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April 16, 2018

VIA: ELECTRONIC FILING

Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

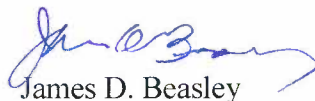
Re: Docket No. 20170215-EU – Review of electric utility hurricane preparedness and restoration actions

Dear Ms. Stauffer:

Attached is Tampa Electric Company's slide presentation for use during the Workshop scheduled for May 2-3, 2018 in the above docket.

Thank you for your assistance in connection with this matter.

Sincerely,


James D. Beasley

JDB/pp
Attachment

cc: Mark Roche
Regan Haines
TECO Regulatory Department
Billy Stiles
Jim Beasley
Jeff Wahlen



Electric Utility Hurricane Workshop

Docket. No. 20170215-EU

To the Florida Public Service Commission

May 2, 2018



Tampa Electric – Overview

- Prevention & Restoration
- Irma Performance of hardened versus non-hardened & overhead versus underground facilities
- Restoration Challenges
- Customer & Stakeholder Communications
- Key Opportunities Identified



Prevention - Strengthen our System

Since 2006, TECO has invested \$577+ million to harden our system. In the next three years, TECO will invest \$175 million more.

Specifically, we plan to:

- Vegetation Management
- T&D Pole hardening
- Hardened UG equipment
- Evaluate targeted OH to UG conversions



Restoration - Prepare our People

- Training
- Mock storm drills
- Federal, state & local coordination
- Technology to improve response

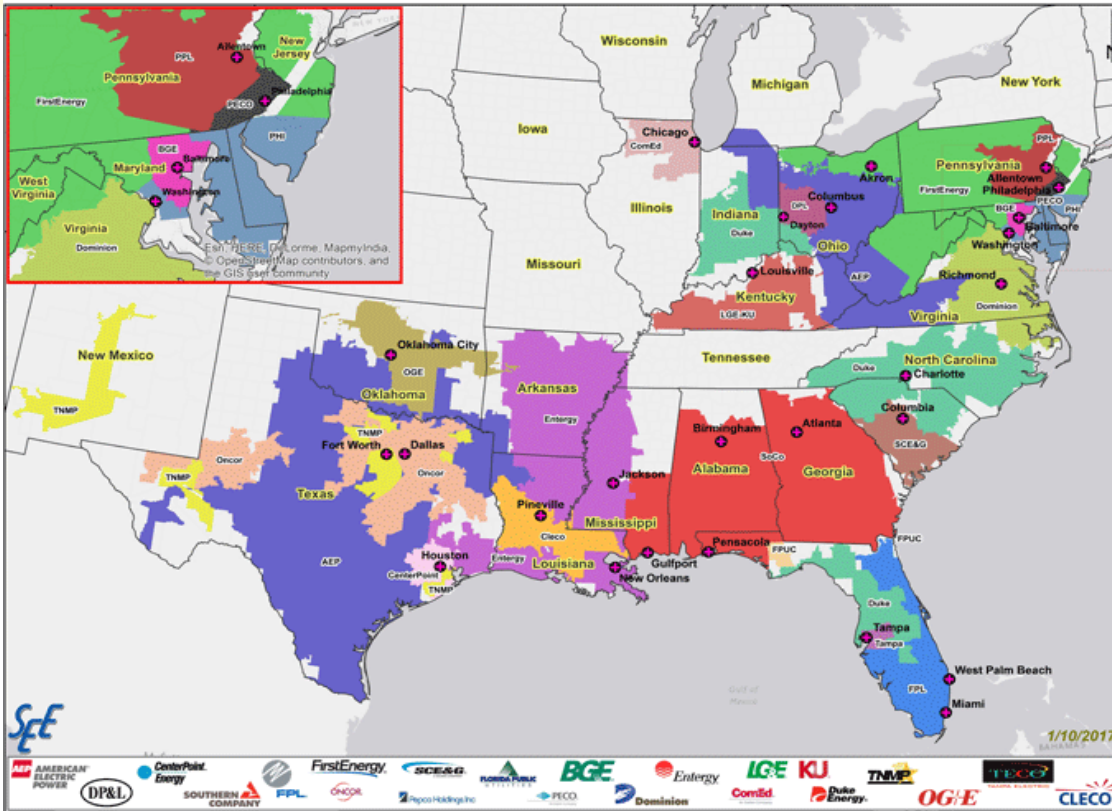


Restoration Response

- Resource acquisition & staging
- Logistics support
- Damage assessment
- Resource management
- Work management
- Customer Experience
- Communications



