Additional Consumer Impact Analysis: Alternative Methods for Determining LCRs

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November 6, 2017

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Background/Overview

- The Consumer Impact Analysis for Alternative Methods for Determining LCRs was presented to stakeholder at the October 11, 2017 ICAP meeting

- During the presentation, some stakeholders requested additional information related to the consumer impact

- This presentation provides additional consumer impact information in response to stakeholder requests

- The October 11, 2017 Consumer Impact presentation is contained in the appendix for easy reference and comparison to the additional information provided in this presentation

Stakeholder Information Requests

- **Stakeholders** requested the following additional information:
  - The October 11, 2017 presentation provided the difference (delta) between the cost of the current and the cost of the optimized LCR methodology for total capacity that cleared in each Locality (Cost of Capacity)
    - Stakeholders wanted to see each Locality's total cost responsibility up to their IRM requirement
    - Additionally, stakeholders wanted to see the total costs (not just the delta) for each Locality between the current and optimized LCR methodologies
- **Stakeholders also requested the historical percentage used in the long term consumer impact analysis**

Additional Cost Impact Analysis

- The tables that follow provide the additional information requested by stakeholders

- The additional analysis follows the same format as the original analysis
  - Short term consumer impact (assumes no changes in generation and/or transmission)
  - Intermediate term consumer impact (generation and transmission resources change)
  - Long term cost impact
    - Long-run equilibrium modelled at the Level of Excess condition (defined in the Demand Curve reset)
    - Historic excess defined as a percentage of excess above the requirement (observed in the last 3 Capability Years in each of the different Localities)

Additional Cost Impact Analysis, Contd.

- The consumer costs shown in the tables for both the current LCRs and optimized LCRs with the Transmission Security Limit (TSL) are based on the full IRM responsibility of each Locality

- The cost of capacity shown in the tables for both the current LCRs and optimized LCRs with the Transmission Security Limit (TSL) are based on the individual Locality requirement and total capacity that cleared in each Locality

- Additionally, the tables that follow show the delta between consumer costs and cost of capacity for the current and optimized LCRs for the different sensitivities for each Locality

	Historic 3 Year % Excess			
	LI	NYC	G-J	NYCA
Summer	7.80%	6.81%	8.10%	5.06%
Winter	10.58%	13.22%	14.70%	10.94%

Total Consumer Costs

Current LCR Methodology

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Sensitivity	Short & Intermediate Term Consumer Cost for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$328	$1,182	$333	$542	$2,385
+500 MW to Zone G at G-J EFORd	$274	$890	$290	$379	$1,833
-500 MW to Zone G at G-J EFORd	$384	$1,580	$420	$701	$3,085
+500MW to Zone J at J EFORd	$280	$654	$230	$376	$1,540
-500MW to Zone J at J EFORd	$378	$1,677	$474	$704	$3,234
+500MW to Zone K at K EFORd	$175	$922	$269	$376	$1,741
-500MW to Zone K at K EFORd	$617	$1,759	$494	$704	$3,574
+500MW to Zone F at F EFORd	$303	$1,094	$318	$369	$2,084
-500MW to Zone F at F EFORd	$344	$1,243	$375	$711	$2,673

Sensitivity	Short & Intermediate Term Consumer Costs for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$263	$847	$296	$542	$1,949
+$25.00 to G-J	$328	$1,193	$387	$542	$2,450
-$25.00 to G-J	$328	$1,172	$281	$542	$2,323
+$25.00 Zone J	$328	$1,346	$333	$542	$2,549
-$25.00 to Zone J	$328	$1,018	$333	$542	$2,221
+$25.00 to Zone K	$414	$1,182	$333	$542	$2,471
-$25.00 to Zone K	$261	$1,182	$333	$542	$2,318
+$25.00 to NYCA	$338	$1,214	$349	$691	$2,592
-$25.00 to NYCA	$324	$1,151	$322	$394	$2,190
+500 MW in Zone G & -500 MW in Zone J	$322	$1,469	$447	$545	$2,784
+500 MW in Zone K & -500 MW in Zone J	$252	$1,478	$419	$542	$2,690
-500 MW in Zone G & +500 MW in Zone J	$328	$1,076	$305	$540	$2,249
-500 MW in Zone K & +500 MW in Zone J	$592	$1,280	$368	$542	$2,783

Sensitivity	Consumer Costs at LOE for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$732	$2,315	$761	$1,437	$5,245
+500 MW to Zone G at G-J EFORd	$730	$2,318	$768	$1,437	$5,253
-500 MW to Zone G at G-J EFORd	$735	$2,321	$756	$1,437	$5,249
+500MW to Zone J at J EFORd	$731	$2,323	$763	$1,437	$5,253
-500MW to Zone J at J EFORd	$735	$2,305	$759	$1,437	$5,235
+500MW to Zone K at K EFORd	$736	$2,301	$758	$1,437	$5,232
-500MW to Zone K at K EFORd	$726	$2,353	$769	$1,437	$5,284
+500MW to Zone F at F EFORd	$732	$2,313	$761	$1,437	$5,242
-500MW to Zone F at F EFORd	$733	$2,318	$762	$1,437	$5,250

Sensitivity	Consumer Costs at LOE for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$729	$2,294	$757	$1,437	$5,217
+$25.00 to G-J	$732	$2,344	$882	$1,437	$5,396
-$25.00 to G-J	$732	$2,290	$640	$1,437	$5,100
+$25.00 Zone J	$732	$2,621	$761	$1,437	$5,551
-$25.00 to Zone J	$732	$2,022	$761	$1,437	$4,952
+$25.00 to Zone K	$922	$2,315	$761	$1,437	$5,435
-$25.00 to Zone K	$667	$2,315	$761	$1,437	$5,180
+$25.00 to NYCA	$850	$2,396	$791	$1,831	$5,868
-$25.00 to NYCA	$721	$2,234	$730	$1,043	$4,727
+500 MW in Zone G & -500 MW in Zone J	$732	$2,312	$767	$1,437	$5,248
+500 MW in Zone K & -500 MW in Zone J	$739	$2,293	$756	$1,437	$5,225
-500 MW in Zone G & +500 MW in Zone J	$732	$2,331	$758	$1,437	$5,259
-500 MW in Zone K & +500 MW in Zone J	$725	$2,364	$771	$1,437	$5,298

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Sensitivity	Consumer Costs at Historic Excess for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$474	$1,171	$237	$531	$2,412
+500 MW to Zone G at G-J EFORd	$472	$1,163	$238	$531	$2,404
-500 MW to Zone G at G-J EFORd	$476	$1,184	$237	$531	$2,427
+500MW to Zone J at J EFORd	$472	$1,175	$237	$531	$2,415
-500MW to Zone J at J EFORd	$476	$1,164	$237	$531	$2,407
+500MW to Zone K at K EFORd	$476	$1,162	$237	$531	$2,406
-500MW to Zone K at K EFORd	$468	$1,194	$238	$531	$2,431
+500MW to Zone F at F EFORd	$473	$1,169	$237	$531	$2,409
-500MW to Zone F at F EFORd	$474	$1,172	$237	$531	$2,414

Sensitivity	Consumer Costs at Historic Excess for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$471	$1,156	$237	$531	$2,395
+$25.00 to G-J	$474	$1,179	$270	$531	$2,454
-$25.00 to G-J	$474	$1,163	$204	$531	$2,371
+$25.00 Zone J	$474	$1,337	$237	$531	$2,578
-$25.00 to Zone J	$474	$1,005	$237	$531	$2,247
+$25.00 to Zone K	$599	$1,171	$237	$531	$2,538
-$25.00 to Zone K	$357	$1,171	$237	$531	$2,296
+$25.00 to NYCA	$479	$1,200	$254	$676	$2,609
-$25.00 to NYCA	$469	$1,142	$221	$385	$2,217
+500 MW in Zone G & -500 MW in Zone J	$474	$1,159	$238	$531	$2,401
+500 MW in Zone K & -500 MW in Zone J	$479	$1,156	$237	$531	$2,403
-500 MW in Zone G & +500 MW in Zone J	$474	$1,190	$237	$531	$2,431
-500 MW in Zone K & +500 MW in Zone J	$467	$1,201	$239	$531	$2,438

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Optimized Methodology with TSL

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Sensitivity	Short & Intermediate Term Consumer Costs for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$380	$963	$312	$542	$2,197
+500 MW to Zone G at G-J EFORd	$400	$912	$181	$379	$1,872
-500 MW to Zone G at G-J EFORd	$402	$1,201	$452	$701	$2,756
+500MW to Zone J at J EFORd	$377	$512	$193	$376	$1,458
-500MW to Zone J at J EFORd	$381	$1,641	$473	$704	$3,199
+500MW to Zone K at K EFORd	$175	$925	$263	$376	$1,740
-500MW to Zone K at K EFORd	$794	$1,013	$348	$704	$2,859
+500MW to Zone F at F EFORd	$387	$923	$257	$369	$1,936
-500MW to Zone F at F EFORd	$411	$1,017	$352	$711	$2,491

Sensitivity	Short & Intermediate Term Consumer Costs for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$360	$942	$204	$542	$2,047
+$25.00 to G-J	$484	$963	$313	$542	$2,302
-$25.00 to G-J	$313	$976	$325	$542	$2,156
+$25.00 Zone J	$404	$1,090	$301	$542	$2,337
-$25.00 to Zone J	$380	$857	$312	$542	$2,090
+$25.00 to Zone K	$424	$970	$345	$542	$2,281
-$25.00 to Zone K	$302	$961	$299	$542	$2,104
+$25.00 to NYCA	$342	$1,001	$357	$691	$2,393
-$25.00 to NYCA	$399	$928	$282	$394	$2,003
+500 MW in Zone G & -500 MW in Zone J	$403	$1,579	$301	$545	$2,828
+500 MW in Zone K & -500 MW in Zone J	$252	$1,605	$439	$542	$2,838
-500 MW in Zone G & +500 MW in Zone J	$377	$833	$313	$540	$2,064
-500 MW in Zone K & +500 MW in Zone J	$788	$608	$229	$542	$2,167

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Sensitivity	Consumer Costs at LOE for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$735	$2,303	$759	$1,437	$5,234
+500 MW to Zone G at G-J EFORd	$736	$2,300	$758	$1,437	$5,230
-500 MW to Zone G at G-J EFORd	$736	$2,301	$758	$1,437	$5,231
+500MW to Zone J at J EFORd	$735	$2,303	$759	$1,437	$5,234
-500MW to Zone J at J EFORd	$735	$2,303	$759	$1,437	$5,234
+500MW to Zone K at K EFORd	$736	$2,300	$758	$1,437	$5,231
-500MW to Zone K at K EFORd	$735	$2,302	$759	$1,437	$5,233
+500MW to Zone F at F EFORd	$735	$2,299	$757	$1,437	$5,228
-500MW to Zone F at F EFORd	$736	$2,303	$759	$1,437	$5,235

