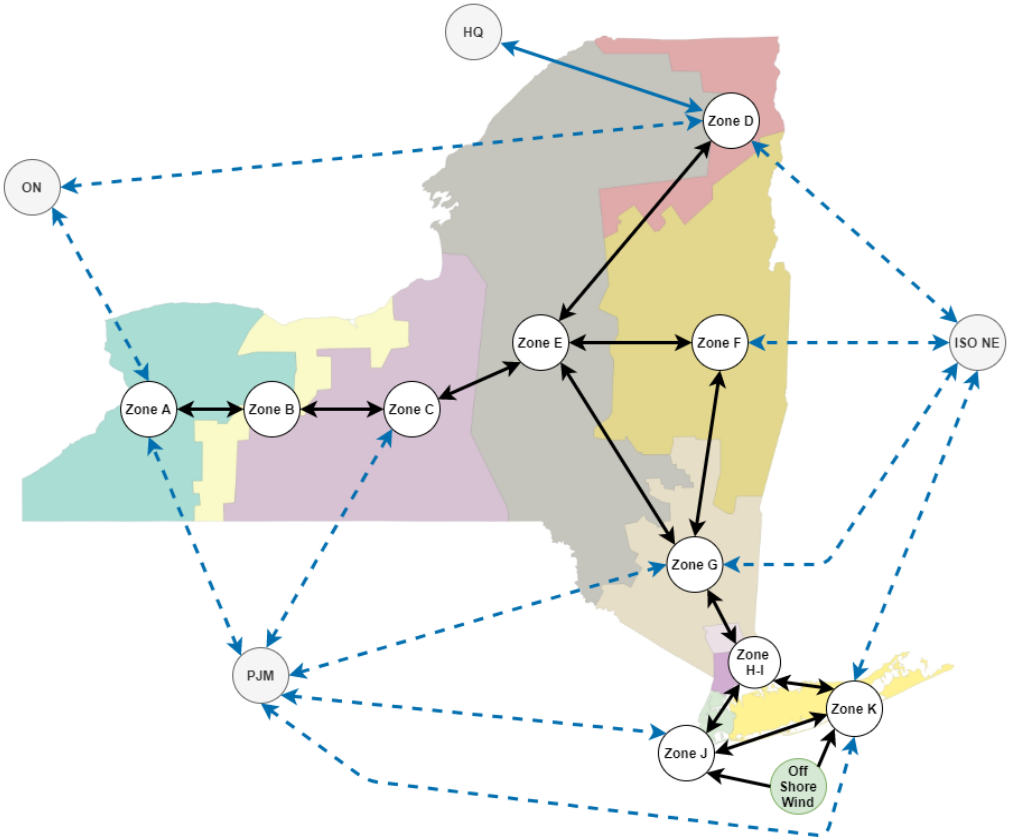
Pipe and Bubble Diagram



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Transmission Limits by Resource Set

- The GIT resource sets did not include any expansion of the Transmission System except for the two Public Policy Projects
- The CCP2 resource sets included significant increases in transmission to relieve 90% of transmission constraints

Interface	NYISO Limits (Starting Point)	90% Limits (CCP2 - Reference)	90% Limits (CCP2 - CLCPA)
A to B	1,800 MW	5,133 MW	7,149 MW
C to B	1,600 MW	1,600 MW	3,319 MW
C to E	4,925 MW	8,432 MW	11,357 MW
D to E	2,550 MW	4,161 MW	6,448 MW
E to G	1,900 MW	9,279 MW	13,932 MW
G to H	7,250 MW	14,713 MW	15,791 MW
I to J	3,900 MW	8,675 MW	10,585 MW
I to K	1,200 MW	4,520 MW	5,137 MW

