# NEXT

2018 Annual Report


DISTRICT ENERGY
ST. PAUL™

**“As we wrap up our 35th year of service, we know it is as important as ever that we lead the industry as solutions and trends evolve.”**

I began working in the energy sector when I was 22 years old and fresh out of college. I feel fortunate to have started working in the sector when I did because it really impresses upon me how extraordinary the change is that we are witnessing today. When I started, the world had experienced the energy crisis of the 1970s. Energy was viewed in a very pragmatic manner with a growing emphasis on efficiency. It was utility-driven infrastructure that most people only understood as a commodity that affected their pocket book. Today, energy is much more visible in our everyday lives and conversations. Citizens are talking about where their energy comes from, and how their rooftops, open land, and buying decisions are influencing the shifting marketplace and their energy service providers.

Change is also being driven by other factors. Climate change, technology innovation, and the national economy are primary factors spurring research and development for energy alternatives. Even with unprecedented change throughout the past five years, I expect even more transformation will occur in the next decade as the grid makes a fundamental shift to accommodate more variable renewable energy production and storage becomes more market ready and cost-effective. We mostly hear about these changes in the electricity sector as energy leaders seek opportunities to green the grid and electrify transportation and other sectors. These are some of the most significant opportunities to reduce carbon and air emissions. However, we also know through examining other countries advancing their energy systems that considering the system as a whole is what will drive the greatest gains in efficiency and cost-effectiveness.

District Energy St. Paul was built to be a leading-edge energy provider. As we wrap up our 35th year of service, we know it is as important as ever that we lead the industry as these solutions and trends evolve. Throughout 2018, we have worked alongside our industry partners and our customers to identify the most impactful solutions and the best available technology to deliver results. I am extremely proud of our team for their efforts, particularly as it relates to using data from our investments in information systems and advanced metering to optimize production; using storage to dramatically drive down peaks; and working with our customers to help them achieve better performance in their buildings.

Looking ahead, I am tremendously excited for the coming years. Not only will we eliminate coal from our production in 2019, but we will explore integrating other renewable solutions to reduce our fossil fuel dependence and look into decreasing heating system temperatures for overall carbon and energy savings. It is exciting to see Saint Paul and our customers excel in efficiency, benchmarking, and world-class building solutions like those featured in this year’s report.

District energy will continue to evolve. Both the flagship system serving this city and the industry that makes up important energy infrastructure around the world. We are confident that we can continue to be leaders in this evolution and make a transformation that continues to demonstrate our longstanding commitment to customers, community, and the environment.

**Ken Smith**
President and CEO

# WHAT’S NEXT

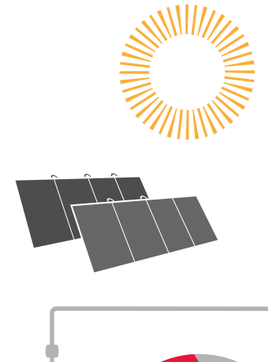
## Emerging Technology Solutions

As new technology enters the marketplace at record-pace, what is next for district energy? We know we cannot just keep up with the market; we need to stay ahead of the curve for our customers.

Our team will make smart and bold decisions that leverage the flexibility of our infrastructure to introduce high-efficiency and low-carbon solutions. We will need to prioritize the technologies that provide our customers with better services, preserve our rate stability, and reduce our use of fossil fuels. We cannot predict all of the amazing technology that will emerge in our next 35 years of service, but we are certainly poised for what is next.

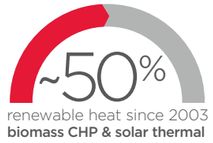
### Beneficial electrification

Electrification of all energy sectors is a growing industry trend, with many looking to this strategy to decarbonize our energy systems, as the grid becomes more renewable and storage becomes more viable. We are promoting a beneficial electrification approach, which emphasizes the integration of renewables and the repurposing of wasted energy from industrial processes, power production, or sewer heat recovery, among others. District energy is a key player in this strategy, leveraging our adaptable infrastructure is flexible and enabling **a more efficient use of all resources**.




### Carbon-free energy sources

Since 2003, our heating services have been close to 50% renewable through the use of biomass-fired combined heat and power (CHP) and solar thermal integration. Looking ahead, we plan to integrate more renewable fuels for heating and will sunset the use of coal from our system early in 2019. Reducing carbon in our system is not just about renewable fuels, it also means putting wasted energy back to work. In the next 3 years, we hope to incorporate wasted heat from customers with industrial processes and capture more energy from our own processes to **improve system efficiency and reduce our fossil fuel inputs**.




