

Historic February Ice Storms & Planning for the Future

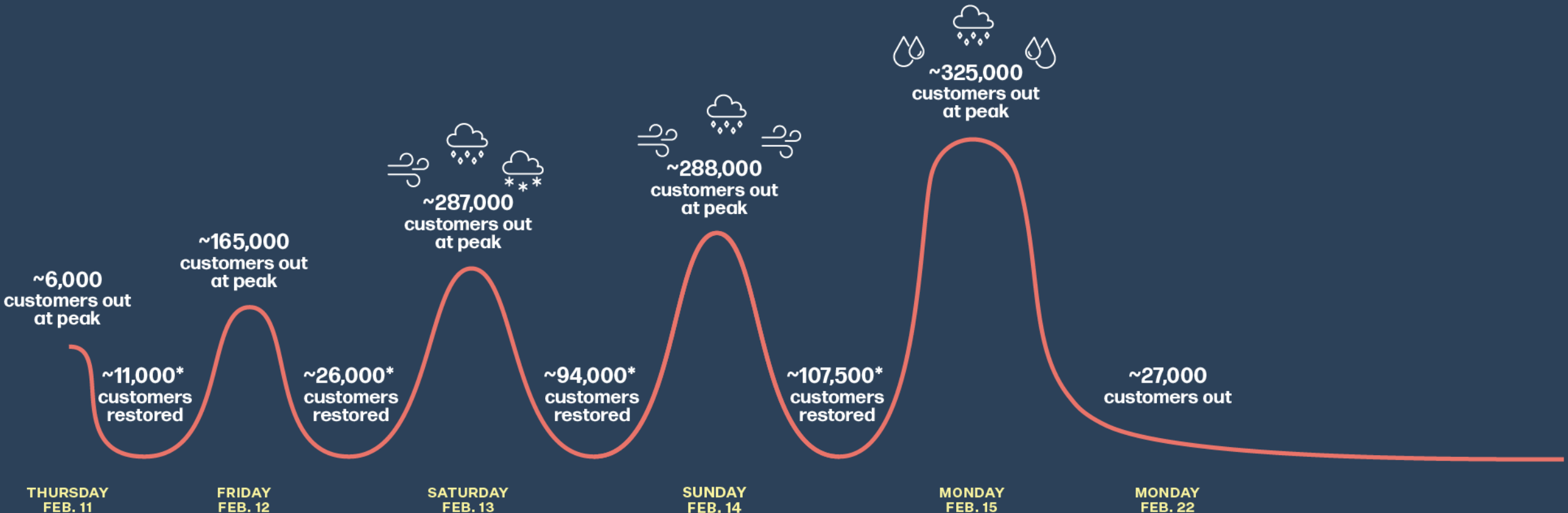
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Historic set of storms: customer impact and restoration

February historic set of storms: customer impact and restoration



*Since 2/11

February 2021 winter storms – by the numbers

Restoration totals:

- **759,185** Customers restored (**217,605** customers were restored more than once)
- **256** Feeders restored
- **20** Substation restored
- **401** Miles of transmission line restored
- **12,733** Wire downs restored

Equipment replaced:

- **3,906** Crossarms
- **1,165** Poles
- **1,223,949 feet or 231 miles** Wire/cable
- **1,110** Transformers
- **2,099** Fuses/cutouts
- **16,939** Insulators
- **74,831** Splices

Storm Personnel:

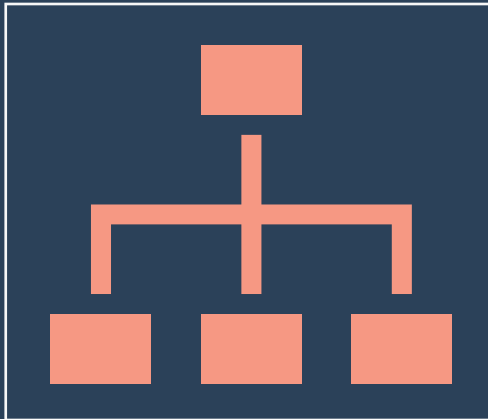
- **988** Line crew personnel including **44** mutual assistance crews & **200** contract crews
- **220** Vegetation crews
- **234** Wire down patrols
- **40** Damage assessment teams
- **105** Flaggers
- **340** Customer service advisors
- **616** PGE support personnel



Accelerating operational resilience

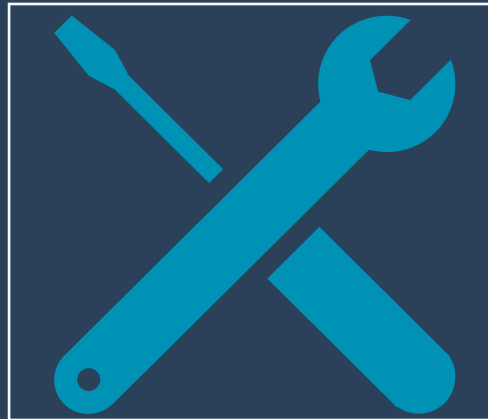
Meeting customer and community expectations for outage response & incident management

Incident Management Team



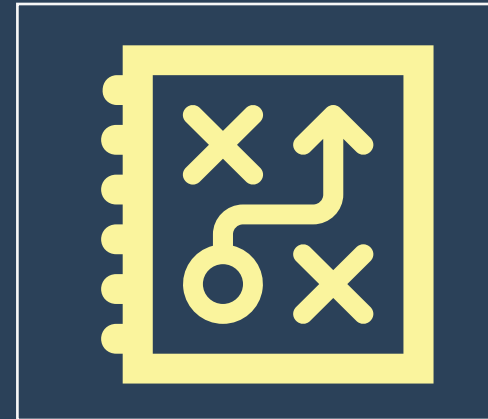
- Situational unit
- Enterprise-wide outage management plan & emergency roles
- Labor pool unit
- Expand CIMT's command, control, and coordination into field
- Aligning and coordinating resources during outage response
- Crisis Management Team