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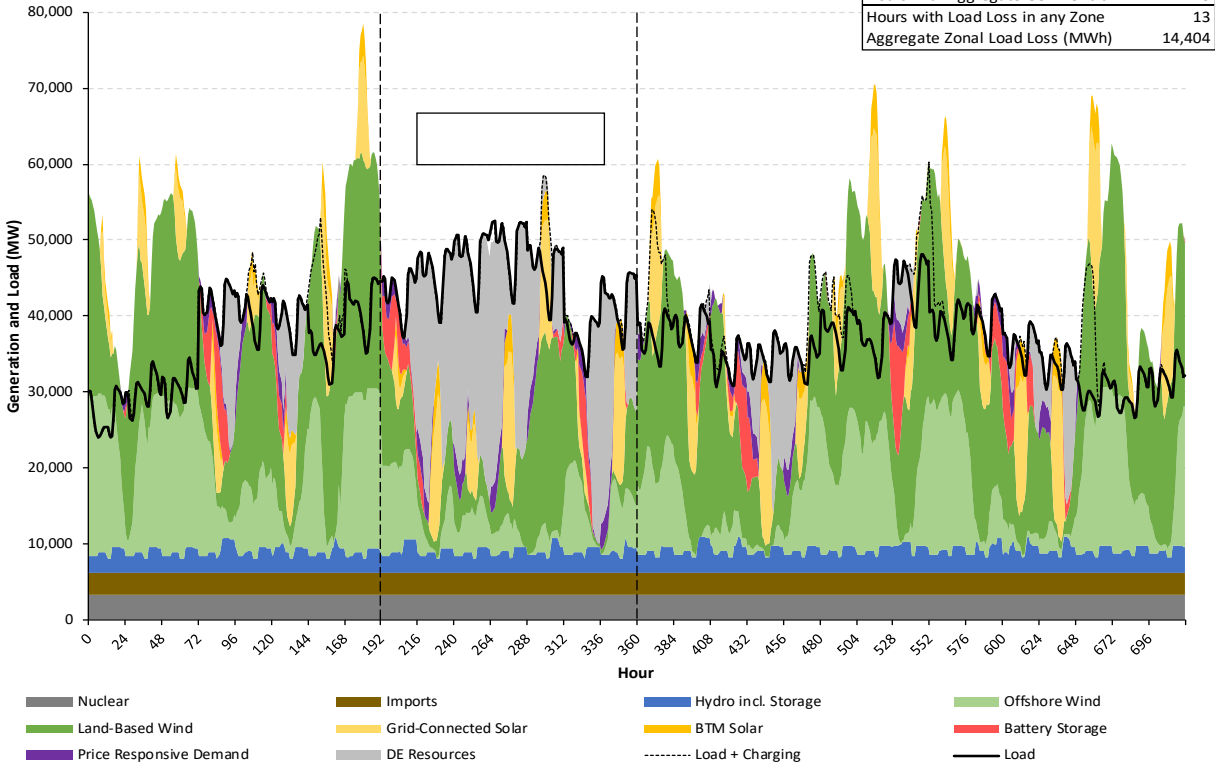
Hourly Load/Generation Balance, CCP2-CLCPA Winter Wind Lull Case

Aggregate Load in Period (MWh)	27,322,037
Aggregate Gen in Period (MWh)	32,527,026
Gen Surplus/Deficit (MWh)	5,204,989
Hours with Aggregate Gen Deficit	13
Hours with Load Loss in any Zone	13
Aggregate Zonal Load Loss (MWh)	14,404



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Generation Capacity, CCP2-Reference

Nameplate Capacity by Zone, MW	A	B	C	D	E	F	G	H	I	J	K	Total
Land-based Wind	6,057.0	877.5	4,326.8	4,353.8	4,097.3	-	-	-	-	-	-	**19,712.3**
Offshore Wind	-	-	-	-	-	-	-	-	-	14,380.4	5,869.6	**20,250.0**
Solar (Behind-the-meter)	822.3	254.8	696.4	80.7	785.5	965.3	798.3	70.8	104.7	784.1	987.9	**6,350.7**
Solar (Grid Connected)	10,059.0	1,148.0	6,273.8	-	3,969.0	8,156.8	4,613.0	-	-	-	134.8	**34,354.3**
Hydro Pondage	2,675.0	-	-	856.0	-	-	41.6	-	-	-	-	**3,572.6**
Hydro Pumped Storage	-	-	-	-	-	1,170.0	-	-	-	-	-	**1,170.0**
Hydro Run-of-River	4.7	63.7	70.4	58.8	376.2	282.5	57.1	-	-	-	-	**913.4**
Nuclear	-	581.7	2,782.5	-	-	-	-	-	-	-	-	**3,364.2**
Imports	-	-	-	1,500.0	-	-	-	-	-	1,310.0	-	**2,810.0**
Storage	1,952.0	8.0	1,958.0	1,976.0	688.0	606.0	168.0	-	-	390.0	54.0	**7,800.0**
Price Responsive Demand (Summer)	474.9	102.6	255.1	178.8	105.5	216.9	123.1	29.3	67.4	970.4	93.8	**2,618.0**
Price Responsive Demand (Winter)	309.5	66.9	166.2	116.5	68.8	141.4	80.2	19.1	43.9	632.3	61.1	**1,706.0**
DE Resources	353.3	102.6	1,148.9	280.9	237.4	2,573.9	2,640.7	38.8	-	5,761.7	3,920.7	**17,059.0**

