MILWAUKEE REGIONAL MEDICAL CENTER THERMAL SERVICES

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Owned by Milwaukee Regional Medical Center (2016)
Ever-Green Energy provides OMM services for campus energy and water systems (2015)
Type of Ownership: 501(c)3 Nonprofit

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Milwaukee Regional Medical Center Thermal

EVER-GREEN ENERGY™

SYSTEM DESCRIPTION

Milwaukee Regional Medical Center Thermal has spent the past six years transforming its energy system to be a best-in-class model for reliability, efficiency, and performance. During these challenging times, when our nation has been critically dependent on our health care systems, it is more important than ever that patients can rely on health care systems like the Milwaukee Regional Medical Center. As the Level 1 trauma center for the region, it is clear that the infrastructure and systems supporting the care of individuals and families, training of tomorrow's physicians and scientists, and study of cures and care must be resilient, reliable, and cost-effective to focus resources on the core mission of health care.

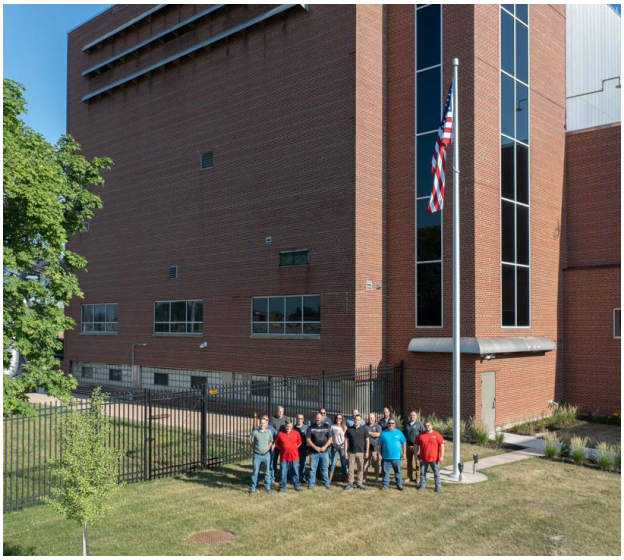
Milwaukee Regional Medical Center Members

- Children's Wisconsin (The region's only Level I Pediatric Trauma Center)
- Curative Care Network
- Froedtert Hospital (The region's only Level I Adult Trauma Center)
- Medical College of Wisconsin
- Milwaukee County DHHS Behavioral Health Division
- Versiti Blood Center of Wisconsin's Blood Research Institute

In 2014, when the medical campus began to plan for expansion, Milwaukee Regional Medical Center made the critical decision to modernize the energy system to meet the crucial demands of a health system providing the highest level of care every hour of the year. Built in 1954, the campus energy system, Milwaukee Regional Medical Center Thermal, supplies low-pressure steam, high-pressure steam, and chilled water for heating, cooling, and critical process loads for the hospitals, clinics, and labs located throughout the 21 campus buildings.

In 2016, the Milwaukee Regional Medical Center purchased the thermal system serving their campus. Along with their energy service partner, Ever-Green Energy, and construction project partners Burns & McDonnell and Boldt Construction, the new owners developed a vision for the transformation of the energy system to increase resiliency, reduce costs, improve efficiency, and better the environmental profile of the system. The transformation was extensive and thoughtful, replacing boilers, chillers, controls systems, operating protocols, and distribution connections. The project had an additional layer of complexity in that energy services remaining online to support patient care, medical education, and research throughout construction.

At Milwaukee Regional Medical Center Thermal, all decisions are made in the exclusive best interests of Milwaukee Regional Medical Center owner-members. The energy system transformation began with the engagement of campus stakeholders to create a shared vision for the energy system. Through goal-setting discussions it became clear how each stakeholder group defined system success, and a common vision emerged amongst all parties. The medical consortium made a commitment to invest in the modernization of the plant and distribution infrastructure with a clear vision for the energy system's future.



The system is designed to accommodate expansion, so that the medical campus can achieve its vision for campus growth while minimizing their environmental impact. Investment in the system has exceeded the original

Milwaukee Regional Medical Center campus

metrics around increased resiliency, reduced costs, improved efficiency, and an enhanced environmental profile. Beyond the physical infrastructure, the strong partnership between the health care leaders and utility team continues to advance the operations in support of vital health services. Today the member-customers provide the governance of the business, giving them a meaningful voice in the energy system decision-making.

A team of 26 Ever-Green Energy employees operates, manages, and maintains the system to the highest standards following industry best practices and leveraging the wealth of operational experience across the company. Working closely with customers, the team continues to improve the system with strategic investments, operational processes, and data-based decision making. The success of this transformation and current operations can be attributed to the partnership between Ever-Green Energy and the Milwaukee Regional Medical Center. The alignment of vision, clear communication, and focus has allowed the partnership to achieve significant accomplishments to transform a medical campus energy system and make them a strong contender for system of the year.

New boiler installation

Cooling tower demolition

Milwaukee Regional Medical Center

- 1,054 patient beds
- 1,500,000 average patients served each year
- 17,500 personnel on campus
- 1,400 students on campus
- 700 physicians in residency
- 200 physicians in fellowships
- 949 medical students
- 370 graduate students
- 48 pharmacy students
- 130 post-doctoral research scientists

Milwaukee Regional Medical Center campus

- Wauwatosa, Wisconsin
- 7.5 million square feet of heating and cooling
- 21 buildings
- 250-acre campus
- CHP system start up 1954
- Chilled water system startup 1975
- Reconstruction 2016 - 2019

VISION FOR TRANSFORMATION

Goal

Results Delivered

Improve reliability by investing in plant and distribution infrastructure.

Reliability 2018 - 2020

- District Heating 99.995%
- District Cooling 99.998%
- 99.999% Against Contract Requirements

Improve resilience with a second plant and redundant distribution infrastructure to provide continuous supply of critical thermal service with geographic source diversity and on-site alternate fuel backup.

Over 36 months the construction project team:

- Installed temporary natural gas boilers
- Demolished three existing coal-fired boilers and one 50-year-old natural gas boiler
- Installed four permanent natural gas boilers, emergency diesel generators, and fuel oil storage
- Upgraded electrical feeders and switchgear
- Replaced five absorption chillers with three centrifugal chillers
- Installed seven new cooling towers
- Maintained steam and chilled water services to the medical campus throughout the project

Improve the environmental profile of the system by eliminating coal as a fuel source and increasing system efficiencies.