Restoration – Mutual Assistance Groups



RMAGs



Mutual Assistance:

- 59 companies SEE Mutual Assistance Group
- 9 Mutual Assistance Groups in US

Restoration – Expanded Resources



Emera family brings a bigger base of resources for TECO and other utilities



2017 Irma Mutual Assistance:

- Lineman from 61 Companies
- 18 Tree Trim Companies
- 5 Companies providing Damage Assessment
- 5 Companies providing Call Center Support
- Emera Affiliate Support
 - Nova Scotia Power
 - Emera Utility Services
 - Emera Maine

Restoration – Technology to Improve Response

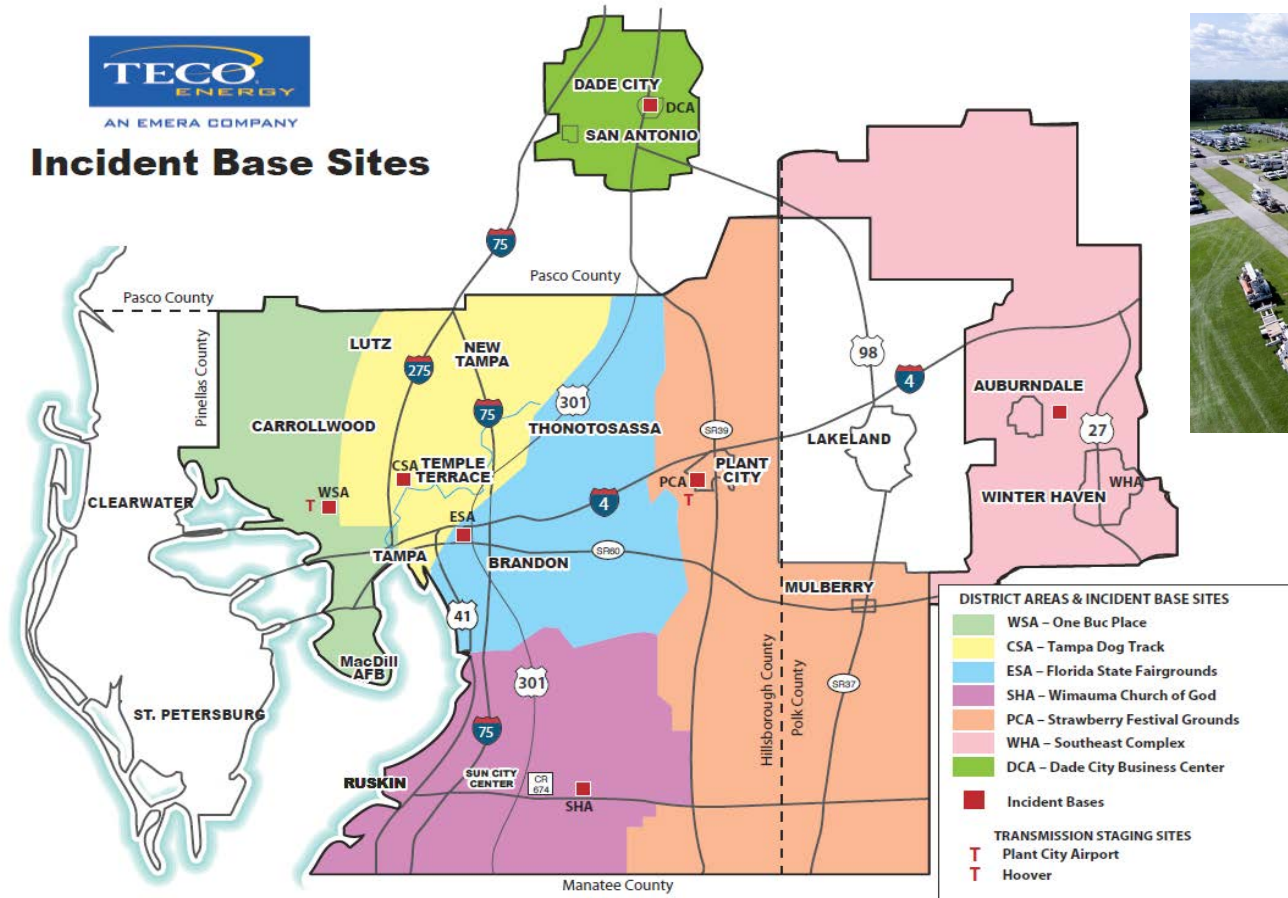
- Mobile command centers
- Ten Fold-Out Rigid Temporary Shelter (FORTS)
- Better resource management:
 - Crew-management software
 - SEE's Common Roster
 - EEI's Ramp-Up tool