Generation Capacity, CCP2-CLCPA

Nameplate Capacity by Zone, MW	A	B	C	D	E	F	G	H	I	J	K	Total
Land-based Wind	10,815.9	1,566.9	7,726.2	7,774.5	7,316.4	-	-	-	-	-	-	**35,200.0**
Offshore Wind	-	-	-	-	-	-	-	-	-	14,957.8	6,105.2	**21,063.0**
Solar (Behind-the-meter)	1,408.5	436.4	1,192.8	138.2	1,345.5	1,653.4	1,367.3	121.2	179.4	1,343.1	1,692.2	**10,877.8**
Solar (Grid Connected)	11,496.0	1,312.0	7,170.0	-	4,536.0	9,322.0	5,272.0	-	-	-	154.0	**39,262.0**
Hydro Pondage	2,675.0	-	-	856.0	-	-	41.6	-	-	-	-	**3,572.6**
Hydro Pumped Storage	-	-	-	-	-	1,170.0	-	-	-	-	-	**1,170.0**
Hydro Run-of-River	4.7	63.7	70.4	58.8	376.2	282.5	57.1	-	-	-	-	**913.4**
Nuclear	-	581.7	2,782.5	-	-	-	-	-	-	-	-	**3,364.2**
Imports	-	-	-	1,500.0	-	-	-	-	-	1,310.0	-	**2,810.0**
Storage	4,232.0	20.0	3,160.0	4,168.0	2,296.0	292.0	84.0	-	-	1,096.0	252.0	**15,600.0**
Price Responsive Demand (Summer)	949.9	205.2	510.1	357.7	211.1	433.9	246.3	58.6	134.9	1,940.8	187.6	**5,236.0**
Price Responsive Demand (Winter)	619.0	133.7	332.4	233.1	137.5	282.7	160.5	38.2	87.9	1,264.7	122.3	**3,412.0**
DE Resources	465.4	674.2	1,513.4	370.0	312.7	3,390.4	6,887.2	79.8	-	11,848.1	6,595.4	**32,136.6**

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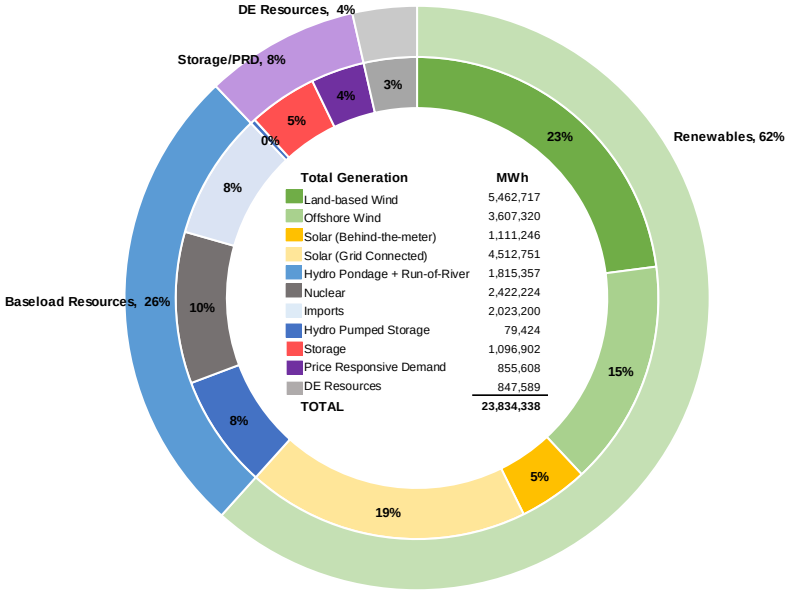
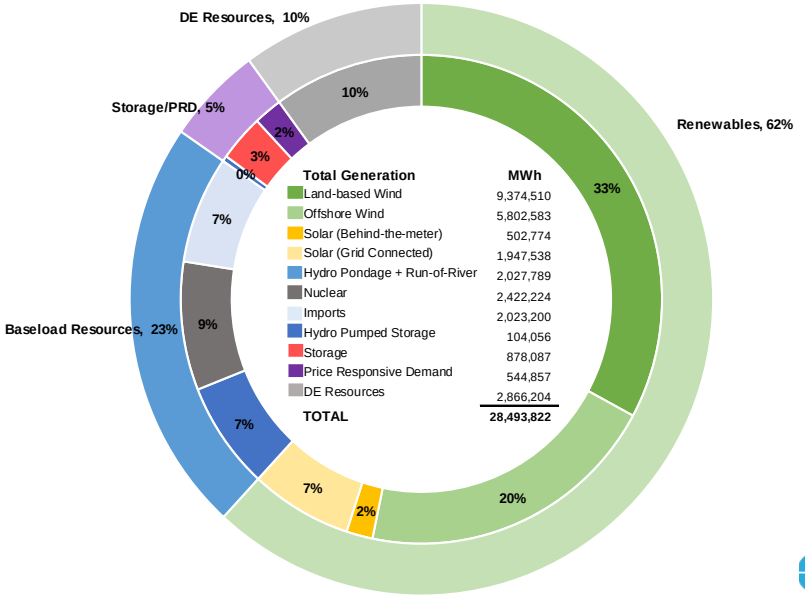
Resource Mix by Seasonal Modeling Period

