Energy prices are uncertain but the trends are not
Prudent planning requires that you anticipate future energy prices will be higher. The one component of energy pricing that has not gone up in 30 years is off-peak electricity. Storing thermal energy is one way to shift usage to off-peak electricity.

Planning for the smart grid
Smart meters and demand-response programs are coming to a utility near you. With thermal storage in place, you are ready to respond to these signals or events without compromising your building operations. Trane knows you can have this capability in a system with similar or lower cost than a conventional chilled-water design.

Simplified off-peak cooling
The Trane ice-enhanced, air-cooled EarthWise™ system simplifies the design and implementation of an ice-storage system typically considered complicated and time-consuming by HVAC designers. Trane offers pretested, standard configurations for air-cooled chillers and ice tanks integrated with customizable, preprogrammed system controls.

Ice storage system advantage
Depending on the project-specific details, there are advantages that make ice storage very attractive.

Lower operating costs. Air-cooled chillers with ice can have full load efficiencies of 0.50 kW/ton while making 39°F brine. EarthWise air-cooled chillers with ice storage exceed EarthWise water-cooled chiller system efficiency with lower utility and water costs, and have no cooling tower maintenance or winterization. Ice tanks have no moving parts, a 10-year warranty and virtually no maintenance.

Lower to neutral installed costs. The overall installed system cost can be lower than a traditional temperature air-cooled chiller with VAV system, and will generally cost less than a water-cooled chiller system. This is due to optional smaller ductwork and piping (reusing existing saves more energy), a smaller electrical system, smaller air-handling units or fans, and/or smaller chillers, and no cooling towers. Grants or utility company rebates may be also be available.

Premium efficiency
Modeling results for an office building in California show air-cooled chillers with ice storage had the lowest annual utility and life-cycle costs.

"We have found project simple paybacks of as little as two years, always less than four years. Over the anticipated life of the school of 40 years or more, we believe the total savings could be as great as $1.2 million in a typical middle school."

Johnston County Schools
Trane air-cooled chillers with built-in ice storage support provide water-cooled efficiency without the added cost, maintenance and complexity of a water-cooled system.

CALMAC IceBank™ thermal energy storage tanks provide pre-engineered, factory-built reliability with tested, efficient and repeatable performance.

System completion module provides single-source responsibility including a pre-engineered pumping system, single-point power and control connection, factory-mounted Trane controls, installation logistics, start-up and commissioning coordination, warranty and technical support.

For a complete systems catalog, visit www.trane.com/EarthWise

Ice-enhanced, Air-cooled Chiller Plant

This EarthWise System includes an optional system completion module, preprogrammed control sequences, operator graphics, reports, drawings and guide specifications.

Features include:
- BACnet system controller
- Preprogrammed sequences
- System scheduling
- Six modes of operation
  - Off
  - Chiller only - single and multiple chiller
  - Ice only
  - Chiller and ice
  - Make ice
  - Make ice and cool
- System mode determination
- Chiller plant demand limiting
- Ice inventory management
- Chilled fluid system control
- Chiller/ice sequencing and control
- Color graphic based chiller and plant status screens
- System and chiller diagnostic messages
- System and chiller reporting
- Failure modes and recovery
- Heat exchanger sequencing and control (option)
- Pump control for water loops (option)