PSEG Long Island Operating Report and Storm Overview/Hardening Update

Report to the Board of Trustees

September 23, 2020

PSEG LONG ISLAND
We make things work for you.

Agenda

- Scorecard
- PSEG Long Island Mission
- Isaias Storm Review
- DPS Remedial Actions
- Review of System Performance and Hardening

PSEG Long Island OSA
2020 Balanced Scorecard

	Operations Services Agreement Metrics	August YTD						Month of August		
		Base Points	Low/ High	OSA YE Target	OSA YTD Target	YTD Result	OSA Forecast	OSA Month Target	Month Result	Month Status
People	OSHA Recordable Incidence Rate	5	L	1.27	1.27	0.77	↑	1.27	0.69	+
	OSHA Days Away Rate (Severity)	2.5	L	17.00	17.00	13.97	↑	17.00	6.94	+
	Reduce Motor Vehicle Accidents	2.5	L	-1.9%	-1.9%	-32.8%	↑	-1.9%	250.0%	–
Safe, Reliable	JD Power Customer Satisfaction Survey (Residential)	5	H	703 or 10th	703 or 10th	746	↑	703 or 10th	748	+
	JD Power Customer Satisfaction Survey (Business)	5	H	763 or 7th	763 or 7th	797	↑	763 or 7th	797	+
	After Call Survey (Residential)	5	H	91.5%	91.5%	95.0%	↑	91.5%	89.5%	–
	After Call Survey (Business)	5	H	91.5%	91.5%	96.0%	↑	91.5%	95.4%	+
	Personal Contact Survey	5	H	92.0%	92.0%	96.8%	↑	92.0%	96.8%	+
	Average Speed of Answer	5	L	19	19	24	→	19	50	–
	Customer Complaint Rate	5	L	6.5	6.5	10.9	↓	6.5	100.7	–
	SAIFI (System Average Interruption Frequency Index)	5	L	0.76	0.52	0.50	↑	0.07	0.07	+
	CAIDI (Customer Average Interruption Duration Index)	5	L	85	85	81	↑	85	107	–
	SAIDI (System Average Interruption Duration Index)	5	L	59.0	42.1	40.1	↑	6.5	7.9	–
	MAIFI (Momentary Average Interruption Frequency Index)	5	L	2.56	1.77	1.34	↑	0.30	0.17	+
	AMI Installations	5	H	250,000	166,667	202,119	↑	20,833	10,296	–
	First Call Resolution (FCR)	5	H	82.8%	82.8%	82.4%	→	82.8%	76.4%	–
	Double Woods (Focus Areas)	1	L	9,110	9,235	9,687	→	N/A	N/A	N/A
	Technology Implementation Pilot (Focus Areas)	1	H	1	1	1	↑	1	1	+
Economic	Operating Budget ($M)	N/A	L	633.7	420.5	373.8	↑	52.1	32.6	+
	Capital Budget ($M)	N/A	L	735.2	486.5	419.1	↑	56.2	33.2	+
	Net Write-Offs per $100 Billed Revenue	5	L	0.54	0.54	0.48	↑	0.54	0.28	+
	AR > 90 (No Exclusions)	5	L	17.7%	17.7%	18.9%	↓	17.7%	17.5%	+
	Low to Moderate Income Program Participation (Focus Areas)	1	H	35,000	33,891	41,264	↑	N/A	N/A	N/A
Green	Customer Self-Service	5	H	47.1%	41.5%	41.5%	↑	N/A	N/A	N/A
	Energy Efficiency Annualized Energy Savings	5	H	1,036,000	702,117	728,866	↑	89,221	97,712	+
	Electric Vehicles (Focus Areas)	1	H	1,000	510	409	↑	160	72	–
	Heat Pumps (Focus Areas)	1	H	3,000	1,920	3,261	↑	330	619	+

YTD Result Color
- At or Better than YTD Plan
- Worse than YTD Plan

YE Forecast
- ↑ On track to meet Target
- → Meeting Target at risk
- ↓ Not expected to meet Target

Month Status
- \+ At or Better than Plan
- — Worse than Plan
- N/A

PSEG Long Island Mission Statement

At PSEG Long Island, our mission is to build an industry leading electric service company that places safety first, in all we do, providing our customers across Long Island and the Rockaways with:

- Excellent customer service
- Best in class electric reliability and storm response
- Opportunities for energy efficiency and renewables
- Local, caring, and committed employees, dedicated to giving back to their communities

Keeping the lights on isn't just a job for us: It's our mission. We bring that spirit to work every day.