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Sensitivity	Consumer Costs at LOE for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$734	$2,266	$740	$1,437	$5,177
+$25.00 to G-J	$740	$2,321	$873	$1,437	$5,371
-$25.00 to G-J	$732	$2,280	$642	$1,437	$5,090
+$25.00 Zone J	$736	$2,602	$758	$1,437	$5,532
-$25.00 to Zone J	$735	$2,017	$759	$1,437	$4,948
+$25.00 to Zone K	$923	$2,308	$761	$1,437	$5,429
-$25.00 to Zone K	$667	$2,300	$757	$1,437	$5,161
+$25.00 to NYCA	$850	$2,388	$792	$1,831	$5,861
-$25.00 to NYCA	$726	$2,216	$726	$1,043	$4,710
+500 MW in Zone G & -500 MW in Zone J	$736	$2,300	$758	$1,437	$5,230
+500 MW in Zone K & -500 MW in Zone J	$736	$2,300	$758	$1,437	$5,231
-500 MW in Zone G & +500 MW in Zone J	$735	$2,303	$759	$1,437	$5,234
-500 MW in Zone K & +500 MW in Zone J	$735	$2,302	$759	$1,437	$5,233

Sensitivity	Consumer Costs at Historic Excess for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$476	$1,162	$237	$531	$2,405
+500 MW to Zone G at G-J EFORd	$477	$1,162	$237	$531	$2,406
-500 MW to Zone G at G-J EFORd	$477	$1,162	$237	$531	$2,406
+500MW to Zone J at J EFORd	$476	$1,162	$237	$531	$2,405
-500MW to Zone J at J EFORd	$476	$1,162	$237	$531	$2,405
+500MW to Zone K at K EFORd	$477	$1,162	$237	$531	$2,406
-500MW to Zone K at K EFORd	$476	$1,162	$237	$531	$2,406
+500MW to Zone F at F EFORd	$476	$1,162	$237	$531	$2,405
-500MW to Zone F at F EFORd	$477	$1,162	$237	$531	$2,407

Sensitivity	Consumer Costs at Historic Excess for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$475	$1,156	$235	$531	$2,396
+$25.00 to G-J	$480	$1,168	$269	$531	$2,448
-$25.00 to G-J	$473	$1,154	$204	$531	$2,362
+$25.00 Zone J	$477	$1,325	$237	$531	$2,569
-$25.00 to Zone J	$476	$999	$237	$531	$2,243
+$25.00 to Zone K	$600	$1,163	$237	$531	$2,531
-$25.00 to Zone K	$359	$1,162	$237	$531	$2,288
+$25.00 to NYCA	$479	$1,192	$254	$676	$2,601
-$25.00 to NYCA	$473	$1,132	$220	$385	$2,209
+500 MW in Zone G & -500 MW in Zone J	$477	$1,162	$237	$531	$2,406
+500 MW in Zone K & -500 MW in Zone J	$477	$1,162	$237	$531	$2,406
-500 MW in Zone G & +500 MW in Zone J	$476	$1,162	$237	$531	$2,405
-500 MW in Zone K & +500 MW in Zone J	$476	$1,162	$237	$531	$2,406

Change between Current LCR and Optimized with TSL

Sensitivity	Δ Short & Intermediate Term Consumer Costs from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$52	-$219	-$21	$0	-$188
+500 MW to Zone G at G-J EFORd	$126	$23	-$109	$0	$40
-500 MW to Zone G at G-J EFORd	$17	-$379	$32	$0	-$329
+500MW to Zone J at J EFORd	$97	-$141	-$37	$0	-$82
-500MW to Zone J at J EFORd	$3	-$37	-$1	$0	-$34
+500MW to Zone K at K EFORd	$0	$4	-$5	$0	-$2
-500MW to Zone K at K EFORd	$177	-$746	-$146	$0	-$715
+500MW to Zone F at F EFORd	$84	-$171	-$62	$0	-$149
-500MW to Zone F at F EFORd	$67	-$227	-$23	$0	-$182

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Sensitivity	Δ Short & Intermediate Term Consumer Costs from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$96	$95	-$93	$0	$99
+$25.00 to G-J	$156	-$229	-$75	$0	-$148
-$25.00 to G-J	-$15	-$196	$44	$0	-$167
+$25.00 Zone J	$76	-$256	-$32	$0	-$212
-$25.00 to Zone J	$52	-$161	-$21	$0	-$131
+$25.00 to Zone K	$10	-$212	$11	$0	-$190
-$25.00 to Zone K	$41	-$221	-$34	$0	-$214
+$25.00 to NYCA	$5	-$213	$9	$0	-$199
-$25.00 to NYCA	$75	-$222	-$40	$0	-$187
+500 MW in Zone G & -500 MW in Zone J	$81	$110	-$146	$0	$44
+500 MW in Zone K & -500 MW in Zone J	$0	$127	$20	$0	$147
-500 MW in Zone G & +500 MW in Zone J	$49	-$243	$8	$0	-$185
-500 MW in Zone K & +500 MW in Zone J	$195	-$672	-$140	$0	-$616

Sensitivity	Δ Consumer Costs at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$3	-$12	-$2	$0	-$12
+500 MW to Zone G at G-J EFORd	$6	-$19	-$10	$0	-$23
-500 MW to Zone G at G-J EFORd	$1	-$20	$2	$0	-$18
+500MW to Zone J at J EFORd	$4	-$20	-$4	$0	-$20
-500MW to Zone J at J EFORd	$0	-$2	$0	$0	-$2
+500MW to Zone K at K EFORd	$0	-$1	$0	$0	-$1
-500MW to Zone K at K EFORd	$9	-$50	-$10	$0	-$51
+500MW to Zone F at F EFORd	$4	-$13	-$3	$0	-$13
-500MW to Zone F at F EFORd	$3	-$15	-$2	$0	-$14

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Sensitivity	Δ Consumer Costs at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$5	-$28	-$17	$0	-$40
+$25.00 to G-J	$7	-$23	-$9	$0	-$24
-$25.00 to G-J	-$1	-$10	$1	$0	-$10
+$25.00 Zone J	$3	-$19	-$3	$0	-$19
-$25.00 to Zone J	$3	-$5	-$2	$0	-$4
+$25.00 to Zone K	$1	-$7	$0	$0	-$6
-$25.00 to Zone K	$0	-$15	-$3	$0	-$19
+$25.00 to NYCA	$0	-$8	$0	$0	-$8
-$25.00 to NYCA	$6	-$18	-$4	$0	-$17
+500 MW in Zone G & -500 MW in Zone J	$4	-$12	-$9	$0	-$18
+500 MW in Zone K & -500 MW in Zone J	-$3	$8	$1	$0	$6
-500 MW in Zone G & +500 MW in Zone J	$2	-$28	$1	$0	-$24
-500 MW in Zone K & +500 MW in Zone J	$10	-$62	-$12	$0	-$64

Sensitivity	Δ Consumer Costs at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$2	-$9	$0	$0	-$7
+500 MW to Zone G at G-J EFORd	$5	-$2	-$1	$0	$2
-500 MW to Zone G at G-J EFORd	$1	-$22	$0	$0	-$21
+500MW to Zone J at J EFORd	$4	-$13	-$1	$0	-$10
-500MW to Zone J at J EFORd	$0	-$1	$0	$0	-$1
+500MW to Zone K at K EFORd	$0	$0	$0	$0	$0
-500MW to Zone K at K EFORd	$8	-$32	-$1	$0	-$25
+500MW to Zone F at F EFORd	$3	-$7	$0	$0	-$4
-500MW to Zone F at F EFORd	$3	-$10	$0	$0	-$7

Sensitivity	Δ Consumer Costs at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$4	-$1	-$2	$0	$1
+$25.00 to G-J	$6	-$11	-$1	$0	-$6
-$25.00 to G-J	-$1	-$9	$0	$0	-$10
+$25.00 Zone J	$3	-$12	$0	$0	-$9
-$25.00 to Zone J	$2	-$6	$0	$0	-$4
+$25.00 to Zone K	$0	-$8	$0	$0	-$7
-$25.00 to Zone K	$2	-$9	$0	$0	-$8
+$25.00 to NYCA	$0	-$8	$0	$0	-$8
-$25.00 to NYCA	$4	-$10	-$1	$0	-$7
+500 MW in Zone G & -500 MW in Zone J	$3	$3	-$1	$0	$5
+500 MW in Zone K & -500 MW in Zone J	-$2	$5	$0	$0	$3
-500 MW in Zone G & +500 MW in Zone J	$2	-$28	$0	$0	-$26
-500 MW in Zone K & +500 MW in Zone J	$9	-$39	-$2	$0	-$32

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Total Cost of Capacity

Current LCR Methodology

Sensitivity	Short & Intermediate Term Cost of Capacity for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$313	$1,011	$348	$714	$2,385
+500 MW to Zone G at G-J EFORd	$262	$744	$333	$494	$1,833
-500 MW to Zone G at G-J EFORd	$368	$1,380	$404	$934	$3,085
+500MW to Zone J at J EFORd	$268	$548	$234	$490	$1,540
-500MW to Zone J at J EFORd	$361	$1,421	$514	$938	$3,234
+500MW to Zone K at K EFORd	$175	$792	$284	$491	$1,741
-500MW to Zone K at K EFORd	$577	$1,530	$529	$938	$3,574
+500MW to Zone F at F EFORd	$291	$955	$344	$495	$2,085
-500MW to Zone F at F EFORd	$328	$1,038	$386	$921	$2,673

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Sensitivity	Short & Intermediate Term Cost of Capacity for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$248	$683	$303	$714	$1,949
+$25.00 to G-J	$313	$1,011	$413	$714	$2,450
-$25.00 to G-J	$313	$1,011	$285	$714	$2,323
+$25.00 Zone J	$313	$1,174	$348	$714	$2,549
-$25.00 to Zone J	$313	$847	$348	$714	$2,221
+$25.00 to Zone K	$399	$1,011	$348	$714	$2,472
-$25.00 to Zone K	$246	$1,011	$348	$714	$2,318
+$25.00 to NYCA	$318	$1,011	$352	$911	$2,592
-$25.00 to NYCA	$313	$1,011	$348	$518	$2,190
+500 MW in Zone G & -500 MW in Zone J	$307	$1,229	$530	$718	$2,784
+500 MW in Zone K & -500 MW in Zone J	$255	$1,262	$460	$714	$2,690
-500 MW in Zone G & +500 MW in Zone J	$312	$940	$284	$712	$2,249
-500 MW in Zone K & +500 MW in Zone J	$559	$1,126	$384	$714	$2,783

Sensitivity	Cost of Capacity at LOE for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$689	$1,887	$782	$1,888	$5,245
+500 MW to Zone G at G-J EFORd	$682	$1,847	$867	$1,857	$5,253
-500 MW to Zone G at G-J EFORd	$697	$1,943	$702	$1,907	$5,249
+500MW to Zone J at J EFORd	$683	$1,901	$788	$1,882	$5,253
-500MW to Zone J at J EFORd	$696	$1,861	$785	$1,893	$5,235
+500MW to Zone K at K EFORd	$700	$1,854	$783	$1,895	$5,232
-500MW to Zone K at K EFORd	$668	$1,967	$789	$1,861	$5,284
+500MW to Zone F at F EFORd	$686	$1,878	$787	$1,891	$5,242
-500MW to Zone F at F EFORd	$691	$1,891	$786	$1,882	$5,250