Restoration – Multiple Incident Bases



Incident Base Sites



Restoration – Prioritization

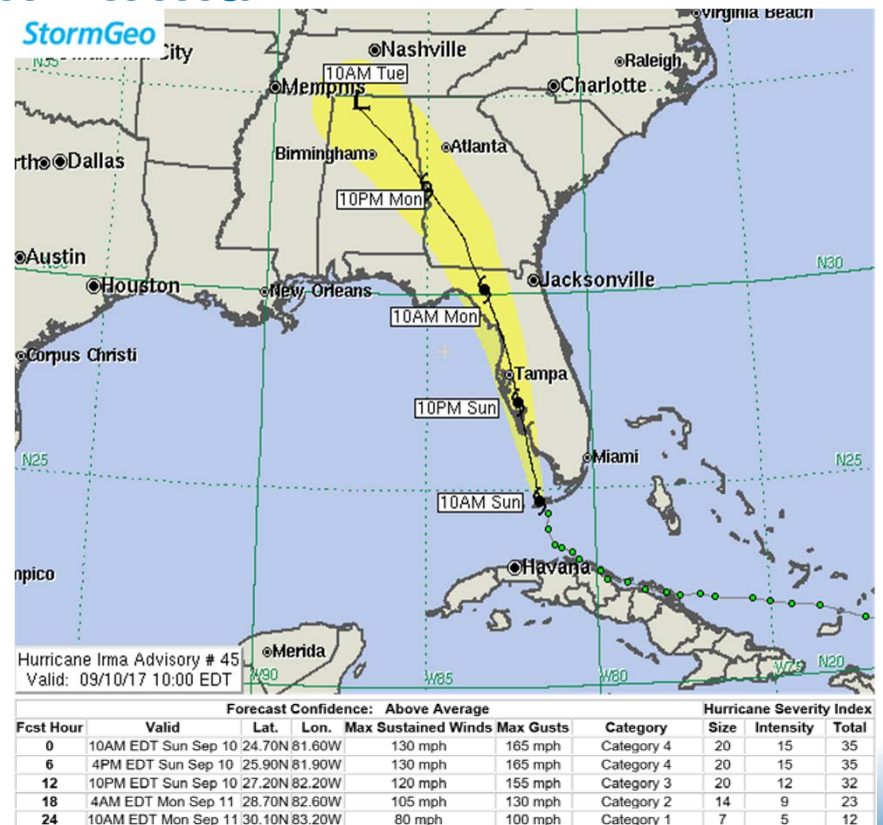
Goal: Restore power to the largest number of customers in the shortest possible time – Transmission, Substation, Main Feeders



1. Critical facilities first (hospitals, police & fire stations, etc.)
2. Water and sewer
3. Schools, groceries, gas stations
4. Largest groups of customers
5. All remaining circuits

