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<p style="text-align: center;"><b>Duke Energy Regulated &amp; Renewable Energy Seasonal Preparation Guidelines</b></p> <p style="text-align: center;"><b>Information Only Procedure</b></p> <p>Allowed for frequently completed work activities that are of low complexity in nature. Incorrect execution of an information use procedure poses no immediate adverse effects to public or personnel safety or plant equipment. Information Use procedures are within the knowledge and skills of a typical qualified performer.</p>	Procedure No. RRE-OPR-NA-GDLN-OP-0005						
	Revision No. 000						
	Enclosures Included? Yes						
<p><b>Approvals:</b></p>  <table border="0" style="width: 100%;"><tr><td style="text-align: center; width: 60%;">_____ Brandon K. Sipe <b>Director - Fleet Operations</b></td><td style="text-align: center; width: 40%;">Date: ____ 6/12/17 ____</td></tr><tr><td colspan="2"> </td></tr><tr><td style="text-align: center;">_____ Bryan P. Walsh <b>General Manager - Organizational Effectiveness</b></td><td style="text-align: center;">Date: ____ 6/12/17 ____</td></tr></table>		_____ Brandon K. Sipe <b>Director - Fleet Operations</b>	Date: ____ 6/12/17 ____			_____ Bryan P. Walsh <b>General Manager - Organizational Effectiveness</b>	Date: ____ 6/12/17 ____
_____ Brandon K. Sipe <b>Director - Fleet Operations</b>	Date: ____ 6/12/17 ____						
_____ Bryan P. Walsh <b>General Manager - Organizational Effectiveness</b>	Date: ____ 6/12/17 ____						

DOCUMENT REVISION DESCRIPTION

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## 1. Purpose

- 1.1 The purpose of the seasonal readiness guideline is to describe the process used to prepare the fleet and/or individual stations for safe and reliable operation during the summer and winter periods. The seasonal readiness guideline should be used in conjunction with site-specific procedures, maintenance tasks and policies to create a complete and thorough seasonal readiness program.
- 1.2 **Winter:** the most prevalent disruptive weather condition. Freezing conditions in the plant areas, with prolonged low temperatures that penetrate walls, insulation, ground depth, etc. In addition, winds that intensify the freezing process are also a consideration. A Polar Vortex further increased the risks due to extreme cold and prolonged durations.
- 1.3 **Summer:** the next most impacting season with warm to hot conditions that challenge the reliability of many components. Here the challenge will be to maintain cooling of running equipment to within its design operating range. The exchange of heat between components and the ambient air and cooling water is significantly decreased, allowing heat to build to unacceptable levels. High temperatures result in shortened lives of equipment, degrading lubrication quality, electronic component failures, etc.
- 1.4 **Other seasonal considerations:** Spring and fall are sub-conditions of either winter or summer; however, short lived and intensive conditions may also need consideration. These may include and are not limited to the following:
  - Thunder storms
  - Hurricanes
  - Tornados
  - Flooding
  - Drought
  - Wind and sand storms
- 1.5 This guideline is expected to be a living document, to be updated as more definitive fleet checklist items are identified.

## 2. References

- 2.1 EPRI Seasonal Readiness Guideline - 3002003216

## 3. Definitions

### 3.1 Polar Vortex

A meteorological phenomenon that is experienced once or twice per decade where there is a breakout of a very cold polar air mass to more southerly latitudes than is typical. This phenomenon, which has been called the Polar Express or Polar Vortex, can introduce temperatures much lower than typical for the southern latitudes, with long duration (several days to one week). If this weather pattern is accompanied by high winds, freeze protection measures can be severely compromised.