### Metering

As the saying goes, you can’t fix what you can’t measure. Our team has been working with our customers and several metering vendors to develop better solutions for measuring building and tenant energy usage and **provide responsive information** back to users to help them save.


### Low-temperature district energy

When District Energy St. Paul converted from steam to hot water in 1983, this was groundbreaking in the United States market. As building design and operation becomes more efficient, it has become more feasible for district systems to adopt lower temperatures to distribute heat. Our team is developing pilot opportunities to lower distribution temperatures, which will help us **save energy, reduce costs, and better utilize more of our carbon-free energy sources**.

## Partners in Innovation

# DYNAMIC BUILDING DESIGN AND PROGRAMMING

Integration of smart technology and solutions goes well beyond our district energy system. Building owners and managers are leading the way for better buildings, promoting sustainability, efficiency, wellness, and more. These shifting priorities, combined with new-to-market building solutions, are creating exciting and dynamic change in our customer buildings. We know that this is the future of high-performing buildings, and that is why we design and operate a system that is adaptable and can advance in partnership with our customers. Opportunities in the past year to serve innovative spaces as well as refine service efficiency with committed customers continue to strengthen the legacy of innovation that has long defined our work at District Energy St. Paul.

Businesses and building managers in Saint Paul are taking the lead on building performance and sustainability, so it does not come as a surprise to see groundbreaking approaches in several of our customer's newly launched building programs. In planning our district energy services, we account for adaptability and the evolution of customer expectations, making sure our solutions stay on pace with our innovative customers. It is part of the genius of district energy, providing a balance of predictable and reliable services with an ever-evolving technology approach. In 2018, downtown welcomed some particularly visionary newcomers, presenting an opportunity to match our values of community and environmental stewardship with the goals they set for their spaces.

**"As buildings in downtown aim to be cutting edge, District Energy St. Paul is a natural partner in this work. We've been honing a renewable, efficient, and innovative system for decades, and we're ready to meet their heating and cooling needs while bringing all of that to the table."**

Steve Rambeck
Director of Business Development
District Energy St. Paul

## LEADING-EDGE SHOWCASE

OSBORN370

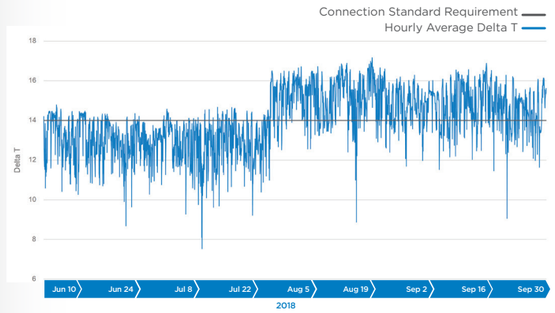
District Energy St. Paul was excited to welcome Osborn370 to the system in 2018. Osborn370, the former Ecolab headquarters, was reimagined by a team of local investors interested in creating a hub for Saint Paul's entrepreneurs, innovators, and business leaders. The innovative building features open floorplans, modern fixtures, and plenty of space to collaborate. Osborn370 is expected to be 90% full by next year. District Energy provides heating, cooling, and domestic hot water to Osborn370, and our team is geared up to continue supporting innovation that has marked this building since its first contract with District Energy in 1982.

# Visualizing Energy Trends

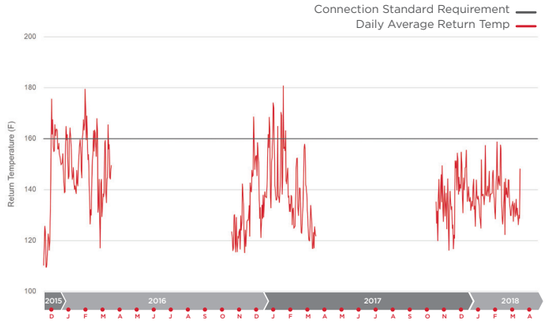
**New** metering and IT platform improvements allowed our customer service team to produce new energy trend reports for our customers this year.

The reports visualize large amounts of data quickly to identify opportunities and diagnose inefficiencies. Customers gain valuable insight into how building operations directly influence energy use and energy budgets. Understanding building energy trends helps customers make more informed decisions on their operations and energy efficiency projects and understand how they can save energy and money.