Tropical Storm Isaias

Putting Isaias in Context

Storm Name	Customers Interrupted	Total Incidents	Restoration 99% (days)	Poles Broken	Transformers Damaged
Tropical Storm Isaias* (2020)	644,967	22,968	8	713	978
Hurricane “Sandy”** (2012)	1,100,000	37,472	16	4,900	2,900
Hurricane Irene** (2011)	523,000	18,726	9	900	1,067
March Storm** (2010)	270,000	4,719	7	n/a	n/a
Hurricane “Ernesto”** (2006)	133,000	1,491	2	104	384
Winter Storm “Riley” (2018)	115,000	2,527	3	n/a	n/a
Strong Wind & Severe Rain (2017)	113,000	2,104	2	n/a	n/a

*Tropical Storm Isaias - 85 Miles of wire/cable

**Data based on PSEG Long Island data w/ restoration from prior service provider

A Focus on Being – "Best in Class"

- Key components of Best in class storm response fell short of our customers' and our own, expectations
  - IT Systems Performance
  - Accuracy and Timeliness of Customer Communications
  - Restoration Process

- Strong Performance in other Areas:
  - Planning and Preparation
  - Mutual Aid Resources
  - Employee Performance
  - Money Spent on Hardening was effective

- PSEG Long Island is focused on a multiphase strategy to improve major storm restoration performance

Major Storm Enhancement Plan

Storm Hardening

Improve Communications

Internal/External Resources

Major Storm Enhancement Plan

(Comprehensive plan to significantly reduce outages and restoration time associated with major storms)

Technology

Process Improvement

Business Continuity

Our Commitment and Focus

Approach and Solutions

	Approach	Desired Outcome	Cores Solutions
	Storm Hardening	Reduce Outages	• Expansion of proven hardening efforts • Strategic undergrounding • Targeted customer contributed improvements (undergrounding and generators)
	Improve Communications	Improve Accuracy	• Enhance the capabilities of our ETR system • AMI validation for alerts • Workload forecasting models with additional inputs and variables
	Internal/External Resources	Increase Lineworkers	• Existing 5 year plan to increase lineworkers by 250 FTEs • Prioritize projects that fund external field personnel • Develop retainer agreements • Develop agreements for additional low voltage storm work
	Technology	Reliability and Productivity	• Harden our storm support IT systems • Systems to optimize restoration efficiency • Advance the completion of AMI
	Process Improvement	Increase Efficiency (Jobs/Day)	• Integrate AMI with outage management systems • Reduce restoration steps and inefficiencies • Work Transmission/Mainline, Branchlines, Services in parallel • Technology Enhancements – GPS, Electronic Dispatch, Workload Optimization, etc.
	Business Continuity	Resiliency	• Enhance our business continuity plan for storm support IT systems • Utilization of AMI/MDMS for large scale business continuity plan

Tropical Storm Isaias

DPS Remedial Actions

PSEG Long Island

Tropical Storm Isaias - DPS Recommendations from letter dated August 19, 2020

	Initiative	Current Status
1	Test, repair or upgrade the Outage Management System to guarantee functionality as well as all communication systems to receive and respond to extraordinary high customer call volumes, and certify to the Department within 10 days of this letter that PSEG LI command and communication systems and Outage Management System will effectively handle such high call volumes. See 16 NYCRR §105.4(b)(9);	
2	Immediately begin the process of adding crewing capacity via retainer contracts from private contractors or utilities located outside of New York, with a goal to be able to secure sufficient crewing to double your existing internal capacity, and report bi-weekly to the Department on your crewing capacity for the reminder of the 2020 calendar year;	Ongoing Through 2020*
3	Develop other plans to secure utility crews in addition to private contractor and mutual aid provided by the NAMAG before and during storms, and report bi-weekly to the Department on your progress for the reminder of the 2020 calendar year;	Ongoing Through 2020*
4	Test capabilities at all command and data centers, call centers and back-up command centers to ensure capability to handle an outage impacting 90% or more of your customers in the PSEG-LI service territory and provide confirmation back to the Department regarding the results of this test within 10 days;	
5	Refine coordination plans with municipalities tailored to each county (road clearing, local liaisons, etc.) and provide to the Department within 20 days a written confirmation from each county Emergency Operations Center that they understand and accept the plan; and	Only NYC Open Active Collaboration
6	Update Life Support Equipment and Critical Infrastructure lists to remove or add customers as necessary and file such updated lists to the Department within 10 days.	