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Sensitivity	Cost of Capacity at LOE for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$678	$1,835	$790	$1,915	$5,217
+$25.00 to G-J	$689	$1,891	$927	$1,888	$5,396
-$25.00 to G-J	$689	$1,887	$636	$1,888	$5,100
+$25.00 Zone J	$689	$2,193	$782	$1,888	$5,551
-$25.00 to Zone J	$689	$1,594	$782	$1,888	$4,952
+$25.00 to Zone K	$879	$1,887	$782	$1,888	$5,435
-$25.00 to Zone K	$624	$1,887	$782	$1,888	$5,180
+$25.00 to NYCA	$795	$1,887	$782	$2,405	$5,869
-$25.00 to NYCA	$689	$1,887	$782	$1,370	$4,727
+500 MW in Zone G & -500 MW in Zone J	$689	$1,831	$871	$1,858	$5,248
+500 MW in Zone K & -500 MW in Zone J	$709	$1,836	$784	$1,896	$5,225
-500 MW in Zone G & +500 MW in Zone J	$689	$1,965	$703	$1,901	$5,259
-500 MW in Zone K & +500 MW in Zone J	$665	$1,993	$790	$1,850	$5,298

NEW YORK INDEPENDENT SYSTEM OPERATOR

Sensitivity	Cost of Capacity at Historic Excess for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$456	$1,023	$249	$685	$2,412
+500 MW to Zone G at G-J EFORd	$452	$1,004	$275	$673	$2,404
-500 MW to Zone G at G-J EFORd	$461	$1,050	$225	$692	$2,427
+500MW to Zone J at J EFORd	$453	$1,030	$251	$682	$2,416
-500MW to Zone J at J EFORd	$460	$1,010	$250	$687	$2,407
+500MW to Zone K at K EFORd	$462	$1,007	$249	$687	$2,406
-500MW to Zone K at K EFORd	$445	$1,061	$251	$674	$2,431
+500MW to Zone F at F EFORd	$455	$1,019	$250	$686	$2,409
-500MW to Zone F at F EFORd	$457	$1,025	$250	$682	$2,414

Sensitivity	Cost of Capacity at Historic Excess for Current LCR (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$451	$998	$252	$695	$2,395
+$25.00 to G-J	$456	$1,023	$290	$685	$2,454
-$25.00 to G-J	$456	$1,023	$208	$685	$2,371
+$25.00 Zone J	$456	$1,189	$249	$685	$2,578
-$25.00 to Zone J	$456	$857	$249	$685	$2,247
+$25.00 to Zone K	$582	$1,023	$249	$685	$2,538
-$25.00 to Zone K	$340	$1,023	$249	$685	$2,296
+$25.00 to NYCA	$456	$1,023	$257	$873	$2,609
-$25.00 to NYCA	$456	$1,023	$241	$497	$2,217
+500 MW in Zone G & -500 MW in Zone J	$456	$996	$276	$673	$2,401
+500 MW in Zone K & -500 MW in Zone J	$467	$998	$250	$688	$2,403
-500 MW in Zone G & +500 MW in Zone J	$456	$1,060	$225	$690	$2,431
-500 MW in Zone K & +500 MW in Zone J	$443	$1,074	$251	$670	$2,438

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Optimized Methodology with TSL

Sensitivity	Short & Intermediate Term Cost of Capacity for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$365	$796	$322	$714	$2,197
+500 MW to Zone G at G-J EFORd	$388	$796	$194	$494	$1,872
-500 MW to Zone G at G-J EFORd	$386	$997	$441	$934	$2,756
+500MW to Zone J at J EFORd	$365	$412	$191	$490	$1,458
-500MW to Zone J at J EFORd	$365	$1,384	$512	$938	$3,199
+500MW to Zone K at K EFORd	$175	$796	$277	$491	$1,740
-500MW to Zone K at K EFORd	$754	$814	$353	$938	$2,859
+500MW to Zone F at F EFORd	$375	$796	$270	$495	$1,936
-500MW to Zone F at F EFORd	$395	$816	$359	$921	$2,491

Sensitivity	Short & Intermediate Term Cost of Capacity for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$344	$796	$193	$714	$2,047
+$25.00 to G-J	$469	$796	$323	$714	$2,302
-$25.00 to G-J	$298	$806	$338	$714	$2,156
+$25.00 Zone J	$388	$925	$309	$714	$2,337
-$25.00 to Zone J	$365	$690	$322	$714	$2,090
+$25.00 to Zone K	$409	$796	$362	$714	$2,281
-$25.00 to Zone K	$287	$796	$307	$714	$2,104
+$25.00 to NYCA	$323	$796	$363	$911	$2,393
-$25.00 to NYCA	$388	$796	$300	$518	$2,003
+500 MW in Zone G & -500 MW in Zone J	$388	$1,384	$338	$718	$2,828
+500 MW in Zone K & -500 MW in Zone J	$255	$1,384	$485	$714	$2,838
-500 MW in Zone G & +500 MW in Zone J	$362	$697	$293	$712	$2,064
-500 MW in Zone K & +500 MW in Zone J	$754	$477	$222	$714	$2,167

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Sensitivity	Cost of Capacity at LOE for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$697	$1,855	$789	$1,893	$5,234
+500 MW to Zone G at G-J EFORd	$700	$1,855	$777	$1,898	$5,230
-500 MW to Zone G at G-J EFORd	$700	$1,855	$781	$1,896	$5,231
+500MW to Zone J at J EFORd	$697	$1,855	$789	$1,893	$5,234
-500MW to Zone J at J EFORd	$697	$1,855	$789	$1,893	$5,234
+500MW to Zone K at K EFORd	$700	$1,855	$779	$1,897	$5,231
-500MW to Zone K at K EFORd	$697	$1,855	$788	$1,893	$5,233
+500MW to Zone F at F EFORd	$698	$1,855	$775	$1,901	$5,228
-500MW to Zone F at F EFORd	$701	$1,855	$792	$1,888	$5,236

Sensitivity	Cost of Capacity at LOE for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$694	$1,855	$636	$1,992	$5,177
+$25.00 to G-J	$712	$1,859	$896	$1,903	$5,371
-$25.00 to G-J	$687	$1,855	$675	$1,874	$5,091
+$25.00 Zone J	$700	$2,156	$779	$1,897	$5,532
-$25.00 to Zone J	$697	$1,569	$789	$1,893	$4,948
+$25.00 to Zone K	$880	$1,855	$809	$1,884	$5,429
-$25.00 to Zone K	$632	$1,855	$777	$1,897	$5,161
+$25.00 to NYCA	$796	$1,855	$810	$2,400	$5,861
-$25.00 to NYCA	$700	$1,855	$779	$1,376	$4,710
+500 MW in Zone G & -500 MW in Zone J	$700	$1,855	$777	$1,898	$5,230
+500 MW in Zone K & -500 MW in Zone J	$700	$1,855	$779	$1,897	$5,231
-500 MW in Zone G & +500 MW in Zone J	$696	$1,855	$792	$1,891	$5,234
-500 MW in Zone K & +500 MW in Zone J	$697	$1,855	$788	$1,893	$5,233

Sensitivity	Cost of Capacity at Historic Excess for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$460	$1,007	$251	$687	$2,405
+500 MW to Zone G at G-J EFORd	$462	$1,007	$248	$688	$2,406
-500 MW to Zone G at G-J EFORd	$462	$1,007	$249	$688	$2,406
+500MW to Zone J at J EFORd	$460	$1,007	$251	$687	$2,405
-500MW to Zone J at J EFORd	$460	$1,007	$251	$687	$2,405
+500MW to Zone K at K EFORd	$462	$1,007	$248	$688	$2,406
-500MW to Zone K at K EFORd	$461	$1,007	$251	$687	$2,406
+500MW to Zone F at F EFORd	$461	$1,007	$247	$690	$2,405
-500MW to Zone F at F EFORd	$463	$1,007	$252	$685	$2,407

NEW YORK
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SYSTEM OPERATOR

Sensitivity	Cost of Capacity at Historic Excess for Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$459	$1,007	$205	$725	$2,396
+$25.00 to G-J	$469	$1,007	$281	$691	$2,448
-$25.00 to G-J	$455	$1,007	$220	$679	$2,362
+$25.00 Zone J	$462	$1,171	$248	$688	$2,569
-$25.00 to Zone J	$460	$844	$251	$687	$2,242
+$25.00 to Zone K	$583	$1,007	$258	$683	$2,531
-$25.00 to Zone K	$344	$1,007	$248	$688	$2,288
+$25.00 to NYCA	$457	$1,007	$266	$871	$2,601
-$25.00 to NYCA	$462	$1,007	$241	$499	$2,209
+500 MW in Zone G & -500 MW in Zone J	$462	$1,007	$248	$688	$2,406
+500 MW in Zone K & -500 MW in Zone J	$462	$1,007	$248	$688	$2,406
-500 MW in Zone G & +500 MW in Zone J	$460	$1,007	$252	$686	$2,406
-500 MW in Zone K & +500 MW in Zone J	$461	$1,007	$251	$687	$2,406

INDEPENDENT
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Change between Current LCR and Optimized with TSL

Sensitivity	Δ Short & Intermediate Term Cost of Capacity from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$52	-$215	-$26	$0	-$188
+500 MW to Zone G at G-J EFORd	$126	$53	-$139	$0	$39
-500 MW to Zone G at G-J EFORd	$17	-$383	$37	$0	-$329
+500MW to Zone J at J EFORd	$97	-$135	-$43	$0	-$82
-500MW to Zone J at J EFORd	$3	-$37	-$1	$0	-$34
+500MW to Zone K at K EFORd	$0	$5	-$6	$0	-$2
-500MW to Zone K at K EFORd	$177	-$716	-$176	$0	-$715
+500MW to Zone F at F EFORd	$84	-$158	-$74	$0	-$149
-500MW to Zone F at F EFORd	$67	-$222	-$27	$0	-$182

Sensitivity	Δ Short & Intermediate Term Cost of Capacity from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$96	$113	-$111	$0	$99
+$25.00 to G-J	$156	-$215	-$89	$0	-$148
-$25.00 to G-J	-$15	-$205	$53	$0	-$167
+$25.00 Zone J	$76	-$249	-$39	$0	-$212
-$25.00 to Zone J	$52	-$157	-$26	$0	-$131
+$25.00 to Zone K	$10	-$215	$14	$0	-$191
-$25.00 to Zone K	$41	-$215	-$41	$0	-$215
+$25.00 to NYCA	$5	-$215	$10	$0	-$200
-$25.00 to NYCA	$75	-$215	-$48	$0	-$187
+500 MW in Zone G & -500 MW in Zone J	$81	$156	-$192	$0	$44
+500 MW in Zone K & -500 MW in Zone J	$0	$122	$25	$0	$147
-500 MW in Zone G & +500 MW in Zone J	$49	-$243	$9	$0	-$185
-500 MW in Zone K & +500 MW in Zone J	$196	-$649	-$162	$0	-$616

Sensitivity	Δ Cost of Capacity at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$8	-$32	$7	$5	-$12
+500 MW to Zone G at G-J EFORd	$18	$8	-$90	$41	-$23
-500 MW to Zone G at G-J EFORd	$3	-$88	$78	-$11	-$18
+500MW to Zone J at J EFORd	$14	-$46	$2	$11	-$20
-500MW to Zone J at J EFORd	$1	-$6	$4	$0	-$2
+500MW to Zone K at K EFORd	$1	$1	-$3	$1	-$1
-500MW to Zone K at K EFORd	$30	-$112	$0	$32	-$51
+500MW to Zone F at F EFORd	$12	-$23	-$12	$10	-$14
-500MW to Zone F at F EFORd	$11	-$36	$5	$6	-$14

