

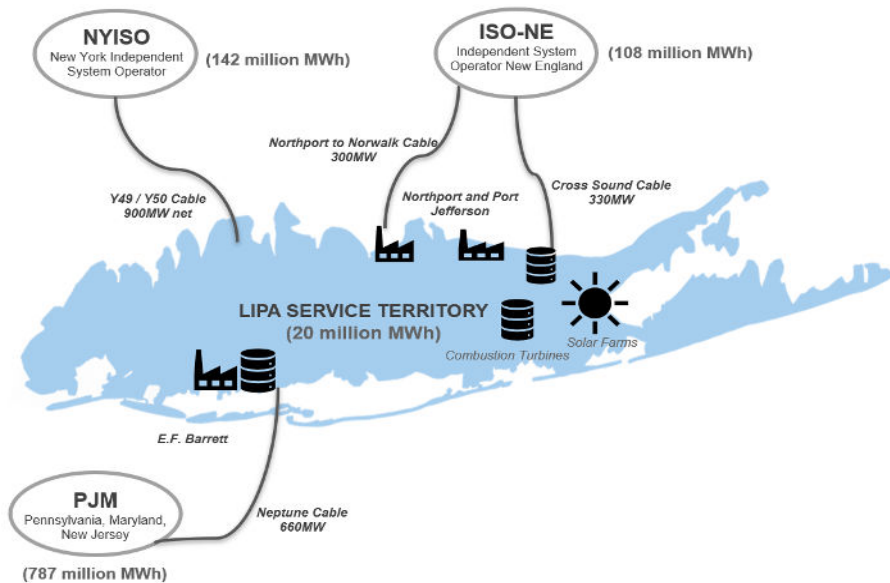


UPDATE ON STORM RESILIENCY PROGRAM (2021 TO 2025)

June 28, 2023

LIPA SYSTEM OVERVIEW

- LIPA's service territory spans **1,640 square miles** with **1,146,481 customers** served



Transmission Circuits		331
Overhead Mileage		989
Underground Mileage		428
Transmission Substations		41
Distribution Circuits		1,070
Overhead Mileage Primary		8,979
Underground Mileage Primary		5,043
LIPA-Owned Poles		324,740
Verizon-Owned Poles		214,465
Smart Switches ASU and ASUV*		2,764
Pole Mounted Transformers		119,146
Underground Transformers		40,435
Capacitor Banks		1,538
Distribution Substations		156

2023 TRANSMISSION AND DISTRIBUTION BUDGET

Project Type	2023 T&D Budget
Load Growth	\$173,016,310
Reliability	\$302,597,635
Storm Hardening	\$77,465,008
Tools, Equipment, & Other	\$70,855,733
Total T&D Capital Budget	\$623,934,686

Spend Category	2023 T&D Budget
T&D Operations	\$78,404,335
Training, Support & Contractor Services	\$74,337,228
Asset Management	\$12,006,759
VP T&D - Other	\$1,758,102
VP T&D - Fringe	\$21,565,957
Total T&D O&M Budget	\$188,072,381

LONG ISLAND'S TOP STORMS

Hurricane Gloria (1985)

78% Customers Affected

Damage Locations: 18,700
Restoration Time: 12 Days



Hurricane Irene (2011)

47% Customers Affected

Damage Locations: 19,900
Restoration Time: 9 Days



Superstorm Sandy and Nor'easter (2012)

90% Customers Affected

Damage Locations: 37,000
Restoration Time: 17 Days
(two storms)



Tropical Storm Isaias (2020)