Preparation and Restoration - Irma

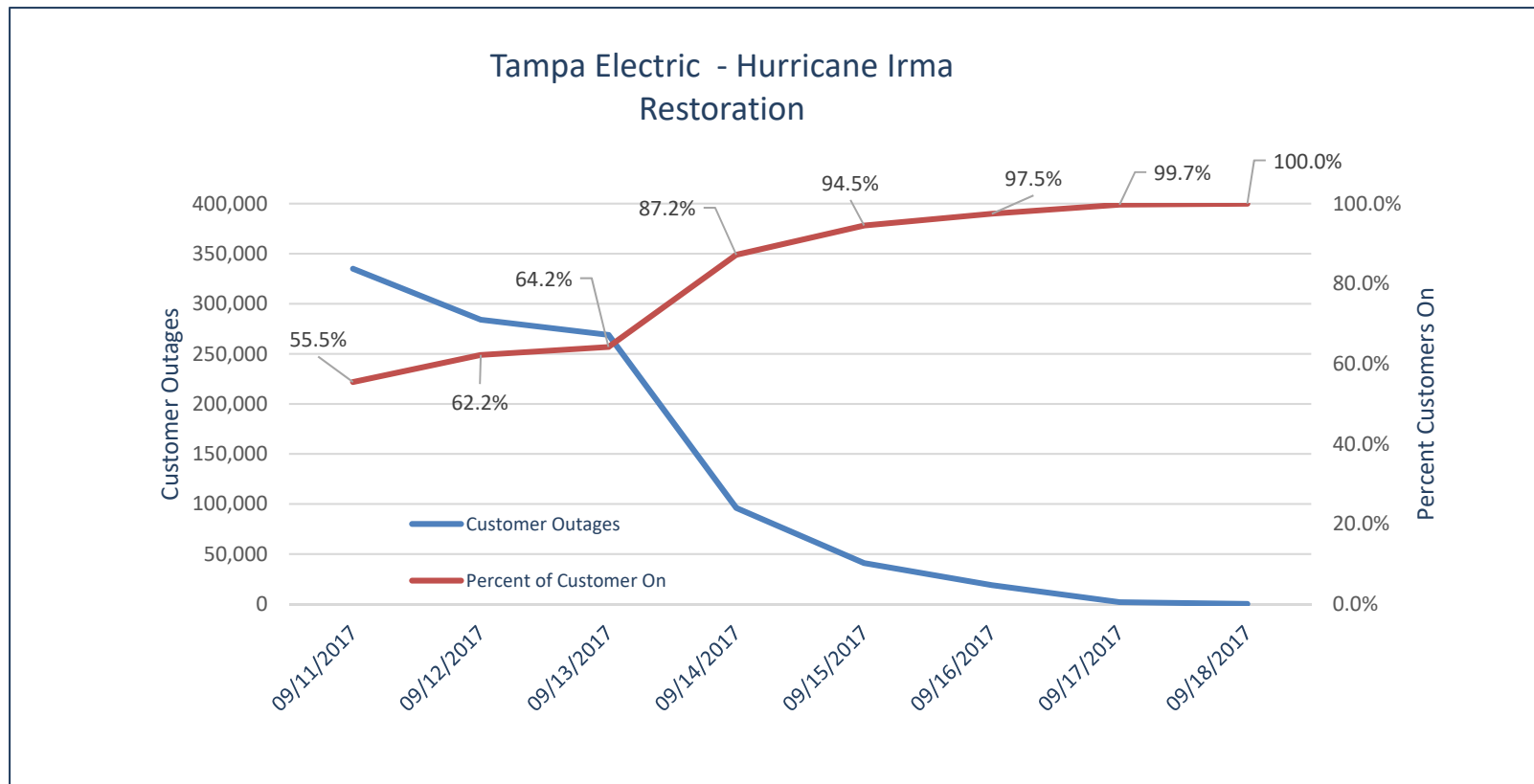
- Initial planning for Irma began on Sept. 3
- At 72 hours away from Florida, the forecasted track was middle to east coast
- The forecast then continually shifted west, and we planned for a more significant event
- Resource acquisition and lodging were challenging due to competition from other utilities and roughly 7 million Florida residents evacuating
- Foreign resources acquired through SEE, regional mutual aid groups and contractor networks:
 - 2,431 distribution line personnel
 - 645 tree workers
 - 174 damage assessors
 - 137 call takers



