

THE VPU QUARTERLY

a newsletter published by Virginia Public Utilities

January 2023

The office will be closed on the following dates:

January 16, 2023
February 20, 2023
April 7, 2023

VPU — QUICK NOTES

KNOW THE SMELL OF NATURAL GAS—BE SAFE!

If there is a faint smell of natural gas, call VPU at 218-748-7540.

If in doubt, leave the building immediately & call 9-1-1.

DIRECT PAY

Sign up for Direct Pay, and eliminate the need to write out a check each month.

Enrollment forms are available in the VPU office, or on our website at www.vpuc.com

Before You Dig.

Contact Gopher State One Call

Dial 8-1-1 or 800-252-1166 or www.gopherstateonecall.org

WINTER REMINDERS

Please keep access to all outside meters shoveled. It is especially important to keep gas meters and regulators free of snow and ice to prevent malfunctioning.

If you have a fire hydrant near your home and are able, please keep the hydrant clear of snow.

Another Retirement at the Utility

Having worked at the Utility for seventeen years, I find myself paying attention to the stacks on the power plant, and one evening I pulled into the bank parking lot and took this photo. By the time you read this article, the Utility's #7 boiler, a boiler that has supplied steam for the powering and heating of Virginia for decades, will have been brought off-line for the last time... retired. Boiler #7 has been an active part of the Utility's fleet of assets for 67 years, and I venture that is the longest run of any boiler the Utility has had.



The Utility's 100-year history booklet reads: "With the end of WWII dramatic increases in productivity across the country, improvements in the overall wealth of individuals, coupled with the advent of electric appliances including the electric hot water heater, the electric stove, and the electric dryer brought about an era of rapid expansion" in the power industry. It was at that time that the Utility began using far more efficient extraction turbines to utilize the same steam used to power the turbines for providing steam to the City's heat district. This was a very significant juncture for the Utility as it coupled electric production with steam heating production. Thus, the Utility's first venture into cogeneration, with the addition of the #7 coal boiler working in tandem with the #5 turbine-generator, was completed in 1955.



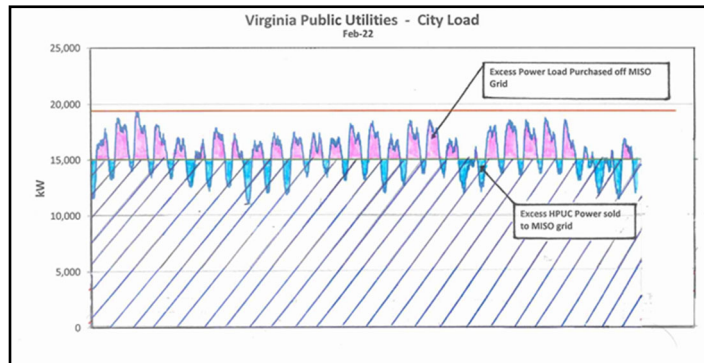
With the de-coupling of power production from steam production in 2018 and with the significant reduction in the size of the steam district, the #7 boiler, a relatively small boiler in the VPU fleet, has been a handy workhorse through these last four years because it has the ability to produce at lower levels than any other boiler, until the recent installation of the Cleaver-Brooks package boiler #1 in May of this year. Although Boiler #7 will likely not be used in the future, it still remains as a useable asset in the event of an emergency, until 2024 when

the Utility renews its permit with the Minnesota Pollution Control Agency. Installation of a second Cleaver Brooks package boiler, boiler #2, will be completed shortly after the turn of the year. That boiler, alongside its twin, our #1 package boiler, will carry the steam load going forward.

The Decision to End Power Production - The Details

Recently there has been some long-after-the-fact questioning of the Utility's decision to discontinue its own power production as opposed to buying wholesale power from Minnesota Power (MP). These questions were brought on by recent articles in the local news reporting the projected successes of the Hibbing Renewable Energy Center. The answer to this power production question, along with the extensive deterioration of the steam district, ultimately led to the abandonment of the Northside and Southside steam zones.

As an illustration, the graph on the right shows the City's power usage for February 2022. Demand for power generally rises at 6:00 am and falls off at about 10:00 pm. Operationally the power plant does not attempt to follow the demand (referred to as the "load") but instead produces at a fixed level, then buying power off the market when the load exceeds the production level, and selling power to the market when the production exceeds the load.



When the Utility sells its excess, in the middle of the night, most other utilities are doing the same thing so the sale price is relatively low. When the Utility needs to buy power from the market, during the peak hours of the day, most other utilities are also in the same situation, so the price of that power is higher, relatively speaking. There are times when the price of peak power is extremely high, reaching \$150/Mwh in February of 2021, and spiking into the \$100/Mwh range quite often in the spring of this year. This introduces significant price risk into the equation – a factor not reflected in the numbers.

The last full year the power plant was operated for the purpose of power generation was in 2017, when it operated on behalf of the Laurentian Energy Biomass Project. That year it had a net production of 114,000 Mwh at a cost of roughly \$10 million. That equates to 8.8 cents per kwh cost of power. Since then, manpower costs are up, diesel fuel price increases have driven fuel costs up, natural gas costs are up, and chemical costs are up. It is not unreasonable to say the 8.8 cents/kwh is low.

To put this matter to rest, an analysis done in March of 2022, based on February's costs and usage pattern, showed VPU having an actual cost of 6.67 cents/kwh based on our current contract with MP, versus a 9.58 cents/kwh based on a best estimate of how we would produce power under that scenario.

The decision to eliminate power production and ultimately abandon the Northside and Southside steam districts was a little less obvious when it was made, because MP's contract with us at the time was not as favorable as this current one, but the answer remains the same: It is 30% less expensive for Virginia Public Utilities to purchase power from MP than to produce it. Furthermore, our full requirements contract with MP combines price predictability and minimal exposure to market price volatility. Through MP's production, the power we sell includes a strong renewable component, and we are continuing the MP partnership that, for more than a half century, has served Virginia and the Iron Range well.

For those who want to compare our decisions to those of Hibbing Public Utility, it is important to be aware that the differences between our utilities cause such a comparison to be dubious. These differences include the fact that Hibbing returns much of its steam condensate back to its plant, thus making it much less costly to prepare water for its boilers. Returning condensate was impossible in Virginia due to its sprawling steam district; Hibbing's turbines are larger, thus allowing them to repair one while the others carry the City load; Hibbing's load is higher, this drives down the fixed cost/unit as a flat cost can be spread out over more kwhs; and lastly, Hibbing's steam district is more compact, thus allowing them to more easily stay ahead of deterioration and minimize steam losses.