

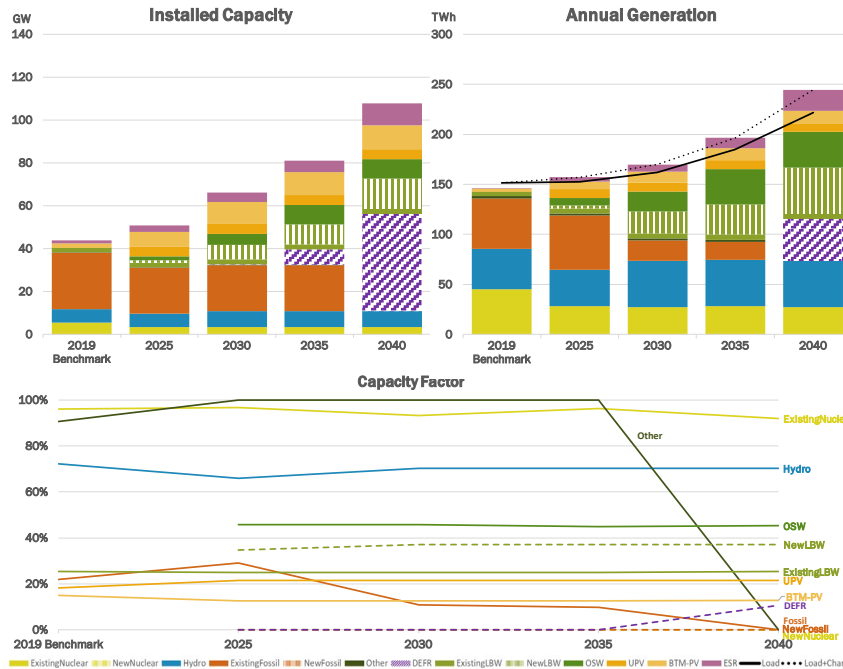
Appendix G

2021-2040 System & Resource Outlook (The Outlook)

**A Report from the New York
Independent System Operator**

September 22, 2022

S1 Scenario: Low Operating Costs DEFRs



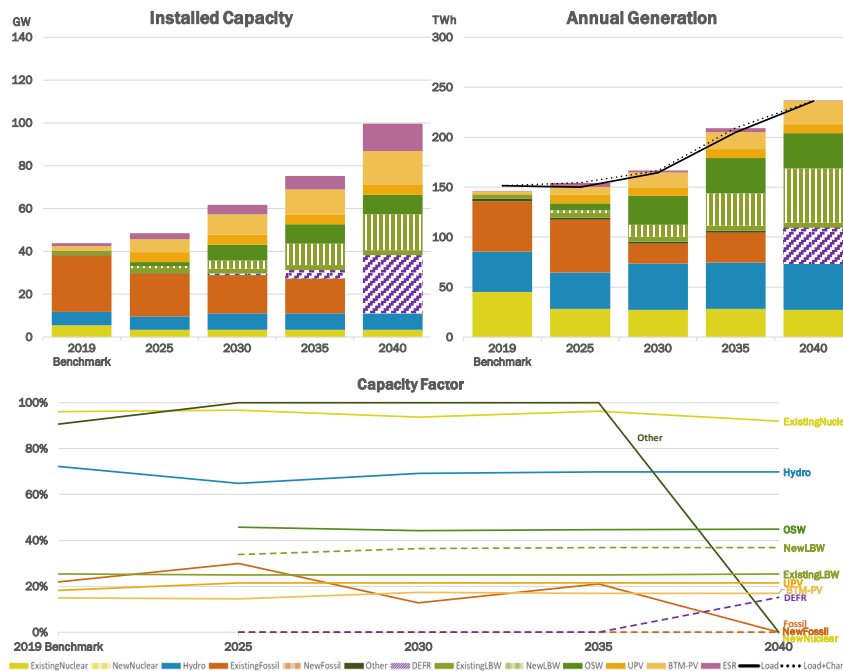
Installed Capacity (MW)					
	2019	2025	2030	2035	2040
Nuclear	5,400	3,346	3,364	3,364	3,364
Fossil	26,262	21,310	21,234	21,236	-
DEFR - HoLo	-	-	-	-	4,621
DEFR - McMo	-	-	-	-	-
DEFR - LoLo	-	-	420	7,371	40,639
Hydro	6,331	6,302	7,537	7,540	7,540
LBW	1,985	3,335	9,062	11,494	16,557
OSW	-	1,826	5,036	9,000	9,000
UPV	32	4,676	4,676	4,676	4,676
BTM-PV	2,116	6,000	10,055	10,838	11,198
Storage	1,405	2,910	4,410	6,191	10,155
Total	43,838	50,763	66,438	88,296	107,750

