# CASE STUDY

## Berkeley County Council - Dunn Building

*Martinsburg, WV*

## CHALLENGE

The Berkeley County Council Dunn Building is a 100,987 sq. ft. facility, located in Martinsburg, WV. This historic building was previously a 1920's woolen mill, a 1980's outlet mall, and a 1990's community and technical college. Today, it houses all of the following departments for the county: County Council Executive Office Suite, Planning, Engineering and Inspections, Fireboard, Ambulance Authority, Extension Office, Sheriff's Tax Office, Information Technology, County Clerk Voters Registration, and Recovery Resource Center.

In 2019, the County Council was challenged with improving reliability of the HVAC system as well as reducing energy expenses and improving the Energy Star rating of the building. In addition, it is the charge of the County to use technology and creative solutions to meet the needs of County resident while being good stewards of the County's tax dollars and setting an example for West Virginia.

## SOLUTION

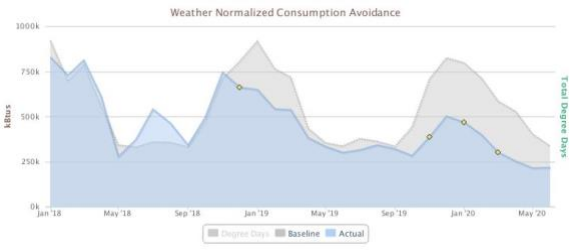
To meet the challenges described above. Boland engineered and implemented the following solution:

- *Installed Trane Ice-Enhanced Chiller Plant using the Trane ACR Ascent air-cooled water chiller.*
- *Replaced three-way valves with two-way pressure independent valves with coil optimization technology.*
- *Converted constant volume air system to single-zone variable air volume system to drastically improve tenant comfort.*

The new ice-enhanced chiller plant produces a supercooled glycol solution to freeze water in the ice storage tanks (also known as energy storage). By running the chiller at night when ambient conditions are cooler, utility rates are lower and the chiller is more efficient. During the day, the glycol solution is pumped through the ice storage tanks. The ice cools the glycol solution which is then pumped to the building to remove additional heat. Mechanical cooling is then used during peak loads to supplement the ice storage.

## RESULTS

Berkeley County continuously tracks and measures results. In addition, it tunes and improves building performance via their Boland Applied Building Insights Service Agreement. Gary Wine, Deputy County Administrator stated, "We have leveraged the analytics to support service contract decisions as well as configuration polices that have helped us reduce our overall energy costs.




- *33% decrease in weather-normalized energy consumption*
- *Increase Energy Star Score from 79 to 92*
- *$53,000+ in weather-normalized cost avoidance*

BOLAND