Emissions 2013 - 2020

- 70% reduction in greenhouse gases

Water 2016 - 2020

- 41% reduction in water consumption

Efficiency 2020

- Heating efficiency: 70.9%
- Chiller plant kW/ton: 0.79
- Chiller plant COP: 4.46

VISION FOR TRANSFORMATION

Goal	Results Delivered
Stabilize rates for steam and chilled water.	Customer Savings 2016 - 2020 • $105 million with 2020 savings of $1.75 million/month • Zero rate increase in first year • Moderate, predictable rate increases in years 2-4 • Rate increases have been less than the member-approved pro forma
Create capacity for medical campus growth.	Supported design and construction of • Medical College Hub for Collaborative Medicine new 333,850 square foot facility • Froedtert Center for Advanced Care 200,000 square foot expansion • Children's Hospital North Tower new 225,000 square foot facility • Kathy's House new 25,000 square foot facility • Designs for several new facilities totaling over 1,000,000 additional square feet
Engage member organizations in decision-making from the source to the user.	Active customer board, Milwaukee Regional Medical Center Thermal Service Board, provides governance

About Milwaukee Regional Medical Center

The Milwaukee Regional Medical Center is a nonprofit consortium of health care institutions whose faculty and staff provide a full range of health and wellness services to the residents of Wisconsin serving an average of 1.5 million patients each year. The medical center's health care institutions share a 250-acre campus in Wauwatosa, Wisconsin. The consortium provides its six member organizations with centralized planning, shared services, and infrastructure including the campus energy system.

Milwaukee Regional Medical Center

The medical systems on campus provide essential, regional services including Level 1 trauma care and acute behavioral health services for adults and children with a shared mission of excellence in patient care, medical education, life-science research, and community service. Alongside patient care, there are more than 1,400 students enrolled in degree-granting educational programs at the Medical College of Wisconsin including medical students, graduate students, pharmacy students, and Master of Science students. The campus also supports physicians in residency and fellowship training. The Medical College of Wisconsin is the largest research institution in the Milwaukee metro area and second largest in Wisconsin. On campus scientists are engaged in postdoctoral research fellowship training leading biomedical and population health advancements through laboratory research, clinical trials, and community-engaged research.

DEMONSTRATED EFFICIENCY

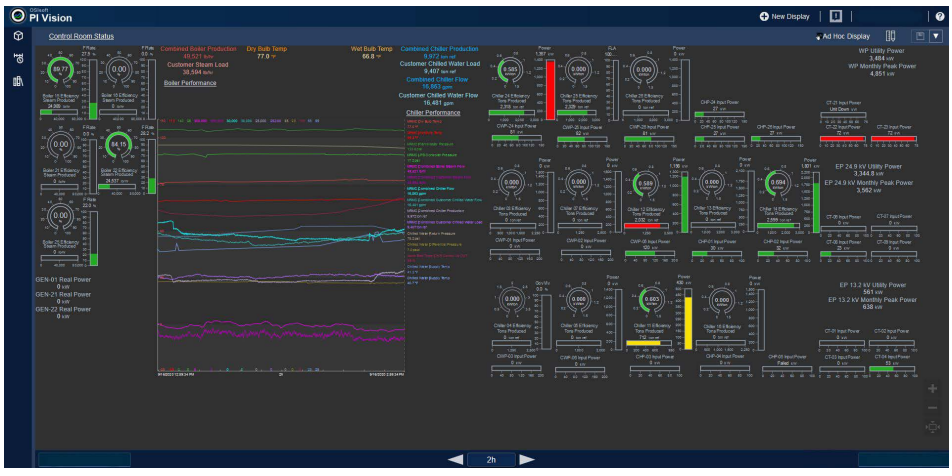
Efficiency

	2018	2019	2020
Heating Efficiency	60.4%	63.0%	70.9%
Chiller Plant kW/ton	1.01	1.06	.79
Cooling COP	3.48	3.32	4.46

Prior to 2020, the operation of the plant and the resulting efficiency was largely determined by the production assets available. In addition to the energy system reconstruction and installation of state-of-the-art equipment, significant improvements have been made in recent years to increase efficiency, while improving performance and increasing reliability. These efforts include strategic capital investments coupled with operational and process improvements. A timeline of system reconstruction and the impact on efficiency is available in the appendix.

Investment in new equipment and system modifications provided an opportunity to also invest in best-in-class controls and controls programming. The control schemes at Milwaukee Regional Medical Center Thermal, strategically designed by Ever-Green Energy, are driving efficiency and automation, which allows the team to focus on the big picture operation of the system and to drive deeper efficiency. This includes automatic staging based on energy optimization, load balancing, and customer controls coordination.

The team uses a PI data historian to visualize instantaneous, daily, and monthly performance data, including chiller kW/ton, boiler efficiency, condensate return, chilled water makeup, chilled water auxiliaries kW/ton, steam parasitic load, and chilled water parasitic load. This enables faster problem identification and troubleshooting, ensures higher quality service delivery, and better efficiency over time.



PI data system drives efficiency and automation

DEMONSTRATED AVAILABILITY/RELIABILITY

Energy system reliability is essential to critical health care systems. Surgical air quality for operating rooms, for example, requires 100% outside air and a minimum 20 air changes per hour. One facility on campus, Froedtert Hospital, has 48 operating rooms. To care for patients with COVID-19, Children's and Froedtert converted significant portions of their care facilities to surgical suite air quality. The team supported this operational change by consulting on thermal system capabilities and then providing them with the increased thermal services required. Furthermore, laboratories and data centers require cooling year-round. The reliability of the Milwaukee Regional Medical Center Thermal systems is vital to sustaining critical, regional health services to 1,500,000 patients each year.

The reliability of the Milwaukee Regional Medical Center Thermal systems is vital to sustaining critical regional health services to 1,500,000 patients each year.

After reconstruction, startup and commissioning were completed by a dedicated team, including a-third party commissioning agent whose role was to ensure all components of the system conformed to design and specification. Once the individual components were turned over to the Ever-Green Energy team, they were tested as a system through the controls to ensure they would function together during large transients like production asset trips. The team systematically tripped every boiler, chiller, pump, and auxiliary to confirm that the remaining assets or control logic would prevent additional failures or cascading trips. Careful coordination with the customers was required to accomplish these activities without disrupting their building operation.

Team communications and procedural routines have been key to enhancing reliability and efficiency. Several improvements have been made to communication protocols including an updated control system that works across plants and is accessible to team members anywhere in the production facilities. Additionally, daily activity logs, standard operating procedures, and improved mobility through the plant have all enhanced plant performance and team responsiveness.