50% Customers Affected

Damage Locations: 23,000
Restoration Time: 8 Days



LIPA BOARD'S VISION FOR RELIABILITY AND RESILIENCY

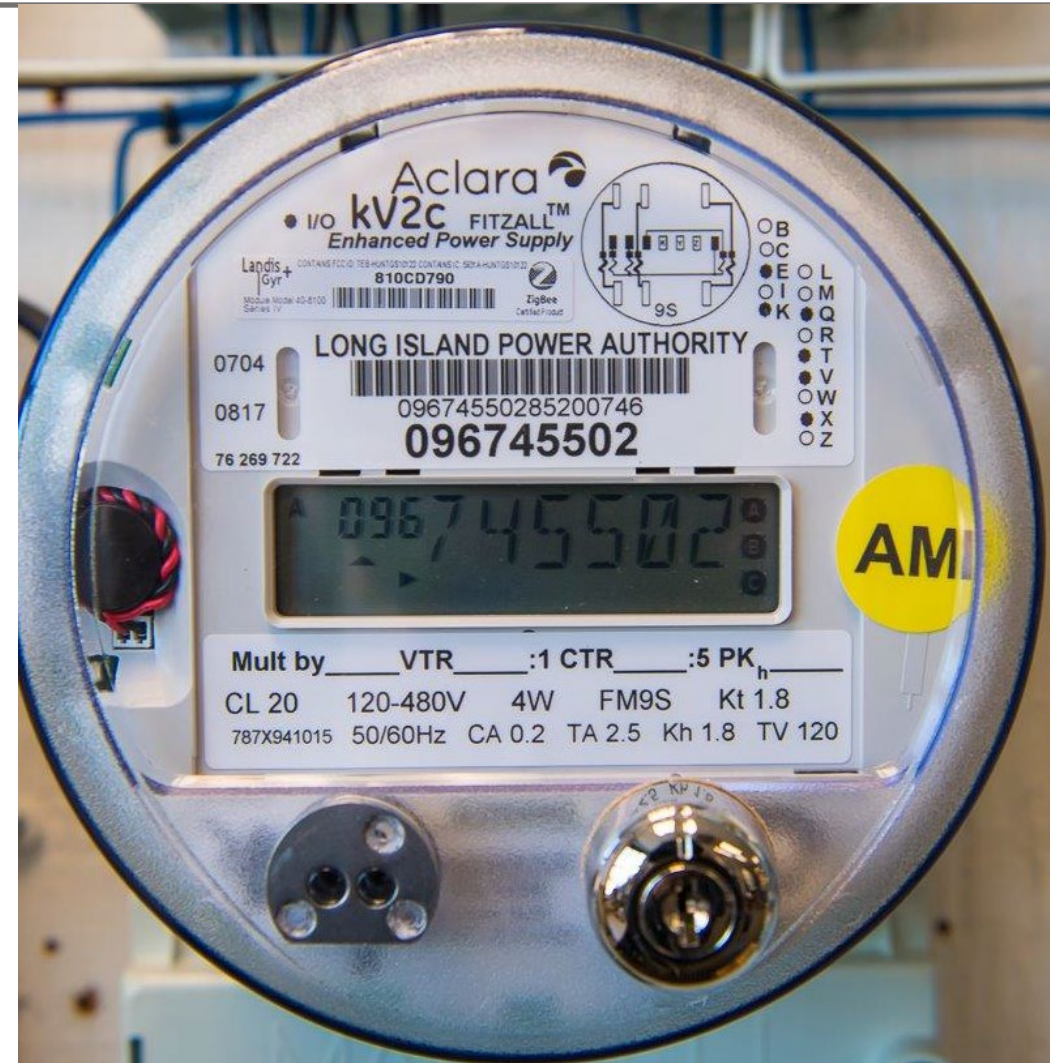
The LIPA Board of Trustees has set objectives for reliability and resiliency to measure management's performance

LIPA Board's [reliability](#) objectives:

- Provide top decile levels of reliability as measured by system average outage duration
- Improve circuit conditions that cause customers to experience 4 or more sustained or 6 or more momentary outages in any 12-month period
- Utilize modern system design and technology to anticipate and minimize outages, and provide for preventative and predictive maintenance

LIPA Board's [resiliency](#) objectives:

- **Mitigate effects of climate change through multi-year programs to reduce the number and duration of outages caused by storms**
- Assure timely and accurate communication to customers about outages and restoration times
- Independently verify emergency restoration plans and testing of IT systems



A CUSTOMER-DRIVEN APPROACH TO GRID RESILIENCY

LIPA seeks to **quantify and further reduce the number of customers and restoration times** after a severe weather event, per Board Policy

