



Pasadena Water and Power

Impacts on Power Distribution and the City's Response During the Recent Excessive Heat Event

City Council
September 16, 2024



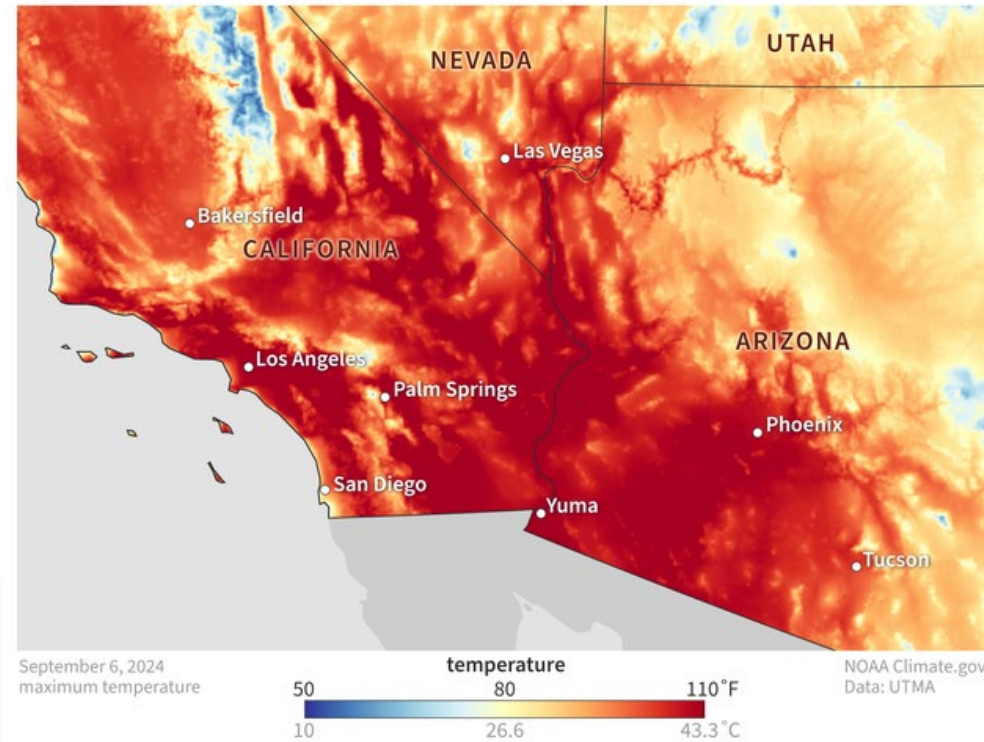


Extreme Heat Conditions in Southern California Impacted Utilities Region-wide

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- Record-breaking to near record-breaking extended heat conditions
 - > Wed 9/4 through Mon 9/9
 - > Peak on Friday, 9/6
- Extreme heat conditions caused power outages across the region

Triple-digit daytime heat bakes southern California, Nevada, and Arizona



Daytime high temperatures on September 6, 2024, across much of southern California, Nevada, and Arizona, were 100 degrees or more (red). Cooler temperatures (blue, yellow, and orange) mark higher elevations—mountains, buttes, ridges, and the southwest corner of the Colorado Plateau in Arizona. NOAA Climate.gov image using data from NOAA's Real-Time Mesoscale Analysis (RTMA/UTMA).



