

## Chagrin Falls Exempt Village Schools Phases I & II

House Bill 264 • District Wide Building Automation • Variable Refrigerant Flow (VRF) • Energy Star

### *School District Funds District Wide Optimization Projects With Energy Savings*

The Chagrin Falls Exempted Village Schools District has earned an "Excellent with Distinction" title by the Ohio Department of Education. The District is comprised of a high school, middle school, intermediate school and elementary school.

#### *Challenge*

The Chagrin Falls Exempted Village Schools District had some vintage building systems, HVAC equipment, lighting and building automation systems. The classroom environment was uncomfortable and the buildings were using a lot of energy due to heating component failures. Faced with budget restrictions for operations, the District had to come up with a way to pay for all of these capital projects and improvements.

#### *Solution*

The District partnered with Gardiner to complete a comprehensive lighting retrofit to save electricity and improve lighting levels throughout the District. Next, the District's existing building automation and controls system was removed and replaced with a web-based Tracer ES Building Automation System district-wide. The new web-based system would allow for better system operation and better control of HVAC equipment and lighting through the use of scheduling and establishing set points. Steam traps were replaced with new ones to increase the efficiency of the heating components. The steam trap components also improved comfort while reducing energy costs. A Variable Refrigerant Flow (VRF) engineered solution was provided for Chagrin Falls High School and Gurney Elementary School to add air conditioning to buildings that did not have existing air conditioning. VRF was the best application for existing building cooling because the solution is ductless and highly efficient. Finally, a complete building automation commissioning was done utilizing Dynamic Commissioning to identify areas of improvement and recommended course of action. Gardiner measured and verified Energy Conservation Measures (ECMs) to sustain a High Performance Building. This process eliminated over ventilation, reheat and re-cooling, all which are large energy wasters.



Chagrin Falls High School



Chagrin Falls Intermediate School



Chagrin Falls Middle School



Gurney Elementary School

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## Results

Chagrin Falls Schools was able to utilize House Bill 264 for their project. This was a budget neutral solution, which allowed them to fund the project with the money they were saving on energy with the Energy Conservation Measures (ECM) they implemented. Since the completion of Phase 1 and 2 of this project, the District has saved 312,862 KWH or \$62,158 in electricity, 5,827 MCF or \$51,616 savings in gas and a cumulative savings of \$113,774.

The District's school building housing the High School and Middle School, received an Energy Star rating of 80, earning them the Energy Star Award for excellence in energy utilization and efficiency. According to the Environmental Protection Agency (EPA), " K-12 schools that are Energy Star labeled, cost on average, 40 cents less per square foot to operate than K-12 schools without the Energy Star label."

***“Gardiner has been a pleasure to work with throughout the entire HB 264 Project. The team clearly set goals for our project, planned accordingly and then implemented their design flawlessly. The project came in on time, and due to Gardiner’s attention to detail, has saved the District above what we originally estimated.”***

*Director of Business and Personnel*



## Project Overview

- House Bill 264
- Comprehensive Lighting Retrofit
- District Wide Building Automation System
- HVAC Equipment Optimization
- Steam Trap Retrofit
- Variable Refrigerant Flow (VRF) Engineered Solution
- Middle School & High School Awarded Energy Star For Excellence in Energy Utilization & Efficiency
  - Chagrin Middle School and Chagrin High School 80 Energy Star Rating
- Energy Savings for Phases I & II \$62,158 or 312,862 KWH
- Gas Savings for Phases I & II \$51,616 or 5,827 MCF
- Annual Energy Savings of \$113,774

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