- Overall, the DE Resource provides a small proportion of system energy; only 4% of summer modeling period load and 10% of winter modeling period load are met by DE Resources in the CLCPA load scenario under the CCP2 resource set

Generation by Resource Type – Summer 2040 CLCPA Load Scenario, Baseline Case



Generation by Resource Type – Winter 2040 CLCPA Load Scenario, Baseline Case



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Resource Sets from Grid in Transition Study

Grid in Transition Reference Case

Nameplate Capacity by Zone, MW	A-E	F	G-I	J	K	Total
Land-based Wind	9,754.8	0.0	0.0	-	-	9,754.8
Offshore Wind	-	-	-	9,173.5	4,593.8	13,767.3
Solar (Behind-the-meter)	452.1	2,606.7	265.0	779.9	2,009.4	6,113.1
Solar (Grid Connected)	4,771.7	20,838.5	4,376.0	-	56.4	30,042.6
Hydro Pondage + Run-of-River	4,431.7	485.6	100.7	-	-	5,018.0
Hydro Pumped Storage	-	1,171.3	-	-	-	1,171.3
Nuclear	2,095.9	-	-	-	-	2,095.9
Imports	1,100.0	-	-	-	-	1,100.0
Storage	1,973.5	3,276.9	895.4	2,645.5	1,945.0	10,736.3
Price Responsive Demand (SCR/EDRP)	1,054.9	216.3	318.5	938.0	634.9	3,162.6
Renewable Natural Gas Dispatchable	2,333.7	3,040.7	3,847.2	6,388.1	5,008.7	20,618.4
DE Resources (added by AG)	-	-	-	1,283.0	797	2,080.0

Grid in Transition CLCPA Case

Nameplate Capacity by Zone, MW	A-E	F	G-I	J	K	Total
Land-based Wind	23,254.8	0.0	0.0	-	-	23,254.9
Offshore Wind	-	-	-	17,938.0	7,164.1	25,102.2
Solar (Behind-the-meter)	537.5	2,843.1	265.0	779.9	2,009.4	6,434.9
Solar (Grid Connected)	4,907.1	21,378.9	5,326.8	-	56.4	31,669.3
Hydro Pondage + Run-of-River	4,431.7	485.6	100.7	-	-	5,018.0
Hydro Pumped Storage	-	1,171.3	-	-	-	1,171.3
Nuclear	2,156.4	-	-	-	-	2,156.4
Imports	1,100.0	-	-	-	-	1,100.0
Storage	5,894.2	3,014.9	260.1	2,620.7	2,317.0	14,106.9
Price Responsive Demand (SCR/EDRP)	1,462.9	306.2	472.5	1,348.9	909.1	4,499.5
Renewable Natural Gas Dispatchable	2,483.6	9,048.6	5,596.7	10,187.0	6,386.5	33,702.3
DE Resources (added by AG)	219.0	-	-	3,629.0	1,988.0	5,836.0