Heat wave knocks out power to thousands of Southern California homes

Los Angeles Times

Hollywood Bowl cancels show after power outage amid L.A. heat wave



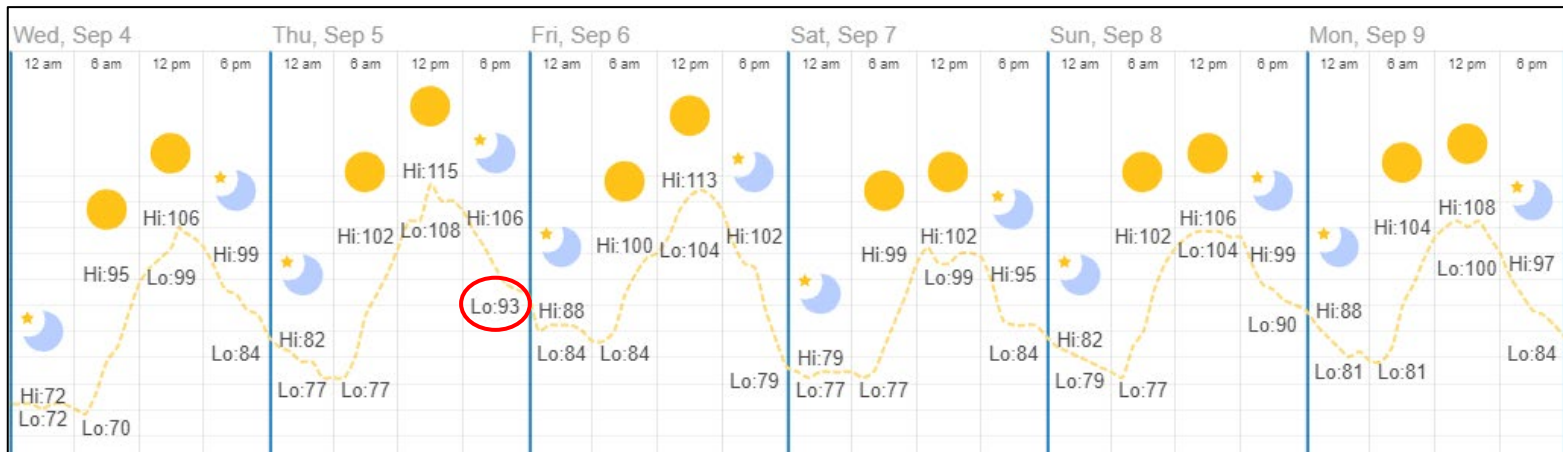
Thousands in Southern California lose power during heat wave



Pasadena Also Impacted by Extreme Heat Wave

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- During extent of 6-day extreme heat event, Pasadena experienced 11 localized outages
 - > Crews on standby allowing for prompt response to outages
 - > Power restored to affected customers within hours or overnight
- Pasadena critically impacted on Fri 9/6
 - > 115 degrees ambient temperature at Glenarm Power Plant
 - > New all-time system high peak load of 330.8 MW
 - > Extreme heat conditions triggered power plant system component shutdowns and automatic preventive measures to safeguard critical equipment from significant damage





Pasadena Provided Critical and Immediate Response for Overall Continued Reliability

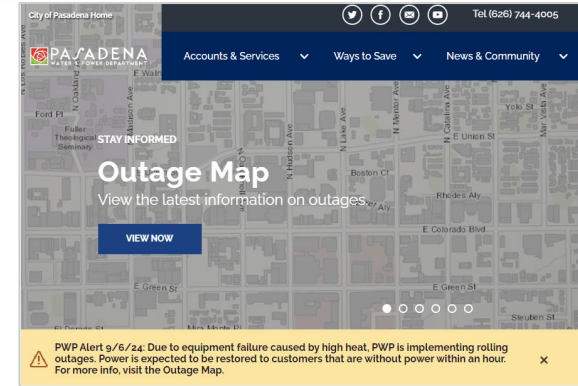
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Emergency preparedness

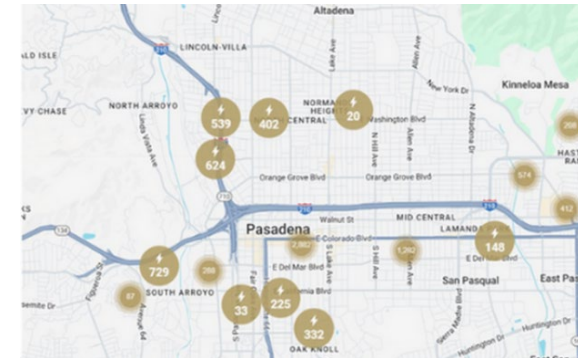
- > Crews and equipment available, ready to respond
- > Early measures taken, including installing additional cooling systems at power plant
- > Protocols in place for emergency response
- > Communication systems established