Reliability

	2018	2019	2020
Heating Availability	100%	99.997%	100%
Heating Reliability	100%	99.987%	99.998%
Cooling Availability	100%	100%	100%
Cooling Reliability	99.996%	100%	100%

Milwaukee Regional Medical Center Thermal has reliability designed into its construction which will serve the campus members for years to come. Great care was taken to eliminate any single point of failure across all systems. The features safeguarding reliability include:

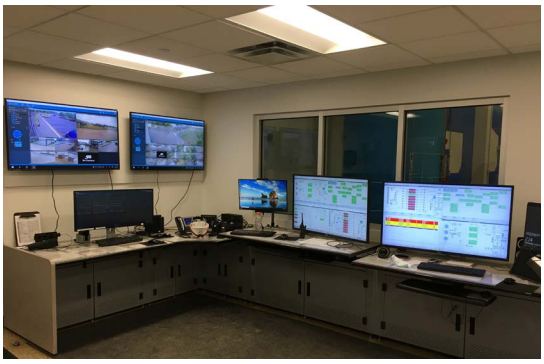
- N+1 boiler capacity. N = 280,000 lbs/hr steam flow from four boilers. Peak observed load was 230,000 lbs/hr at -20F on 1-31-2019.
- 36% excess chiller capacity. Combined chiller capacity is 25,010 tons. Peak observed load is 15,963 tons at 81.9F wet bulb, 93.5F dry bulb on 7-19-19.
- Geographic production diversity ensures catastrophic plant failures do not affect all production assets.

- The three plants are electrically supplied by 7 primary feeders, which are in-turn fed from two geographically separated utility substations.

- All new electrical switchgear, transformers, and nearly all new VFDs are enclosed in filtered, air conditioned spaces to ensure their cleanliness and extend their service life.

- The North Plant is supplied by a flywheel UPS which, when paired with its emergency diesel generator, completely eliminates the possibility of a power disruption.

- Operator work stations exist in all three plants and are connected to redundant control networks. The control system can also be accessed using a mobile platform and secure WiFi.



East Plant control room

- The control system is programmed to sense a motor failure and immediately start the next component in a lead / lag sequence. This applies to all pumps, makeup air units, and cooling towers. The failed component is forced to an “off” state to await troubleshooting.

- When pumps are started and stopped, the system ramps them up or down slowly to minimize the transient on the respective systems until pump speeds are matched. The same is done for the low pressure steam pressure reducing valves, which ramps valves open and closed slowly.

- The control system is programmed to alarm as motors approach their peak capacity or rated full load amperage to allow operators to intervene and prevent a trip.

- Looped, redundant steam and chilled water headers may be isolated in segments, preventing the system as a whole from deenergizing should a leak occur and allowing all loads to be fed from two directions.

- Visual management of piping systems by color-coding piping and insulation based on ASME standards and labeling piping with flow directions at specified intervals.

- Fuel oil is stored in four above ground storage tanks and may be offloaded into two stations which are geographically separate and transferred between tanks. The storage capacity will supply the boilers and emergency generators at full capacity for three days.

- There are two natural gas mains supplying the facility.

- There are two water mains supplying the facility, which in turn are cross-connected inside the plant.

- Modern building codes coupled with fire detection and full coverage sprinkling reduce the risk of fire spreading throughout the facility.

Capital Investment and Maintenance

Milwaukee Regional Medical Center Thermal continues to invest in its infrastructure to ensure its reliability, resiliency, and efficiency. Using a continuous historian paired with analytics enables data-based decision making for capital investment analysis. Ever-Green Energy develops annual capital investment recommendations and a 10-year capital plan for approval by the customers representatives on the Milwaukee Regional Medical Center Thermal Services Board.

Operator-based maintenance is a key strategy to enable higher productivity and more rapid problem identification. Housekeeping activities are paired with inspection and lubrication to reduce the number of touches on each piece of equipment and to maximize the efficiency of an operator's time, which is especially important with a small team. To enable this and other maintenance, a 5S program modeled after Lean Manufacturing principles has been adopted.

Water Treatment

Water treatment is another area with consequential impacts to reliability and efficiency. Every steam and water system is checked every shift, and every operator is qualified to conduct every test. Part of the updated water treatment system's design are corrosion coupons, located in each system both in the plant and in select customer buildings. These are used to verify results of the system, and the trends are excellent. Condensate samples have returned less than 5 mil per year for mild steel and less than 1 mil per year for copper. Cooling tower samples have been less than 2 mil per year for mild steel and less than 1 mil per year for copper. Chilled water samples have been less than 1 mil per year for both mild steel and copper.

Water chemistry lab

Cybersecurity

Cybersecurity is an essential element of energy system reliability. A range of technology is integral to enhancing the customer experience, asset management, transmission and distribution control systems, and systems that protect against cyber threats. By addressing information and operational systems early in the system transformation planning process, the team was able to design an integrated system including the software, hardware, and operational processes to support security best practices. Beyond the information systems, the team managing the energy system follow security protocols and processes and participate in regular security training to continuously safeguard the energy system's network of information systems.

Overcoming COVID-19 Challenges

The most recent challenge to our system's reliability has come from COVID-19. In the first week of March 2020, when it became apparent that action was need prior to government mandate, the Ever-Green Energy team developed a plan to ensure the safety of employees and continuity of operations. With the following precautions place, we were able to prevent any spread of the coronavirus within our facility:

- Splitting the operators between the two control rooms to ensure that at least one team member per shift is isolated from the others.
- Prohibiting anyone besides the operators from entering the control rooms.

- Shifting the daily standing operations meeting to video teleconference.
- Splitting up employees within departments so that only half of each group are in the plant each weekday with the other half work remotely.
- Requiring physical distancing and mask use.
- Eliminating the use of the plant lunch room.
- Disinfecting the control rooms at the start of each shift and the offices at the beginning of each day.
- Shifting all control room and office HVAC to 100% outside air and installing HEPA filtration.
- Requiring home quarantine following any known or presumed exposure or any high-risk travel.
- Reviewing our critical spares and water treatment chemicals to account for lead times as well as potential shortage and supply chain disruptions.
- Thermally temperature scan all contractors every day and require mask use.
- Eliminating non-critical outside activity, including plant tours and sales calls.