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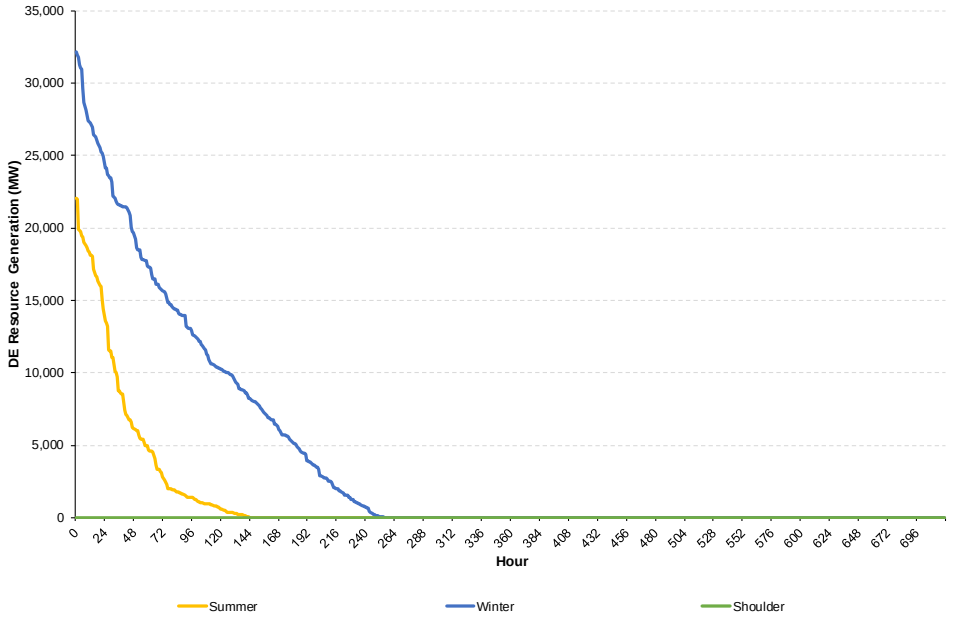
DE Resource Use by Seasonal Modeling Period

- Large quantity of DE Resource generation needed in a small number of hours
- DE Resource has low capacity factor (~12%) during the most stressed seasonal modeling period (winter)
- DE Resource has only a 3.7% capacity factor in the summer seasonal modeling period
- DE Resource is not needed at all during shoulder season modeling period
- Thus, while a substantial quantity of capacity is needed, the energy need is minimal

Duration Curve of DE Resource Generation by Modeling Period – CLCPA Load Scenario, Baseline Case



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Climate Disruption Results

Description of Physical Disruption Modeling

ID	Event	Model Toggles Adjusted	
Baseline	None		
A	Heat Wave	Wind Generation - 20% decrease for 7 days Solar Generation - Use solar profile from hottest day in Y2006 for 7 days Load - High temp 90° F or above for days 1-7, with daily zonal load increase of between 0% to 18.7% Transmission - 5% decrease for 7 days	
B	Cold Wave	Solar Generation - Use solar profile from coldest day in Y2006 for 7 days Load - Low temp of 0° F or below for days 1-7, with daily zonal load increase of between 2.3% to 25.6%	
		Summer	Winter
C	Wind Lull - Upstate	Wind Generation - 15% Average Capacity Factor in Zones A-E for 12 days	Wind Generation - 25% Average Capacity Factor in Zones A-E for 7 days
D	Wind Lull - Off-Shore	Wind Generation - 15% Average Capacity Factor in Zones J-K for 12 days	Wind Generation - 25% Average Capacity Factor in Zones J-K for 7 days
E	Wind Lull - State-wide	Wind Generation - 15% Average Capacity Factor in Zones A-K for 12 days	Wind Generation - 25% Average Capacity Factor in Zones A-K for 7 days
F	Hurricane/Coastal Wind Storm	Calibrated using Hurricane Sandy data Load - 30% decrease in Zones G-K for 1 day with 11 day recovery Transmission - Off in Zones G-K for 1 day with 14 day recovery Wind Generation - Off in Zones J-K for 1 day with 14 day recovery Solar Generation - 50% decrease in Zones G-K for 1 day with next day recovery DE Capacity - 40% decrease in Zones G-K for 1 day with 14 day recovery	
G	Severe Wind Storm – Upstate	Calibrated using Hurricane Sandy data Load - 30% decrease in Zones A-F for 1 day with 11 day recovery Transmission - Off in Zones A-F for 1 day with 14 day recovery Wind Generation - Off in Zones A-F for 1 day with 14 day recovery Solar Generation - 50% decrease in Zones A-F for 1 day with next day recovery DE Capacity - 40% decrease in Zones A-F for 1 day with 14 day recovery	
H	Severe Wind Storm – Offshore	Wind Generation - Off in Zones J-K for 1 day with 14 day recovery	
I	Drought	Hydro Generation - 50% decrease for 30 days	
J	Icing Event	Transmission - Off in Zones A-C for 1 day with 7 day recovery Load - 25% decrease in Zones A-C for 1 day with 7 day recovery Wind Generation - 50% decrease in Zones A-C for 1 day with 7 day recovery	