Quick action taken to protect the system, communicate with customers, and restore power

- > Implemented immediate load shedding (rotating outages): maintained safe thresholds and prevented potential cascading system-wide equipment failure
- > Sent system-wide customer notifications
- > Safely restored power plant equipment, restarted units, and stabilized the system within 1.5 hours
- > Concluded rotating outages, restored power to impacted customers, and continued to meet loads through remainder of extreme heatwave event



PWP website front page during heat wave



Rotating one-hour outages implemented, preventing system equipment damage

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Extreme Heat Impacts and Response

Pasadena Water and Power

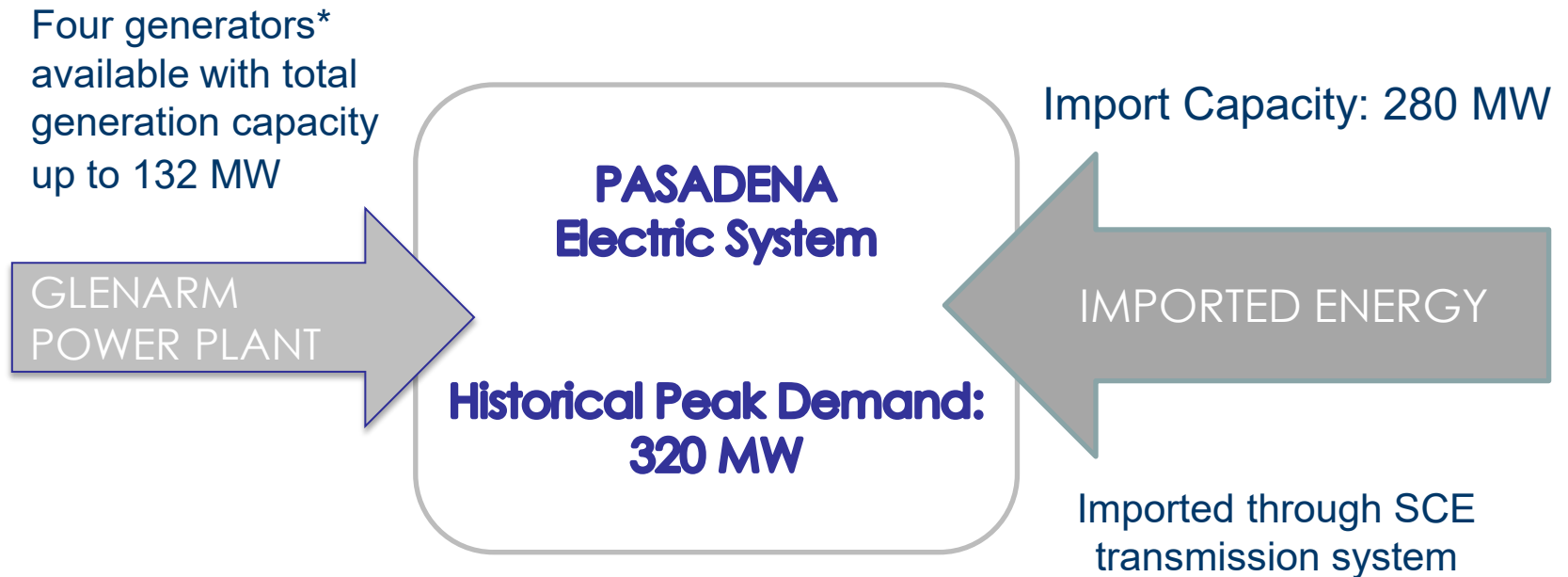
Additional Details



Ready to Supply Power System Demands with Imported and Locally Produced Energy

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Available Capacity to Meet Demands