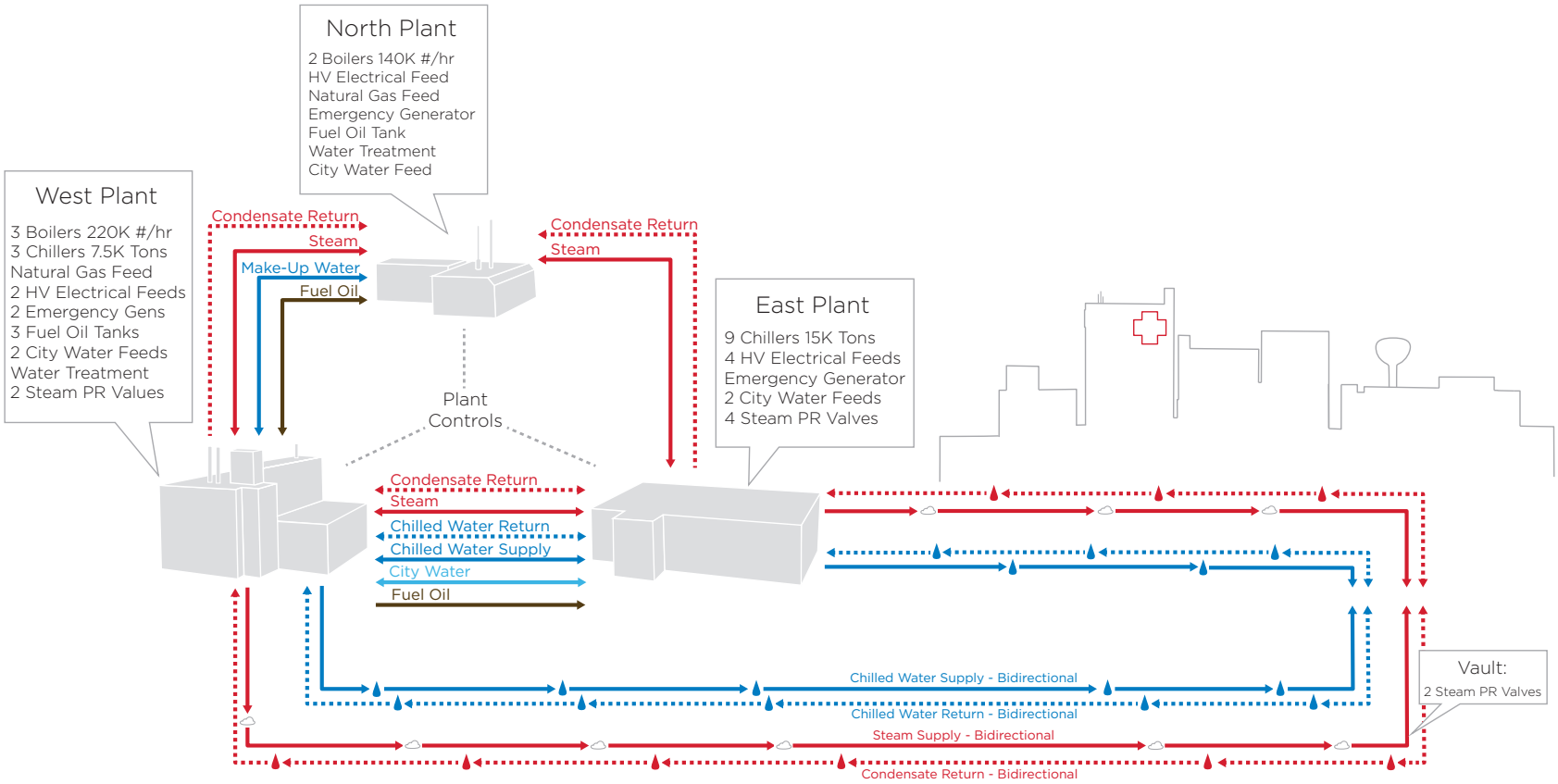
DEMONSTRATED RESILIENCY

The Milwaukee Regional Medical Center members made the investment in the resiliency of the energy system because of its critical value to the campus. The Ever-Green Energy team trains specifically to ensure that they are able to utilize all of the design features available to restore the plant following a failure.

Following the purchase of the plant in 2016, the first external failures came in the form of power disruptions. Power monitoring was installed on the incoming feeder, which confirmed that the issue was the incoming power. During a meeting held with the local utility, they recommended local protection beyond the existing emergency generator. Two devices were sourced for consideration, and the 900 kW flywheel UPS selected. This system provides over 2 minutes of ride-through following a power disruption, more than enough for the 11 seconds the emergency generator requires to come online. There were 13 total boiler trips due to power quality issues prior to the flywheel's startup in September 2017. Since then, there have been over 132 power quality events eliminated by the flywheel. Power monitoring was installed on the remaining six primary feeders into the other plants based on the value of the data provided while solving this problem.

Reliable and Resilient by Design

MILWAUKEE REGIONAL MEDICAL CENTER THERMAL



There are a number of design features included in the reconstruction of the plant which enable the systems to be segmented and restarted rapidly should failures occur. They include:

- PLC operated main-tie-main switchgear at the medium and low voltage levels which automatically sense a loss of power and tie across busses. The PLCs will also sense a loss of both busses utility power and automatically start emergency generators.
- Emergency generator capacity is sized to provide full steam production, and critical campus chilled water loads.
- All loads are evenly split between electrical busses, so a loss of any bus does not trip all operating equipment.
- The power monitoring on all primary feeders will text message the Operators and select Leadership, supporting faster root cause identification and system restoration.
- Steam, chilled water, condensate return, and compressed air piping is looped and segmented by isolation valves, able to feed loads from two directions. Customer building segments include no more than five customers.

East Plant chillers

- East Plant condenser water is looped and segmented between two sumps, preventing a pipe failure from resulting in the loss of all East Plant chillers.
- All equipment is able to be controlled locally should a control system failure occur.
- All VFDs, with the exception of the new West Plant chillers, include bypasses.
- All control valves include either full size bypass valves or manual handwheel operation.
- A 1,000 gpm water well has been developed and is in the process of completion. It will primarily provide cooling tower makeup, but connections are in place to provide water to the water softeners for boiler makeup should a water main failure occur.

Processes have also been put into place to maximize the speed of recovery:

- Critical spares have been stocked with resilience in mind. PCCP pipe segments and repair saddles for each diameter of chilled water main are on site. New chilled water service lateral isolation valves are stocked on site.
- Emergency repair agreements are in place with underground mechanical contractors. All long-term maintenance contracts include service level agreements for emergency service.
- Control system programming, including local equipment PLCs, is backed up with copies stored off site.
- Relationship development and recurring plant familiarization training with local first responders including fire and police departments.