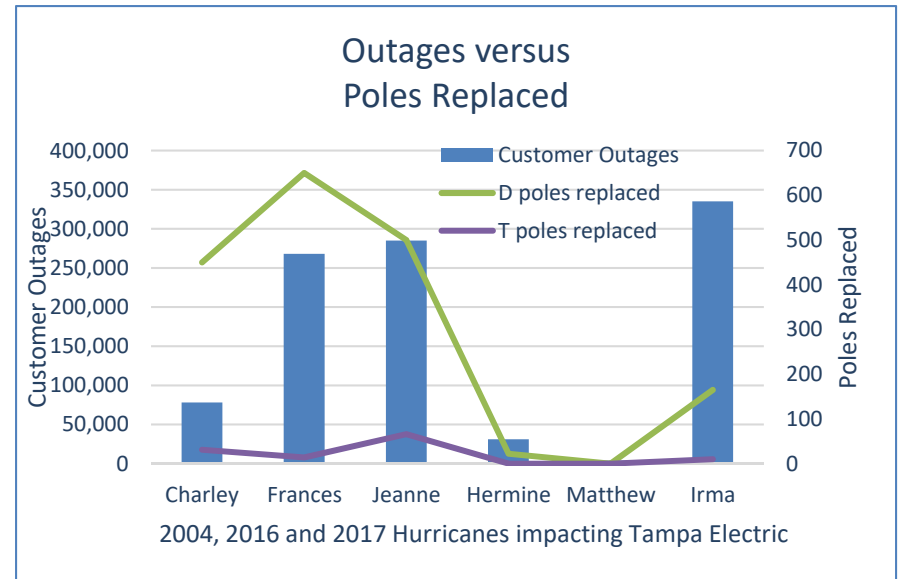
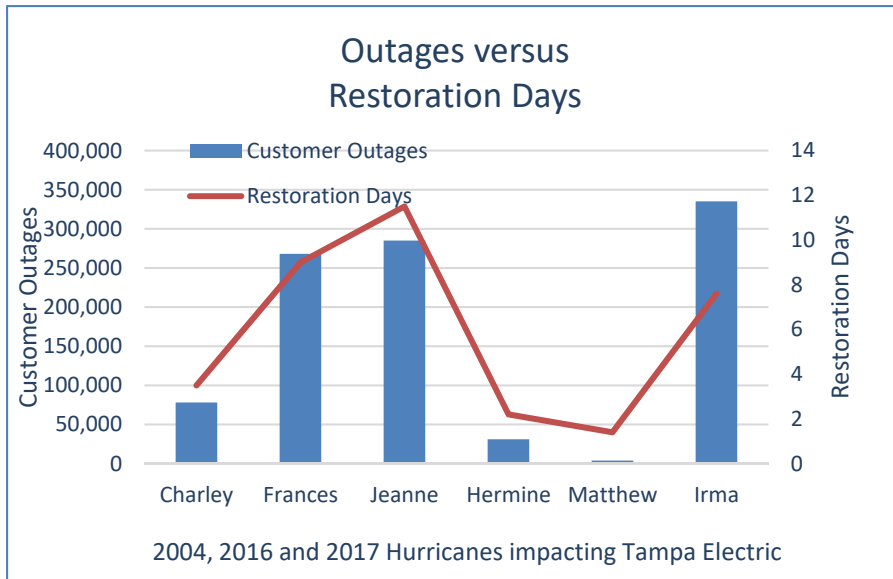
Preparation and Restoration - Irma

- Outages began on Sunday, Sept. 10, peaking after midnight. Sustained winds were approximately 50 mph with gusts to 76 mph.
- Restoration began Sunday in the field and continued Sunday night through transmission switching. Outages peaked at 335K, with roughly 425K of 752K customers affected.
- While there were transmission and substation outages, these did not impede restoration
- 6 incidents bases were setup on Monday and Tuesday
- The bulk of Restoration began after 8 a.m. Monday, when winds conditions became safe
- No recordable injuries
- Approximately 3400 foreign resources utilized
- Estimated time of restoration (ETR) was established on Tuesday, based on damage assessment (Essentially all customers restored by end of day Sunday)

Preparation and Restoration – Irma Restoration Timeline



Preparation and Restoration – 2004, 2016 & 2017 Hurricane Comparisons



Storm Hardening is working - Irma was a much larger/stronger storm than 2004's, and while we had more customers impacted, there was less damage and restoration times were much quicker

Preparation and Restoration – Irma Performance of Hardened vs. non-Hardened Facilities

