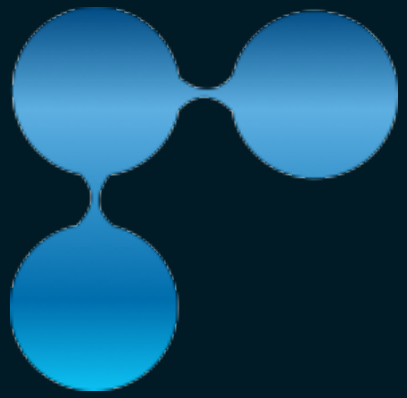

SeeQ®
conneqt
FOOD & BEVERAGE



From Data to Action: Optimizing Cooling with Seeq

Joe Menning

Senior Manufacturing Analytics Engineer
Cargill, Inc.

connect

Nourishing the world in a safe, responsible and sustainable way

- Cargill is a family company committed to providing food, ingredients, agricultural solutions and industrial products to nourish the world in a safe, responsible and sustainable way.
- We sit at the heart of the agricultural supply chain, partnering with producers and customers to source, make and deliver products that are vital for living.

We are...

160K+
Employees

70
Countries

125
Markets

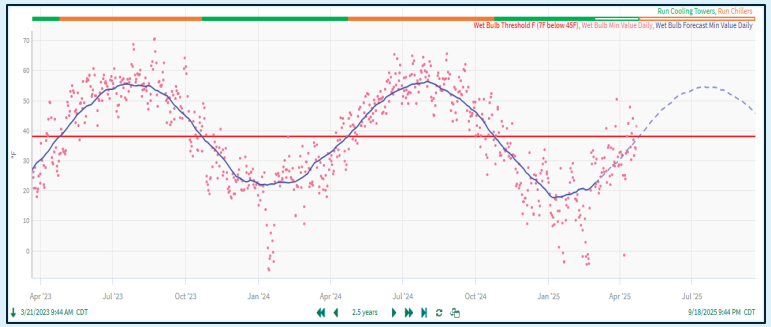
159
Years old

Speaker Background

- **Engineering and Data Sciences Team**
  - Senior Manufacturing Analytics Engineer
  - Seeq Mentor and Super User
  - Lean / Six Sigma Black Belt
- **35 Years of Experience**
  - Food & Beverage
  - Bio-Pharma Equipment Manufacturing
  - High Purity Chemical Packaging and Dispense Systems
  - Integrated Circuit Manufacturing Equipment
  - Flex Circuit Design & Manufacturing

Joe Menning

Outline



Source – Microsoft Copilot

CHALLENGE

How to predict a semi-annual transition between Cooling Towers and Electric Chillers?

SOLUTION

Utilize Seeq to calculate metrics, build predictive model, conditions and notifications to alert Engineers

RESULTS

Maintain process performance while minimizing operational cost.

Cooling Tower, Performance Factors

- **Wet Bulb Temperature**
  - Wet Bulb Temperature is the lowest temperature to which water can be cooled by evaporation
- **Heat Load**
  - The amount of heat to be removed from the system
  - Proportional to the difference in water temperature as well as the flow
- **Water & Air Flow Rates**
  - Higher flow rates increase operation costs