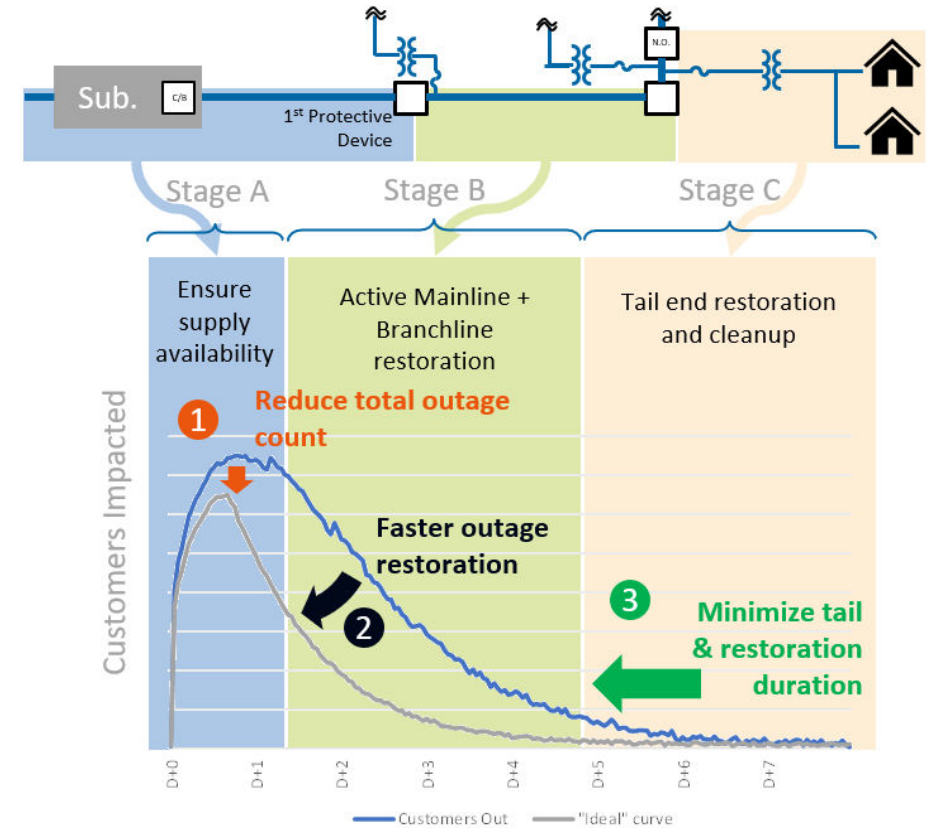
Reduce the number of outages by:

- ✓ Continuing to harden worst performing transmission and distribution circuits
- ✓ Hardening one transmission supply feed to every substation in identified load pockets
- ✓ Reducing number of customers behind each protective device to less than 500
- ✓ New trim-to-sky standard and additional hazard tree removal; deploying intelligence to the tree trim cycle (vs. cycle trim)

Shorten length of storm restoration by:

- ✓ Utilizing smart meter data to reduce truck rolls and speed restoration
- ✓ Evaluating selective undergrounding of hard-to-access rear-lot service
- ✓ Deploying electricians and trained gas contractors for low-voltage restoration

Illustrative Restoration Curve



TOP LONG ISLAND STORMS IMPACT

Super Storm Sandy

October 29, 2012

- **Customers Impacted:** 1,171,061*
- **Customer Minutes Interrupted:** 2.698 Billion
- **Substations Out of Service:** 51
- **Total Feeder Lockouts:** 455
- **Mainline Events:** 775
- **Damage Locations:** 37,000
- **Average Outage Duration:** 2,305 minutes

FEMA-Funded Hardening

2013-2020

- 10 substations storm hardened
- 338 distribution circuits partially hardened
- 877 miles overhead mainline hardened
- 40 miles underground hardened
- 26,364 distribution poles replaced
- 894 ASUV (Automatic Sectionalizing Unit Viper)
- 2,720 miles of covered "tree" wire installed
- >1,000 wood transmission poles replaced

Tropical Storm Isaias

August 4, 2020

Total Storm Impact

vs.

FEMA-Hardened Avoided Events

- **Customers Impacted:** 644,967*
- **Customer Minutes Interrupted:** 954 Million
- **Substations Out of Service:** 20
- **Total Feeder Lockouts:** 138
- **Mainline Events:** 466
- **ASUV Lockouts:** 93
- **Damage Locations:** 23,000
- **Average Outage Duration:** 1,692 minutes

- ↓ **Avoided Customers Impacted:** 65,005
- ↓ **Reduced Customer Minutes Interrupted:** 67 Million
- ↓ **Avoided Mainline Events:** 74

48% decrease in incidents per mile on hardened portions of system compared to non-hardened

STORM HARDENING PROGRAM INITIATIVES THROUGH 2025

	2021		2022		2023		2024		2025	
Program	Units Completed	% System	Units Completed	% System	Units Planned	% System	Units Planned	% System	Units Planned	% System
Power On! Mainline	111.01	37.86%*	80.41	40.75%	51.76	42.61%	53.00	44.51%	53.00	46.41%
Hazard Tree Removal	7,115	14.23%	14,060	42.35%	11,000	64.35%	11,000	86.35%	11,000	108.35%
Trim-To-Sky Distribution Trim	10	1.14%	215	25.71%	207	49.37%	198	72.00%	233	98.63%
4-year Cycle Trim (Catch Up Trimming)	36	0.38%	348	2.26%	9	0.09%	38	0.40%	38	0.40%
LT5H (ASUV 500 Customer/Segment)	154	44.96%*	149	60.44%	156	76.64%	150	92.21%	75	100.00%
Transmission Load Pocket	-	-	-	-	-	-	-	-	1 Project	13.00%