- Transmission
 - Over 25k transmission structures
 - Approximately 40% Steel, 40% Concrete and 20% Wood
 - Hardened 9,084 structures since 2007
 - 10 structures failed - all non-hardened wood
- Substation
 - 28 substations impacted
 - 2 transformers & 6-13kV circuit breakers required replacement

Preparation and Restoration – Irma Performance of Hardened vs. non-Hardened & Overhead vs. Underground Facilities

- Distribution
 - Approximately 263,000 poles - 24% hardened
 - 165 poles failed (.06% of pole population) including 20 hardened poles
 - 11,500 circuit miles (55% OH & 45% UG)
 - 2,300 feeder miles (76% OH & 24% UG)
 - Vast majority of repairs were OH
 - UG repairs made were typical of day to day during Summer
 - 144,000 transformers (55% OH & 45% UG)
 - Replaced 360 pole-top & 22 pad-mounted transformers
 - 516 of 738 circuits operated during the storm & 220 circuits locked out
 - Over 1,400 wire-down reports

Preparation and Restoration – Forensics Analysis of Irma Data

Based on root cause analysis of data, the following conclusions were drawn:

- Damage categories include broken poles, conductor (wire down) and cross arm broken
- Pole damage (broken) was predominately due to wind damage and wind borne debris
- Conductor damage was generally due to debris hitting the conductor and/or hitting and breaking cross arms
- Total infrastructure impacted rates for all affected categories range from 0.06% to 7.69% within the survey areas only
- There was no transmission structure damage; three leaning structures were reported

Restoration Challenges

- Trees outside ROW
- Trailing “bands”
- Storm Path Uncertainty
- Limited Resource Availability
- Returning Evacuation Congestion

Tampa Electric – Customer & Stakeholder Communications

TECO received **more than 500,000 calls**, a near **400% increase** over a typical week. The **IVR handled more than 70%** of the calls through our automated systems

About **115,000 calls handled by live agent**; **153%** of a typical week. A little **over 5%** of these calls represent gas emergency calls.

Telephone service level was **~ 90% of calls answered in 120 seconds or less**, with an average speed of answer of **47 seconds**. Abandoned calls were **~6%**.

Call center mutual aid partners, including our New Mexico sister affiliate, **fielded about 22,000 calls** during the highest call volume days, representing **20% of total volume**.

We sent **500,000 emails** to customers in advance of the storm and we placed **~54,000 automated restoration calls** during restoration.

Hurricane Irma Customer Experience Restoration Efforts

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A balance of technology &
human touch, plus frequent
& direct communication

Our Outage Map received nearly **2M clicks** with more than **1.2M unique visitors**, a **2356% increase** from normal volume.

Of the nearly **300,000 outage tickets reported**, **more than 65% were handled through automated systems** – **14% on-line; 8% text and 44% through the IVR**.

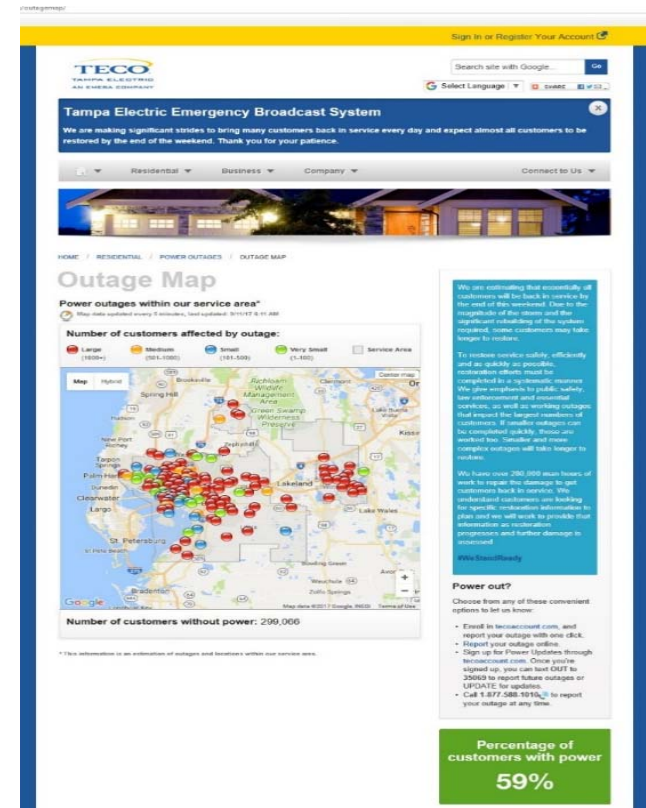
Power Update enrollments increased by **nearly 27,000, a 217% increase** – approximately **40,000 customers** are now enrolled.