Sensitivity	Δ Cost of Capacity at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$16	$20	-$153	$78	-$40
+$25.00 to G-J	$23	-$32	-$31	$15	-$24
-$25.00 to G-J	-$2	-$32	$38	-$14	-$10
+$25.00 Zone J	$11	-$36	-$3	$9	-$19
-$25.00 to Zone J	$8	-$24	$7	$5	-$4
+$25.00 to Zone K	$1	-$32	$28	-$4	-$7
-$25.00 to Zone K	$8	-$32	-$5	$9	-$19
+$25.00 to NYCA	$1	-$32	$28	-$5	-$8
-$25.00 to NYCA	$11	-$32	-$3	$6	-$17
+500 MW in Zone G & -500 MW in Zone J	$12	$24	-$94	$40	-$18
+500 MW in Zone K & -500 MW in Zone J	-$9	$19	-$5	$1	$6
-500 MW in Zone G & +500 MW in Zone J	$7	-$110	$89	-$10	-$25
-500 MW in Zone K & +500 MW in Zone J	$33	-$138	-$2	$43	-$64

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Sensitivity	Δ Cost of Capacity at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$4	-$15	$2	$2	-$7
+500 MW to Zone G at G-J EFORd	$10	$4	-$27	$16	$2
-500 MW to Zone G at G-J EFORd	$1	-$42	$24	-$4	-$21
+500MW to Zone J at J EFORd	$7	-$22	$1	$4	-$10
-500MW to Zone J at J EFORd	$0	-$3	$1	$0	-$1
+500MW to Zone K at K EFORd	$0	$0	-$1	$1	$0
-500MW to Zone K at K EFORd	$16	-$54	$1	$12	-$25
+500MW to Zone F at F EFORd	$7	-$11	-$3	$4	-$4
-500MW to Zone F at F EFORd	$6	-$17	$2	$2	-$7

Sensitivity	Δ Cost of Capacity at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$8	$10	-$47	$30	$1
+$25.00 to G-J	$12	-$15	-$9	$6	-$6
-$25.00 to G-J	-$1	-$15	$12	-$5	-$10
+$25.00 Zone J	$6	-$18	-$1	$3	-$9
-$25.00 to Zone J	$4	-$13	$2	$2	-$5
+$25.00 to Zone K	$1	-$15	$9	-$2	-$7
-$25.00 to Zone K	$5	-$15	-$1	$4	-$8
+$25.00 to NYCA	$1	-$15	$9	-$2	-$8
-$25.00 to NYCA	$6	-$15	-$1	$2	-$7
+500 MW in Zone G & -500 MW in Zone J	$6	$12	-$28	$15	$5
+500 MW in Zone K & -500 MW in Zone J	-$5	$9	-$2	$0	$3
-500 MW in Zone G & +500 MW in Zone J	$4	-$53	$27	-$4	-$26
-500 MW in Zone K & +500 MW in Zone J	$17	-$66	$0	$17	-$32

Appendix

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Consumer Impact Analysis: Alternative Methods for Determining LCRs

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October 11, 2017

Agenda

- Project Objective
- Background
- Cost Impacts
- Additional Factors
- Other Impacts
- Feedback
- Next Steps

Project Objective for Determining Alternative LCRs

- Evaluate an alternative methodology for determining LCRs based on economic optimization that minimizes the cost of satisfying planning requirements

  - Identify LCRs that provide the least cost distribution of capacity resources amongst NYCA Localities while keeping LOLE<0.1

Background

- The NYISO started this project by first establishing guiding principles (least cost, stable, robust, predictable)

- Next, the proof of concept phase demonstrated how the alternative LCR methodology performs in relation to the guiding principles

- This was followed by Phase 2, which focused on refining the methodology to ensure that optimization is based on sound market and engineering principles

- Phase 3 will focus on simulating market situations to demonstrate the performance of the alternative methodology

Consumer Impact Analysis (IA) Evaluation Areas

- Present the potential impact on all four evaluation areas

RELIABILITY	COST IMPACT/ MARKET EFFICIENCIES
ENVIRONMENT/ NEW TECHNOLOGY	TRANSPARENCY

Cost Impact Methodology

- The impact analysis compares the cost impacts on consumers in each of the three Localities (J, K, G-J) and NYCA of the alternative LCR methodology with the current methodology for the, short term, intermediate, and long term

- The base case and the sensitivity cases referenced herein are the same as those presented to stakeholders
  - The cost impact analysis utilizes the results produced after all refinements were incorporated into the methodology (*i.e.*, final methodology)

- The 2017/2018 Capability Year LCR base case was solved to an LOLE of 0.1 days/year while using the NYCA Minimum Installed Capacity Requirement

Consumer Impact Assumptions

- **Load**
  - Equivalent to the peak load in the MARS case
- **Reference Point**
  - Current values, except when sensitivity assumed a change in Net CONE
- **Derating Factor**
  - Historical values
- **Supply**
  - **Short Term:** Current generation with assumed values for imports, exports, unsold, and unoffered based on historical levels
  - **Intermediate Term:** Same as short term except with the removal or addition of the generation assumed in the sensitivity
  - **Level of Excess:** Supply level is equal to the LCR/IRM plus the assumed level of excess defined in the Demand Curve Reset
  - **Historical Percentage Excess:** Supply level is equal to the historic excess defined as a percentage of excess above the requirement observed within the last 3 Capability Years in each of the different Localities

Consumer Costs in the Short & Intermediate Term

Short Term Cost Impact Methodology

- The short term impact compares the cost of applying the current methodology and the alternative methodology to the 2017/2018 Capability Year LCR base case

  - The short-run impact analysis assumes no changes to generation and transmission

Scenario	Optimized Costs ($)			Current LCR Methodology Costs ($)		
	As found	At Level of Excess	At Generic excess level	As found	At Level of Excess	At Generic excess level
Base Case						
+500 MW in G						
-500 MW in G						

Difference in cost is short run impact (as found system and assumes no changes)

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Total Short Term Cost for Different Areas
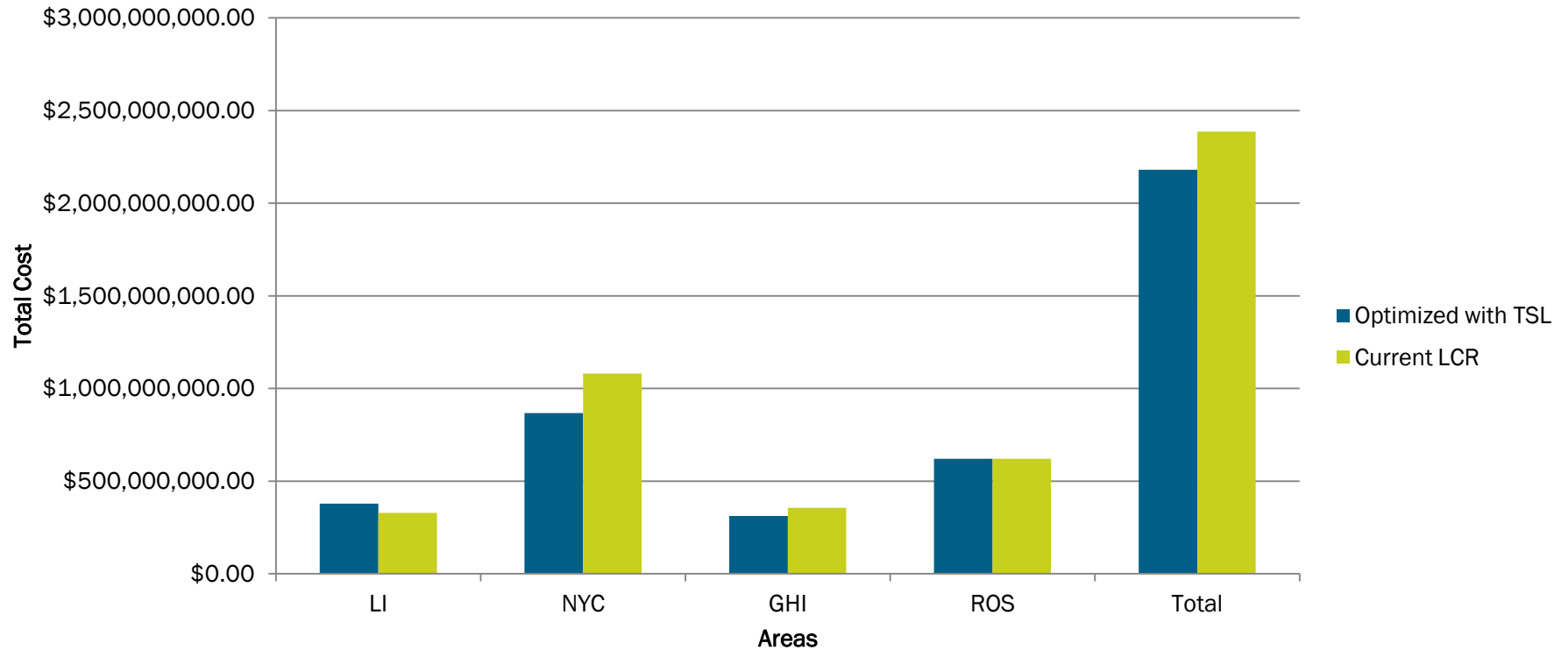
TSL = Transmission Security Limits

Intermediate Cost Impact Methodology

- The intermediate impact compares the cost of applying the current LCR methodology with the alternative methodology as generation and transmission resources change
  - This analysis assumes the only change to the system is the change used to perform the sensitivity case
  - For example, the cost impact of a +500 MW Zone J sensitivity case would keep all assumptions constant except for the addition of 500 MW to Zone J
- The intermediate impact was performed on a sub-set of simple sensitivity cases along with a set of sensitivities that include multiple changes to the system
- Sensitivities were also performed for changes in net CONE

Scenario	Optimized Costs ($)			Current LCR Methodology Costs ($)		
	As found	At Level of Excess	At Generic excess level	As found	At Level of Excess	At Generic excess level
Base Case						
+500 MW in G						
- 500 MW in G						

Difference in cost is intermediate impact (as found system with an addition and subtraction of 500 MW to G)