Program Scope and Units		
Power On!	Mainline, Branchline	Miles
Hazard Tree Removal	Transmission, Mainline, Branchline	Number of Whole Trees and Large Limbs
Trim-To-Sky Distribution Trim	Mainline	Circuits
4-year Cycle Trim (Catch Up Trimming)	Mainline, Branchline	Miles
LT5H (ASUV 500 Customer/Segment)	Mainline	Units
Transmission Load Pocket Hardening	Transmission	Projects

PLAN VS. ACTUAL COSTS (IN MILLIONS)

Operations and Maintenance Budget

	2021		2022		2023		2024		2025		Totals
Program	Plan	Actual	Plan	Actual	Plan	Budget	Plan	Forecast	Plan	Forecast	
Hazard Tree Removal*	\$ 1.76	\$ 7.80	\$ 11.60	\$ 13.20	\$ 10.63	\$ 10.63	\$ 11.69	\$ 11.69	\$ 12.86	\$ 12.86	\$ 56.18
Trim-To-Sky Distribution Trim*	\$ 0.50	\$ 0.44	\$ 1.40	\$ 2.22	\$ 1.51	\$ 2.31	\$ 2.54	\$ 2.54	\$ 2.80	\$ 2.80	\$ 10.32
4-year Cycle Trim (Catch Up Trimming)*	\$ 0.29	\$ 0.29	\$ 3.28	\$ 3.76	\$ 0.09	\$ 0.09	\$ 0.42	\$ 0.42	\$ 0.47	\$ 0.47	\$ 5.03

Capital Budget

LT5H (ASUV 500 Customer/Segment)	\$ 9.86	\$ 7.31	\$ 9.54	\$ 9.63	\$ 9.98	\$ 9.98	\$ 10.56	\$ 10.56	\$ 5.28	\$ 5.28	\$ 42.77
Power On!	\$ 70.00	\$ 63.54	\$ 70.00	\$ 71.04	\$ 75.00	\$ 75.00	\$ 75.00	\$ 75.00	\$ 75.00	\$ 75.00	\$ 359.58
Transmission Load Pocket Hardening	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 25.25	\$ 25.25	\$ 25.25
Program Totals (Capital and O&M):	\$ 82	\$ 79	\$ 96	\$ 100	\$ 97	\$ 98	\$ 100	\$ 100	\$ 122	\$ 122	\$ 499

REDUCTION TO CUSTOMER MINUTES INTERRUPTED FROM POST-ISAIAS PROGRAMS INFLIGHT 2021 THROUGH 2025

Program	Cumulative Program Benefits by Year					Overall Impact on "Next Isaias"
	2021	2022	2023	2024	2025	
PowerOn Storm Hardening	1.40%	2.22%	2.72%	3.22%	3.73%	3.73%
Hazard Tree Removal	1.61%	3.21%	4.82%	6.43%	8.03%	8.03%
Trim-To-Sky	0.14%	0.27%	0.41%	0.54%	0.68%	0.68%
4-year Cycle Trim (Catch Up Trimming)	0.02%	0.20%	0.21%	0.23%	0.25%	0.25%
LT5H	0.69%	1.36%	2.06%	2.73%	3.07%	3.07%
Transmission Load Pockets	-	-	-	-	2.26%	2.26%
Overall Benefit All Calendar Year Work Completed	3.86%	7.27%	10.22%	13.16%	18.02%	18.02%

ADDITIONAL EFFORTS IN PROGRESS WITH BENEFITS TO BE DETERMINED

Effort	Benefit
Underground rear property branch line	Reduce overhead exposure on difficult to repair sections of system
Low voltage crew procurement	Shorten “tail” of storm curve due to secondary/service repairs
Single phase branch line reclosers	Clearing of transient faults on branch, preventing blown fuse and sustained outage
Spacer cable	Reduction of tree related outages in high vegetation areas
FEMA (Isaias) Mitigation Grant Application \$426M	Hardening of overhead distribution system mainline damaged during Isaias
FEMA (Isaias) Mitigation Grant Awarded \$3.5M	Harden 3 "highway" overhead crossings
FEMA (Sandy) Excess Funds Application \$35M	Continue hardening of overhead distribution system mainline
FEMA (Ida) Mitigation Grant Applications \$10M	To replace poles in underserved communities
FEMA (COVID) Mitigation Grant Application \$10M	To replace poles in underserved communities

Discussion

Questions?