Portal enrollment **increased 4%** with **nearly 410,000 customer accounts created**.

Nearly **1,000 personal outbound calls** were placed to customers to verify if services were on or off, and to ensure they knew they **were not forgotten and crews were working through the night to restore their power**.

Customer Communications – Outage Map

- Messaging was updated through the storm, advising customers what to expect:
 - **Pre-storm** – Planning, safety and reporting an outage
 - **During storm** – Safety, we are standing by to serve, prepare for extended outages
 - **Restoration Begins** – Assessment under way, reporting an outage, plan for extended outages, working as safely and efficiently as possible around the clock.
 - **Restoration in Full Swing** – Global ETR, working around the clock to restore as safely and quickly as possible, reporting an outage
 - **Nearing completion** – If you are still out, please contact us, thank you for your patience & support, working around the clock, nobody will be forgotten
 - **Essentially complete** – Thank you for your patience and the opportunity to serve



Tampa Electric – Customer & Stakeholder Communications

Data from Sept. 6 to 17

Key Messages

- Storm preparation
- Storm safety
- Line down safety
- Generator safety
- **Signup → portal**
- Update your contact info
- **Signup for PowerUpdate**
- Rumor control
 - Robbery
 - Generator shutdown
- **Photos and videos of our restoration work**
- Promote our **restoration process** video
- Thank you

Communication Channels

- Social Media: Tampa Electric, Peoples Gas, TECO Energy
- Twitter
- Facebook
- YouTube
- Power Blog
- TECO TV network
- Tampa Electric email marketing list
- Media coverage
- Direct email
- TECO's IVR Systems
- TECO Customer Portal
- Public Websites

Impact

- 3.6 million impressions on Tampa Electric Facebook
- 9,300 accounts engaged with Twitter posts
- Caught and corrected several online rumors
- Customer sentiment transformed from negative on Monday (9/11) after the storm to 75% neutral or positive by Sunday (9/17)
- Thursday Sept. 14 four media channels carried live stories from Fairgrounds incident base
- Media used outage map regularly for reporting
- Avalanche of "Thank You, TECO" as online photos and videos took effect
- Restoration process video viewed > 31,000 times

Customer Communications



Safety messages were a major part of our posts. We ramped up generator safety during recovery.



^ Our target rate for posting: 1 per hour. At **peak we were posting every 20 minutes**, as fast as we could process photos and videos, for days.

< **Outage percentage** updates were among the most shared posts. The outage thermometer was effective and used by several media outlets.



^ Team member videos were popular. **Company President's thank you** video had over **54,000 impressions**



^ Our hints and tips posts were popular and effective.



< Images & videos posted with locations garnered more positive responses (and a very few complaints)

Report covers data from Sept. 6 to 17

Key Successes

- Safety – no serious injuries or motor vehicle accidents
- Implemented storm model to manage over 3,400 external resources – largest ever
- No serious environmental incidents
- Critical facility work – Hospitals, nursing homes, water treatment – prioritization and triage process
- Call Center – Mutual Assistance Routing Systems (MARS) handled 20% of calls; 47 seconds was average speed of answer
- Targeted, proactive, and consistent messaging to key officials and governmental agencies
- Developed global estimated time to restoration (ETR) after 24 hours, based on damage assessment models, and Tampa Electric met that goal
- Interactive customer communications and social media posts keeping customers aware of restoration efforts

Key Opportunities Identified

- Continued close coordination with local governments on establishing restoration priorities
- Improve Wire-down process – need to refine and add resources
- Enhance storm plan for larger event requiring significantly more resources
- Train internal and external management teams to operate additional incident bases
- Develop enhanced granularity on ETRs to meet customer expectations
- Streamline outage communication technologies
- Implement technology to gather damage assessment data from field and incorporate into Outage Management and Work/Resource Management Systems more efficiently