

1.0 EXECUTIVE SUMMARY

Bronx School for Law Government & Justice is a school located in Bronx, NY. The following analysis utilizes this building as a basis for a complete overhaul of its mechanical systems. Specifically, the mechanical redesign explored the possibility of ice thermal storage with cold air distribution.

One of ice thermal storage's main focuses is to eliminate high demand cost during on peak times and "shift" it to off peak times, when the rate is cheaper. As will be discussed, there are a few ways to operate thermal storage in either full or partial storage. Full storage transfers all of the peak loads to off peak times and part load, as the name suggests, transfers part of the load to off peak time with the remaining load being met by the chiller. It will be shown that it is often more economical to operate with the partial storage strategy because often, equipment sizes are smaller than conventional systems and less storage capacity is required as compared to full storage.

Cold air distribution takes advantage of the cooler than average water from ice thermal storage and supplies low temperature air to the spaces. Cold air distribution has many advantages including lowering first cost due to the reduction of fans, ductwork and pumps.

Also in this analysis, the impact of thermal storage and cold air distribution on other systems namely, structural and electrical will be evaluated.