#### **4. Roles and Responsibilities**

##### **4.1 Senior Management**

- 4.1.1 Sets expectations for safety, reliability and compliance
- 4.1.2 Ensures that a seasonal preparation process exists for each operating location
- 4.1.3 Challenges individual sites in the annual seasonal preparation cycle
- 4.1.4 Supports with the needed resources for preparation, training and execution of seasonal readiness
- 4.1.5 Encourages sharing of best practices and lessons learned across the fleet and through industry associations

##### **4.2 Station/Regional Management**

- 4.2.1 Ensure site focus is on the implementation of seasonal readiness actions
- 4.2.2 Ensure site has developed a seasonal readiness guideline and available supporting documentations (procedures, maintenance items, etc.)
- 4.2.3 Ensure operational procedures/tests are conducted to prepare for season
- 4.2.4 Develop contingency and communication plans for the winter and summer seasons
- 4.2.5 Conduct a plant readiness review prior to the winter and summer months
- 4.2.6 Encourage station staff to identify potential issues that may impact safety or reliability during the winter and summer seasons
- 4.2.7 Ensure adequate resources are applied to execute the Seasonal Readiness scheduled items
- 4.2.8 Ensure lessons learned and best practices after each season are discussed and incorporated into the seasonal readiness documentation

##### **4.3 Seasonal Readiness Coordinator (if needed)**

- 4.3.1 Responsible for facilitating seasonal readiness activities at a plant/site location
- 4.3.2 Responsible for communication to plant management the status of seasonal readiness preparations and any associated support required
- 4.3.3 Leads the site seasonal readiness team and facilitates team meetings
- 4.3.4 Facilitates the lessons learned and best practice review meetings and ensures all items are captured in plant documentation



**4.4 Site Staff**

- 4.4.1 Perform seasonal readiness preparations and execute seasonal readiness activities as directed by site procedures, policies and management
- 4.4.2 Identify potential issues that may impact safety or reliability during the winter and summer seasons
- 4.4.3 Feedback results from execution of readiness program, such as identifying insufficient heating or insulation, requirements to add heaters, or employ added cooling not considered part of the existing readiness program.

**5. Precautions and Limitations**

- 5.1 N/A

**6. Health and Safety**

- 6.1 At Duke Energy, Health and Safety is a Core Company Value. Employees are responsible for maintaining the highest regard for safety while planning and conducting work. Employees are also responsible for ensuring a safe work environment exists for themselves and their coworkers.

**7. Safety Systems and Functions**

- 7.1 N/A

**8. Prerequisites/Initial Conditions**

- 8.1 N/A

**9. Winter Season Program**

**9.1 Winter Readiness Coordinator and Team**

- 9.1.1 Identify a winter readiness coordinator, if needed.
- 9.1.2 Identify a winter readiness cross functional team, if needed, with a member from Operations, Maintenance and Engineering
- 9.1.3 Develop a regular meeting schedule for the winter readiness team
- 9.1.4 During the winter readiness team meetings, review the following:
  - 9.1.4.1 Winter Readiness Punch List and Schedule to complete
  - 9.1.4.2 Winter Readiness Contingency Plans
  - 9.1.4.3 Winter Readiness
- 9.1.5 At the conclusion of the winter season, schedule a debrief to review lessons learned



**9.2 Preparation Activities**

- 9.2.1 Develop a site-specific punch list to prepare the site for winter operation and use to track applicable winter readiness activities
- 9.2.2 Perform winter readiness system walkdowns to identify any deficiencies and issues that will need repair
  - 9.2.2.1 Capture all issues within Maximo and flag for winter readiness
- 9.2.3 Review Maximo to identify any deficiencies and issues that will require repair prior for the winter months
  - 9.2.3.1 Ensure applicable PMs are generated and scheduled
  - 9.2.3.2 Ensure all items are properly flagged/coded for winter readiness and tracked
  - 9.2.3.3 Schedule all winter readiness items within the normal work management process for completion by Oct. 15
  - 9.2.3.4 Develop contingency work orders for items
- 9.2.4 Conduct winter readiness training and crew briefings in preparation for the winter months
- 9.2.5 Develop contingency work orders for the winter season
- 9.2.6 Develop communication plans for site shutdown, staffing changes and emergent events
- 9.2.7 Verify inventory of all supplies, PPE and material needed for the winter season
- 9.2.8 Perform a site challenge review to ensure the site is prepared for the winter season

**9.3 Execution Activities**

- 9.3.1 Initiate additional operator rounds for the winter months
- 9.3.2 Review new work order reports daily and identify any items applicable to winter readiness
- 9.3.3 Perform maintenance on winter readiness items in a timely fashion

**9.4 Restoration and Lessons Learned**

- 9.4.1 Restore all winter readiness items to normal lineups
- 9.4.2 Secure winter-related operator rounds
- 9.4.3 Conduct a critique of winter performance
  - 9.4.3.1 Use the corrective action program to capture lessons learned





- 9.4.3.2 Incorporate lessons learned into procedures, PMs, Job Plans, training, etc.