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Total Intermediate Term Cost for the NYCA (Change in Generation)
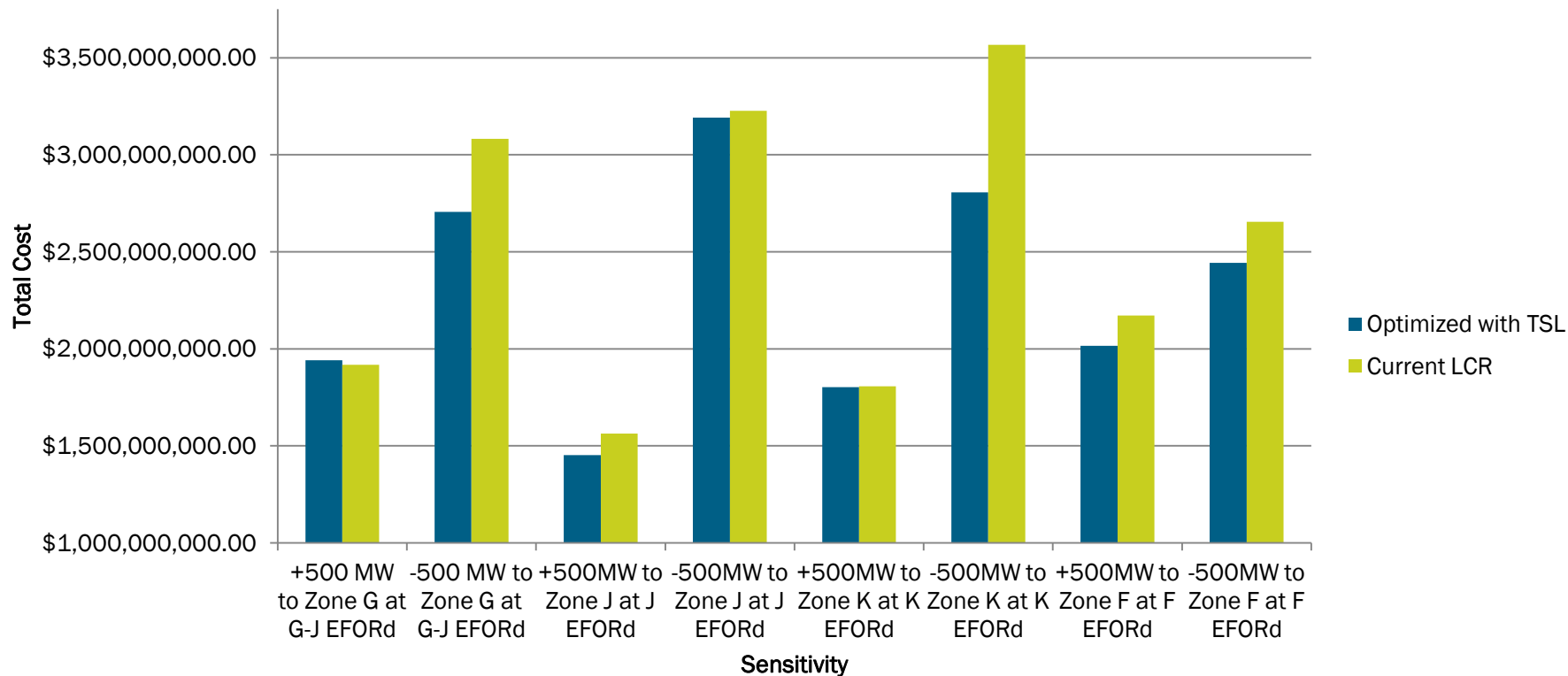
Total Intermediate Term Cost for NYCA (Multiple Changes in Generation)
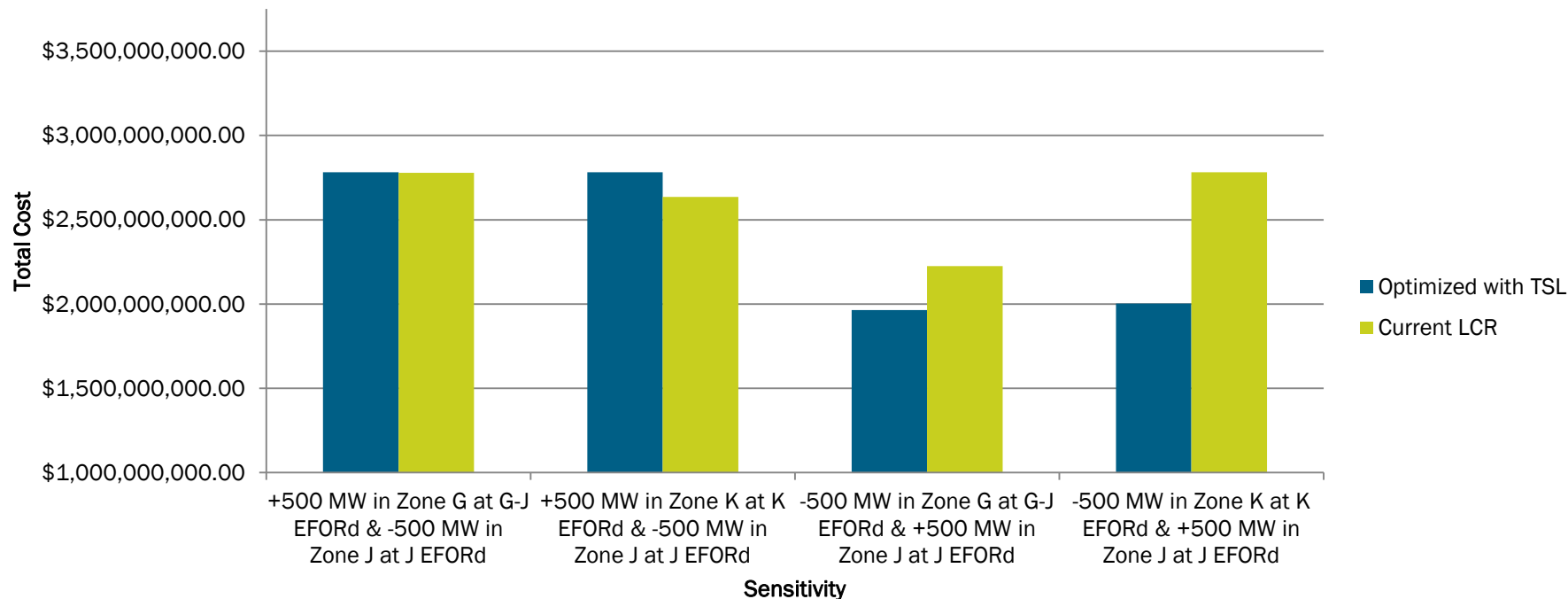
Total Intermediate Term Cost for NYCA (Change in Net CONE)

Sensitivity	Δ Short & Intermediate Term Costs from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$51.11	-$212.66	-$44.33	$0.00	-$205.88
+500 MW to Zone G at G-J EFORd	$125.27	$51.96	-$153.43	$0.00	$23.81
-500 MW to Zone G at G-J EFORd	$17.39	-$431.24	$36.33	$0.00	-$377.53
+500MW to Zone J at J EFORd	$95.83	-$163.15	-$42.96	$0.00	-$110.28
-500MW to Zone J at J EFORd	$2.84	-$35.90	-$1.17	$0.00	-$34.24
+500MW to Zone K at K EFORd	$0.00	$4.77	-$8.51	$0.00	-$3.74
-500MW to Zone K at K EFORd	$176.11	-$726.29	-$210.43	$0.00	-$760.61
+500MW to Zone F at F EFORd	$83.41	-$156.50	-$82.52	$0.00	-$155.62
-500MW to Zone F at F EFORd	$73.11	-$239.52	-$46.42	$0.00	-$212.83

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Sensitivity	Δ Short & Intermediate Term Costs from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$107.88	$142.14	-$110.75	$0.00	$139.28
+$25.00 to G-J	$155.10	-$212.66	-$126.83	$0.00	-$184.39
-$25.00 to G-J	-$15.26	-$212.66	$55.22	$0.00	-$172.69
+$25.00 Zone J	$74.53	-$246.68	-$73.12	$0.00	-$245.26
-$25.00 to Zone J	$51.11	-$155.60	-$44.33	$0.00	-$148.82
+$25.00 to Zone K	$10.29	-$212.66	$13.82	$0.00	-$188.54
-$25.00 to Zone K	$40.66	-$212.66	-$76.86	$0.00	-$248.85
+$25.00 to NYCA	$4.37	-$212.66	$14.68	$0.00	-$193.60
-$25.00 to NYCA	$74.17	-$212.66	-$71.94	$0.00	-$210.43
+500 MW in Zone G & -500 MW in Zone J	$79.84	$154.57	-$230.94	$0.00	$3.47
+500 MW in Zone K & -500 MW in Zone J	$0.00	$120.91	$25.27	$0.00	$146.17
-500 MW in Zone G & +500 MW in Zone J	$48.98	-$329.79	$20.31	$0.00	-$260.50
-500 MW in Zone K & +500 MW in Zone J	$194.48	-$776.11	-$197.59	$0.00	-$779.23

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	Δ Short & Intermediate Term Costs from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Minimum	-$15.26	-$776.11	-$230.94	$0.00	-$779.23
25th percentile	$12.07	-$232.80	-$103.69	$0.00	-$237.15
Average	$65.96	-$194.32	-$61.66	$0.00	-$190.01
75th percentile	$92.72	-$65.82	$10.07	$0.00	-$53.25
Maximum	$194.48	$154.57	$55.22	$0.00	$146.17

Short & Intermediate Term Consumer Impacts

- Based on the sensitivities conducted, total NYCA consumer cost is reduced in the majority of cases
  - The only cases that do not result in savings occur when the current LCR methodology results in a Zone J LCR lower than the Transmission Security Floor used in the optimization

- The average benefit from the Optimized LCR methodology with TSL compared to the Current LCR methodology is approximately $190 million

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Consumer Costs at Level of Excess (LOE)

Long Term Cost Impact Methodology

- The long term cost impact compares the cost of the current LCR methodology with the alternative methodology at long-run equilibrium

  - The long-run equilibrium was modeled at the Level of Excess condition (Defined in the Demand Curve reset), and also

  - Historic excess defined as a percentage of excess above the requirement observed within the last 3 Capability Years in each of the different Localities

Scenario	Optimized Costs ($)			Current LCR Methodology Costs ($)		
	As found	At Level of Excess	At Generic excess level	As found	At Level of Excess	At Generic excess level
Base Case						
+500 MW in G						
-500 MW in G						

Difference in cost is long term impact (at LOE)

