

Liberty Utilities Cold Weather Preparedness

An aerial photograph of a power plant facility at sunset. The sun is low on the horizon, casting a warm, golden glow over the scene. In the foreground, there are several large industrial buildings, including a tall smokestack and a large rectangular structure. To the right, there are several large, circular cooling towers. The facility is situated near a wide river that flows through a wooded area in the background. The sky is filled with soft, orange and yellow light from the setting sun.

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Winter Storm Uri (Feb 2021) extreme weather picture



Upcoming Cold Weather Preparedness

- **Plants have formalized the winterization processes into Policies, Procedures & operational documents to tackle Extreme Weather effectively. This includes:**
 - **1. Responsibilities – identification of critical staff responsible for which portion of extreme weather plan**
 - **2. Training – who must be trained, trained on what & frequency of training for extreme weather**
 - **3. Action Plan – Execution of all Preventive Maintenance work orders beforehand to prepare for cold weather**
 - **4. Upgrades – All identified deficiencies from insulation and heat tracing inspections completed**
- **Plants have conducted heat trace/insulation inventory & closed identified gaps**
- **Stocked 4.6 Million gallons of fuel oil for 9 days of generation at Energy Center**
- **Stocked 95% of the fuel tanks at State Line CC for 7 days of generation**



Wind Farms: Neosho Ridge, North Fork Ridge, Kings Point wind farms

- **Purchased & Installed the optional cold weather package which include oil heaters to allow operation in cold weather**
 - With cold weather packages, operations possible at – 30 deg C (- 22 deg F)
- **Turbines are designed to operate in extreme weather/icing until controls trip them, if safety threshold is crossed to provide maximum generation**
 - Wind Turbines trip (electrically disconnect) when adequate icing occurs
 - Shutdown can occur as wind turbine performance drops as ice accumulates and generator shaft slows
 - Once a turbine trips from low generator input shaft speed due to icing, when adequate ice shed occurs, the turbines will automatically re-connect to the system



Some Cold Weather recent Capital Projects

- **HRSG wind break panels**



- **Piping insulation upgrades**



Sample of executed Cold Weather PM's

PM CT1HT01	PM for Unit 1 heat trace inspection
PM HTRC001	PM for SLCC heat trace inspection
PM CT1EVC01	PM to drain Unit 1 evaporative coolers for winter
PM EVAP21	PM to drain 2-1 evaporative coolers for winter
PM EVAP22	PM to drain 2-2 evaporative coolers for winter
PM CT1HTR01	PM to check all fixed space heaters on Unit 1 for winter
PM HTRS003	PM to check all fixed space heaters on 2-1 for winter
PM HTRS004	PM to check all fixed space heaters on 2-2 for winter
PM HTRS001	PM to check all fixed space heaters in outer buildings for winter
PM HTRS002	PM to inspect heaters in Common Service Buildings for winter
PM TARP002	PM to install HRSG skirting for winter on 2-1 and 2-2



T&D: Transmission and Distribution Operations

➤ **Transmission**

- Review event forecast and path
- Review Emergency Operating Plan
- Opened Public communications in advance of storm event
- Review critical customer list

➤ **Distribution**

- Review Emergency Operating Plan
- Phase load balancing and Relay settings
- Heating system inspection in cabinets and switchgear
- Pre-positioning of personnel in advance of any load shedding event



Thank you