## **10. Summer Season Program**

### **10.1 Summer Readiness Coordinator and Team**

- 10.1.1 Identify a summer readiness coordinator, if needed.
- 10.1.2 Identify a summer readiness cross-functional team, if needed, with a member from Operations, Maintenance and Engineering.
- 10.1.3 Develop a regular meeting schedule for the summer readiness team
- 10.1.4 During the summer readiness team meetings review the following:
  - 10.1.4.1 Summer Readiness Punch List and Schedule to complete
  - 10.1.4.2 Summer Readiness Contingency Plans
  - 10.1.4.3 Summer Readiness
- 10.1.5 At the conclusion of the summer season, schedule a debrief to review lessons learned

### **10.2 Preparation Activities**

- 10.2.1 Develop a site-specific punch list to prepare the site for summer operation and use to track applicable summer readiness activities
- 10.2.2 Perform summer readiness system walkdowns to identify any deficiencies and issues that will need repair
- 10.2.3 Review Maximo to identify any deficiencies and issues that will require repair prior to the summer months
  - 10.2.3.1 Ensure applicable PMs are generated and scheduled
  - 10.2.3.2 Ensure all items are properly flagged/coded for summer readiness and tracked
  - 10.2.3.3 Schedule all summer readiness items within the normal work management process for completion by May 15
  - 10.2.3.4 Develop contingent work orders for items
- 10.2.4 Conduct summer readiness training and crew briefings in preparation for the summer months
- 10.2.5 Contact switchyard operator to ensure summer activities related to the switchyard have been completed
- 10.2.6 Develop contingency work orders for the summer season



10.2.7 Develop communication plans for emergent events

10.2.8 Verify inventory of all supplies, PPE and material needed for the summer season

### 10.3 Execution Activities

10.3.1 Initiate additional operator rounds for the summer months

10.3.2 Review new work order reports daily and identify any items applicable to summer readiness

10.3.3 Perform maintenance on summer readiness items in timely fashion

### 10.4 Restoration and Lessons Learned

10.4.1 Restore all summer readiness items to normal lineups

10.4.2 Secure summer-related operator rounds

10.4.3 Conduct a critique of summer performance

10.4.3.1 Use the corrective action program to capture lessons learned

10.4.3.2 Incorporate lessons learned into procedures, PMs, Job Plans, training, etc.

## 11. Recordkeeping

11.1 Execution of this guideline can result in the creation of the following record(s):

Record Description	Record Series Number
Winter Punch List and Schedule	OPS-082
Summer Punch List and Schedule	OPS-082
Completed Procedure Checklist	OPS-105

11.2 Execution of this guideline can result in the creation of the following record(s):

Record Description	Record Series Number
Procedure Deviation Form ( <a href="#">RRE-FRM-NA-0127</a> )	ADM-043
Work Order	ADM-044

11.3 This guideline has identified the records above. These records are found listed in a document known as the Records Management Instructions (RMI). The RMI is a list of business records and it contains all the important recordkeeping information such as; the file classification, retention timeframe, recommended storage locations, etc. The associated Record Series Number for each record is the unique indexing identifier within the RMI. The following is the link to the RMI where you will find the identified Record Series and the corresponding information. ([RMI](#)).



## **12. Procedure Deviation Documentation**

12.2 Any deviation from this Information Use procedure requires approval from immediate supervision providing the deviation does not conflict with the original intent of the procedure. Feedback on this procedure or associated templates should be provided to the procedure owner. Utilize the [Procedure Deviation Form](#) to document any required feedback.

### **12.3 Contingency Plan**

Critical Documents – Customers are encouraged to identify document(s) critical to work processes. A current hardcopy collection of such documents should be maintained by the customer (owner) to support the work flow during times of criticality and inaccessibility to electronic documents due to a complete system failure.