Generation (GWh)					
	2019	2025	2030	2035	2040
Nuclear	45,429	28,338	27,444	28,338	27,092
Fossil	50,520	54,174	19,986	18,019	-
DEFR - HoLo	-	-	-	-	40,587
DEFR - McMo	-	-	-	-	-
DEFR - LoLo	-	-	-	-	1,255
Hydro	40,034	36,418	46,342	46,392	46,391
LBW	4,416	8,189	26,971	34,929	51,482
OSW	-	7,331	20,186	35,460	35,647
UPV	51	8,817	8,816	8,817	8,819
BTM-PV	2,761	7,483	11,068	11,983	12,454
Storage	612	4,347	7,015	10,454	20,895
Total Generation	146,262	157,088	169,820	196,385	244,621
RE Generation	47,261	68,238	113,383	137,581	154,792
ZE Generation	93,301	100,922	147,842	176,374	244,621
Load	151,386	152,336	162,117	184,969	221,828
Load+Charge	151,773	157,089	169,820	196,385	244,621
% RE [RE/Load]	31%	45%	70%	74%	70%
% ZE [ZE/(Load+Charge)]	61%	64%	87%	90%	100%

Emissions (million tons)					
	2019	2025	2030	2035	2040
CO ₂ Emissions	22.24	23.53	8.53	7.75	-

- * Storage Includes Pumped Storage Hydro and Batteries
- * Utility solar (UPV) Includes existing (77 MW) and new UPV
- * Hydro Includes hydro imports from Hydro Quebec
- * Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
- * Dispatchable Emission Free Resource (DEFR), High Capital Low Operating (HoLo)

S2 Scenario: Low Operating Costs DEFRs



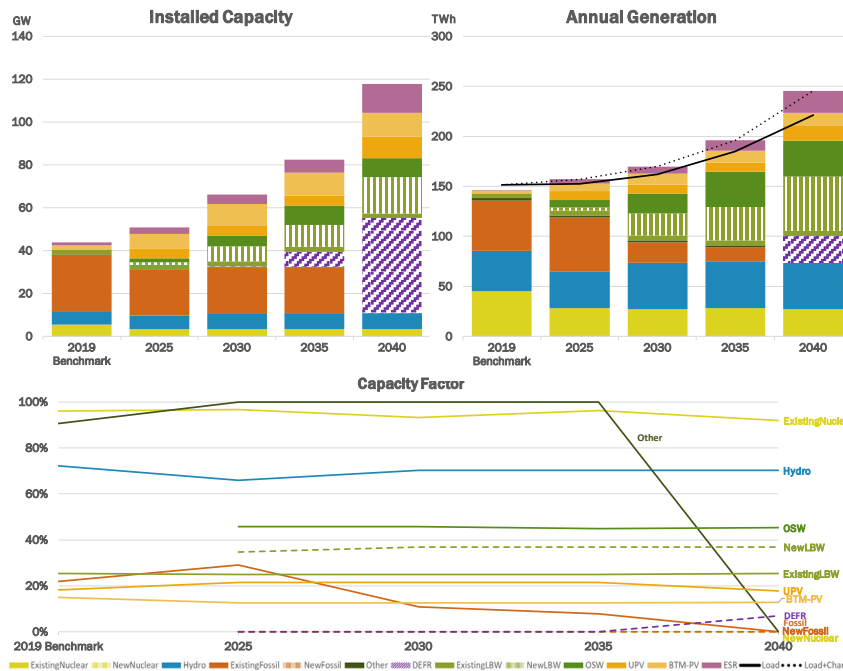
Installed Capacity (MW)					
	2019	2025	2030	2035	2040
Nuclear	5,400	3,346	3,346	3,364	3,364
Fossil	26,262	19,988	17,650	16,071	-
DEFR - HoLo	-	-	-	-	-
DEFR - McMo	-	-	819	3,990	27,237
DEFR - LoLo	-	-	-	-	-
Hydro	6,331	6,415	7,660	7,584	7,584
LBW	1,985	3,138	5,979	12,437	19,087
OSW	-	1,826	7,436	9,000	9,000
UPV	32	4,676	4,676	4,676	4,676
BTM-PV	2,116	6,000	9,523	11,601	15,764
Storage	1,405	2,910	4,410	6,137	12,810
Total	43,838	48,523	62,543	79,075	99,523