Total Long Term Cost at LOE for Different Areas
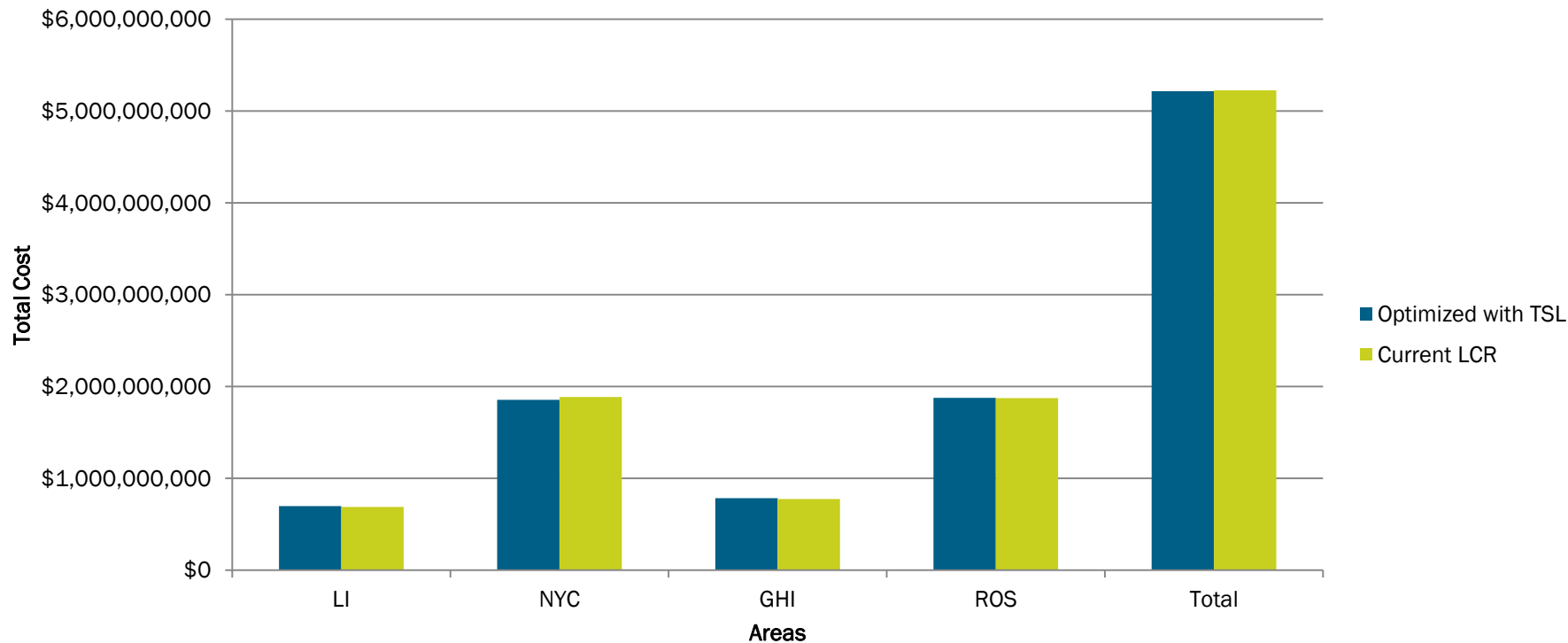
Total Long Term Cost at LOE for NYCA (Change in Generation)
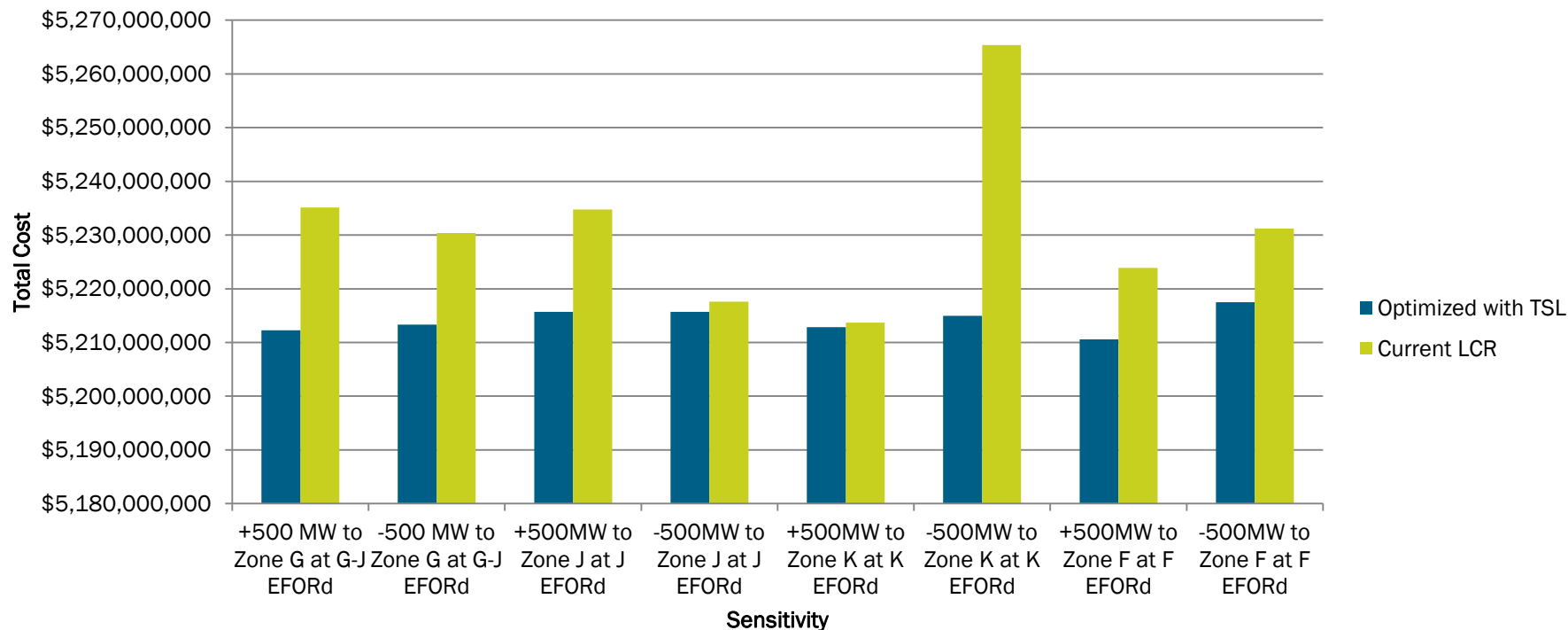
Total Long Term Cost at LOE for NYCA (Multiple Changes in Generation)

Total Long Term Cost at LOE for NYCA (Change in Net CONE)

Legend: ■ Optimized with TSL ■ Current LCR

X-axis (Sensitivity): +$25.00 to G-J, -$25.00 to G-J, +$25.00 Zone J, -$25.00 to Zone J, +$25.00 to Zone K, -$25.00 to Zone K, +$25.00 to NYCA, -$25.00 to NYCA

Y-axis (Total Cost): $0 to $7,000,000,000
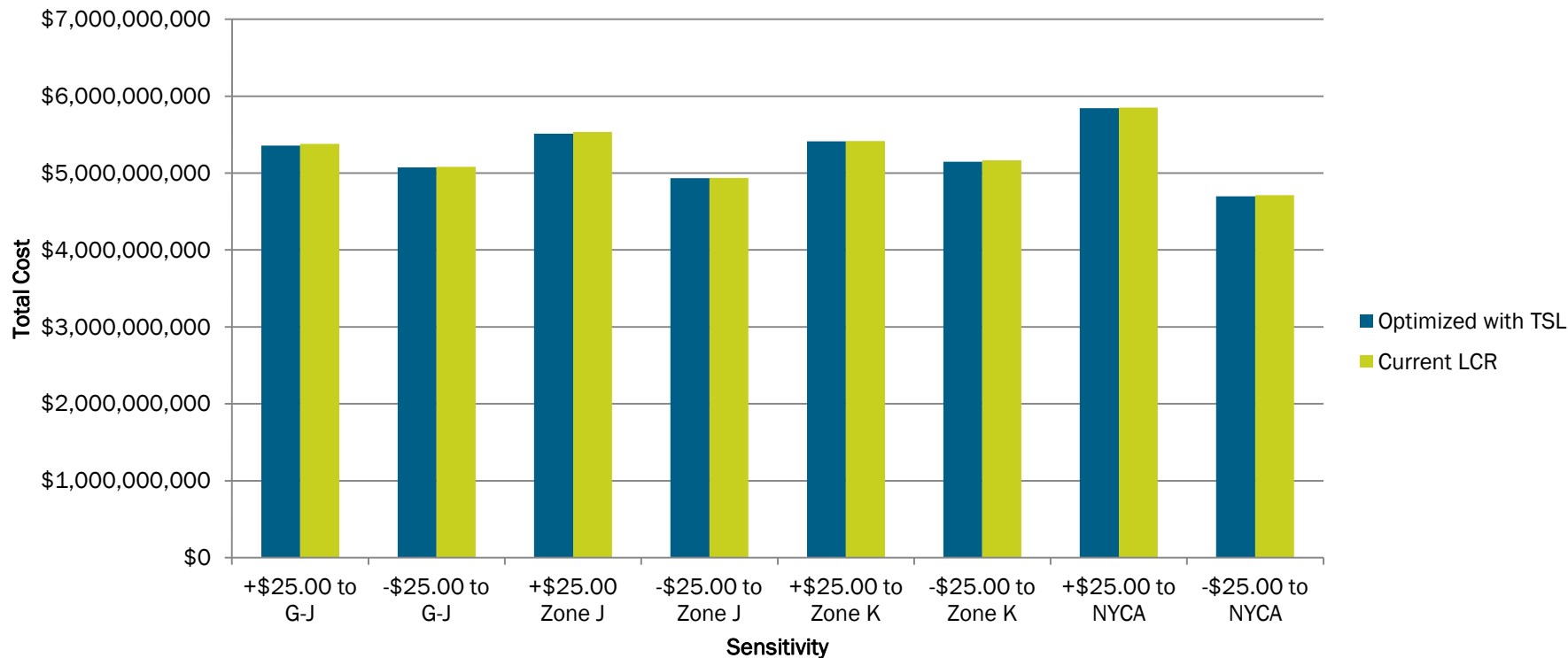
Sensitivity	Δ Cost at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$7.80	-$31.74	$7.56	$4.70	-$11.68
+500 MW to Zone G at G-J EFORd	$18.04	$7.60	-$89.40	$40.91	-$22.85
-500 MW to Zone G at G-J EFORd	$2.65	-$87.49	$78.69	-$10.92	-$17.06
+500MW to Zone J at J EFORd	$14.05	-$45.76	$1.64	$11.01	-$19.06
-500MW to Zone J at J EFORd	$0.36	-$6.07	$3.85	-$0.09	-$1.94
+500MW to Zone K at K EFORd	$0.60	$0.57	-$3.40	$1.39	-$0.84
-500MW to Zone K at K EFORd	$29.82	-$111.71	-$0.43	$31.91	-$50.42
+500MW to Zone F at F EFORd	$12.04	-$23.40	-$11.86	$9.91	-$13.31
-500MW to Zone F at F EFORd	$10.33	-$35.26	$5.28	$5.89	-$13.75

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Sensitivity	Δ Cost at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$15.88	$21.00	-$153.53	$77.85	-$38.80
+$25.00 to G-J	$23.24	-$31.87	-$30.80	$15.18	-$24.26
-$25.00 to G-J	-$2.33	-$31.74	$38.48	-$14.01	-$9.60
+$25.00 Zone J	$11.17	-$36.17	-$2.65	$8.66	-$18.98
-$25.00 to Zone J	$7.80	-$24.26	$7.56	$4.70	-$4.20
+$25.00 to Zone K	$1.15	-$31.74	$27.86	-$3.94	-$6.67
-$25.00 to Zone K	$8.50	-$31.74	-$4.64	$9.22	-$18.66
+$25.00 to NYCA	$1.08	-$31.74	$28.20	-$5.34	-$7.80
-$25.00 to NYCA	$11.09	-$31.74	-$2.32	$6.18	-$16.79
+500 MW in Zone G & -500 MW in Zone J	$11.71	$24.44	-$94.00	$40.27	-$17.58
+500 MW in Zone K & -500 MW in Zone J	-$8.89	$19.91	-$4.83	$0.43	$6.61
-500 MW in Zone G & +500 MW in Zone J	$7.48	-$110.46	$89.00	-$10.00	-$23.98
-500 MW in Zone K & +500 MW in Zone J	$32.71	-$138.07	-$1.89	$43.22	-$64.04

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	Δ Cost at LOE from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Minimum	-$8.89	-$138.07	-$153.53	-$14.01	-$64.04
25th percentile	$1.53	-$35.94	-$4.79	$0.04	-$21.90
Average	$9.83	-$34.88	-$5.07	$12.14	-$17.98
75th percentile	$13.55	-$10.40	$7.56	$14.14	-$8.25
Maximum	$32.71	$24.44	$89.00	$77.85	$6.61

Long Term Consumer Impacts at Level of Excess

- Based on the sensitivities conducted, total long term NYCA consumer cost at the LOE is reduced in all cases, except one
  - The only case that did not result in savings occurs when the current LCR methodology results in a Zone J LCR lower than the Transmission Security Floor used in the optimization