### CHILLED WATER DELTA T HISTORY




### HOT WATER RETURN TEMP HISTORY




Built on a foundation of high sustainability and wellness standards, The 428 redefines office space in Saint Paul. The former F.W. Woolworth Co. store, fondly remembered for its iconic lunch counters, has been fully renovated to create a modern, collaborative office building that is good for its occupants and the environment. The 428 received WELL Gold Certification™ for Core and Shell, designated by the WELL Building Institute, and is seeking LEED Silver certification, designated by the United States Green Building Council. District Energy works closely with The 428 to support its design goals and values. Our services connect The 428 to renewable heating from locally-sourced wood waste while eliminating fuel combustion and cooling refrigerants on-site. We also supported the installation of innovative piping technology inside the building, which is hydrophobic, inert, and VOC-free. The 428 will continue to see benefits to sustainability as we increase renewables and efficiency.

**"District Energy works closely with The 428 to support its design goals and values."**

THE 428

## LEADING-EDGE SHOWCASE

# Smart People + Smart Technology = **Incredible Results**

Over the past three years, energy efficiency and controls integration have been a major focus for our plant and production team.

We have also worked closely with our customers to optimize their energy operations, which benefits the system. Most of our customers are familiar with the success story of our cooling savings, having received cooling rebates in recent years because we have shifted the production of our cooling tons to the off peak electrical rates, which has lowered our peak electrical demand at the Kellogg plant by approximately 33%. This has translated into savings for the system and our customers.

We have achieved these results through a combination of continuous improvement of operations protocols and the integration of smarter controls technologies that provide us better access to data. Our modernized systems tell us where we are peaking each day, how our customers are managing their building performance, and how these variables intersect with weather conditions and storage dispatch. That has allowed us to shift more of our production load to off-peak electricity usage, which means less strain on the grid and more dollars saved.

This work has been ongoing, but several key projects elevated these efforts in 2018. We completed the overhaul of our cooling towers, which allows us to run more effectively and efficiently and our revised controls system protocols have allowed us to make much better use of our two chilled water storage tanks. By dispatching the chilled water from the tanks later in the day, we are addressing the customer building heat gain at its highest while avoiding the grid's peak electricity demand. All of these efforts allow us to avoid starting up additional chillers in our fleet. Looking ahead to 2019, we will continue to increase efficiency by adding a state-of-the-art chiller to our operations.

Evolving technology and operations best practices are certainly making a difference, and how our customers operate is a key to success. Through our new customer analytics and efficiency program, our customers' peak demand for cooling is one-third of previous years. This allows us to cool more customer spaces with less energy and save money for our customers. Truly a win for all involved.

Since 2016, we've **reduced** our peak electrical demand by over

**30%**

by **shifting creation** of cooling-tons from peak to off-peak demand times.

$$$

$$

**= cool more space with less money!**

# DISTRIBUTION

## At District Energy St. Paul, we track emergent technologies in the industry.

This year we installed our first leg of corrugated stainless steel pipe. The pipe is flexible in its ability to change directions without the inclusion of a joint. This is important for our distribution system because it is designed for bending the pipe around obstructions without fittings or joints, which makes installation more adaptable and cost-effective.

This flexible pipe option meets design specifications of our operating temperatures and pressures of our system, so it can easily be used to connect new customers joining the system. This stainless steel pipe is much more resistant to corrosion compared to carbon steel pipe and has a longer life span. The nature of the material allows for simpler and less costly installation, which can translate to savings for our customers. Because of the successful implementation of the product this year, we will continue to look for opportunities to install it as our customer base continues to grow.