Source – Microsoft Copilot

Comparison of Cooling Technologies

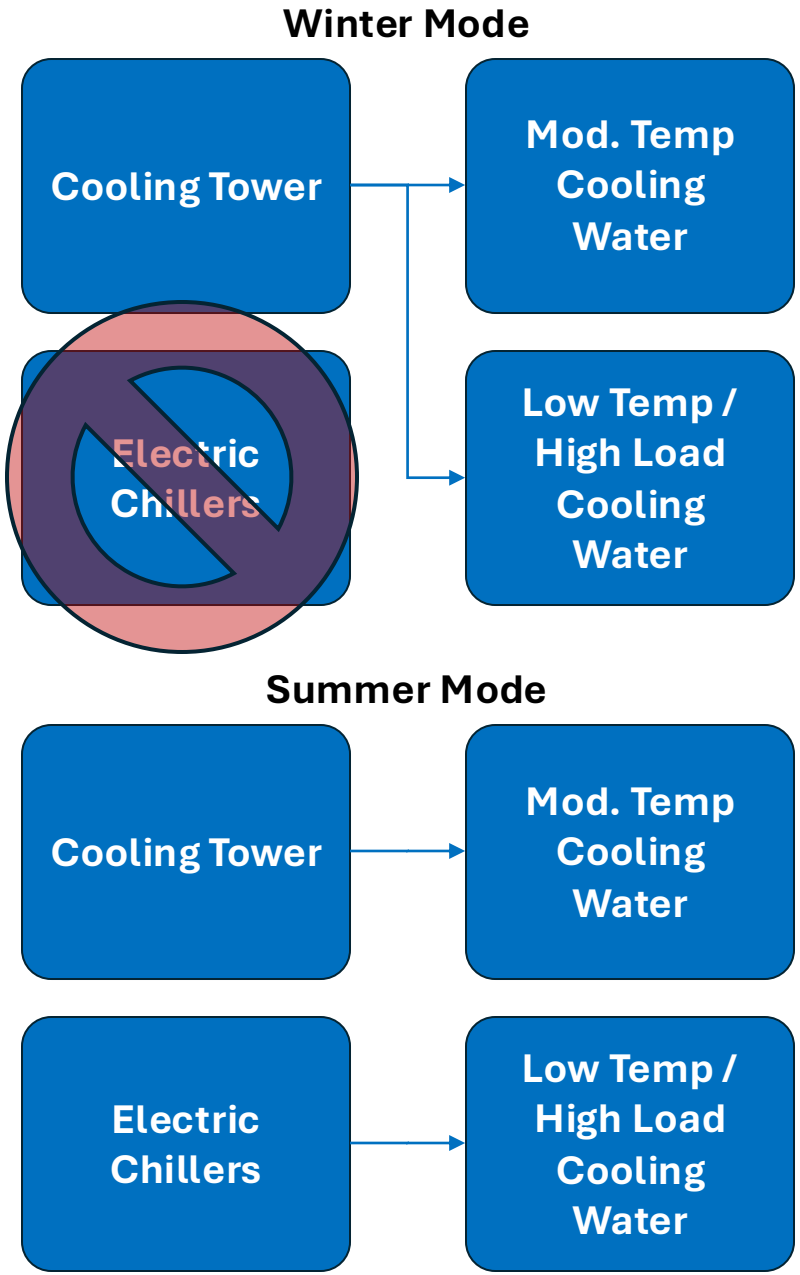
Source – Microsoft Copilot

Source – Microsoft Copilot

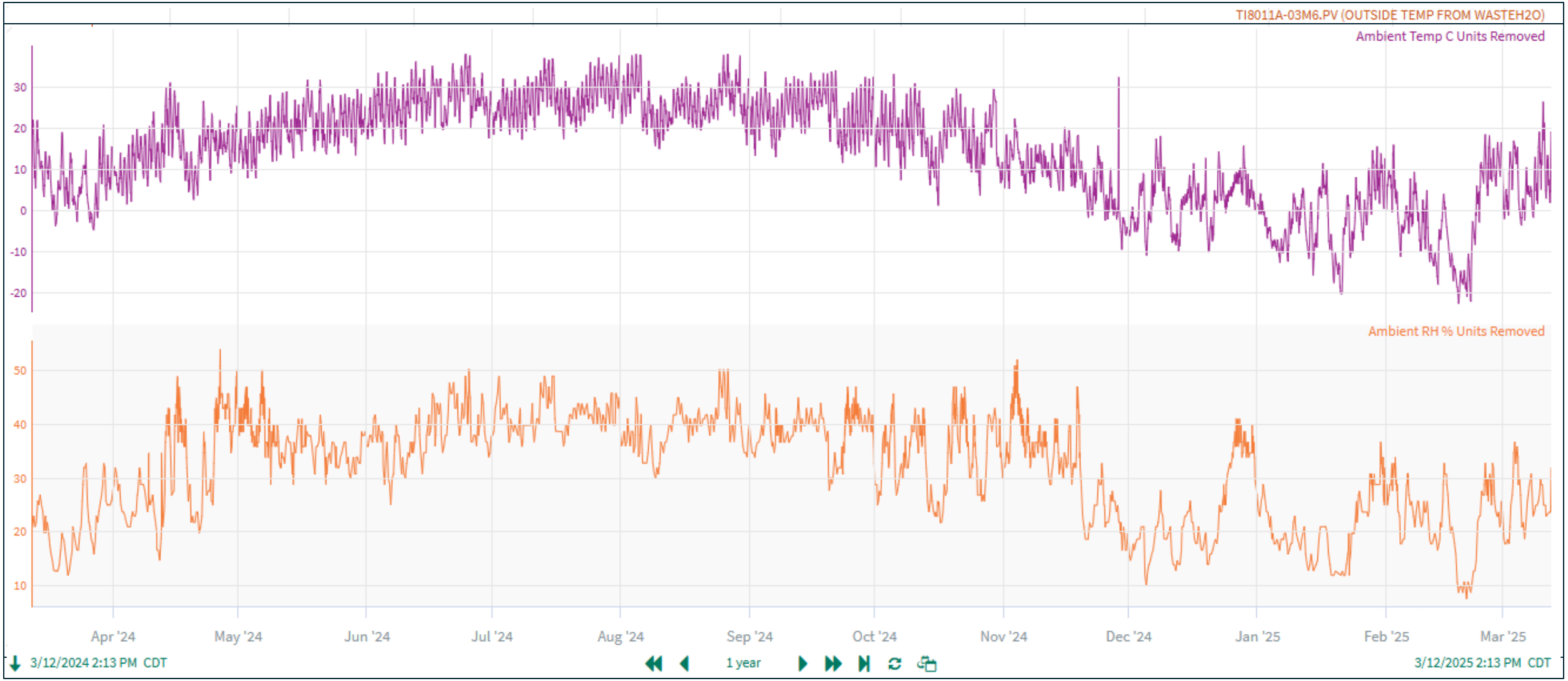
Aspect	Cooling Towers	Electric Chillers
Energy Efficiency	Lower electrical consumption	Higher electrical consumption
Cost Effectivity	Lower operating costs	Higher operating costs

