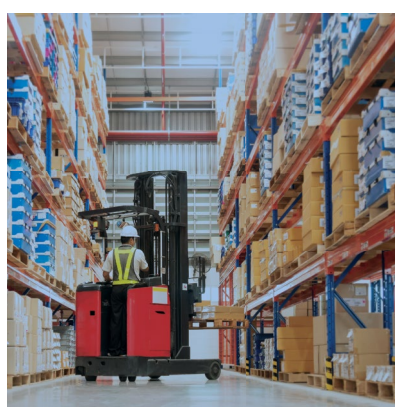
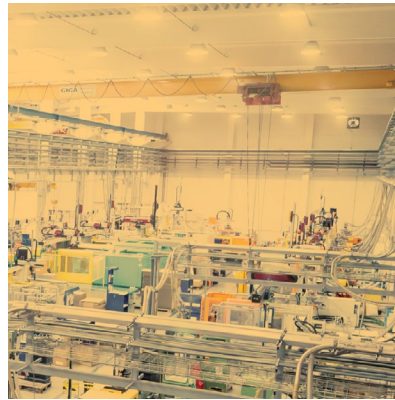


DEVELOPING A FAIR AND EQUITABLE RATE FOR LARGE LOAD CUSTOMERS

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PUBLIC POWER RATE DESIGN CASE STUDIES

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AMERICAN
**PUBLIC
POWER**
ASSOCIATION
Powering Strong Communities

CITY OF NILES

YEAR FORMED

1895

SERVICE AREA

City limits of Niles, Michigan,
and parts of surrounding townships

POPULATION

11,988

CUSTOMERS SERVED

6,646

ANNUAL SALES

133,119 MWh

(39,748 MWh industrial)

ANNUAL REVENUE

\$17,269,500

43% residential

36% commercial

21% industrial

GOVERNANCE

Council appointed utilities board

RATE CHANGE

Developed a new industrial
rate featuring a fixed charge and
pass-through power supply
and transmission charges

Acknowledgements

This rate design process involved many great organizations and people. And really it has been the people that have been able to accomplish this multi-year project. Everyone from CEOs to clerical staff, from private companies, big investor-owned utilities, joint action agencies, and public power utilities of all sizes helped Niles achieve this project. The author would like to especially thank the following organizations.

- City of Niles, Michigan — Administration, Utilities Board, City Council and Mayors
- Indeck Niles Energy Center
- Alpha Engineering
- Encompass Engineers & Architects
- Utility Financial Solutions
- Michigan Public Power Agency
- Michigan Municipal Electric Association
- AEP/Indiana Michigan Power
- Fahey, Schultz, Burzych, Rhodes PLC
- Duncan, Weinberg, Genzer & Pembroke, P.C.

Over the last decade, Niles, a former heavy manufacturing town in the Rust Belt, has seen its industrial customers and load stay relatively stable. Its 24 industrial customers use about 40,000 megawatt-hours (MWh) each year and make up about 21 percent of its annual sales, spread across five rate schedules:

- Small Industrial Power, Rate 3
- Small Industrial Power, Rate 3R
- Medium Industrial Power, Rate 4
- Medium Industrial Power, Rate 4R
- Large Industrial Power Plant, Rate 5

Niles does not currently own any behind-the-meter generation. Generation is managed by the Michigan Public Power Agency (MPPA) through the Energy Services Project, power purchase commitments, and independently negotiated bilateral transactions. Niles is one of four MPPA member public power utilities within the PJM Interconnection.

The utility was motivated to develop an electric rate for large load customers after investors chose space in Niles to build a 1,085 MW combined-cycle power plant that could serve the PJM electricity market. This plant would be a new industrial customer for the utility, requiring power from Niles to start up plant operations.

Starting in March 2017, Niles, along with rate design partners and the power plant industrial customer, began to discuss developing Large Industrial Power Plant, Rate 5. A development agreement team coordinated with the customer to understand the plant's needs for electric, water, and wastewater. Initial data inputs are shared in Table 1.

The rate design consultants supporting this effort analyzed data and ran calculations for the utility. For standby rates, service-level costs for distribution, transformer, substation, subtransmission, generation, and a contribution to the city were included. The consultants also calculated line extension contribution costs to serve this new customer. They also analyzed annual demand and daily demand in relation to the number of start-up events per year.

The first Rate 5 and development agreement was approved by city council in July 2017. The rate was formatted into the existing template design Rate 5: Large Industrial Power Plant-City Availability and included the estimated maximum power requirements of 12 MW.

In the following months, the utility received updated load information, which revealed start-ups of 20.4 MW. This would be a massive increase for a small utility with a coincident peak of 26 MW in 2016.

Based on this new information, the utility conducted system impact studies in 2018. While awaiting study results, the team developed various iterations of the rate, including instituting standby charges. During this period, rate design took a backseat to infrastructure concerns. The priority was verifying the **ability to serve**. Supplying possibly in excess of 50 MW (normal load in addition to 21 MW power plant load) was a significant challenge.

Table 1. Data Inputs to Inform Rate

Input	Value	Source
Infrastructure cost	\$75,000	Utility contracted engineer
Cost recovery	10–15 years	Niles
Plant start-ups per year	50–70	Customer
Annual capacity factor	73%	Customer
Maximum demand	12 MW	Customer

New Options and New Inputs

The first study from Niles' wholesale power provider and transmission owner identified needed upgrades at two feed points from 34.5 kV to 69 kV. The system impact study revealed that the estimated costs to upgrade lines, construct two new substations, and add a new line to serve this customer did not pencil out without very long-term cost recovery and significant risks. Shortly thereafter, the transmission owner suggested that Niles obtain meter data from the power plant's revenue meter at the interconnection point, an option that had not been considered. The power plant would be a Niles customer that could backfeed from the interconnection point, where Niles would meter and invoice accordingly. Minimal costs for MPPA meter connection and telemetry were needed along with updated agreements with AEP, MPPA, and PJM. Niles approved this option on August 8, 2018, and requested an updated impact study from AEP. The updated study identified that the cost to Niles would be significantly reduced.

