

Central Plant Optimization Strategy

What is this Technology?

This central plant control technology is designed to optimize energy use in chilled water systems. To reduce energy consumption, chillers, cooling towers, and associated pumps are operated as a single system. In combination with the necessary Variable Frequency Drive (VFD) equipment, this technology applies a control algorithm to maintain optimal differential system pressure, reducing pumping energy and equipment runtime.

Why is GSA Interested?

Approximately 75% of GSA space-cooling energy is consumed by central cooling plants. Over the past decade, many of those cooling facilities have become equipped with the VFD technology that would enable them to take cost-effective advantage of this holistic approach to chilled water system optimization and reduce energy use. This project is the second phase of an assessment begun as part of GPG's FY11 program, evaluating a different manufacturer's product in a different climate zone.



ENERGY EFFICIENCY Depending on facility design, equipment and climate—the manufacturer projects space-cooling energy savings of between 20% and 50%.



COST EFFECTIVENESS Given an optimum facility design where cooling plant equipment already has VFD functionality, this technology is projected to be life cycle cost-effective in all climate zones under current utility rates.



OPERATIONS & MAINTENANCE The study will seek to validate the core projected benefit of this technology: the ability to improve plant operation by maintaining optimal system pressure, reducing excessive pumping energy, reducing equipment runtime, and increasing deliverable tonnage.



DEPLOYMENT POTENTIAL This technology is potentially applicable to any building with a central cooling plant. This assessment will include a checklist of the specific requirements needed to prioritize its potential for deployment by GSA, should the technology's performance prove out.

Adapted from a report by the National Renewable Energy Laboratory. The Green Proving Ground program, in association with a federal laboratory, is subjecting chilled water plant optimization technology to real-world measurement and verification in GSA buildings. Findings from that investigation will be available in late 2013 or early 2014.