Project Status Key

- Step Complete and Documentation Finalized
- All work activities and milestones on track
- Some work activities/milestones off schedule, work around plans in place to close gaps, overall schedule on track
- Some work activities and / or milestones off schedule, achievement of overall schedule / objectives at risk

***Initial weekly reports provided in accordance by deliverable date identified – Bi-weekly updates to continue through 2020 calendar year**

FEMA Program Isaias Performance

- 44% decrease in incidents per mile on hardened vs. non-hardened zones
- Hardening yielded approximately 41,000 Reduction in customer outages during the storm
- FEMA circuits: 23% Reduction mainline incidents
- Overall: 10% reduction in total mainline events

Program was effective in reducing damage locations, only partial hardening of circuits limited benefit to CI reductions……

System Hardening Options

- Isaias Data By Category

ISAIAS Data By Category				
Category	Customer %	% of Jobs	Customers	Incidents
Transmission	10.0%	0.8%	64,786	115
Mainline	52.2%	4.0%	336,445	560
Branch	33.5%	32.4%	216,015	4,585
Transformer	2.1%	11.5%	13,585	1,622
Secondary/Service	2.2%	51.3%	14,136	7,262
Totals	**100.0%**	**100.0%**	**644,967**	**14,144**

- Key Considerations
  - 63% of incidents (Transformer/Service/Secondary) account for 4.3% of customers impacted
  - 36% of incidents (mainline or branch) account for 86% of the outages
  - Reducing incidents is the key parameter to reducing storm durations
  - The effectiveness of different hardening programs to reduce incidents
  - Develop hardening initiatives to address the branchline outages

Programs for Modelling

High level Conceptual Program Model Yields Order of Magnitude Results

Program Size	Approach	Isaias Duration (Days)	Revise Isaias (Days)	Duration Reduction (Days)	Cost ($B)	Construction Time at $150M Per Year (Years)	Construction Time at $300M Per Year (Years)
Small	25% of primary hardened to FEMA	8.0	7.6	0.4	$1.6	11	5
Medium	50% of primary hardened to FEMA	8.0	6.9	1.1	$4.5	30	15
Large	100% of primary hardened to FEMA	8.0	5.6	2.4	$10.4	69	35
Extra Large	100% of primary hardened to 2x FEMA	8.0	3.1	4.9	$31.2	208	104

Hardening Program Development

- Program Considerations
  - Prioritization/Optimization to achieve earliest results
  - Mainline and Branch hardening required to achieve results
  - Targeted undergrounding to achieve incident reductions
  - Targeted Transmission line hardening and/or macro-grid for high risk load areas
  - Potential service hardening program

- Explore new programs such as:
  - Microgrids
  - Targeted incentives for generators
  - Targeted undergrounding incentives

Transmission and Substation Performance – Isaias

- Transmission System Impact
  - 64,786 customers assigned to Transmission Outages
    - Approximately 10% of impacted customers
    - Loss of supply to 28 stations during the entire event

- August 4th – Tropical Storm Isaias hits Long Island
  - 2 interconnections tripped out of service
  - 20 Substations outages, all back in service by August 6th at 3:22PM

- August 7th – Salt Spray Effect During Embedded Rain and Wind Event
  - 1 Interconnection tripped out of service
  - 5 Substation outages, all back in service by August 7th at 8:15PM

- August 12th – Embedded Series of Thunderstorms
  - 3 Substations outages, all back in service by August 13th at 12:47AM

Transmission and Substation Performance – Isaias

- August 4th 2020 – Tropical Storm Isaias hits long Island
  - 8 – 138KV circuits locked out, 3 - 138KV circuits tripped and reclosed
  - 34 – 69KV circuits locked out, 16 – 69KV circuits tripped and reclosed
  - 8 – 33KV circuits locked out, 6 – 33KV circuits tripped and reclosed
  - 5 – 23KV circuits locked out

- August 7th 2020 - Salt Spray Effect During Embedded Rain and Wind Event
  - 1 – 138 KV circuit tripped and reclosed
  - 5 – 69KV Bus differentials trip
  - 11 – 69KV circuits locked out, 2 – 69 kV circuits tripped and reclosed
  - 1 – 33KV circuit tripped and reclosed

- August 12th 2020 – Long Island is affected by a series of thunderstorms
  - 2 – 138KV circuits tripped and reclosed
  - 6 – 69KV circuits locked out, 7 – 69KV circuits tripped and reclosed
  - 3 – 23KV circuits tripped and reclosed

Transmission system to be considered in storm hardening.....

Next Steps

Storm Hardening

- Finalize program recommendations for short and long term approach

- Coordinate with LIPA on rate impacts

Overall Next Steps

- Completion and sharing of After Action Reviews
  - Information Technology
  - Operational Overview

- Development of comprehensive project plan for 6 areas of improvement/focus

- Implementation of short and medium term improvement initiatives