Challenges

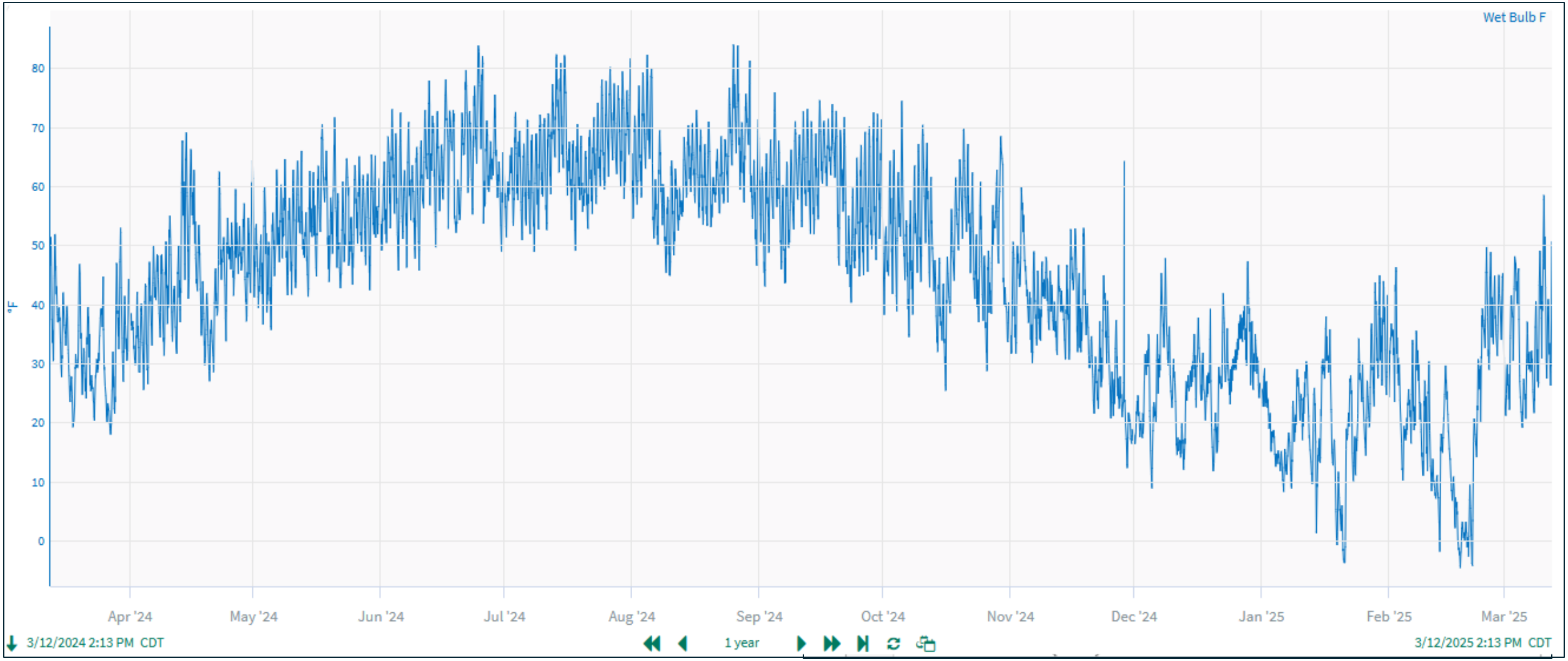
- **High Product Mix**
  - Starches, Sweeteners, Fuel Additives and Animal Feed
- **Plant design**
  - Both Cooling Towers and Electric Chillers are available
  - Site requires manual transition between Modes
- **Impacts**
  - Maximizing time in Winter Mode minimizes electrical usage (cost) and improves sustainability