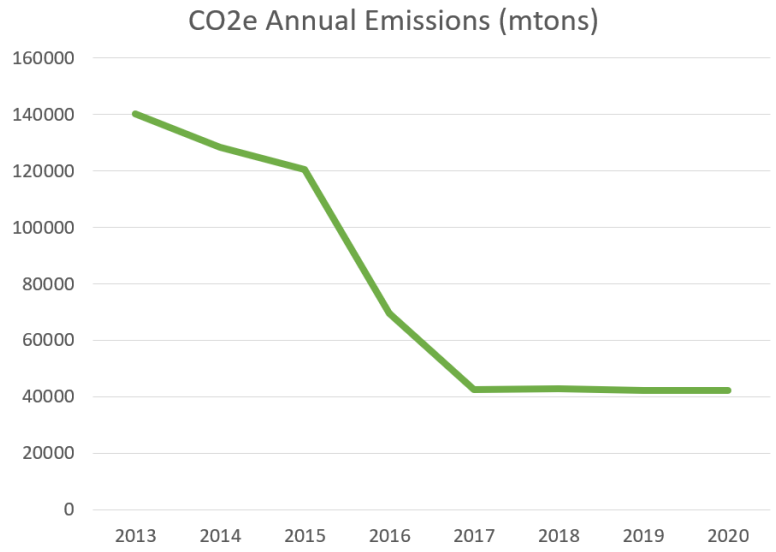
ENVIRONMENTAL BENEFITS

70% reduction in greenhouse gas emissions since 2013

41% reduction of water consumption since 2016

Recognizing the impact on population health and the natural world, Milwaukee Regional Medical Center and Ever-Green Energy are committed to minimizing environmental impacts, conserving natural resources, and providing effective stewardship of the environment. As the energy system transformation began, the vision to reduce greenhouse gas emissions was clear. As the project progressed, many opportunities arose that helped the project team advance environmental improvements through technology and operations. The renovation project team worked to reduce carbon and improve environmental profiles alongside the system advancements to benefit the system's environmental footprint. The most significant metrics of progress are the 70% reduction in greenhouse gas emissions since 2013 and the 41% reduction of water consumption since 2016. This progress is also discussed in the Sustainability section.

- Beyond these metrics, facilities upgrades have led to additional environmental benefits including:
- Elimination of soil and storm water contamination from coal dust and coal ash
- Elimination of mercury switches on coal boilers and mercury ballasts from fluorescent lighting
- 70% reduction of lubricating oil used by eliminating turbine-driven equipment
- Modern combustion controls include oxygen trim maximizing boiler efficiency across the span of operation
- Installation of low-NOx burners further reduces emissions
- Fuel oil utilized is ultra-low sulfur
- Minimized potential for soil contamination by utilizing double-walled, above-ground fuel oil storage tanks with interstitial leak detection
- Emergency generator day tanks prevent fuel oil overflow utilizing an integrated reversing pump, which will pump back to the main storage tanks



Donald is a banded male peregrine falcon that nested at MRMCT in 2019 and returned in 2020.

Operational routines to ensure environmental permit compliance are built into the maintenance program, training programs, operator rounds, and standard operating procedures. These include Title V air permit requirements, EPA Method 22 opacity checks, storm water management checks, and spill prevention, countermeasure, and control procedures. Spill kits are co-located at all fuel oil and chemical off-loading stations.

Since 2013, the plant has served as a nesting site for the Wisconsin Peregrine Falcon Recovery Program. That tradition continued with the transition of ownership, and the site has averaged three chicks per year since the nest was installed. The Ever-Green Energy team works closely with the DNR program manager to maintain the nest and support annual banding after the chicks are hatched. There was a particular challenge in 2018, in that construction dictated that a new nest be constructed and relocated. This was performed by Boldt Construction in coordination with the Falcon Recovery Program. There were no issues with this transition and the nesting pair produced four offspring the next season.

SUSTAINABILITY EFFORTS

Milwaukee Regional Medical Center Thermal is playing a significant role in Milwaukee Regional Medical Center's overall sustainability efforts that aim to protect the health and well-being of patients, staff, and the communities they serve.

In 2018, Ever-Green established four key metrics for monitoring sustainability:

- System efficiency
- Renewable energy integration
- Carbon reductions
- Water savings

Clearly, the major emphasis for Milwaukee Regional Medical Center Thermal operations during the system transformation has been on efficiency, which saves water, reduces carbon, and makes future renewable integration more viable. The use of LED lighting and solar tubes improved electric loads in the offices and plant. HVAC occupancy setbacks and outside air economizing have also been integrated.

Water savings in the past few years has also been significant, with an emphasis on reducing potable water usage. Steam system sample coolers are cooled using DI water, eliminating single pass potable water use and reclaiming the heat to the makeup system. High quality water treatment ensures 50 cycles of concentration in the boilers and 5 cycles of concentration in the cooling towers, minimizing the makeup due to blow down. Additionally, with the startup of the water well in 2022, treated potable water will no longer be required for cooling tower makeup, reducing the environmental footprint of that process.

Operationally, the plant has a robust recycling program. Additionally, Operators have completed performance testing to determine the optimal time to run sample coolers, building it into the water treatment SOPs to minimize their waste.

WORKPLACE SAFETY/EMPLOYEE TRAINING

Ever-Green Energy is committed to providing employees with education, training, and a safe work environment. To support the safety of staff, guests, and contractors the Milwaukee Regional Medical Center Thermal safety program is designed to promote thorough safety procedures and emergency preparedness, as well as to minimize the hazards to human health and the surrounding environment. Throughout 2019-2020 the team had two OSHA recordable incidents at Milwaukee Regional Medical Center Thermal,

achieving a total recordable injury rate 22% lower than industry average (Source: 2019 U.S. DOL Bureau of Labor Statistics for NAICS code 221330).

Ever-Green Energy supports employee well-being with the LiveWell program that focuses on the four areas of health, financial, community, and social, offering employees a wide variety of events and resources to meet their diverse needs.

Asbestos safety training

Employee Safety

Employee safety training utilizes SafeStart, a third-party "train the trainer" program, and extensive internal training customized to the needs of the team. The SafeStart safety awareness program focuses on non-deliberate risk and human behavior. The goal of the program is to provide the awareness and the tools needed to help keep employees safe everywhere they are, not just in the workplace. SafeStart focuses on the mistakes and errors that can occur anywhere, and are more likely when someone is rushing, frustrated, fatigued, or complacent. These states can contribute to one of four critical errors including: eyes not on task, mind not on task, being in or moving into the line-of-fire, and loss of balance, traction, grip. These factors cause more than 90 percent of all serious injuries at work, at home, and on the road.

SafeStart training has been completed by all Ever-Green Energy employees at Milwaukee Regional Medical Center Thermal. It includes 5 units for a total of 10 hours per employee plus annual refresher training. Milwaukee Regional Medical Center Thermal was visited by SafeStart implementation staff in 2018 and received their Mark of Success Gold Star in recognition of its integration.

In addition to SafeStart training, monthly safety meetings are conducted for all team members. The 2019 – 2020 safety trainings have included topics like asbestos, lock-out/tag-out, hot work, confined spaces, freon leaks, accident prevention, hearing protection, CPR and first aid, NFPA-70E, shop safety, fork lift operations, physical security, and active shooter awareness.

Contractor Safety

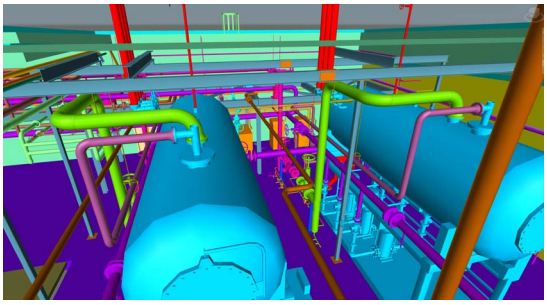
The Ever-Green Energy contractor safety program ensures that all on-site contractors have received the necessary OSHA safety training from their employers, along with a site-specific policy review. Tunnel entry procedures for contractors have been put into place.