*GT-5 out for repairs (66 MW)



Glenarm Power Plant Supplies Electricity to Meet Load Above Import Capacity

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Power Supply Balance Prior to Units Going Offline 9/6/2024



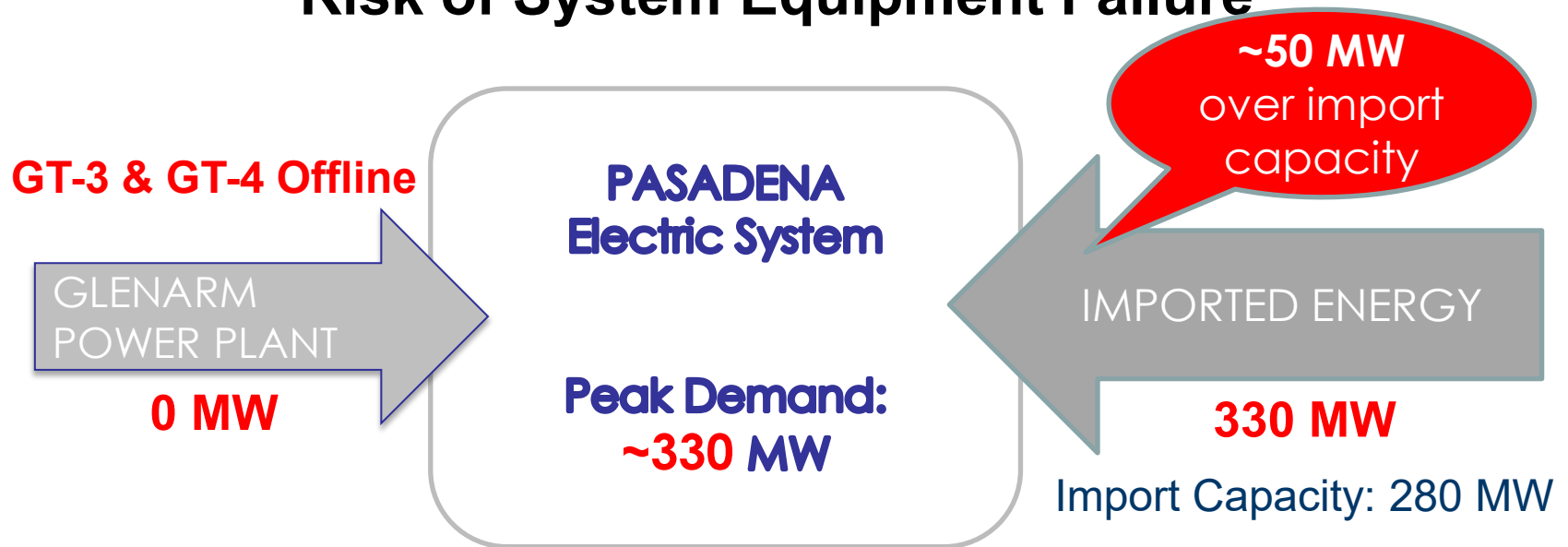
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Glenarm Power Plant Supplies Electricity to Meet Load Above Import Capacity

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**Extreme Heat Conditions Tripped Units Offline
Demand Greater than Import Capacity
Risk of System Equipment Failure**



GT-3 & GT-4 offline as main gas compressor tripped due to high heat, and redundant gas compressor failed to start due to cooling system issues