## **13. Enclosures**

13.1 Winter Readiness Items

13.2 Summer Readiness Items

## Winter Readiness Items

Winter Readiness Items				
Item	Preparation Activities <i>(items which need to be completed prior to entering the designated Season)</i>	Execution Activities <i>(items to be completed during the designated Season)</i>	Restoration Activities <i>(items to be completed after the designated Season has ended)</i>	Contingency Items <i>(items that should be ready for execution during the designated Season as needed)</i>
<b>Personnel Safety</b>	<ul style="list-style-type: none"> <li>• Conduct staff safety meetings to heighten awareness to upcoming conditions.</li> <li>• Organize routine ongoing safety briefs and crew sessions in anticipation of upcoming season</li> <li>• Inventory and store needed items for seasonal personnel safety</li> </ul>	<ul style="list-style-type: none"> <li>• Continue routine safety meetings. Ensure crew briefs deal effectively with seasonal challenges and adequate warnings to staff</li> <li>• Monitor staff performance to ensure proper safety conduct is in place</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal safety monitoring and briefing.</li> <li>• Capture any lessons learned for future seasonal preparations.</li> </ul>	<ul style="list-style-type: none"> <li>• Have extra staff as needed to reduce extreme environmental impact on normal staff.</li> <li>• Have contract in place to provide specialized seasonal services to allow plant staff to focus on operational needs of plant, while others take care of seasonal emergencies</li> </ul>
<b>Backlog and Open Work Orders</b>	<ul style="list-style-type: none"> <li>• Review the backlog and all open work orders and designate those associated with winter/summer readiness</li> <li>• Schedule all winter/summer readiness items</li> <li>• Ensure the proper resources are placed on each item</li> </ul>	<ul style="list-style-type: none"> <li>• Finalize any open work orders that may impact readiness for winter/summer operation.</li> <li>• Prioritize new work orders properly consistent with potential impact to operations under expected weather conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate work orders as needed to remove any temporary seasonal equipment, portable heaters, extra cooling units, temporary power supplies, etc</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare open work orders and resources to make anticipated repairs due to seasonal challenges, based on experience and current status of plant systems and equipment</li> </ul>
<b>System Walkdowns</b>	<ul style="list-style-type: none"> <li>• System Owners perform walkdowns on systems impacted by seasonal risks</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate Work Orders for anomalies found during walkdowns</li> </ul>	<ul style="list-style-type: none"> <li>• Capture Lessons Learned for assigned systems</li> </ul>	<ul style="list-style-type: none"> <li>• Assist in oversight of key plant areas for additional heating or protection needs</li> </ul>

Winter Readiness Items				
Item	Preparation Activities (items which need to be completed prior to entering the designated Season)	Execution Activities (items to be completed during the designated Season)	Restoration Activities (items to be completed after the designated Season has ended)	Contingency Items (items that should be ready for execution during the designated Season as needed)
Not in Demand Periods	<ul style="list-style-type: none"> <li>• Be prepared to implement needed temporary changes to plant operations to protect plant equipment for unit offline</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate temporary conditions into operator rounds, data collection efforts, and other operational procedures as needed</li> </ul>	N/A	<ul style="list-style-type: none"> <li>• Utilize Operations procedures to operate systems needed to prevent damage during extreme freezing conditions</li> </ul>
Unit Start/Fuel Issues	<ul style="list-style-type: none"> <li>• Test unit ability to run/switch to Fuel Oil as applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Assess use of Fuel Oil before peak demand as applicable</li> <li>• Initiate the unit's start sequence earlier in the event's evolution to avoid deep freezing conditions on the HRSG and the unit's steam system</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Contingency Plans	<ul style="list-style-type: none"> <li>• Organize contingency plans so that proper equipment and materials are staged</li> <li>• Develop checklists to monitor status of all contingencies.</li> <li>• Develop contingencies based on thresholds of lowering temperatures, e.g. 32, 20, 5 degrees</li> <li>• Evaluate ordering additional Hydrogen, Ammonia, Fuel Oil, Kerosene, etc. based on expected duration</li> </ul>	<ul style="list-style-type: none"> <li>• Regularly confirm status of contingent equipment and material</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate effectiveness of contingency plans, note items that require adjustment, correction.</li> <li>• Also note unused/expensive contingencies to determine if they should continue to be implemented in future years</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