Safety was a priority throughout reconstruction. At the project peak, there were over 150 contractors on site and 30 systems locked out in some manner with over 500 points of isolation. To minimize the potential for injury, nearly every system tie-in, including electrical, steam, chilled water, and auxiliary systems, were done with the systems de-energized. Boldt Construction performed 675,000 labor hours of construction through 2019, with a TIR of 1.5 which is half of the construction industry average.

Emergency Response

Emergency response plans have been developed and are available via mobile platform for many plant emergencies such as fire, tornado, and active shooter.

Safety in Design



Three dimensional renderings helped to incorporate employee safety into design.

Safety was engineered into the design of the plant, tunnels, and vaults during energy system reconstruction to better protect employees, contractors, and the campus. Three dimensional renderings were used to reduce risk by incorporating ergonomics for component access, stabilizing surfaces to access equipment, and clearing traffic patterns through the facilities. Safety design included:

- Consideration of employee ergonomics for storage of equipment and tools
- Elimination of trip hazards like conduit and drains
- Improved work surfaces and access including added platforms to eliminate ladders, new concrete pad to stabilize valve access, and added chain operators to access valves located overhead
- Guest and vendor access can be monitored and controlled by employees via mobile devices from anywhere in the plant
- The radio system was extended to operate reliably throughout tunnel network
- Public address system was installed to enable emergency communication in and around the plant.
- Freon leak detection was tied into the control system that can automatically initiate emergency ventilation
- Natural gas leak detection was installed and tied into the control system for immediate notification
- Fire detection exists throughout the facility, with redundant notification panels including one in the control room
- The control system automatically monitors system components to ensure that water treatment chemicals, including biocide, are always at the appropriate concentrations, which helps to prevent legionella in the cooling towers

Training

Ever-Green Energy offers employees a comprehensive training and development program, that includes:

- Onboarding
- Professional development
- Apprenticeships
- Job shadowing
- Organizational learning
- Tuition reimbursement
- Management training

In total, between internal monthly and specialty training, the Milwaukee Regional Medical Center Thermal team completes at least 40 hours per year per employee. During and after reconstruction, employees logged at least 128 hours of new system training per employee.

New operator onboarding follows a system similar to the US Navy submarine qualification program, with knowledge "check outs" by qualified team members for individual systems included in a qualification book. Operators undergo annual written and oral examinations as well as system drills that are overseen by the chief engineer. Beyond onboarding, monthly operator training is focused on topics to develop skills across the team and has included trainings on steam plant chemistry, cooling tower chemistry, pump design and maintenance, valves and regulators, energy and thermodynamics, boiler controls and emissions, emergency response, and manual chiller plan operation.

The team completes at least 40 hours of training per year and logged at least 128 hours of new system training per employee.

CUSTOMER RELATIONS STRATEGY

There is a strong and strategic partnership between the Ever-Green Energy team and the team at the Milwaukee Regional Medical Center campus. This partnership is built on open communication, mutual respect, and trust.

The Ever-Green Energy teams supports the campus members on three levels. At the tactical level, distribution technicians work with facility operators on a day-to-day basis for seasonal building start up and shut down and system troubleshooting. By monitoring customer building data, the team has been able to identify out-of-normal operations of customer equipment often before the systems reveal issues at the building level.

The second level of support is operations. The Ever-Green Energy team works with the medical campus facilities management to support their needs. This has included coaching on chilled water control methods to improve building functions, guidance during COVID19 for shifting air handlers to 100% outside air, and building water quality. They have also conducted analysis of building energy use trends and met with project teams to discuss HVAC component designs.

At the strategic level, the team supports the campus members by providing complete transparency in operation of the plant. Customers guide the system decisions through their representatives serving on the Milwaukee Regional Medical Center Thermal Services Board. Ever-Green Energy promotes trust. The owners are able to have a high degree of confidence in the thermal system because they are certain that when mistakes are made or issues arise, they will be notified promptly, the root cause will be determined, and both corrective actions and lessons learned will be shared.

"Ever-Green has been the very definition of strategic partner. This has been evident in Ever-Green meeting or exceeding every major milestone of our very complex $250 million central utility plant and distribution project. Our team has given them large, complex goals and the Ever-Green team has risen to the occasion to achieve them. They understand our world of limited resources and consistently demonstrate an ability to prioritize initiatives and investments based on sound metrics. Their leadership team has been very intentional about creating a culture of accountability. Their integrity is beyond reproach." Bob Simi, Executive Director, Milwaukee Regional Medical Center

With a seat at the planning table, the Every-Green Energy team has helped the campus architects and designers right-size equipment and infrastructure saving the member-owners money and preparing for the best service experience. A clear set of connection design standards for steam and chilled water helps engineers specify building connections and components. Since 2016, Ever-Green Energy has supported:

- The construction of the Medical College Hub for Collaborative Medicine, a new 333,850 square foot facility
- The 200,000 square foot expansion of the Froedtert Center for Advanced Care
- The construction of the Children's Hospital North Tower, a new 225,000 square foot facility
- The construction of Kathy's House, a new 25,000 square foot facility
- Designs for several new facilities totaling over 1,000,000 additional square feet

The Ever-Green Energy team has been able to control costs and stabilize the customer's rates. This has been accomplished by a number of means:

- Hedging gas has locked in much lower rates and provides budget certainty. Savings have been >20% over retail purchase
- Real Time Market Pricing for electricity has saved $581,000 or 43% from retail rates in 2020, the first year with the rate structure
- Milwaukee Regional Medical Center Thermal was assigned an AA rating from Standard & Poor's on the strength of its structure and contracts, enabling extremely favorable financing rates and structures

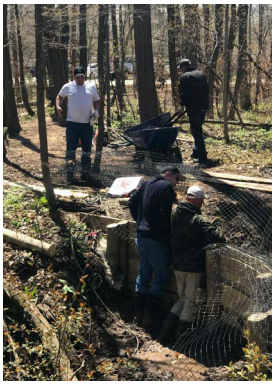
The results have been exceptional. Each year's annual operations budget has decreased. There was no customer rate increase in 2016, moderate rate increases in years 2-4, and no rate increase in 2020. With the financial hardships endured by the members due to the COVID-19 pandemic, a 2% rate decrease was provided for the second half of 2020. The member savings since acquisition are estimated to be $105 million from 2016 through 2020. In 2020, the savings represented $1.75 million per month.

Since 2016 customer-members have saved $105M including $1.75M per month in 2020.