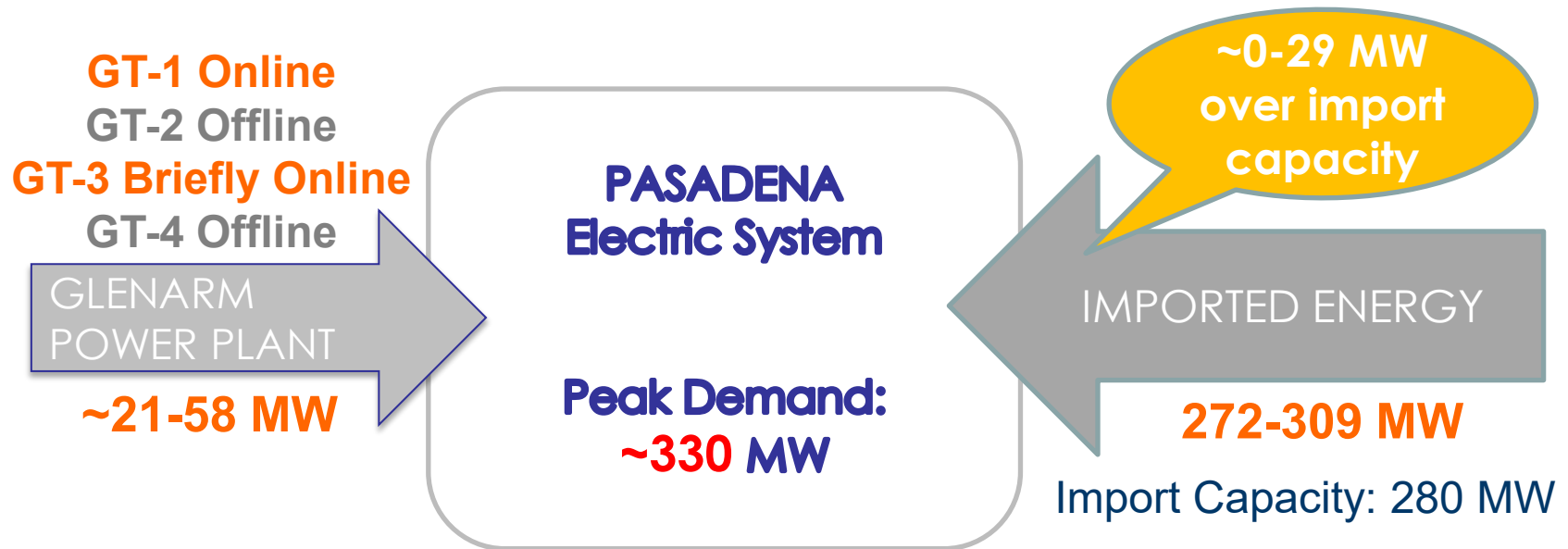
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Glenarm Power Plant Supplies Electricity to Meet Load Above Import Capacity

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Immediately Worked to Bring Units Online to Avoid Load Shedding



GT-2 unable to synchronize due to voltage out of phase issues;
GT-1 generated power for 53 minutes until extreme high heat tripped the unit