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Comparison of Case Results by Resource Set, Winter CLCPA

	Climate Impact Phase II Resource Set					Grid in Transition Resource Set				
	Total Hours with LOLO in at least one Load Zone	Aggregate LOLO (MWh)	Total Hours with DE Resource Gen.	Aggregate DE Resource Gen. (MWh)	Diff. in DE Resource Gen. from Baseline (MWh)	Total Hours with LOLO in at least one Load Zone	Aggregate LOLO (MWh)	Total Hours with DE Resource Gen.	Aggregate DE Resource Gen. (MWh)	Diff. in DE Resource Gen. from Baseline (MWh)
CLCPA Winter Scenario										
Baseline Winter	0	0	255	2,866,203	+0	0	0	460	6,155,321	+0
Cold Wave	0	0	259	2,879,947	+13,744	0	0	466	6,272,961	+117,640
Wind Lull - Upstate	5	2,373	259	3,076,530	+210,327	8	7,090	469	6,309,711	+154,390
Wind Lull - Off-Shore	10	7,184	274	3,350,666	+484,463	6	1,378	487	6,836,558	+681,237
Wind Lull - State-Wide	13	14,404	278	3,653,404	+787,201	9	10,757	486	6,988,838	+833,517
Severe Wind Storm – Upstate	45	22,146	369	3,822,059	+955,856	51	57,457	551	6,707,765	+552,444
Severe Wind Storm – Offshore	9	4,203	304	3,609,785	+743,582	2	327	561	7,916,575	+1,761,254
Icing Event	2	88	273	2,909,437	+43,234	24	11,242	480	6,145,568	-9,753

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Comparison of Case Results by Resource Set, Summer CLCPA

	Climate Impact Phase II Resource Set					Grid in Transition Resource Set				
CLCPA Summer Scenario	**Total Hours with LOLO in at least one Load Zone**	**Aggregate LOLO (MWh)**	**Total Hours with DE Resource Gen.**	**Aggregate DE Resource Gen. (MWh)**	**Diff. in DE Resource Gen. from Baseline (MWh)**	**Total Hours with LOLO in at least one Load Zone**	**Aggregate LOLO (MWh)**	**Total Hours with DE Resource Gen.**	**Aggregate DE Resource Gen. (MWh)**	**Diff. in DE Resource Gen. from Baseline (MWh)**
Baseline Summer	0	0	145	847,589	+0	0	0	512	4,181,951	+0
Heat Wave	0	0	147	964,668	+117,079	0	0	523	4,404,209	+222,258
Wind Lull - Upstate	0	0	179	1,171,656	+324,067	0	0	516	4,501,251	+319,300
Wind Lull - Off-Shore	0	0	196	1,116,165	+268,576	0	0	543	4,983,818	+801,867
Wind Lull - State-Wide	0	0	235	1,697,161	+849,572	0	0	543	5,322,997	+1,141,046
Hurricane/Coastal Wind Storm	26	20,168	322	1,892,046	+1,044,457	25	20,488	559	4,832,633	+650,682
Severe Wind Storm – Upstate	8	1,620	283	2,002,682	+1,155,093	24	18,963	549	4,998,149	+816,198
Severe Wind Storm – Offshore	0	0	167	1,079,462	+231,873	0	0	556	5,126,163	+944,212
Drought	0	0	166	1,148,649	+301,060	0	0	520	4,616,646	+434,695

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CLCPA Load Scenario Results (CCP2 Resource Set)

	Loss of Load		DE Resource Generation				
	Total Hours with LOLO in at least one Load Zone	Aggregate LOLO (MWh)	Max Consecutive Hours with DE Resource Gen.	Total Hours with DE Resource Gen.	Aggregate DE Resource Gen. (MWh)	Max DE Resource Gen. (MW)	Max 1-hr. DE Resource Gen. Ramp (MW)
CLCPA Summer Scenario - Climate Impact Phase II Resource Set							
Baseline Summer	0	0	36	145	847,589	22,081	9,170
Heat Wave	0	0	36	147	964,668	22,081	8,642
Wind Lull - Upstate	0	0	37	179	1,171,656	23,361	9,447
Wind Lull - Off-Shore	0	0	40	196	1,116,165	23,170	9,170
Wind Lull - State-Wide	0	0	40	235	1,697,161	24,440	11,605
Hurricane/Coastal Wind Storm	26	20,168	171	322	1,892,046	22,081	8,642
Severe Wind Storm – Upstate	8	1,620	87	283	2,002,682	22,081	8,642
Severe Wind Storm – Offshore	0	0	36	167	1,079,462	22,163	10,015
Drought	0	0	36	166	1,148,649	23,595	10,610