## Winter Readiness Items

Winter Readiness Items				
Item	Preparation Activities (items which need to be completed prior to entering the designated Season)	Execution Activities (items to be completed during the designated Season)	Restoration Activities (items to be completed after the designated Season has ended)	Contingency Items (items that should be ready for execution during the designated Season as needed)
Lessons Learned and Operating Experience	<ul style="list-style-type: none"> <li>• Review all seasonal related events and work orders from past season.</li> <li>• Confirm that corrective actions developed from lessons learned, event reviews, and work order history are identified and scheduled to be resolved for the upcoming seasonal readiness</li> </ul>	<ul style="list-style-type: none"> <li>• Capture events and work orders that provide lessons learned for future seasonal readiness efforts</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate events and work orders for appropriate root causes and identify needed corrective actions</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
Insulation	<ul style="list-style-type: none"> <li>• Inspect insulation and identify issues</li> <li>• Repair damaged insulation</li> </ul>	<ul style="list-style-type: none"> <li>• Identify damaged insulation</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Temporary insulations</li> <li>• Portable heaters</li> </ul>
Heat Trace	<ul style="list-style-type: none"> <li>• Check heat trace circuits</li> <li>• Walkdown and inspect heat trace</li> <li>• Identify heat trace deficiencies</li> </ul>	<ul style="list-style-type: none"> <li>• Frequent operational check of heat trace circuits</li> <li>• Identify heat trace failures</li> </ul>	<ul style="list-style-type: none"> <li>• Secure heat trace circuits</li> <li>• Repair damaged heat trace</li> </ul>	<ul style="list-style-type: none"> <li>• Heat trace repair work orders and parts</li> <li>• Heating blankets</li> <li>• Temperature guns</li> </ul>
Instruments and Associated Lines	<ul style="list-style-type: none"> <li>• Inspect insulation and identify needed repairs</li> <li>• Identify critical components</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor instrument for faulty readings</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Heating supplies</li> <li>• temporary instrumentation</li> </ul>
Dampers and Louvers	<ul style="list-style-type: none"> <li>• Walkdown areas and identify issues, obstructions</li> </ul>	<ul style="list-style-type: none"> <li>• Visually inspect automatically operated equipment</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Repair as needed, thaw frozen obstructions</li> </ul>

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Area Heating	<ul style="list-style-type: none"> <li>• Walkdown to assess proper operation, check auto controls or thermostats</li> <li>• Be aware of stored chemicals and the required storage temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Increase rounds and inspections in heated areas</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Have portable heating available. Verify power and fuel supplies</li> </ul>
Low or No Flow Piping	<ul style="list-style-type: none"> <li>• Develop list for all expected operating conditions. Confirm heat trace and insulation is in good condition. Drain if not protected</li> </ul>	<ul style="list-style-type: none"> <li>• Include routine walkdown of piping to verify heat trace and insulation condition</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Establish alternate operating mode to keep flow in pipe</li> </ul>
Fire Protection	<ul style="list-style-type: none"> <li>• Confirm all dry pipes are fully drained and void of water, stagnant wet piping should be insulated and heat traced, confirm proper condition and operation, confirm all hoses are drained</li> </ul>	<ul style="list-style-type: none"> <li>• Include monitoring of fire water piping on routine observations/rounds</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Store contingency hoses to back up inoperable installed systems</li> </ul>
Lube Oil Heaters	<ul style="list-style-type: none"> <li>• Verify heaters are in proper operating condition, including control devices</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor oil temperature and heater operation</li> </ul>	<ul style="list-style-type: none"> <li>• Remove any external heaters that have been used</li> </ul>	<ul style="list-style-type: none"> <li>• Add blankets or external heaters if needed to maintain oil temperature, increase sampling for moisture if temperatures are not maintained</li> </ul>
Motor Heaters	<ul style="list-style-type: none"> <li>• Confirm proper operation</li> </ul>	<ul style="list-style-type: none"> <li>• Check idle motors to confirm heaters are warming motor</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Provide external hot dry air to keep motor warm and dry</li> </ul>