Generation (GWh)					
	2019	2025	2030	2035	2040
Nuclear	45,429	28,338	27,444	28,338	27,092
Fossil	50,520	52,437	19,778	29,494	-
DEFR - HoLo	-	-	-	-	-
DEFR - McMo	-	-	-	-	36,031
DEFR - LoLo	-	-	-	-	-
Hydro	40,034	36,418	46,342	46,392	46,391
LBW	4,416	7,518	16,790	37,701	59,362
OSW	-	7,331	28,865	35,203	35,392
UPV	51	8,817	8,816	8,817	8,819
BTM-PV	2,761	7,631	14,461	17,223	23,220
Storage	612	4,007	2,147	4,118	136
Total Generation	146,262	154,488	166,636	209,278	236,442
RE Generation	47,261	67,715	115,276	145,336	173,184
ZE Generation	93,301	100,059	144,866	177,792	236,442
Load	151,386	150,047	162,255	204,725	236,334
Load+Charge	151,773	154,488	166,637	209,279	236,442
% RE [RE/Load]	31%	45%	70%	71%	73%
% ZE [ZE/(Load+Charge)]	61%	65%	87%	85%	100%

Emissions (million tons)					
	2019	2025	2030	2035	2040
CO ₂ Emissions	22.24	22.87	8.87	12.92	-

- * Storage Includes Pumped Storage Hydro and Batteries
- * Utility solar (UPV) Includes existing (77 MW) and new UPV
- * Hydro Includes hydro imports from Hydro Quebec
- * Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
- * Dispatchable Emission Free Resource (DEFR), High Capital Low Operating (HoLo)

S1 Scenario: High Operating Costs DEFRs



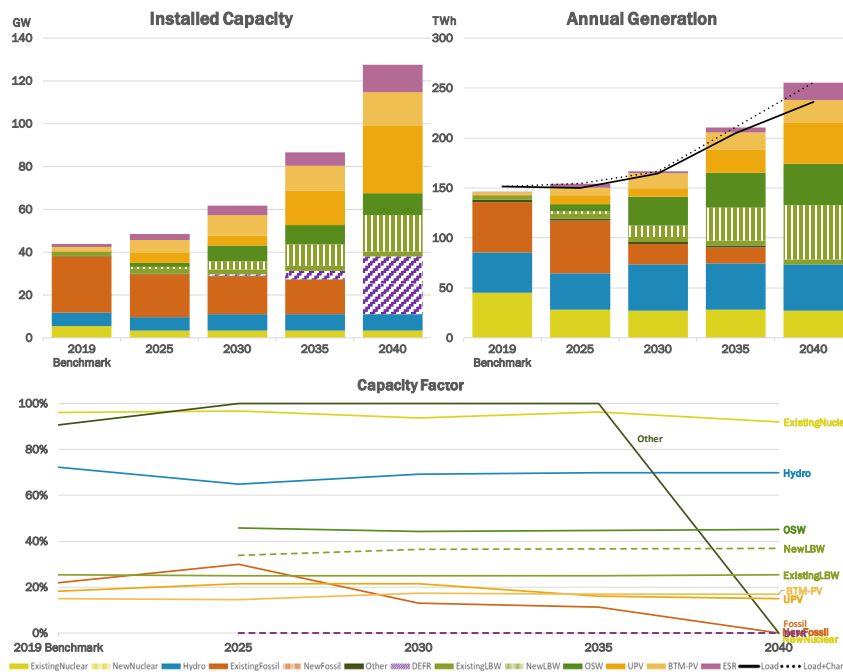
Installed Capacity (MW)					
	2019	2025	2030	2035	2040
Nuclear	5,400	3,346	3,364	3,364	3,364
Fossil	26,262	21,310	21,232	21,234	3,049
DEFR - HoLo	-	-	-	-	-
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	420	6,985	41,163
Hydro	6,331	6,302	7,537	7,540	7,540
LBW	1,985	3,335	9,086	12,612	19,087
OSW	-	1,626	5,036	9,000	9,000
UPV	32	4,676	4,676	4,676	9,863
BTM-PV	2,116	6,834	10,055	10,828	11,198
Storage	1,405	2,910	4,410	6,956	13,357
Total	43,838	50,763	66,461	89,404	117,622