# FINANCIALS

## Rates and Unit Sales

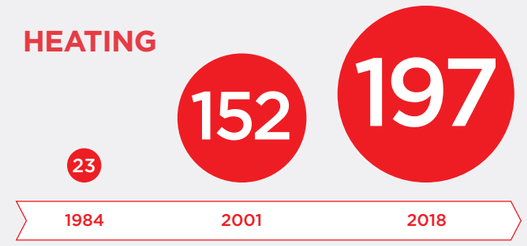
| Year-End September 30 | FY2018 | FY2017 | FY2016 |
|---|---|---|---|
| **HEATING SERVICES** | | | |
| Demand rate ($/kW/mo) | **$ 5.45** | $ 5.37 | $ 5.27 |
| Energy rate ($/MWh) | **$ 23.85** | $ 24.15 | $ 25.59 |
| Fuel adjustment charge ($/MWh) | **($ 1.64)** | ($ 1.25) | $ (4.36) |
| Overall rate ($/MMBtu, 1700 Util hrs) | **$ 17.78** | $ 17.82 | $ 17.12 |
| Demand (kW) - average | **182,928** | 176,510 | 170,241 |
| Energy sales (MWh) - actual | **348,136** | 294,185 | 283,259 |
| Heating season degree days | **7,714** | 6,310 | 6,252 |
| Energy sales (MWh) - normalized | **340,000** | 346,000 | 336,000 |
| **COOLING SERVICES** | | | |
| Demand rate ($/ton/mo) | **$ 28.15** | $ 27.41 | $ 26.69 |
| Energy rate ($/ton-hour) | **$ 0.100** | $ 0.098 | $ 0.087 |
| Fuel adjustment charge ($/ton-hour) | **($ 0.011)** | ($ 0.008) | $ (0.003) |
| Overall rate ($/ton-hour, 1200 Util hrs) | **$ 0.371** | $ 0.365 | $ 0.352 |
| Demand (tons) - average | **27,591** | 27,211 | 26,518 |
| Energy sales (tons-hours) - actual | **40,429,968** | 37,785,631 | 41,974,384 |
| Cooling season degree days | **1,136** | 831 | 969 |

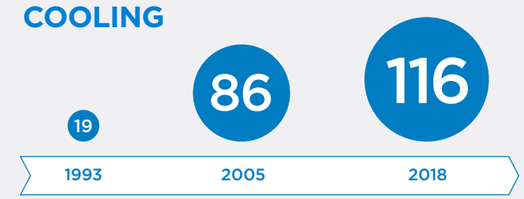
## Revenues and Expenses

| Year-End September 30 | FY2018 | FY2017 | FY2016 |
|---|---|---|---|
| **HEATING SERVICES** | | | |
| OPERATING REVENUES | | | |
| Net demand revenues | **$ 11,937,265** | $ 11,405,148 | $ 10,784,394 |
| Energy revenues | **$ 7,622,920** | $ 6,650,927 | $ 6,193,191 |
| Other revenues | **$ 974,353** | $ 963,345 | $941,529 |
| Total operating revenues | **$ 20,534,538** | $ 19,019,420 | $ 17,919,114 |
| OPERATING EXPENSES | | | |
| Fuel and energy | **$ 7,622,920** | $ 6,650,927 | $ 6,193,191 |
| Non-fuel operating expenses | **$ 7,024,049** | $ 7,547,939 | $ 7,101,545 |
| Total operating expenses | **$ 14,646,969** | $ 14,198,866 | $ 13,294,736 |
| Operating income Before depreciation | **$ 5,887,569** | $ 4,624,378 | $ 4,624,378 |
| **COOLING SERVICES** | | | |
| OPERATING REVENUES | | | |
| Net demand revenues | **$ 9,275,755** | $ 8,962,803 | $ 8,504,130 |
| Energy revenues | **$ 3,749,272** | $ 3,446,231 | $ 3,763,576 |
| Other revenues | **$ 11,605** | $11,255 | ($ 1,713) |
| Total operating revenues | **$ 12,420,289** | $ 12,265,993 | $ 12,124,839 |
| OPERATING EXPENSES | | | |
| Fuel and energy | **$ 3,749,272** | $ 3,446,231 | $ 3,763,576 |
| Non-fuel operating expenses | **$ 5,392,554** | $5,249,871 | $ 4,997,124 |
| Total operating expenses | **$ 9,141,826** | $ 8,696,102 | $ 8,760,700 |
| Operating income Before depreciation | **$ 3,894,806** | $ 3,724,187 | $ 3,505,293 |

## Market Growth by Customers

Our customer base continues to grow and diversify, enhancing the system and financial stability for all customers.




**Our team of experts** is just down the street and ready to help customers with energy projects and system optimization.

## DISTRICT ENERGY ST. PAUL BOARD OF DIRECTORS 2017-2018

**Mark Rancone**, Chairperson
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*Medium-sized customer representative*

**Heidi Conrad**
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**Ken Smith, Ex Officio**
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