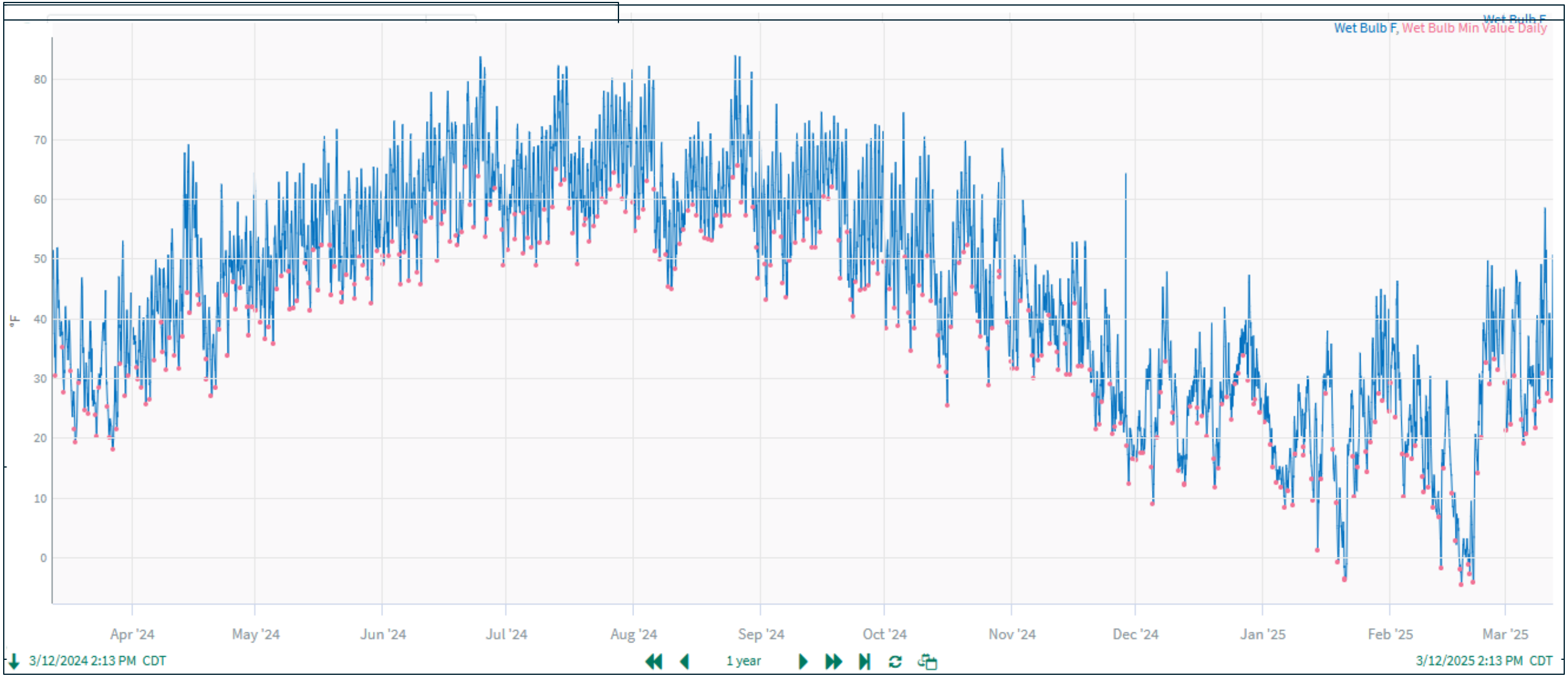
Step 1 - Find raw signals and prepare for calculation