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Moisture in Air Systems	<ul style="list-style-type: none"> <li>• Confirm proper operation of air dryer systems</li> </ul>	<ul style="list-style-type: none"> <li>• Verify proper operation of air dryer systems, increase blowdown frequency of long piping runs</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal line blowdown frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Provide temporary source of dry air. Ensure connections and power supplies are available</li> </ul>
Icing of Open Systems	<ul style="list-style-type: none"> <li>• Confirm proper operation of systems to prevent ice buildup and intrusion. Test operating components and systems such as circulating water recirculation valves, intake trash rakes, wash down systems, etc.</li> <li>• Identify improperly working components and include in seasonal readiness work order scheduled work</li> </ul>	<ul style="list-style-type: none"> <li>• Increase monitoring of areas that tend to ice up during extreme cold weather.</li> <li>• Modify operator rounds accordingly to add systems and components used to prevent operational impacts due to icing of open water systems</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal rounds</li> </ul>	<ul style="list-style-type: none"> <li>• Provide standby and back up deicing capability for areas that are subject to freeze.</li> <li>• Insure sufficient staff is available to manage the potential increase in workload</li> </ul>
Treatment of Closed Loop Water Systems	<ul style="list-style-type: none"> <li>• Confirm proper levels of antifreeze treatment exist in closed systems.</li> <li>• Verify external cooling is functioning at design prior to entering summer periods. Identify any needed heat exchanger cleaning</li> </ul>	<ul style="list-style-type: none"> <li>• Increase monitoring of temperature sensitive areas</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal operations and monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Backup cooling systems or alternate connections to existing systems may be needed to support operation.</li> <li>• Prepare procedures and conditions that would require such implementation</li> </ul>



## Winter Readiness Items

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Item	Preparation Activities <i>(items which need to be completed prior to entering the designated Season)</i>	Execution Activities <i>(items to be completed during the designated Season)</i>	Restoration Activities <i>(items to be completed after the designated Season has ended)</i>	Contingency Items <i>(items that should be ready for execution during the designated Season as needed)</i>
<b>Air Flow Pathways</b>	<ul style="list-style-type: none"> <li>• Include rounds or other inspection plans to maintain air flow paths needed for proper equipment clear of snow, ice, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor routine air flow paths for obstructions. Buildup of snow can result in heating due to the insulating properties if air flow is blocked</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal rounds</li> </ul>	<ul style="list-style-type: none"> <li>• Have snow and ice removal equipment readily available to open blocked air flow passages</li> </ul>
<b>Emergency Generators</b>	<ul style="list-style-type: none"> <li>• Confirm cooling systems are protected via heating or antifreeze.</li> <li>• Develop increase rounds or operating periods to maintain operational integrity</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor equipment more frequently with special attention being paid to impact of cold weather.</li> <li>• Conduct increased test operations</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal rounds and testing</li> </ul>	<ul style="list-style-type: none"> <li>• Be prepared to run emergency generators through extreme cold weather to provide back-up capability. Have access to off-site back-up generators and connection capability</li> </ul>
<b>Fuel and Material Handling</b>	<ul style="list-style-type: none"> <li>• Review solid fuel handling system to confirm ability to manage frozen coal</li> <li>• Review capability to manage other solid materials, such as limestone, gypsum, etc. under extreme cold conditions.</li> <li>• Evaluate the use of deicing chemical treatment of systems and equipment.</li> <li>• Narrow chutes should be heated and insulated if moist solids can flow through them.</li> <li>• Evaluate the use of strainers that may become iced/plugged</li> </ul>	<ul style="list-style-type: none"> <li>• Routinely monitor heating systems that support operation of these systems</li> <li>• Implement deicing chemicals as determined appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal monitoring</li> <li>• Curtail use of deicing chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• Have backup heaters available</li> </ul>