- Consumer savings in the long term are smaller than the short term savings since the difference in the quantity of capacity purchased for each Locality is minimal between the current LCR methodology and the optimization while the price stays relatively stable

Consumer Costs at Historic Percentage Excess

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Scenario	Optimized Costs ($)			Current LCR Methodology Costs ($)		
	As found	At Level of Excess	At Generic excess level	As found	At Level of Excess	At Generic excess level
Base Case						
+500 MW in G						
-500 MW in G						

Difference in cost is long term impact (at generic excess)

Total Long Term Cost at Historic Excess for Different Areas
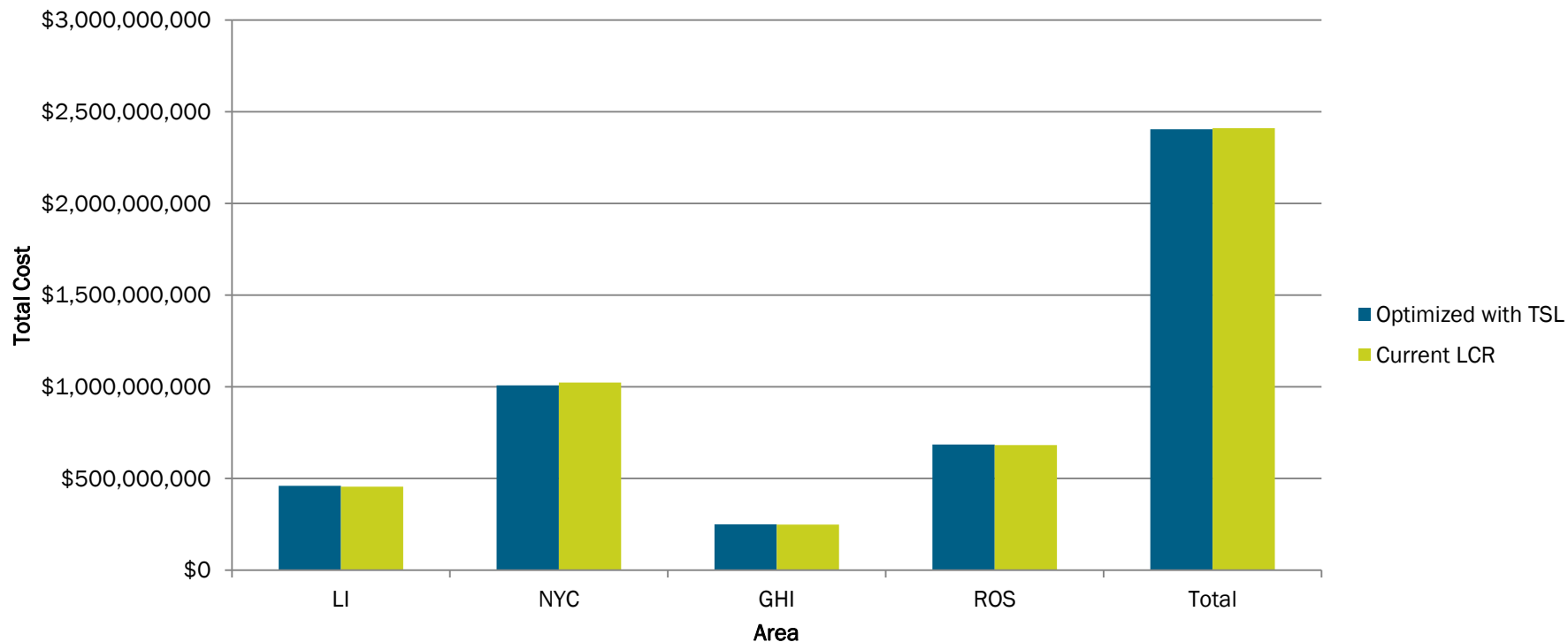
Total Long Term Cost at Historic Percentage Excess Level for NYCA (Change in Generation)
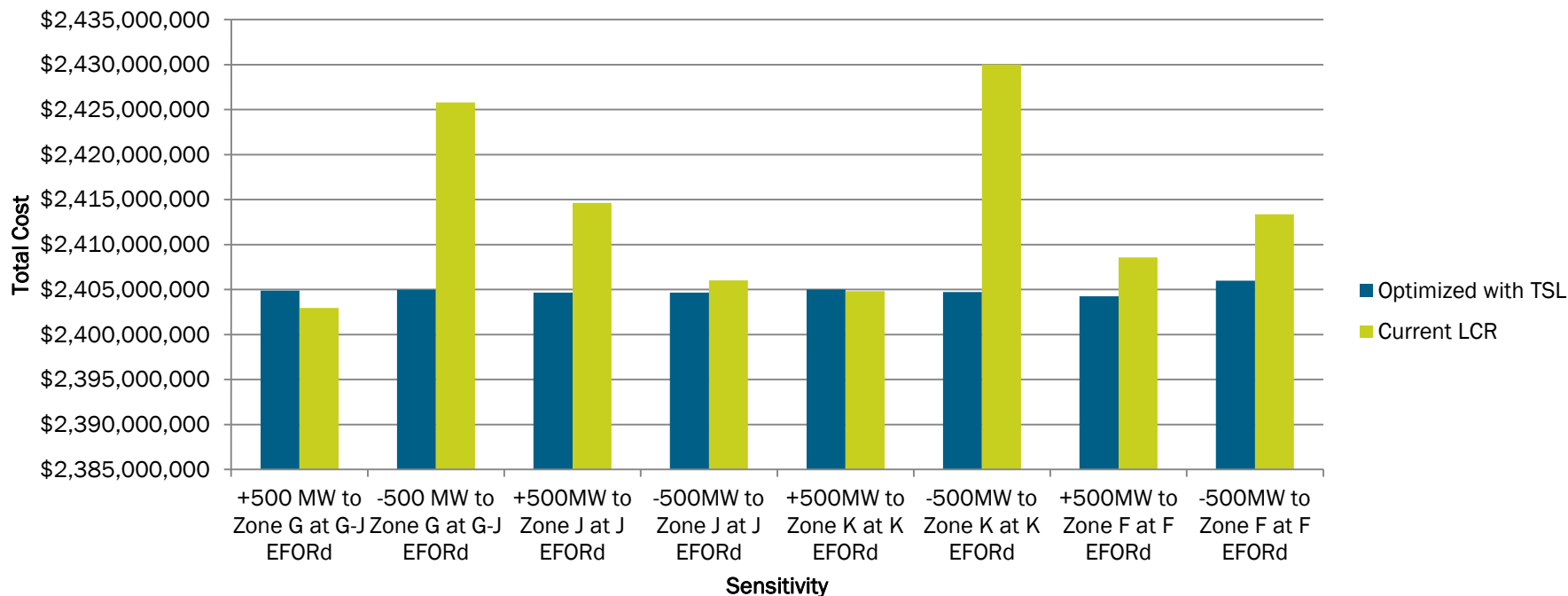
Total Long Term Cost at Historic Percentage Excess Level for NYCA
(Multiple Changes in Generation)

Total Long Term Cost at Historic Percentage Excess Level for NYCA
(Change in Net CONE)
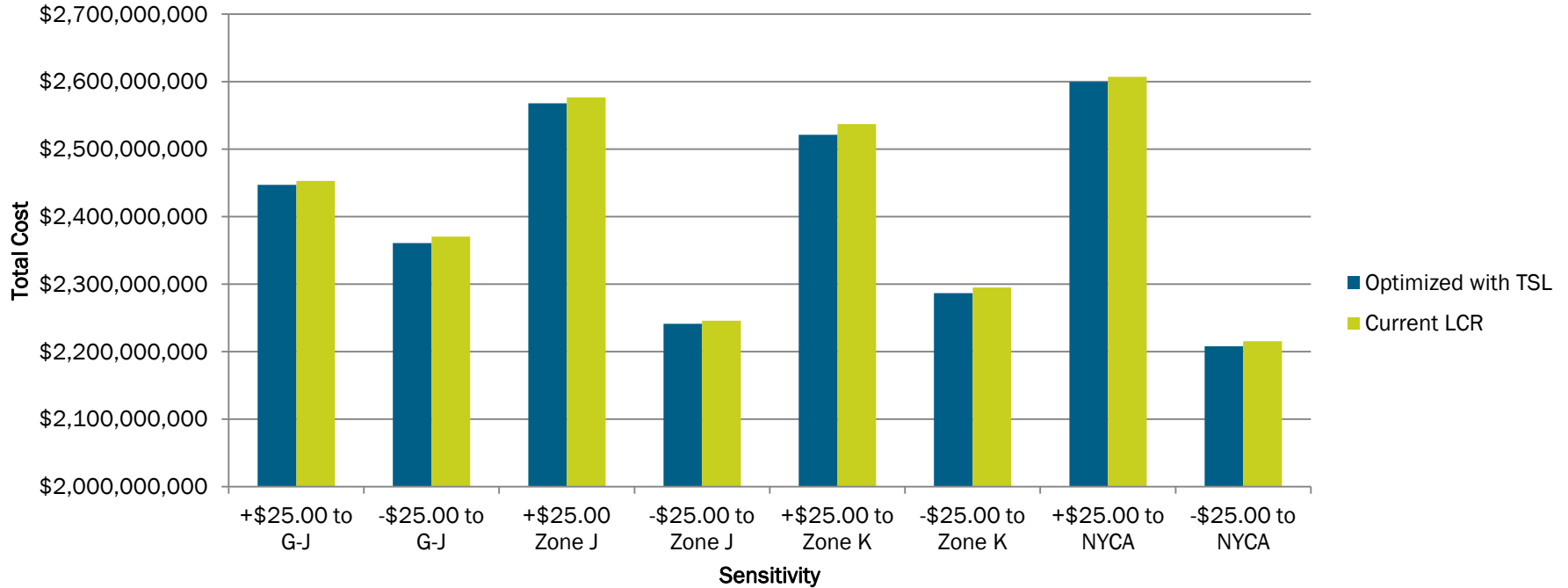
Sensitivity	Δ Cost at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Base Case	$3.99	-$15.16	$2.45	$1.81	-$6.91
+500 MW to Zone G at G-J EFORd	$9.68	$3.62	-$27.06	$15.70	$1.93
-500 MW to Zone G at G-J EFORd	$1.36	-$42.27	$24.27	-$4.17	-$20.82
+500MW to Zone J at J EFORd	$7.39	-$22.32	$0.73	$4.24	-$9.96
-500MW to Zone J at J EFORd	$0.25	-$2.76	$1.19	-$0.03	-$1.35
+500MW to Zone K at K EFORd	$0.41	$0.32	-$1.06	$0.53	$0.20
-500MW to Zone K at K EFORd	$15.60	-$53.74	$0.58	$12.27	-$25.29
+500MW to Zone F at F EFORd	$6.46	-$11.15	-$3.44	$3.82	-$4.32
-500MW to Zone F at F EFORd	$5.73	-$17.11	$1.73	$2.28	-$7.38