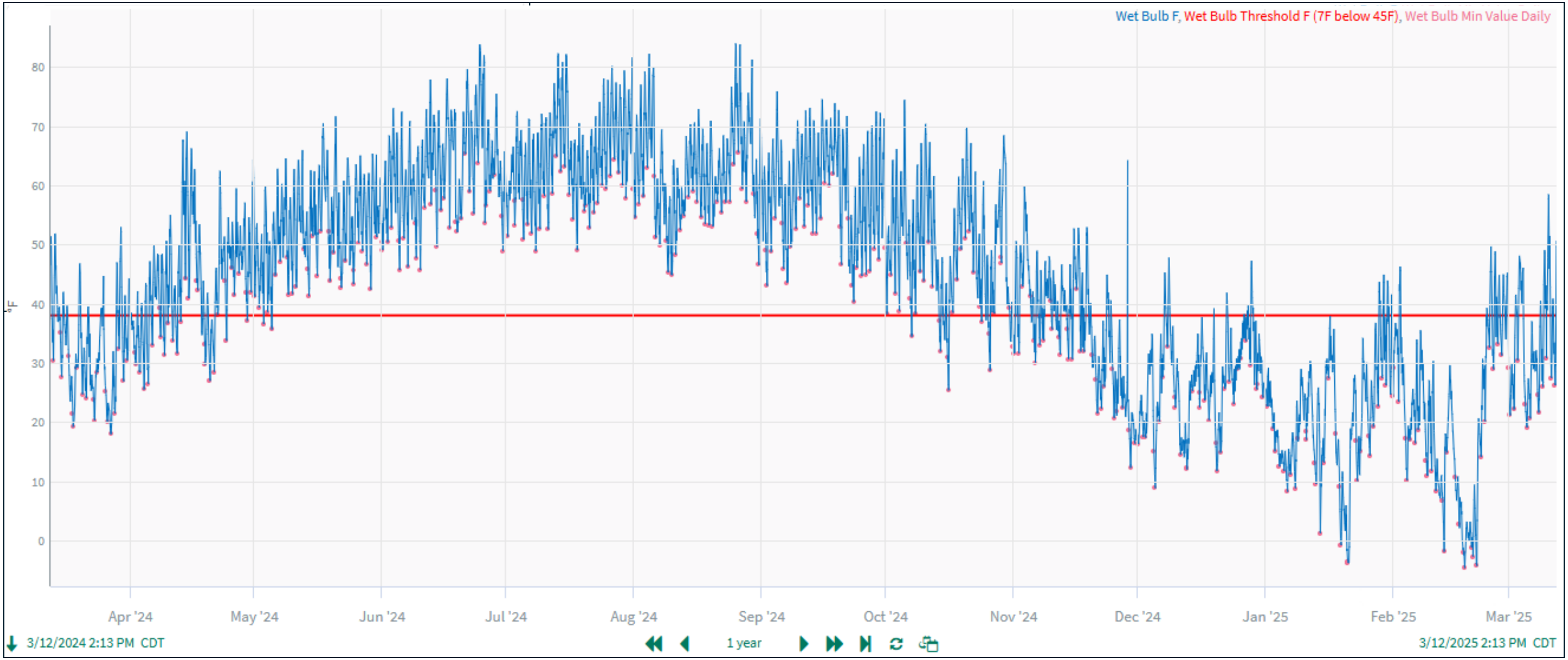
Step 2 - Calculate Wet Bulb Temperature



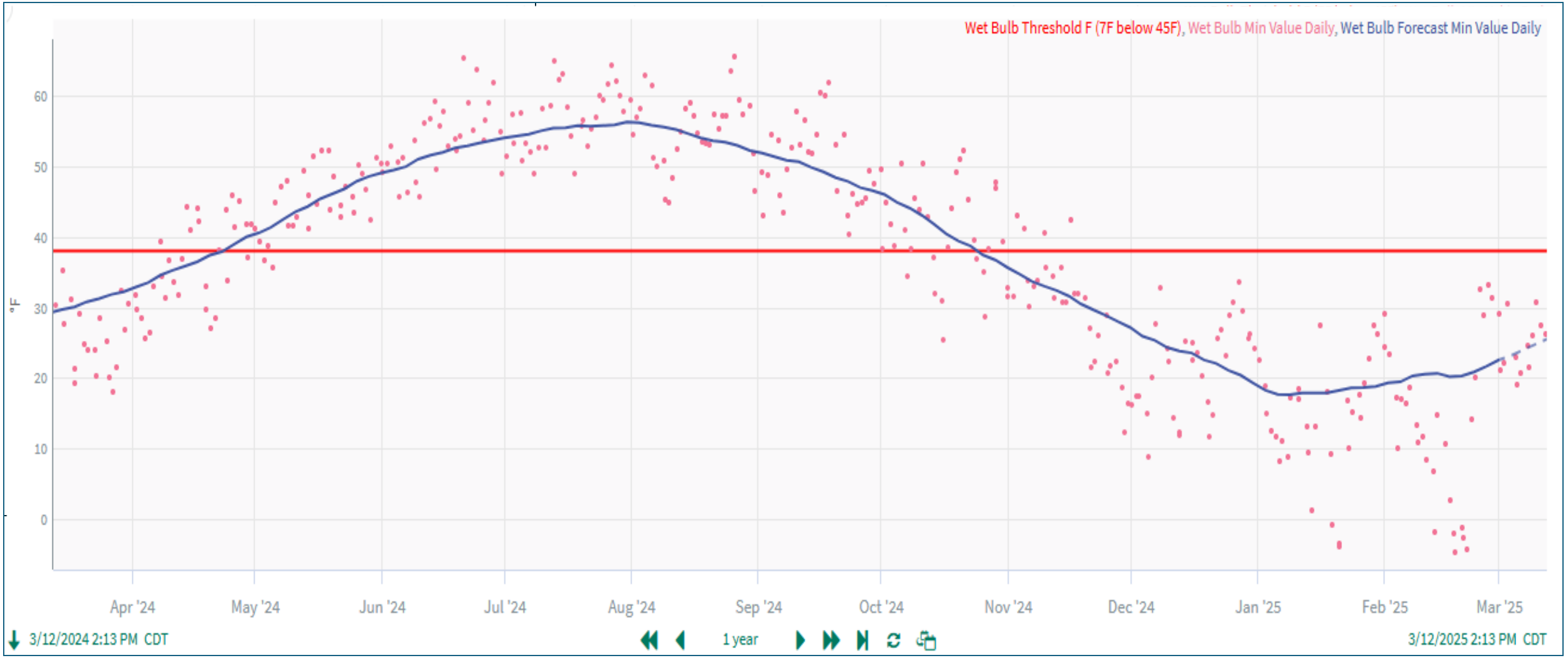
Step 3 - Calculate Min. Daily Wet Bulb Temperature



