

NU Campus Steam Plant Decentralization/ Hot Water Conversion

Project Highlights and Results

- Master Plan identified alternatives to improve or replace an oversized existing steam plant to address significant costly repairs and maintenance that had been anticipated in the near future
- Confirmed the feasibility to convert the majority of campus heating loads to be served by distributed hot water boiler plants, with dedicated steam provided in specific buildings to support process loads
- The distributed heating plant schematic design projects an annual savings of \$655,000
- Phase 1 of the distributed heating plant implementation that includes the conversion of six academic buildings to hot water heating is complete and Phase 2 is currently in design.

Project Background

Owner:	Northwestern University (NU)
Location:	Chicago, IL (Chicago Campus)
Team/Team Lead:	Don McLauchlan, Jay Parikh, Dustin Langille
Elara Role:	MEFPF Engineer
Type:	Central Plant Upgrade
Budget Cost:	\$23,100,000 (All Phases), \$14,500,000 (Incremental over like-for-like replacement)

Project Overview

Building Type:	Higher Education; Research and Academic Buildings
Building Attributes:	12 Buildings; 2,692,000 Total SF
Initial Construction:	1925 to 2005 (Varies)
MEFPFIT Systems:	Hot water heating (AHUs, FCUs, radiation, preheat/reheat, etc.), DHW, low pressure steam high pressure process steam, DDC

Innovation

- Prepared master plan to identify alternatives to improve or replace the existing steam plant to address significant costly repairs and maintenance scheduled for the University's existing steam plant and associated distribution system.
- At the time of Elara's study, the University's downtown steam plant had approximately 5,000,000 pounds/hour of steam capacity and was significantly oversized to serve the campus' 12 research and academic buildings.
- Project deliverables included an initial master plan, distributed boiler plants schematic design, existing steam plant cost analysis, design services and construction services.
- Ultimately confirmed the feasibility and estimated cost associated with converting the majority of campus heating loads to be served by distributed hot water boiler plants with dedicated steam provided in specific buildings to support process loads.