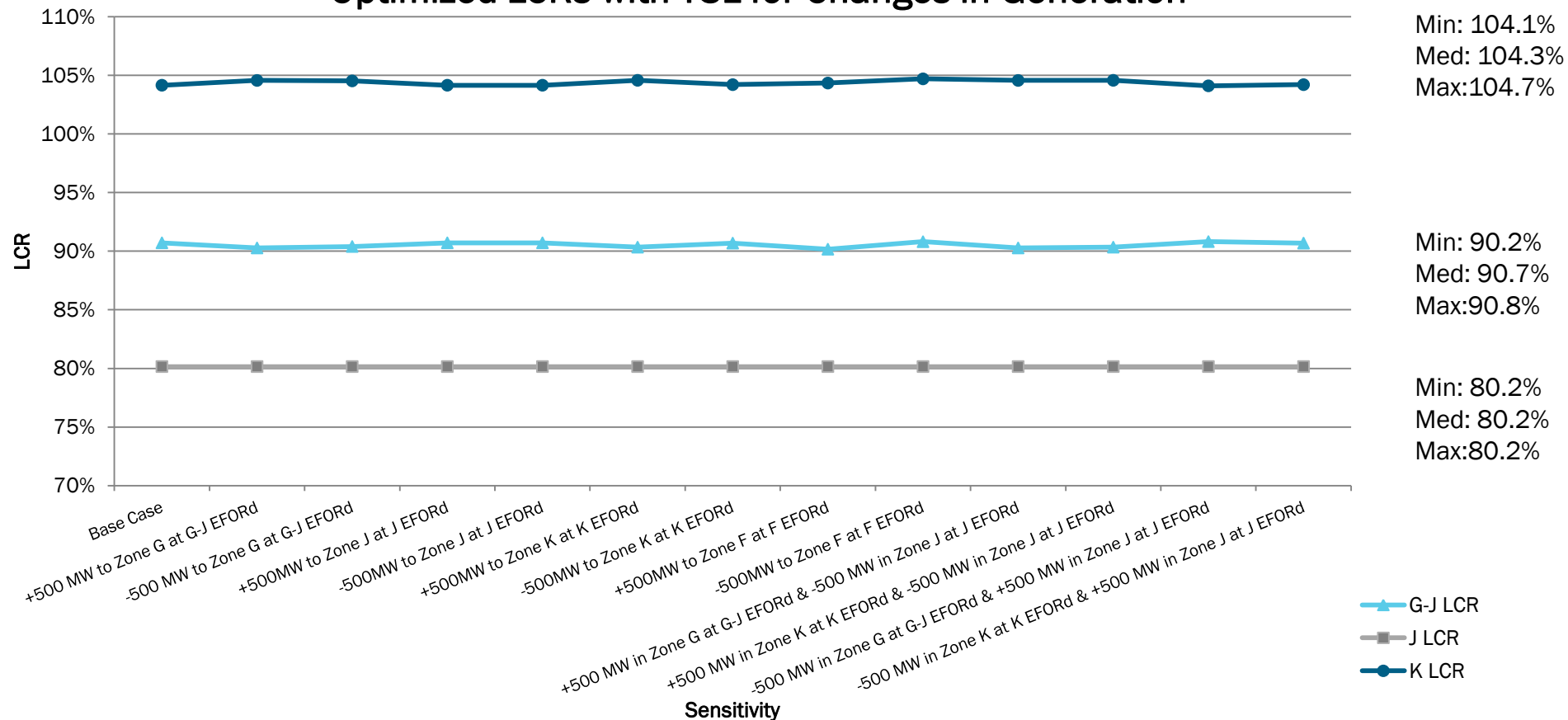| Sensitivity	Δ Cost at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
+1000 MW to UPNYSENY	$8.22	$9.86	-$46.53	$29.83	$1.37
+$25.00 to G-J	$12.26	-$15.16	-$8.93	$5.86	-$5.98
-$25.00 to G-J	-$1.15	-$15.16	$12.10	-$5.37	-$9.58
+$25.00 Zone J	$5.85	-$17.61	-$0.58	$3.34	-$9.01
-$25.00 to Zone J	$3.99	-$12.71	$2.45	$1.81	-$4.45
+$25.00 to Zone K	$7.35	-$41.02	$25.70	-$8.02	-$16.00
-$25.00 to Zone K	$4.78	-$15.16	-$1.20	$3.55	-$8.03
+$25.00 to NYCA	$0.64	-$15.16	$9.03	-$2.04	-$7.54
-$25.00 to NYCA	$5.80	-$15.16	-$0.46	$2.38	-$7.45
+500 MW in Zone G & -500 MW in Zone J	$6.22	$11.77	-$28.45	$15.44	$4.98
+500 MW in Zone K & -500 MW in Zone J	-$4.71	$9.25	-$1.63	$0.15	$3.06
-500 MW in Zone G & +500 MW in Zone J	$3.78	-$53.05	$27.42	-$3.81	-$25.67
-500 MW in Zone K & +500 MW in Zone J	$17.16	-$66.35	$0.22	$16.61	-$32.36

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	Δ Cost at Historic Excess from Current LCR to Optimized with TSL (million $)				
	LI	NYC	GHI	ROS	Total
Minimum	-$4.71	-$66.35	-$46.53	-$8.02	-$32.36
25th percentile	$1.97	-$21.14	-$1.53	$0.01	-$9.86
Average	$5.50	-$18.01	-$0.52	$4.37	-$8.66
75th percentile	$7.38	-$4.86	$2.45	$5.45	-$2.10
Maximum	$17.16	$11.77	$27.42	$29.83	$4.98

Long Term Consumer Cost Impacts at Historic Excess

- Based on the sensitivities conducted, total long term NYCA consumer cost at historic excess is reduced in the majority of cases

  - The only cases that do not result in savings occur when the current LCR methodology results in a Zone J LCR lower than the Transmission Security Floor used in the optimization
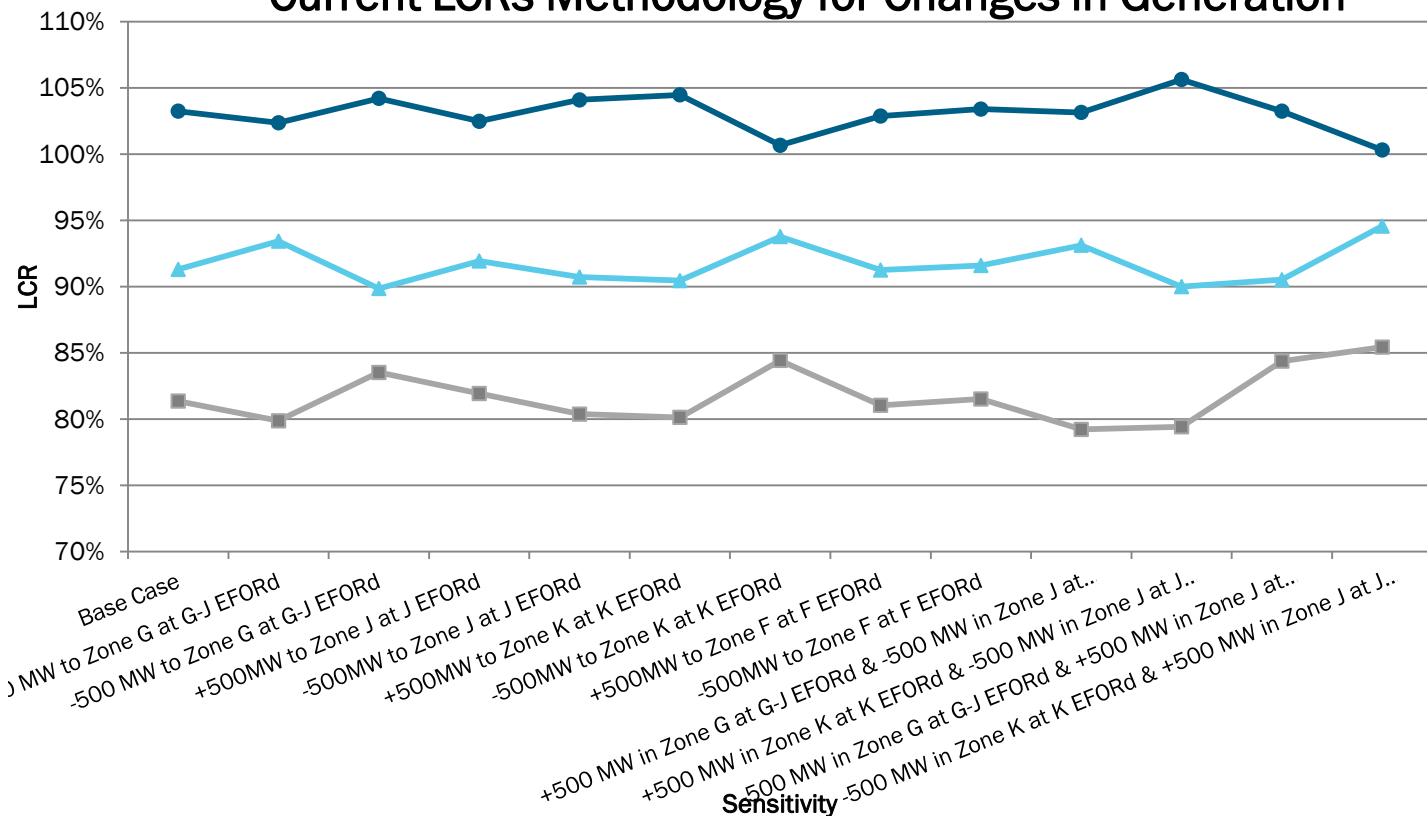
Additional Factors

Optimized LCRs with TSL for Changes in Generation

Min: 104.1%
Med: 104.3%
Max:104.7%

Min: 90.2%
Med: 90.7%
Max:90.8%

Min: 80.2%
Med: 80.2%
Max:80.2%

Legend:
- G-J LCR
- J LCR
- K LCR

X-axis categories (Sensitivity):
Base Case; +500 MW to Zone G at G-J EFORd; -500 MW to Zone G at G-J EFORd; +500MW to Zone J at J EFORd; -500MW to Zone J at J EFORd; +500MW to Zone K at K EFORd; -500MW to Zone K at K EFORd; +500MW to Zone F at F EFORd; -500MW to Zone F at F EFORd; +500 MW in Zone G at G-J EFORd & -500 MW in Zone J at J EFORd; +500 MW in Zone K at K EFORd & -500 MW in Zone J at J EFORd; -500 MW in Zone G at G-J EFORd & +500 MW in Zone J at J EFORd; -500 MW in Zone K at K EFORd & +500 MW in Zone J at J EFORd

Current LCRs Methodology for Changes in Generation

Stability of LCRs

- The optimization methodology results in an increase in stability as generation changes occur within the system

Methodology	Range of LCRs		
	Zone K	Zone J	G-J
Current LCR Methodology	5.3%	6.2%	4.7%
Optimized with TSL	0.6%	0.0%	0.7%

Stability of LCRs

Methodology	Range of LCRs		
	Zone K	Zone J	G-J
Current LCR Methodology	289 MW	725 MW	756 MW
Optimized with TSL	32 MW	0 MW	104 MW

Other Impacts

Reliability Impact

- The alternate LCR methodology results in more stable and efficient LCRs than the current LCR methodology

- The increase in stability should improve market signals

- Stable and predictable market signals will lead to more efficient decisions in expanding and retiring assets, hence improving reliability

- Transmission Security Limits (TSL) further ensure that reliability is maintained at all times

Environmental Impact

- No change expected

Impact on Transparency

- More stable LCRs should enhance transparency as market response to changes in generation and/or reference prices will be more predictable than under the current LCR methodology

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Feedback?

- Email additional feedback to:
- deckels@nyiso.com

Questions?

We are here to help. Let us know if we can add anything.

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system

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