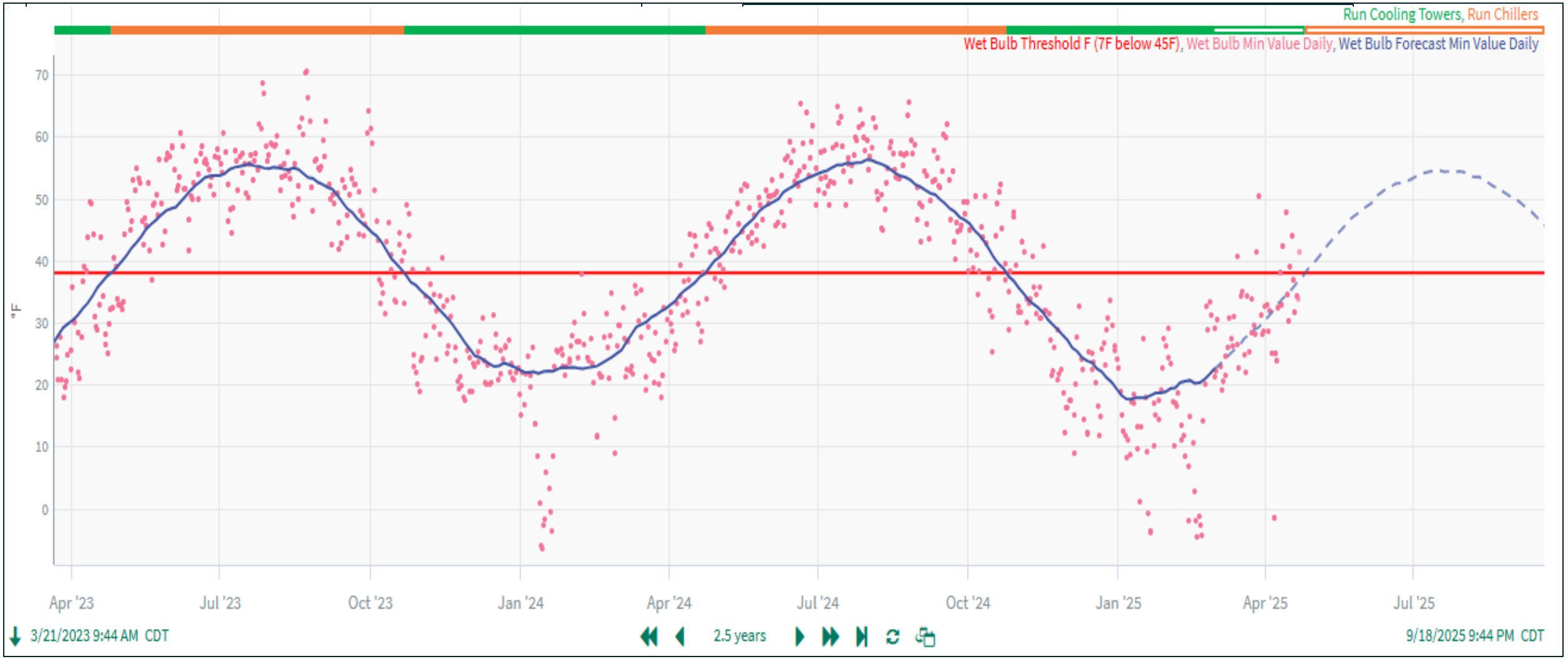
Step 4 - Add Wet Bulb Temperature Threshold