Generation (GWh)					
	2019	2025	2030	2035	2040
Nuclear	45,429	28,338	27,444	28,338	27,092
Fossil	50,520	54,174	19,987	14,459	-
DEFR - HoLo	-	-	-	-	26,783
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	374
Hydro	40,034	36,418	46,342	46,392	46,377
LBW	4,416	8,189	26,971	38,297	59,362
OSW	-	7,331	20,186	35,460	35,647
UPV	51	8,817	8,816	8,817	15,440
BTM-PV	2,761	7,483	11,068	11,983	12,454
Storage	612	4,347	7,004	10,141	21,886
Total Generation	146,262	157,088	169,810	195,879	245,415
RE Generation	47,261	68,238	113,383	140,949	169,280
ZE Generation	93,301	100,922	147,831	179,428	245,415
Load	151,386	152,336	162,122	184,697	221,277
Load+Charge	151,773	157,088	169,811	195,879	245,415
% RE [RE/Load]	31%	45%	70%	76%	77%
% ZE [ZE/(Load+Charge)]	61%	64%	87%	92%	100%

Emissions (million tons)					
	2019	2025	2030	2035	2040
CO ₂ Emissions	22.24	23.53	8.50	6.20	-

- * Storage Includes Pumped Storage Hydro and Batteries
- * Utility solar (UPV) Includes existing (77 MW) and new UPV
- * Hydro Includes hydro imports from Hydro Quebec
- * Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
- * Dispatchable Emission Free Resource (DEFR), High Capital Low Operating (HoLo)

S2 Scenario: High Operating Costs DEFRs



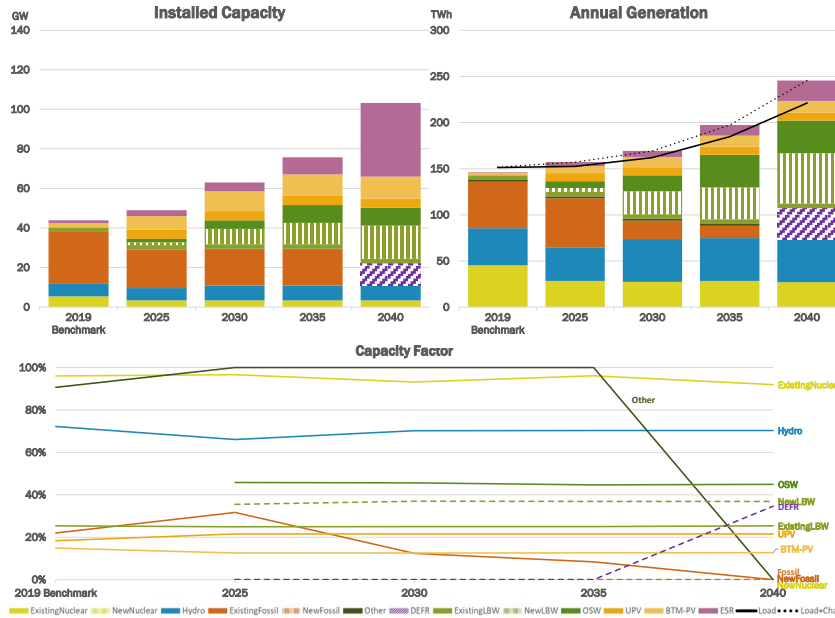
Installed Capacity (MW)					
	2019	2025	2030	2035	2040
Nuclear	5,400	3,346	3,346	3,364	3,364
Fossil	26,262	19,988	17,650	16,071	-
DEFR - HoLo	-	-	819	3,990	27,163
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	-
Hydro	6,331	6,415	7,660	7,584	7,584
LBW	1,985	3,138	5,890	12,366	19,087
OSW	-	1,626	7,436	9,000	10,440
UPV	32	4,676	4,676	15,130	31,288
BTM-PV	2,116	6,000	9,523	11,601	15,764
Storage	1,405	2,910	4,410	6,147	12,810
Total	43,838	48,523	62,454	90,469	127,500

