# Village of Winnetka
## Village Council Study Session

February 13, 2024 at 7:00 PM
Village Hall
510 Green Bay Road

## AGENDA

1. **Call to Order**
2. **Public Comments**
3. **Discussion**
   a. Repair of Turbine #4 at the Electric Plant and Future of Continued Steam Turbine and Boiler Operation
4. **Closed Session**
5. **Adjournment**

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Village of WINNETKA, IL

# Agenda Item Executive Summary

**TITLE:** Repair of Turbine #4 at the Electric Plant and Future of Continued Steam Turbine and Boiler Operation

**PRESENTER:** Brian Keys

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**AGENDA DATE:** February 13, 2024

**CONSENT:** No

**ITEM TYPE:** Presentation

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**ITEM HISTORY:**
At the July 11, 2023, Village Council Study Session, staff provided background information on the Village's electric distribution system, power supply agreement and electrical generating resources located at the Electric Plant. The purpose of the report was to provide a broad overview of the various elements that comprise the electric distribution system to assist the Council with making policy decisions with respect to future capital investments. The Electric Fund's Capital Plan contains $3.6M of capital improvements required for the on-going operation of the steam generation at the Electric Plant.

Turbine #4 was taken out of service in 2023, due to abnormal vibrations. The Village Council approved Resolution No. R-87-2023, at the September 19, 2023 Council Meeting, authorizing a contract for an internal inspection of the Turbine #4 steam path.

**EXECUTIVE SUMMARY:**
The Electric Fund's 5 Year Capital Plan contains $3.6M of capital improvements required for the on-going operation of the Electric Plant. One of the steam turbines, Unit #4, is currently out of service due to abnormal vibrations. In September 2023, the Village Council authorized funding in the amount of $168,402 to perform an internal inspection of Turbine #4. Staff has received the inspection report along with a cost estimate for the required repairs. In conjunction with securing an estimate for the turbine repair, staff contracted with a mechanical contractor to validate the budgeted 2025 capital expenditure to partially retube a boiler. The combined cost of the boiler and turbine work is currently projected to be $2,983,000.

This report provides details on the turbine and boiler expenditures along with financial projections for continued operation of the Electric Plant's steam generation. The Electric Plant has reached a transition point at which an increasing amount of funding is required to repair and maintain the aging equipment for the long-term operation of the plant. The following report represents staff's analysis and recommendations on the future of steam generation and policy direction related to the repair of Turbine #4 is requested.

**RECOMMENDATION:**

Policy direction related to the repair of Turbine #4 and the future of continued steam turbine and boiler operation is requested.

**ATTACHMENTS:**

1. Agenda Report - Repair of Turbine No. 4 and Future of Continued Steam Operations at the Electric Plant

**AGENDA REPORT**

**SUBJECT:** Repair of Turbine #4 and Future of Continued Steam Operations

**PREPARED BY:** Brian Keys, Director of Water & Electric

**REF.** Exhibit A - Council Study Session July 11, 2023
Exhibit B - Village Council Meeting September 19, 2023, pp. 69-79

**DATE:** February 13, 2024

**Executive Summary:**
The Electric Fund's 5 Year Capital Plan contains $3.6M of capital improvements required for the on-going operation of the Electric Plant. One of the steam turbines, Unit #4, is currently out of service due to abnormal vibrations. In September 2023, the Village Council authorized funding in the amount of $168,402 to perform an internal inspection of Turbine #4. Staff has received the inspection report along with a cost estimate for the required repairs. In conjunction with securing an estimate for the turbine repair, staff contracted with a mechanical contractor to validate the budgeted 2025 capital expenditure to partially retube a boiler. The combined cost of the boiler and turbine work is currently projected to be $2,983,000.

This report provides details on the turbine and boiler expenditures along with financial projections for continued operation of the Electric Plant's steam generation. The Electric Plant has reached a transition point at which an increasing amount of funding is required to repair and maintain the aging equipment for the long-term operation of the plant. The following report represents staff's analysis and recommendations on the future of steam generation and policy direction related to the repair of Turbine #4 is requested.