Until financing was secured for this large project, the utility acknowledged there was no certainty of construction or completion. Between 2016 and 2019, the utility financed study costs and rate design work. By spring 2019, the project was funded, with construction scheduled to begin in the summer.

In September 2019, Niles received new start up load data. The load requirements for the plant start at about 6 MW, ramp through about 10 MW, and then peak at just under 25 MW for a single unit start until it becomes self-

generating at six minutes. By the end of 2019, the rate discussions focused on the elements within PJM, especially transmission and capacity obligations. MPPA is Niles' market participant and began educating the utility on how this new generator could affect the utility's purchasing costs. The utility had previously been served under a full requirements contract and was not involved in the wholesale PJM markets. In the first half of 2020, the utility concentrated on the new facilities agreement (FA) that this new 345 kV tie would require. The FA included metering information and costs to Niles for this additional delivery point. By late summer, the utility was settled into a "market rate" type design decision and had notified the customer that the Rate 5 approved in July 2017 would be changing.

Communications with the transmission owner proceeded into 2021 as solutions to metering, IT communications between Niles and MPPA, the FA, and other issues were resolved. By spring 2021, MPPA identified concerns in the rate language with the power plant being on house power during a coincident peak event and making a significant contribution to Niles' transmission and capacity obligations. There was some urgency to finalize the rate as the plant's commercial operation date was quickly approaching.

In May 2021, the utility received an updated power requirement number of 30-35 MW from the customer. Although this new larger number could potentially affect the utility's obligations to PJM, Niles was no longer concerned about infrastructure support, as any load needs would be coming directly to the plant from

Table 2. Comparison of the Rate 5 Elements in 2017 and 2021

2017 Rate 5 Components	2021 Rate 5 Components
Standby charges If served at transmission voltage If served at distribution voltage (primary) If served at distribution voltage (secondary) Energy charges Daily demand startup charges	Basic charge Power supply and transmission charges (pass-through) Energy Capacity Reserve margin Transmission Ancillary services Market MPPA administrative charges PILOT fee Other costs

the interconnection point and through the plant's own infrastructure. The first draft of a revised Rate 5 was distributed in June 2021, which included pass-through language for the larger breadth of costs potentially incurred. Table 2 outlines a high-level comparison of the elements in the initial and revised rate designs.

Rate 5 was fine-tuned even further throughout summer 2021. MPPA estimated the utility's market exposure, which provided Niles with an informed potential customer deposit amount.

The utility added the terms sheet to the rate tariff, which placed all relevant information in one document, allowed for transparency, and was still flexible. The utility's governing body approved the final Rate 5 on September 27, 2021.

What We Learned

Overall, the development of this new rate for a single large customer spanned over three years. The utility plans to update this rate schedule every five years, including examining example usage and whether to update the deposit.

Large load customers may not have accurate usage data during the planning and construction phases. Load is dependent on installed components, how equipment functions, weather, and a host of other factors. This customer contributed to the utility's coincident peak (CP), which resulted in increased transmission charges in 2022, 2024, and 2025, all of which were paid for by the customer under this market-based rate. An analysis of the customer's electricity usage between June 2021 and May 2025 revealed that the customer's load ranged between zero MW and nearly 18 MW.

MPPA calculates the power plant's load contribution and energy use through one-hour interval meter data, which is then communicated to Niles for billing. Niles then takes MPPA's detailed spreadsheet and generates in-house custom monthly billing.

This rate was designed to accommodate a new large load customer within Niles's service territory. The goal was to provide a fair and reasonable rate to the customer with an underlying goal of fulfilling the public power

obligation to serve everyone, including those that might be marginalized from a rate design that is too difficult to understand or predict or one that does not include enough customers.

The city is currently upgrading to advanced metering infrastructure (AMI). However, since this Rate 5 customer is metered at the interconnection by an investor-owned utility, the meter will not be changed.

Niles feels that this rate has succeeded by:

- **Being fair and equitable to the customer.** Charges in the wholesale PJM market are merely passed through on a "cost" basis. The utility intentionally did not add markup to these expenses as market costs fluctuate and the infrastructure investment by Niles was minimal.
- **Fairly recovering utility costs.** The utility recovers costs through the ready-to-serve fixed charge and the administrative fee. The city recovers its costs through the PILOT. If the power plant is operating in an outflow condition, the only fixed cost is the \$1,000 customer charge. This charge is necessary to help recover monthly costs to the utility for metering at the connection point.
- **Reducing risk to other ratepayers and the utility.** This single customer is responsible for its portion of market costs, which is something no other industrial customers are required to do.

As shown in Table 3, the customer was able to save money with the custom-designed rate. Furthermore, the customer benefits from MPPA's hedge plan for Niles as the utility is entering forward power purchase commitments, keeping costs known and lower, for all our customers (including this power plant). Since the load is variable, MPPA does not make market transactions specifically for the plant.

One of the benefits of a community owning its own utility is the ability to change rates and closely monitor and serve customers. Hence, any future changes, if needed, will be easy to accomplish. If you are a small utility like Niles know that it is possible to serve every customer.

Table 3. Customer Billing Comparison Under Different Rates

Energy Usage (June 2021-May 2025)	Customer Cost Under Rate 4	Customer Actual Cost Under Rate 5	Customer Savings
34,894.426 MWh	\$1,775,867.39	\$1,716,400.79	\$59,466.60



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