**Enclosure 13.2  
Summer Readiness Items**

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<b>Summer Readiness Items</b>				
<b>Item</b>	<b>Preparation Activities</b> <i>(items which need to be completed prior to entering the designated Season)</i>	<b>Execution Activities</b> <i>(items to be completed during the designated Season)</i>	<b>Restoration Activities</b> <i>(items to be completed after the designated Season has ended)</i>	<b>Contingency Items</b> <i>(items that should be ready for execution during the designated Season as needed)</i>
<b>Personnel Safety</b>	<ul style="list-style-type: none"> <li>• Conduct staff safety meetings to heighten awareness to upcoming conditions. Organize routine ongoing safety briefs and crew sessions in anticipation of upcoming season.</li> <li>• Inventory and store needed items for seasonal personnel safety</li> </ul>	<ul style="list-style-type: none"> <li>• Continue routine safety meetings. Ensure crew briefs deal effectively with seasonal challenges and adequate warnings to staff</li> <li>• Monitor staff performance to ensure proper safety conduct is in place</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal safety monitoring and briefing</li> <li>• Capture any lessons learned for future seasonal preparations.</li> </ul>	<ul style="list-style-type: none"> <li>• Have extra staff as needed to reduce extreme environmental impact on normal staff</li> <li>• Have contract in place to provide specialized seasonal services to allow plant staff to focus on operational needs of plant, while others take care of seasonal emergencies</li> </ul>
<b>Backlog and Open Work Orders</b>	<ul style="list-style-type: none"> <li>• Review the backlog and all open work orders and designate those associated with summer readiness</li> <li>• Schedule all summer readiness items within the normal work management process</li> <li>• Ensure the proper resources are placed on each item</li> </ul>	<ul style="list-style-type: none"> <li>• Finalize any open work orders that may impact readiness for summer operation</li> <li>• Prioritize new work orders properly consistent with potential impact to operations under expected weather conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate work orders as needed to remove any temporary seasonal equipment, portable heaters, extra cooling units, temporary power supplies, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare open work orders and resources to make anticipated repairs due to seasonal challenges, based on experience and current status of plant systems and equipment</li> </ul>
<b>System Walkdowns</b>	<ul style="list-style-type: none"> <li>• System Owners perform walkdowns on systems impacted by seasonal risks</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate Work Orders for anomalies found during walkdowns</li> </ul>	<ul style="list-style-type: none"> <li>• Capture Lessons Learned for assigned systems</li> </ul>	<ul style="list-style-type: none"> <li>• Assist in oversight of key plant areas for additional heating or protection needs</li> </ul>

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<b>Lessons Learned and Operating Experience</b>	<ul style="list-style-type: none"> <li>• Review all summer related events and work orders from past season</li> <li>• Confirm that corrective actions developed from lessons learned, event reviews, and work order history are identified and scheduled to be resolved for the upcoming seasonal readiness</li> </ul>	<ul style="list-style-type: none"> <li>• Capture events and work orders that provide lessons learned for future seasonal readiness efforts</li> </ul>	<ul style="list-style-type: none"> <li>• Investigate events and work orders for appropriate root causes and identify needed corrective actions</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Dampers and Louvers</b>	<ul style="list-style-type: none"> <li>• Walkdown areas and identify issues, obstructions</li> </ul>	<ul style="list-style-type: none"> <li>• Visually inspect automatically operated equipment</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Repair as needed</li> </ul>
<b>Motor Heaters</b>	<ul style="list-style-type: none"> <li>• Confirm proper operation</li> </ul>	<ul style="list-style-type: none"> <li>• Check idle motors to confirm heaters are warming motor</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Provide external hot dry air to keep motor warm and dry</li> </ul>
<b>Moisture in Air Systems</b>	<ul style="list-style-type: none"> <li>• Confirm proper operation of air dryer systems</li> </ul>	<ul style="list-style-type: none"> <li>• Verify proper operation of air dryer systems, increase blowdown frequency of long piping runs</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal line blowdown frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Provide temporary source of dry air. Ensure connections and power supplies are available</li> </ul>
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<b>Abnormal System Lineups</b>	<ul style="list-style-type: none"> <li>• Review all temporary systems lineups, jumpers and lifted leads to identify those that impact seasonal readiness.</li> <li>• Return to normal operation, or develop plans to manage through the season with temporary condition in place</li> </ul>	<ul style="list-style-type: none"> <li>• Be prepared to develop needed temporary changes to the plant to protect plant equipment for seasonal issues</li> <li>• Incorporate temporary conditions into operator rounds, data collection efforts, and other operational procedures as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Return equipment to normal operating conditions. Return rounds and inspections to normal</li> </ul>	<ul style="list-style-type: none"> <li>• If temporary lineups are needed to continue through the season, make sure needed parts are available to keep the temporary equipment in operation</li> </ul>
<b>Air Cooled Condensers</b>	<ul style="list-style-type: none"> <li>• Plan to clean coils as necessary based on inspections and performance</li> </ul>	<ul style="list-style-type: none"> <li>• Clean with care not to damage finned tubing as needed to achieve expected performance</li> <li>• Implement sectional isolation per plant procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal operating conditions</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Leaks</b>	<ul style="list-style-type: none"> <li>• Correct leaks that can impact cooling performance on cooling systems</li> </ul>	<ul style="list-style-type: none"> <li>• Promptly correct leaks that impact cooling system performance or create personnel hazards</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