	Loss of Load		DE Resource Generation				
	Total Hours with LOLO in at least one Load Zone	Aggregate LOLO (MWh)	Max Consecutive Hours with DE Resource Gen.	Total Hours with DE Resource Gen.	Aggregate DE Resource Gen. (MWh)	Max DE Resource Gen. (MW)	Max 1-hr. DE Resource Gen. Ramp (MW)
CLCPA Winter Scenario - Climate Impact Phase II Resource Set							
Baseline Winter	0	0	62	255	2,866,203	32,135	11,716
Cold Wave	0	0	62	259	2,879,947	32,135	11,716
Wind Lull - Upstate	5	2,373	62	259	3,076,530	32,135	12,707
Wind Lull - Off-Shore	10	7,184	104	274	3,350,666	32,135	11,715
Wind Lull - State-Wide	13	14,404	105	278	3,653,404	32,135	12,403
Severe Wind Storm – Upstate	45	22,146	81	369	3,822,059	31,419	12,850
Severe Wind Storm – Offshore	9	4,203	103	304	3,609,785	32,135	11,715
Icing Event	2	88	62	273	2,909,437	32,135	11,716

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Reference Case Load Scenario Results (CCP2 Resource Set)

	Loss of Load		DE Resource Generation				
	Total Hours with LOLO in at least one Load Zone	Aggregate LOLO (MWh)	Max Consecutive Hours with DE Resource Gen.	Total Hours with DE Resource Gen.	Aggregate DE Resource Gen. (MWh)	Max DE Resource Gen. (MW)	Max 1-hr. DE Resource Gen. Ramp (MW)
Reference Summer Scenario - Climate Impact Phase II Resource Set							
Baseline Summer	0	0	36	183	972,444	17,059	6,520
Heat Wave	0	0	36	199	1,067,892	17,059	6,520
Wind Lull - Upstate	2	729	38	209	1,175,961	17,059	5,655
Wind Lull - Off-Shore	2	1,797	41	243	1,307,211	17,059	6,380
Wind Lull - State-Wide	4	3,149	42	283	1,697,728	17,059	10,929
Hurricane/Coastal Wind Storm	76	96,295	173	349	1,637,221	17,059	6,520
Severe Wind Storm – Upstate	18	4,470	106	330	1,975,003	17,059	6,520
Severe Wind Storm – Offshore	0	0	36	241	1,249,958	17,059	7,489
Drought	11	6,383	38	209	1,305,698	17,059	5,755

	Loss of Load		DE Resource Generation				
	Total Hours with LOLO in at least one Load Zone	Aggregate LOLO (MWh)	Max Consecutive Hours with DE Resource Gen.	Total Hours with DE Resource Gen.	Aggregate DE Resource Gen. (MWh)	Max DE Resource Gen. (MW)	Max 1-hr. DE Resource Gen. Ramp (MW)
Reference Winter Scenario - Climate Impact Phase II Resource Set							
Baseline Winter	0	0	4	6	9,316	3,762	2,479
Cold Wave	0	0	4	6	9,316	3,762	2,479
Wind Lull - Upstate	0	0	4	6	10,646	4,213	2,400
Wind Lull - Off-Shore	0	0	9	15	48,055	6,386	3,819
Wind Lull - State-Wide	0	0	13	32	90,238	8,219	4,127
Severe Wind Storm – Upstate	10	1,146	14	56	119,192	5,809	2,283
Severe Wind Storm – Offshore	0	0	8	20	31,311	4,677	3,809
Icing Event	3	157	6	14	9,886	3,762	2,479