Generation (GWh)					
	2019	2025	2030	2035	2040
Nuclear	45,429	28,338	27,444	28,338	27,092
Fossil	50,520	52,437	20,066	15,953	-
DEFR - HoLo	-	-	-	-	-
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	-
Hydro	40,034	36,418	46,342	46,392	46,391
LBW	4,416	7,518	18,494	37,460	59,362
OSW	-	7,331	28,865	35,232	41,325
UPV	51	8,817	8,816	22,740	40,784
BTM-PV	2,761	7,631	14,461	17,223	23,220
Storage	612	4,007	2,086	5,374	17,419
Total Generation	146,262	154,488	166,567	210,706	255,593
RE Generation	47,261	67,715	114,979	159,048	211,082
ZE Generation	93,301	100,059	144,509	192,763	255,593
Load	151,386	150,047	164,255	204,789	236,334
Load+Charge	151,773	154,488	166,567	210,706	255,593
% RE [RE/Load]	31%	45%	70%	78%	89%
% ZE [ZE/(Load+Charge)]	61%	65%	87%	91%	100%

Emissions (million tons)					
	2019	2025	2030	2035	2040
CO ₂ Emissions	22.24	22.87	8.98	7.28	-

- * Storage Includes Pumped Storage Hydro and Batteries
- * Utility solar (UPV) Includes existing (77 MW) and new UPV
- * Hydro Includes hydro imports from Hydro Quebec
- * Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
- * Dispatchable Emission Free Resource (DEFR), High Capital Low Operating (HoLo)

S1 Scenario: Remove Declining Capacity Value Curves



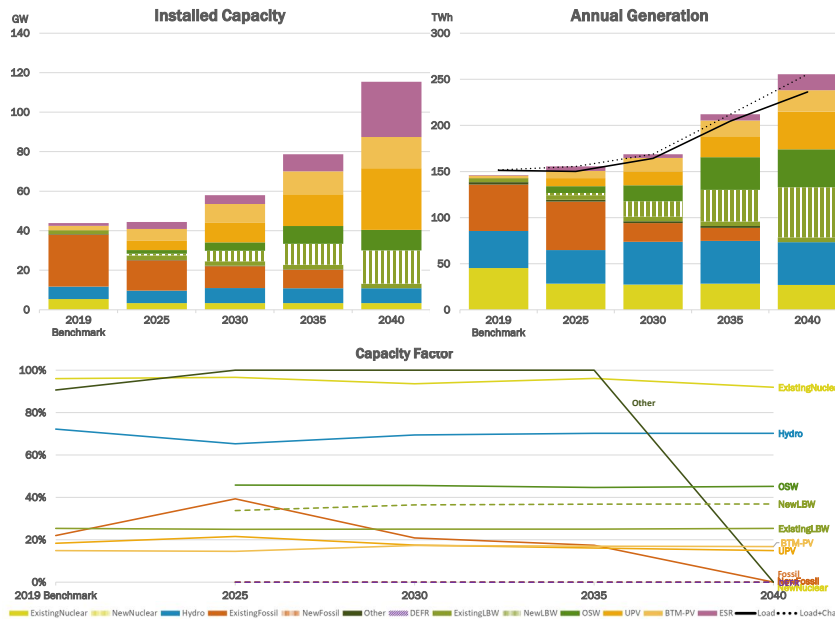
Installed Capacity (MW)					
	2019	2025	2030	2035	2040
Nuclear	5,400	3,346	3,364	3,364	3,364
Fossil	26,262	19,186	18,424	18,426	-
DEFR - HoLo	-	-	-	-	3,853
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	7,306
Hydro	6,331	6,294	7,529	7,532	7,532
LBW	1,985	3,636	9,969	13,013	19,087
OSW	-	1,826	4,316	9,000	9,000
UPV	32	4,676	4,676	4,676	4,676
BTM-PV	2,116	6,834	10,055	10,828	11,198
Storage	1,405	2,910	4,410	4,410	8,668
Total	43,838	48,932	62,968	75,732	103,264

