Predictive Free Cooling

Extending the power of the OptiCx® platform

The OptiCx platform, in conjunction with the OptimumLOOP® operational module, delivers continuous, system-level optimization of centrifugal chilled water plants. Through machine learning, web and mobile apps, and world-class support, the OptiCx platform provides a complete energy optimization and performance management solution that learns and adapts over time. The benefits of the platform can be extended through Predictive Free Cooling, which is available for purchase as an add-on to an OptiCx platform subscription.

Free cooling (water-side economizing) is an effective tool for reducing overall energy consumption in complex cooling systems. In practice, however, it can be difficult to implement effectively, and often involves guesswork in determining when to turn on and off. Due to lack of precise information, operators tend to avoid using free cooling to minimize the possibility of expending the extra energy consumed by suddenly restarting chillers. When free cooling is used, it is often inefficiently implemented and fans are overrun — again, due to lack of precise data.

OptiCx Predictive Free Cooling eliminates this guess-work through incorporating weather forecast data that accurately predicts free cooling availability based on outside air wet bulb threshold. When the weather is below the threshold for the minimum free cooling window period, and current plant conditions permit free cooling operation, OptimumLOOP informs the operator that free cooling is available. This process can also occur automatically, through OptimumLOOP triggering free cooling mode on and off without

operator intervention: the choice is up to the customer. Predictive Free Cooling is configurable, allowing for both the outside air wet bulb threshold and the minimum free cooling window period to be adjusted based on a site's specific requirements. Monthly reports are available to subscribers, giving insight into the free cooling hours available, free cooling hours activated, and free cooling hours missed.

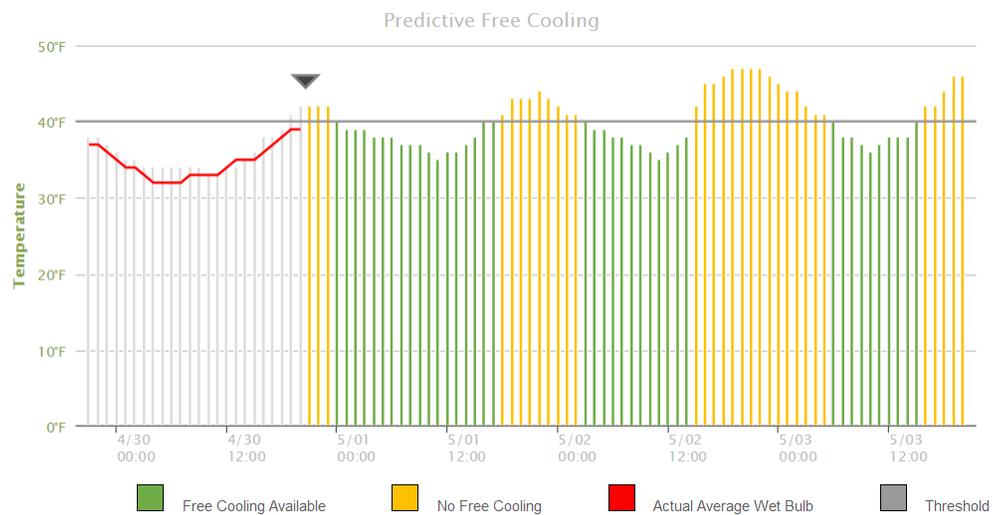### Predictive Free Cooling Benefits

- Automated and configurable based on your site's unique needs
- Seamlessly communicates with OptimumLOOP and the OptiCx platform
- Enables efficient and accurate use of free cooling windows
- Provides visibility into accuracy of your outside air and humidity sensors
- Both automatic (closed-loop) and manual (information sent to operators) options are available

Predictive Free Cooling is available via the OptiCx web app for intelligent plant management. It shows forecasted free cooling windows for the upcoming 72 hours, as well as the historical actual and forecasted wet bulb temperatures for the past 24 hours. Customers have the option to use Predictive Free Cooling for automatic control of free cooling mode (the OptiCx platform manages the process directly), or through information sent to the operator.

The ongoing result is reduced overall energy consumption through increased use of free cooling and improved efficiency in system operations. By leveraging the real-time operating data in the OptiCx platform, the system learns and improves over time, allowing operators to use free cooling more often, and at optimal efficiency.

OptiCx® charts the forecasted free cooling windows for the next 72 hours as well as the historical actual and forecasted wet bulb temperatures for the past 24 hours.

FREE COOLING NOT AVAILABLE

FREE COOLING IS CURRENTLY OFF

WETBULB TEMPERATURE

THRESHOLD	CURRENT
40°F	**39.6**°F

FREE COOLING DURATION

REQUIRED MINIMUM	EXPECTED TIME REMAINING IN CURRENT WINDOW
4 HOUR(S)	**No current window**

FREE COOLING WINDOW AVAILABILITY

CURRENT WINDOW BEGAN	NEXT WINDOW AVAILABLE
NO CURRENT WINDOW	**4/30 5PM**

Predictive Free Cooling

Legend: ■ Free Cooling Available ■ No Free Cooling ■ Actual Average Wet Bulb ■ Threshold

ABOUT OPTIMUM ENERGY

Since 2005, Optimum Energy's patented software and engineering expertise has helped customers reduce energy use in heating and cooling systems, the largest consumer of energy in buildings, by up to 50%. The OptiCx® platform combines technologically advanced HVAC optimization software with world-class expertise in system design and operations. It's a proven, measurable approach that verifiably reduces resource usage—water, electricity, and natural gas—while providing detailed insights into how building systems are operating. The result is vastly improved operating efficiency, increased energy savings, and reduced carbon emissions.