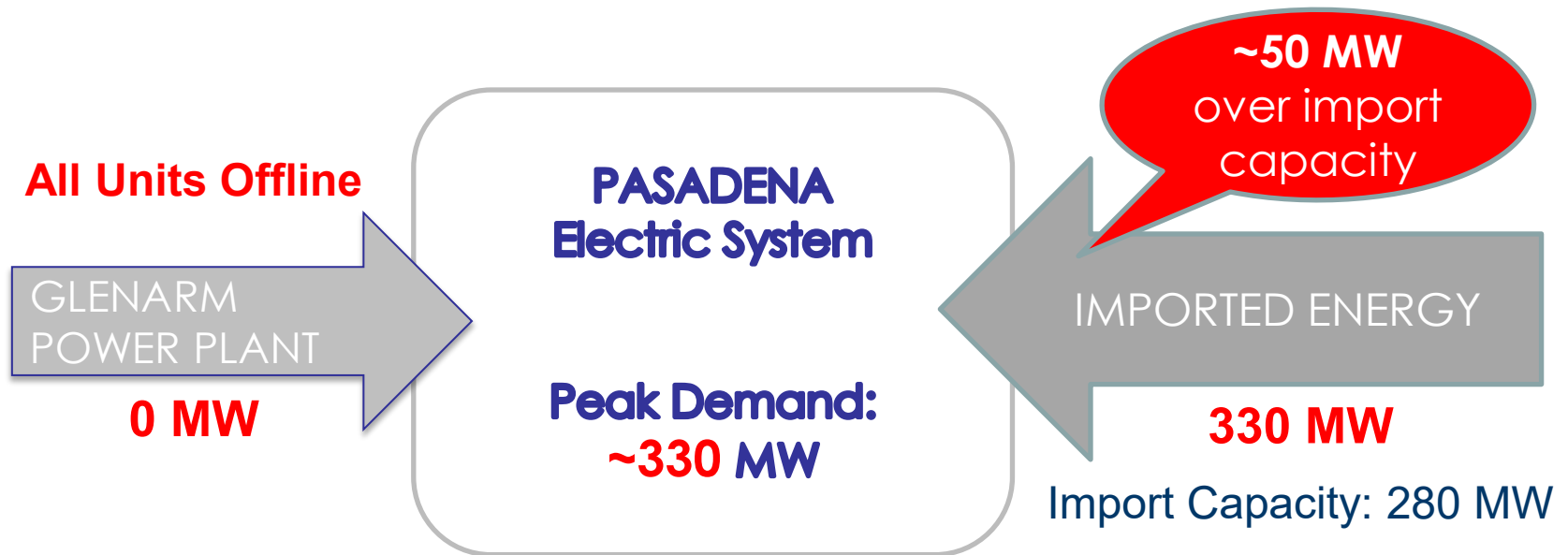
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Glenarm Power Plant Supplies Electricity to Meet Load Above Import Capacity

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Full Loss of Glenarm Power Plant Production (3:54pm)
Required Immediate Load Shedding (4:02pm)
Preventing Potential System Equipment Failure



Rotating outages implemented for 1-hr periods;
Approximately 12,000 customers impacted (between 15 min to 1 hr max)

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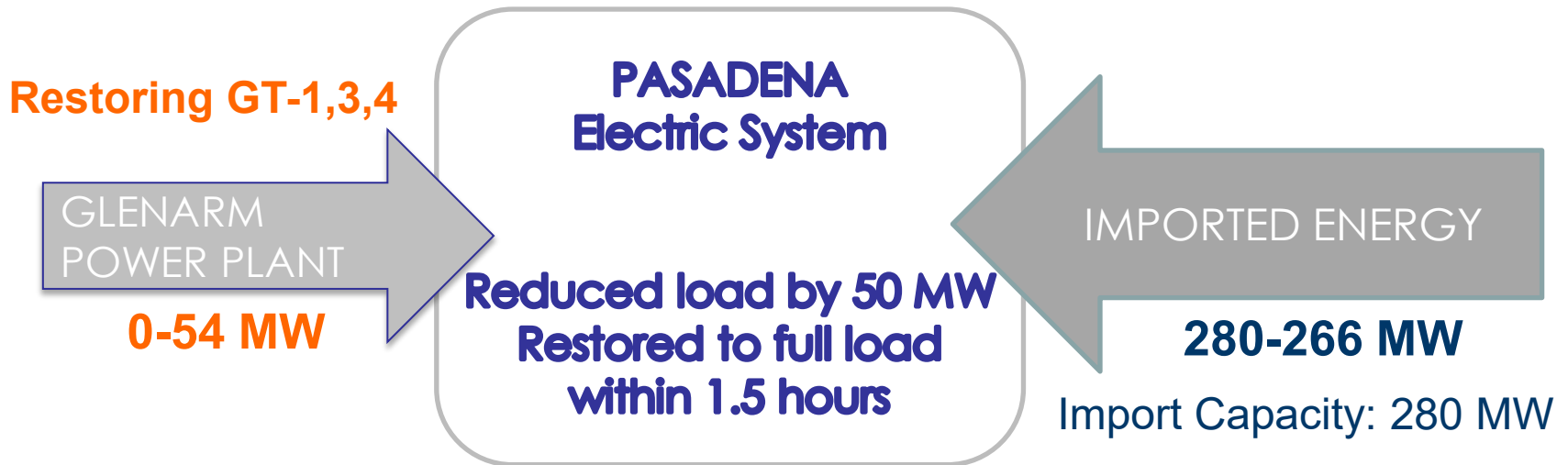