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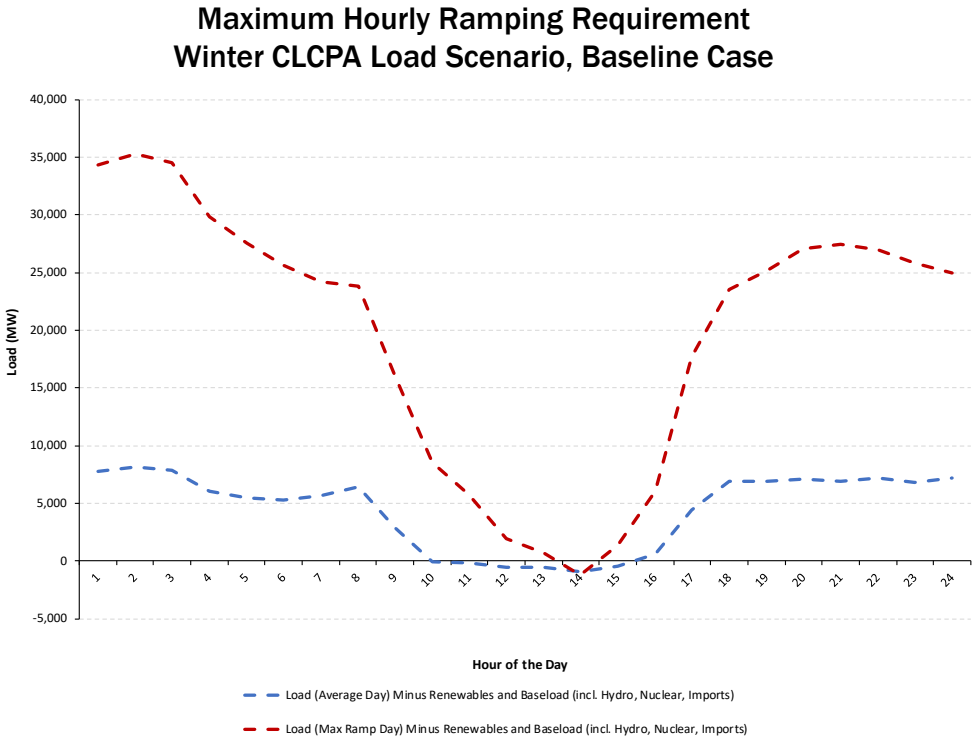
DE Resource Ramping Capability Attribute

- The DE Resource must be able to come on line quickly, and be flexible enough to meet rapid, steep ramping needs
- On an average day, storage can meet evening peaks, but the DE Resource must generate if storage is depleted and renewable generation is low
- In the Winter CLCPA scenario, the DE Resource output across the state must increase from 362 MW (1.1% of DE Resource nameplate capacity) to 27,434 MW (85.4% of nameplate capacity) in six hours of the most stressed day



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Observations

- Climate disruption scenarios involving storms and/or reductions in renewable resource output (e.g., due to wind lulls) can lead to loss of load occurrences
- The variability of meteorological conditions that govern the output from wind and solar resources presents a fundamental challenge to relying on those resources to meet electricity demand
- Battery storage resources help to fill in voids created by reduced output from renewable resources, but periods of reduced renewable generation rapidly deplete battery storage resource capabilities
- The DE resources needed to balance the system in many months must be significant in capacity, be able to come on line quickly, and be flexible enough to meet rapid, steep ramping needs

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Observations (Cont.)

- The assumed increase in inter-zonal transfer capability in the CCP2 resource sets enables a renewables-heavy resource mix and improves reliability, but also increases vulnerability to certain climate disruption scenarios
- Cross-seasonal differences in load and renewable generation could provide opportunities for renewable fuel production
- The current system is heavily dependent on existing fossil-fueled resources to maintain reliability, and eliminating these resources from the mix will require an unprecedented level of investment in new and replacement infrastructure, and/or the emergence of a zero-carbon fuel source for thermal generating resources

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Observations (Cont.)

- Overall, the key reliability challenges identified in this study are associated with both how the resource mix evolves between now and 2040 in compliance with the CLCPA, and the impact of climate change on meteorological conditions and events that introduce additional reliability risks
- Comparing the CCP2 resource sets to the GIT resource sets reveals key differences in how the system makeup in 2040 can affect reliability outcomes

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NYISO Stakeholder Process and Next Steps

Phase II Project Status

- Presentations at six stakeholder meetings starting in February 2020
- Final report presented to stakeholders

Next Steps

- **Final report will be posted on the NYISO website**
- **2021 Climate Change and Grid in Transition Project**
  - Will study, investigate, discuss, and develop market design concepts based on the 2020 Climate Change and Grid in Transition projects

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Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

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Questions?