Generation (GWh)					
	2019	2025	2030	2035	2040
Nuclear	45,429	28,338	27,444	28,338	27,092
Fossil	50,520	53,251	49,896	43,467	-
DEFR - HoLo	-	-	-	-	33,849
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	-
Hydro	40,034	36,416	46,341	46,392	46,391
LBW	4,416	9,192	29,910	39,633	59,362
OSW	-	7,331	17,248	35,247	35,436
UPV	51	8,817	8,816	8,817	8,819
BTM-PV	2,761	7,483	11,068	11,983	12,454
Storage	612	4,374	6,598	11,496	22,176
Total Generation	146,262	157,194	169,313	197,365	245,579
RE Generation	47,261	69,239	113,383	142,072	162,461
ZE Generation	93,301	101,951	147,426	181,906	245,579
Load	151,386	152,472	162,015	184,697	221,132
Load+Charge	151,773	157,194	169,314	197,365	245,579
% RE (RE/Load)	31%	45%	70%	77%	73%
% ZE (ZE/Load+Charge)	61%	65%	87%	92%	100%

Emissions (million tons)					
	2019	2025	2030	2035	2040
CO ₂ Emissions	22.24	23.15	8.32	5.58	-

- * Storage Includes Pumped Storage Hydro and Batteries
- * Utility solar (UPV) Includes existing (77 MW) and new UPV
- * Hydro includes hydro imports from Hydro Quebec
- * Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
- * Dispatchable Emission Free Resource (DEFR), High Capital Low Operating (HoLo)

S2 Scenario: Remove Declining Capacity Value Curve



Installed Capacity (MW)					
	2019	2025	2030	2035	2040
Nuclear	5,400	3,346	3,346	3,364	3,364
Fossil	26,262	15,271	11,088	9,341	-
DEFR - HoLo	-	-	-	-	-
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	-
Hydro	6,331	6,370	7,616	7,539	7,539
LBW	1,985	3,138	7,547	12,904	19,087
OSW	-	1,826	4,316	9,000	10,440
UPV	32	4,676	9,870	16,110	31,220
BTM-PV	2,116	6,000	9,523	11,601	15,764
Storage	1,405	3,565	4,410	8,595	27,997
Total	43,838	44,416	57,939	78,679	115,412

Generation (GWh)					
	2019	2025	2030	2035	2040
Nuclear	45,429	28,338	27,444	28,338	27,092
Fossil	50,520	52,539	20,279	14,248	-
DEFR - HoLo	-	-	-	-	-
DEFR - McMo	-	-	-	-	-
DEFR - LoHo	-	-	-	-	-
Hydro	40,034	36,416	46,342	46,392	46,391
LBW	4,416	7,518	21,815	39,247	59,362
OSW	-	7,331	17,248	35,247	41,340
UPV	51	8,817	15,112	22,738	40,719
BTM-PV	2,761	7,631	14,461	17,223	23,220
Storage	612	4,962	4,058	6,694	17,428
Total Generation	146,262	155,545	168,752	212,119	255,551
RE Generation	47,261	67,715	114,979	160,847	211,031
ZE Generation	93,301	101,014	146,881	195,879	255,551
Load	151,386	150,047	164,285	204,701	236,334
Load+Charge	151,773	155,545	168,753	212,119	255,551
% RE (RE/Load)	31%	45%	70%	79%	89%
% ZE (ZE/Load+Charge)	61%	65%	87%	92%	100%

Emissions (million tons)					
	2019	2025	2030	2035	2040
CO ₂ Emissions	22.24	23.36	8.42	5.86	-

- * Storage Includes Pumped Storage Hydro and Batteries
- * Utility solar (UPV) Includes existing (77 MW) and new UPV
- * Hydro includes hydro imports from Hydro Quebec
- * Land-Based Wind (LBW), Offshore Wind (OSW), Zero Emissions (ZE)
- * Dispatchable Emission Free Resource (DEFR), High Capital Low Operating (HoLo)