COMMUNITY INVOLVEMENT

Ever-Green Energy was started as a public-private partnership and each of its systems is rooted in community and customer partnerships. Giving back to the community is a core value of our organization. The team at Milwaukee Regional Medical Center Thermal has a long-standing legacy of demonstrating their community commitment through offering support via volunteering and providing funding to strengthen the local community and invest in its future.

13 of 26 team members have a combined 146 years of military service in the US Army, Navy, Air Force, and National Guard



Volunteering at Schlitz Audubon Nature Center

The Ever-Green Energy giving strategy centers on customers, community, and the environment. In the Milwaukee area this includes support for Schlitz Audubon, the United Way of Greater Milwaukee and Waukesha Counties, Milwaukee Hour of Code, and Ballpark Day of Faith.

Ever-Green Energy gives every team member 8 hours each year to use at company-sponsored volunteer events or at opportunities of their choosing. In 2019, Ever-Green team members serving Milwaukee Regional Medical Center Thermal used 53 hours to volunteer with the Schlitz Audubon Nature Center while working on trails and other land stewardship projects that support the habitat of the Southeastern Wisconsin bird population. Ever-Green Energy is also a sponsor of Schlitz Audubon's Annual Gala, which celebrates decades of conservation and environmental education.

Additionally, the Milwaukee Regional Medical Center Thermal team has a strong history of military service. Thirteen of the 26 members of the team are Veterans between the US Army, Navy, Air Force, and National Guard, with a combined 146 years of service.

Vets Medallion Award from US Department of Labor recognizes veteran employment and professional development

APPENDIX

System Transformation Timeline

- 2012 – MRMC due diligence for system procurement commencement
- 2015 – Construction of a temporary steam plant commencement
- October 2015 – Ever-Green Energy hired to form a new utility
- April 2016 – Change of ownership, system recapitalization and conversion from coal to natural gas commencement. Ever-Green Energy assumes OMM responsibility for campus energy systems
- 2017 – Major demolition completion, new equipment installation commencement and phase 1 of new distribution system startup
- 2018 – New equipment startups including electrical switchgear, boilers, chillers, diesel generators, cooling towers, control system, building systems, and Phase 2 of distribution system and final demolition activities
- 2019 – Added scope startups including chiller turbine conversion, boiler conversion, new cooling towers, and expanded control system and last mobile boiler removed
- 2020 – Final boiler conversion tuning, cooling tower tuning, and control system tuning

System Transformation Technical Project Details

Steam System

- Installed four temporary natural gas and distillate oil steam boilers, including all necessary auxiliaries (four makeup air units, two deaerators, six feedwater pumps, two air compressors, two air dryers)
- Demolished three existing coal-fired stoker grate steam boilers and one existing (1960s-vintage) natural gas steam boiler including ESPs and coal handling equipment
- Demolished three steam turbine electric generators and auxiliaries
- Demolished all associated high pressure auxiliaries and two cooling towers
- Installed four permanent 70,000 lb/hr 135 psig saturated steam natural gas and oil-fired boilers, including new auxiliaries (2 makeup air units, 4 feedwater pumps, 1 air compressor, 2 air dryers)
- Converted one 69,000 lb/hr 600 psig superheated steam natural gas fired boiler to 80,000 lbs/hr 135 psig saturated steam
- Installed 32,000 ft of steam and auxiliary piping and 1,200 valves

- Installed a 1.25 MW emergency diesel generator to provide full North Plant steam capability
- Installed a 900 kW flywheel UPS to eliminate power quality related boiler trips at the North Plant
- Installed 170,000 gallons of fuel oil storage, associated pumping, and purification
- Installed a separate water treatment system including 20,000 gallons of deionized water storage, 2 pumps, 2 condensate polishers, 2 water softeners, and 2 reverse osmosis treatment trains
- Installed an additional 20,000 gallons of condensate storage, with transfer and pumping
- Installed four pressure reducing valves between two plants to produce 15 psig steam
- Separated production capacity between two facilities

Chilled Water System

- Upgraded electrical feeders and all plant electrical switchgear to increase power supply diversification, 16,400 ft of medium voltage cable with 18,000 KVA of transformation in total between 8 new transformers and 6 new substations
- Installed 6.75 MW between 3 emergency diesel generators to provide emergency cooling load
- Replaced chillers
  - » Removed 5 – 1,000 ton absorption chillers and auxiliaries
  - » Installed 3 – 2,500 ton centrifugal chillers – 2 with variable frequency drives
- Converted a turbine-driven chiller from a 400 psig turbine to a 135 psig turbine.
- Installed 8,000 feet of pipe and 500 valves
- Installed six new VFD driven pumps
- Installed chilled water expansion tanks, makeup pumps, and water treatment
- Installed a cooling tower water treatment system
- Replaced 5 extraction turbine cooling tower and chilled water circulation pumps (1,850 hp total) with VFD driven pumps
- Demolished five and installed seven new cooling towers, all with FM rated material.
- Separated production capacity between two facilities

Control System

- Demolished 1970's Bailey pneumatic controls associated with legacy steam components

- Demolished 1990's JCI Metasys controls associated with legacy chilled water and customer controls components
- Installed a temporary control system for the temporary boiler installation
- Installed a new Distributed Control System consisting of:
  - » New redundant controllers and redundant I/O hardware in each plant coordinating operation of all equipment
  - » Three new sets of redundant controllers creating customer building clusters with remote I/O in each customer building
  - » 166,000 ft of control wiring, 43,500 ft of Cat5E and 6 ethernet, 6,000 ft of coaxial, and 92,000 ft of fiber optic cable for redundant controls and networking throughout the campus
  - » Over 3,000 logic modules and I/O points which automate equipment operation and staging
  - » Five operator work stations distributed between the three plants
  - » A secure wireless network enabling mobile operation
  - » Redundant data historian services enabling operational data analysis, insights, and problem solving

Distribution System

- Installed 2,400 ft of box conduit containing 135 psig steam, 15 psig steam, and condensate piping with 13 vaults for isolation and expansion, including remote monitoring and leak detection at the plant
- Directionally bored 3,270 ft of HDPE chilled water piping, including 2 - 900 ft bores for 42 inch pipe, the largest and longest completed in Southeast Wisconsin
- Inspected 1,000 ft of 36 inch PCCP chilled water piping from the 1970's, resulting in 176 linear ft of carbon fiber sleeving

Civil and Architectural

- Demolished 5,880 square feet of building space to enable site realignment
- Constructed 28,432 square feet of new building space to geographically diversify production assets. Included were new office areas and control rooms and their associated HVAC
- Brought 89,788 square feet of legacy building space, constructed between 1954 and 1990, up to modern code compliance. This included full interior sprinkling, two new stair towers and enclosing two others, separating refrigeration spaces from boiler combustion air, and a new elevator
- Enhancement to site storm water management including a new retention pond and settling vault
- Two new water main services for boiler and cooling tower make up

