

CASE STUDY | The Tri-M Group Headquarters

The Tri-M Group is an industrial solutions company specializing in electrical construction, high voltage, building automation, networking and telecom, security and energy management. The Headquarters is located in Kennett Square, Pennsylvania. The campus consists of 4 buildings that house over 100 employees, servers and warehouse space. This case study focuses on the largest and most densely occupied building, Building 3, whose square footage is approximately 35000ft².

The Tri-M Group took a multifaceted approach to energy conservation. There are three key components to this alternative energy system. The first, and most prominent component, is the solar array, the second is an energy management system and third is an energy efficient lighting retrofit.



SNAPSHOT

- Tri-M Group Headquarters
- Kennett Square, Pennsylvania
- Area: 35,000 ft²
- Vertical Market: Office



SCOPE

- Solar Array
- Occupancy Sensors and Occupancy Scheduling
- Demand Limiting
- Lighting Retrofit
- Integrated BAS & Energy Optimization
- Integrated Weather Station
- Custom Monitoring System
- Public Dashboard Display



RESULTS

- Annual grid energy use reduced by 150,000kWh (70% savings)
- Energy Star Accreditation with a score of 94
- Peak demand reduced by 50%
- 1st year energy spend reduced by more than \$10,000



PV Solar Generation

The solar PV array is comprised of three separate elements: a 52.28kW roof-mounted array, a 33.83kW ground-mounted array, and a 15.79kW parking canopy array. Together, these elements

offset approximately 130,000kWh of Tri-M's energy consumption annually. The array also includes a weather station and a custom built monitoring system that tracks results in real time.



Occupancy Sensors and Occupancy Scheduling

All of the offices, conference rooms, restrooms and kitchen area have been equipped with motion sensors. When no motion is detected for a set amount of time, the lights will shut off automatically. A 50% reduction in lighting in spaces with occupancy sensors results in over \$1000 annual savings. In addition, the interior lights in the entire building will turn off daily at 5:15 PM. A manual override is needed turn the lights on for an hour at a time. This prevents the lights from being left on unnecessarily during building unoccupied times.



Demand Limiting

Building 3 has three levels of demand curtailment which are active during the peak cooling season, June 1st through September 30th. Demand curtailment is set to limit our energy use to 60kWh.

- Level 1: Turn off lighting in the entry way and reception area.
- Level 2: Setback space temperatures by 2°F.
- Level 3: Cycle rooftop units on/off in 30 minute intervals.



Lighting Retrofit

Lighting accounts for an average of 35% of a typical office building's electrical use. Building 3 has been retrofitted with energy efficient T8 fluorescent lighting and dimmable ballasts. This allows the building to operate lighting at 50% intensity for the entire occupied period while still achieving adequate illumination. The retrofit and dimming control provides over \$5000 savings each year.



Results/Conclusion

The Tri-M Group has recognized an annual reduction in grid energy use of over 150,000kWh (70% savings). With this decrease, Building 3 has qualified for Energy Star Accreditation with a score of 94 out of 100 which means that the facility is 44% more efficient than the median office building.