Tools & Equipment



- Portable generators
- Portable energy storage
- Device batteries
- Tablets
- Contract crew work tracking tool
- Public information tools

Operational Plans



- Emergency plan orientation
- Staging site operational plan
- End-to-end assessment process
- Outage management manual
- Wire-down, wire-watcher and damage assessment program

Supply Chain



- Fuel supply
- Storeroom readiness
- Partnerships
- Materials distribution centers
- Expand facility capabilities
- Critical materials & service provider requirements
- Expanded services tactics
- Inventory management

Accelerating infrastructure resilience

Meeting customer and community expectations for resilient power delivery

Wildfire Mitigation



- Fire risk assessment & modeling
- Data strategies & situational awareness
- **Design & construction standards**
- **Inspection & maintenance plans**
- **Advanced Wildfire Risk Reduction (AWRR) Vegetation Management**

Ice Storm Learnings



- Transmission event learnings
- Telecom event learnings
- Texas energy crisis event learnings
- **Hardening standards**
- **Enhanced Vegetation Management (EVM)**

Customer Resiliency Planning



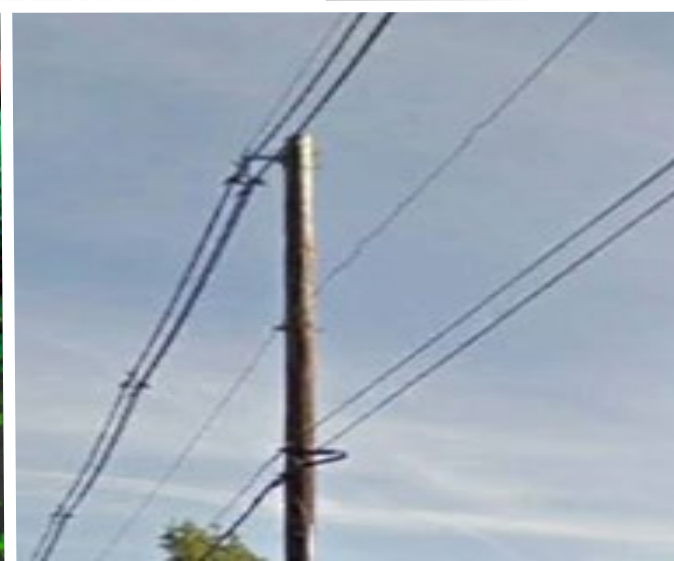
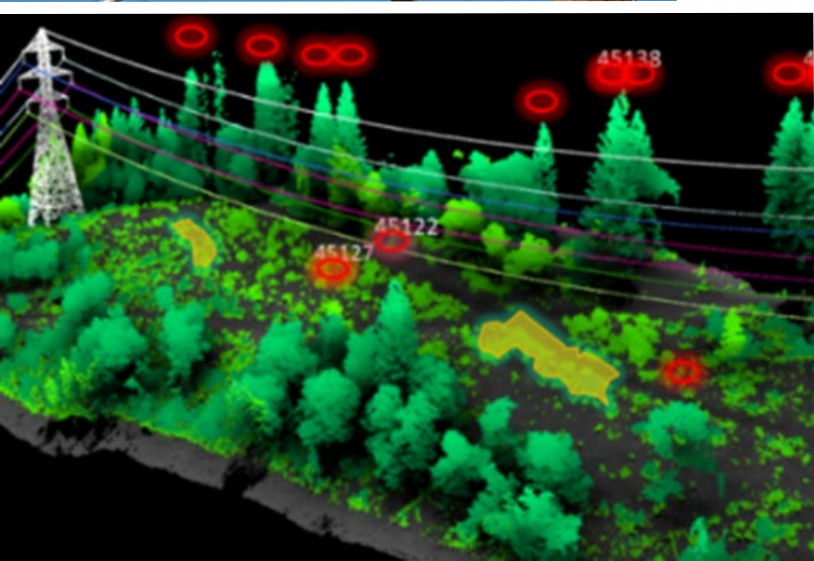
- Resiliency metrics
- Pole risk model & full pole inspection
- Planning criteria updates
- Critical customer reliability assessment
- Community engagement & customer engineer expansion
- **Mt Hood improvements**
- **Willamette Valley improvements**
- **Critical customer improvements**

Data Resiliency Planning



- Wide Area Network (WAN) joint IT/OT planning
- Telecom single points of failure
- INOC telecom design
- Telecom risk model
- **AMI infrastructure improvements**
- **WAN improvements**

Resilience & system hardening tools



Enabling energy resiliency: Beaverton Public Safety Center pilot

- Completed in Fall 2020
- Designed for police and emergency management
- PGE contributed more than \$1.5 million to the pilot project
- City owned:
 - 330 kW Solar
 - 1 MW Generator
- Utility Owned:
 - Microgrid Controller
 - 250 kW / 1 MWh Battery



Improvements and next steps

1

Customers **want** to know we've created **a reliable and resilient system.**

2

Customers **expect and deserve accurate** and timely information about the outage impacting them.

3

Partnership and collaboration is the **key to serving our customers and communities.**



**Let's
meet the
future
together.**