Step 5 - Create Forecasted Wet Bulb Signal

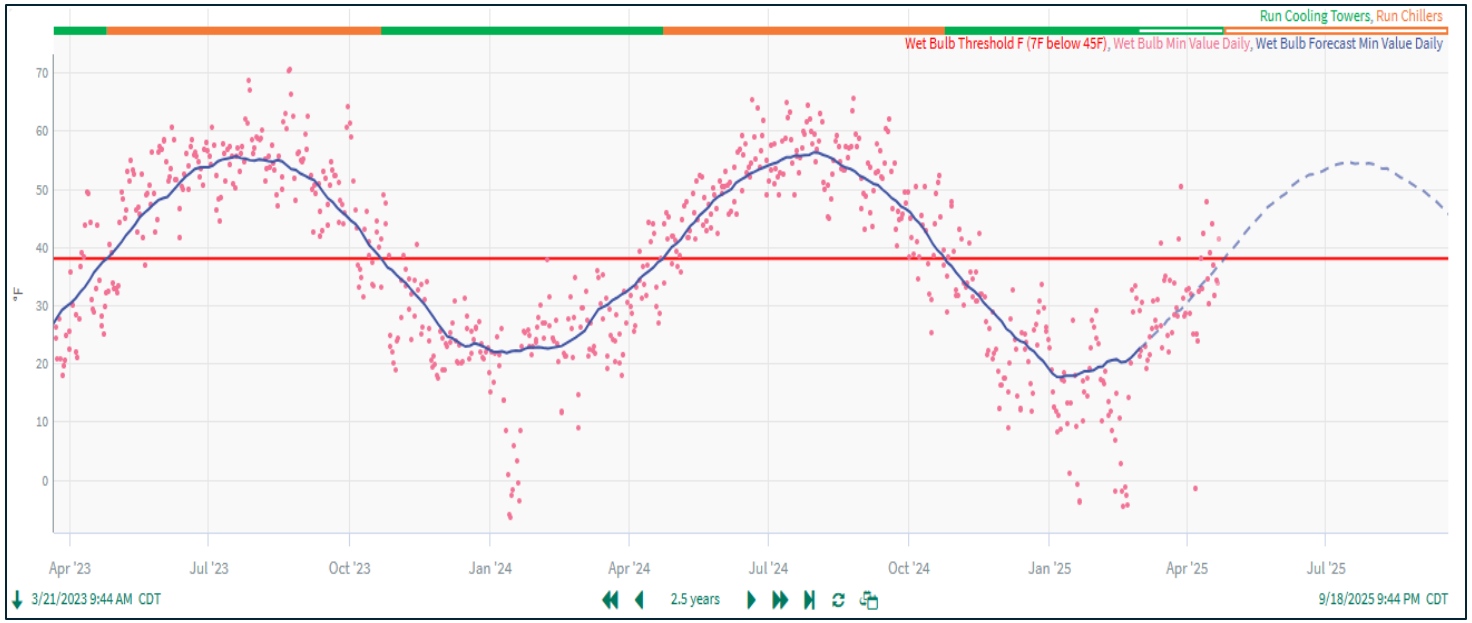


Step 6 - Create Conditions and Notifications



Results / Impact

- **Results**
  - Engineers are notified before forecasted transition
  - Review weather forecast and production schedule
  - Plan transition work
- **Impacts**
  - Reduced operating cost
  - Reduced Scope 2 Emissions

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Questions?

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Thank You