Glenarm Power Plant Supplies Electricity to Meet Load Above Import Capacity

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4:02 p.m. – 5:21 p.m.

Rotating Outages (Load Shed) ~50 MW



Rotating outages concluded at 5:21 p.m. after steady production verified
Continued to generate power to meet loads through extreme heatwave

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Continued Communications throughout Extreme Heat Event

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- Promoted emergency preparedness and energy conservation prior to extreme heat event
 - > Working closely with City PIO
- Quickly notified customers
 - > When critical load shedding was required, staff implemented "robo-calls" and emails to all PWP customers via Everbridge
 - Due to critical time constraints, initial notification sent shortly after rotating outages implemented
 - > Follow up notification sent when rotating outages concluded
- Coordinated emergency messaging with City PIO
 - > Immediate and ongoing communication with PIO
 - > Coordinated responses to multiple news media requests

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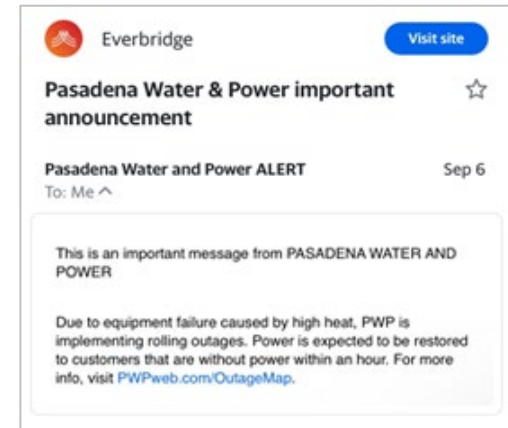
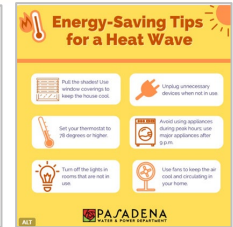
Pasadena Star-News



- > Social media support   

- PIO team posted to City social media (X/Twitter, Facebook, Instagram)
- PWP team posted to department's social media (X/Twitter & Facebook)

- > PWP front webpage changed to direct customers to outage map





Continue to Enhance Systems for Reliability

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- **Cooling systems at Power Plant**
 - > Installed mister/sprinkler system for gas compressor
 - > Created shade for the emissions control load center and used a fan for cooling
 - > Augmented evaporative cooling system with purchase of 2 additional large units
 - > Considering installing a HVAC system for the gas compressor building and permanent shade structure for emissions control load center
- **Improving communication systems**
 - > Developing customer notification messaging system to incorporate multiple languages and proactive messaging
 - > Continue outreach for medical device registration.
 - Recent activity:
 - Bill inserts (Mar/Apr, Sep/Oct), advertising (print/digital) social media, City Manager newsletter, PWP newsletter
- **City and community continue to step up**
 - > Crews continue to maintain reliable services and remain ready to respond
 - > **Thank you to the community and other city departments!**

Do you rely on a medical device for life-support?

Help PWP plan and better respond to emergencies and power outages by informing us of medical equipment in your home.

Households with qualifying equipment can also register for a monthly bill credit. Update your account by calling Customer Service at (626) 744-4005.

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WATER & POWER DEPARTMENT

PWPweb.com/EmergencyPrep