Continuous Improvements

- Adding filtration to both legacy condenser water and chilled water loops in the East Plant. Replaced one of the failed legacy sump traveling screens
- Adding a chemical treatment system to the chilled water systems. None had previously existed
- Redesigning the legacy condenser water chemical treatment system in the East Plant, installing all new tanks, pumps, piping, and controls
- Redesigning the legacy boiler water treatment system in the West Plant, installing new tanks, pumps, piping, and controls
- Installing sample coolers and corrosion coupon racks for condensate and chilled water in five customer buildings to confirm the water treatment program results
- Reconstructing one cooling tower cell, upgrading from wood to FM rated materials
- Replacing four single speed condensate pumps with three VFD driven pumps
- Adding VFDs to three deionized water pumps
- Adding VFDs to six legacy chiller evaporator pumps
- Adding VFDs to four legacy cooling tower fans
- Adding a VFD to a 40-year-old reciprocating air compressor
- Replacing all legacy high bay sodium and fluorescent lighting with LED
- Upgrading the overflow protection of the legacy deaerator and eliminating all unnecessary tank penetrations
- Adding a layup system for the North Plant deaerators
- Replacing badly corroded pipe stands supporting the legacy chilled water mains and eliminating five abandoned and corroded pipe penetrations
- Replacing five expansion joints in the steam and condensate distribution systems
- Replacing 300 ft of walkable steam tunnel
- Adding insulation to 2,500 linear feet of tunnel condensate piping
- Adding two and replacing two condensate receivers in the steam distribution system
- Replacing or repairing 8 customer steam billing meters
- Upgrading 95 high and low pressure steam traps in the distribution system

- Re-roofing 37,400 square feet of legacy buildings
- Adding control valves to automate operation of the eight East Plant cooling tower cells
- Replacing 300 ft of corroded chiller condenser water piping between 10 and 16 inches in diameter
- Enhancing plant security by upgrading the perimeter fence, installing additional exterior lights and cameras, replacing the legacy windows with blast-resistant laminate windows, and adding perimeter controls in the control room.
- Modernizing the legacy elevator
- Reflooring, repainting, and upgrading the insulation in the East and West Plants outside of reconstruction scope
- Adding a public address system for emergency notification

Timeline of Equipment Replacement and the Impact on Efficiency

The legacy steam and chilled water systems were established to produce superheated steam and utilize turbine driven equipment through the plant to generate electricity and act as the prime mover for auxiliaries. Low-pressure extraction steam was distributed to customers. In the summer, it was utilized by the absorption chillers. As the turbine-driven components were eliminated in 2016 and 2017, the efficiency in utilizing the absorption chillers was significantly diminished. Steam was vented during the summer due to the limited turn down of the boilers, volume of needed extraction steam, and functionality of the absorption chillers. Chilled water system differential pressure was operated as it had been, controlled between 12-17 pounds per square inch differential (psid) by changing pump speed manually.

2016 – Steam System: 4 – 70k lbs/hr, 135 psig saturated steam natural gas and fuel oil fired rental boilers without modern combustion controls capable of 3:1 turndown, 1 – 69k lbs/hr, 600 psig superheated steam natural gas fired boiler capable of 3:1 turndown, 1 – 50k lbs/hr, 600 psig superheated steam natural gas fired boiler capable of 2:1 turndown.

Chilled Water System: Primary / Secondary chilled water distribution from the East Plant. 8 – Motor driven centrifugal chillers, 1 – 400 psig steam turbine driven centrifugal chiller. 5 – Lithium Bromide absorption chillers (3 were functional). 3 – Turbine driven cooling tower circulation pumps (2 were functional). 2 – Turbine driven chilled water circulation pumps.

2017 – The oldest, 50k lbs/hr boiler was demolished, as were all remaining turbine driven pumps. With the limited turndown of the rental boilers, steam was vented most of the summer to keep them within air permit limits. That summer, two of the rental boilers were removed and two of the new boilers with modern controls and 10:1 turndown along with their auxiliaries were commissioned in time for winter. New controls for the steam system were commissioned.

That summer, the two non-functional absorption chillers were demolished.

2018 – The last two new boilers and their auxiliaries completed commissioning in the spring and the last two rental boilers were removed. Steam venting was not required that summer. Demolition of 600 psig

auxiliaries took place in the spring, but the last remaining 600 psig boiler was not converted in time for winter. A new rental boiler was procured and connected to the system at the North Plant in time for winter, able to be base-loaded.

The new West Plant variable primary flow chilled water system was started up in the fall, but not able to be fully tested and commissioned. Only one of three chillers were operated at a time for initial startup. Following system hydraulic testing, it was determined the chilled water system could be operated at 3.5 psid, greatly reducing chilled water pump load. The five oldest wooden cooling towers for the East Plant and last absorption chillers were demolished in the fall. New VFDs were installed for the East Plant chiller evaporator pumps, and East Plant chilled water controls were commissioned.

2019 – The last legacy boiler completed conversion to 135 psig saturated steam in the fall, but was limited based on feedwater flow. It was in service for the winter, but only base loaded.

Recommenced additional West Plant chilled water system testing in the spring, then stopped in order to minimize load in the West Plant. This was to enable setting a minimal baseline load for the purpose of shifting to a new electrical rate with significant financial consequences. One West Plant Chiller was operated in July and August during peak load periods. New East Plant cooling tower startup occurred in the summer. New customer controls were commissioned which included all customer billing meters. The turbine driven chiller was converted to a 135 psig turbine and commissioned. Based on the limits of West Plant chilled water production, this chiller was utilized heavily, even with an efficiency in excess of 2.5 kw/ton.

2020 – The feedwater controls were recently upgraded on the last boiler and it is now capable of 80k lbs/hr with an 8:1 turndown.

The West Plant chilled water system is now able to be fully operated. It has the efficiency advantage of a variable primary flow system and electrical rates a fraction of the legacy East Plant equipment. Testing and balancing is complete, enabling the two systems to function together. The PI historian service is developed to visualize operating data. As a result, a number of customer steam billing meters were identified to be inaccurate and have since been replaced, reducing apparent parasitic load and increasing plant efficiency per unit sold. The 2,000 ton turbine driven chiller is now utilized selectively to peak shave the monthly electrical Peak Demand Charge, which is $17.44 per kW. Based on a comparable model of chiller, its operation saves 1,550 kW, or $27,032 per month. It saves an additional $3,456 per month in our 12-Month Demand charge. With the variable primary flow system in operation and selective use of the turbine, chilled water system efficiency has increased significantly in 2020.

2021 – Adding electrical power monitoring at the plant and production asset level for real-time and long-term efficiency calculations. Replacing 5 legacy pneumatic customer control valves with modern digital control valves.