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<b>HVAC, Air Conditioning, Exhaust Fans, Remote Cabinet Cooling, etc.</b>	<ul style="list-style-type: none"> <li>• Confirm proper operation of systems</li> </ul>	<ul style="list-style-type: none"> <li>• Verify proper operation of cooling and air flow systems</li> <li>• Complete normal service check-ups and repairs</li> <li>• Provide alternative means of cooling in case of failures</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal ventilation</li> </ul>	<ul style="list-style-type: none"> <li>• Provide temporary source of cooling</li> </ul>
<b>Contingency Plans</b>	<ul style="list-style-type: none"> <li>• Organize contingency plans so that proper equipment and materials are staged.</li> <li>• Develop checklists to monitor status of all contingency</li> </ul>	<ul style="list-style-type: none"> <li>• Regularly confirm status of contingent equipment and material</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate effectiveness of contingency plans, note items that require adjustment, correction.</li> <li>• Also note unused/expensive contingencies to determine if they should continue to be implemented in future years</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Mold and Mildew</b>	<ul style="list-style-type: none"> <li>• Identify likely areas and causes of mold and mildew.</li> <li>• Develop mitigation strategy.</li> <li>• Obtain appropriate solutions and processes to remove mold and mildew that may develop</li> </ul>	<ul style="list-style-type: none"> <li>• Implement mitigation strategy; avoid leaks, and moisture buildup.</li> <li>• Add ventilation as needed to prevent mold and mildew. Correct any buildup promptly</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal ventilation</li> </ul>	<ul style="list-style-type: none"> <li>• Have contract in place for supplemental resources to correct problems if they develop</li> </ul>

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<b>Biofouling</b>	<ul style="list-style-type: none"> <li>• Ensure proper operation of bio agents that prevent fouling. System should be tested for proper operation ahead of summer season</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor heat exchangers to identify potential biofouling conditions.</li> <li>• Add data to rounds to monitor more closely</li> <li>Promptly correct biofouling conditions as they develop</li> </ul>	<ul style="list-style-type: none"> <li>• Return to normal water treatment of non-seasonal conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Have work orders planned to clean heat exchangers that traditionally have experienced biofouling</li> </ul>
<b>Insects</b>	<ul style="list-style-type: none"> <li>• Ensure adequate pre-cautions and treatments are in place prior to the summer season</li> </ul>	<ul style="list-style-type: none"> <li>• Contracts in place for exterminators to treat areas as needed</li> <li>• Add pre-job brief / meaningful discussions to include inspection and mitigation plans of insects (bugs, spiders, ticks, bees, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Have necessary mitigation equipment (insecticides, bug spray, etc.) located in the warehouse for easy access when needed</li> <li>• Ensure employee inform peers of any allergies associated with insects (i.e. bee stings, etc.) and have necessary medication available if needed</li> </ul>