**Background:**
The Village's Electric Plant consists of three steam turbines and four boilers. The three existing Westinghouse Electric Corporation generating units were installed in 1948, 1953 and 1960. The existing boilers manufactured by Babcock & Wilcox were installed in 1938, 1948, 1958 and 1968. The average age of the equipment is 71 years old. A detailed overview of the Electric Plant generating equipment was presented at the July 11, 2023, Village Council Study Session.

At present, Turbine #4 is out of service and the Village needs to determine if the unit should be repaired or retired. Turbine #4 was taken out of service in June 2023 after it exhibited abnormal vibrations during operation. Turbine #4, a 1953 turbine with a net output capability of 8,650 kW, is the second largest turbine at the Plant. As part of the FY 2024 Electric Fund Budget, an estimated repair cost of $650,000 was budgeted for this unit.

For FY 2025, the Electric Fund Capital Improvement Plan contains $1.4M for the partial retubing of Boiler #4. This boiler was installed in 1958 and has the second largest steam producing capability of the four boilers at the Electric Plant. Although not the oldest boiler, Boiler #4 is considered the least reliable due to the frequency of internal tube failures.

**Turbine #4 Evaluation:**

At the September 19, 2023, meeting, Village Council adopted Resolution No. R-87-2023, *Waiving Competitive Bidding and Approving a Contract With The Progress Group, Inc. For Evaluation Services Related to Turbine #4*. The scope of work contained in the contract included an "open and inspect" of the steam path for Turbine #4. The awarded contract in the amount of $168,402 did not include the performance of any non-destructive evaluation. This type of evaluation requires further disassembly and offsite transport of the turbine.

In October 2023, The Progress Group, Inc. mobilized to disassemble Turbine #4. After disassembling the turbine, the contractor performed an internal visual inspection. On December 1, 2023, the contractor reviewed their inspection report with staff. A summary of their findings is as follows:

- Radial turbine bearings are worn or grooved and need to be rebuilt.
- Several stages of turbine blading need to be replaced.

The combination of these items is the likely root cause of the significant vibrations exhibited by the unit during operation.

Steam turbine blades are critical components which convert the high temperature and high-pressure steam into a rotary motion of the turbine shaft. Turbine #4 has fifteen stages of blading. The contractor identified deteriorated blading from corrosion pitting and erosion. In several locations, the corrosion pitting has also thinned the edges of the blading and pieces of the blading have broken away. Foreign material passing through the turbine has caused additional damage in other stages of the turbine. For reference, a photo of the third stage of blading has been included.

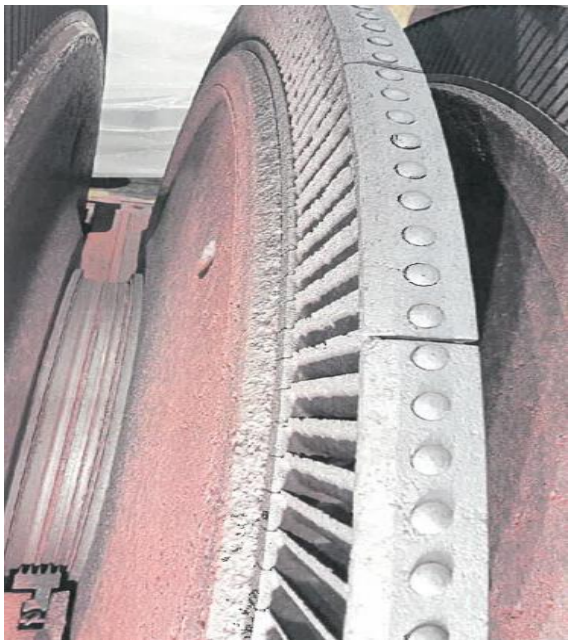


**Photo – Severe corrosion pitting on the blading edges. The corrosion has caused the edges to thin to the point that the material breaks off. The edges also show damage from foreign material passing through the steam path.**

In December 2023, The Progress Group provided a cost estimate to repair Turbine #4. The contractor's proposed scope of work includes the replacement of six rows of turbine blading, replacement of all stationary seals/bearings, balancing and re-assembly of the unit for an estimated cost of $992,500. The cost estimate was based solely on the visual inspection. The scope of work and cost has the potential to increase after the turbine blading is removed and shipped offsite for non-destructive evaluation.

Upon receipt of the cost estimate to repair the steam path of the turbine, staff also considered what additional repairs are required for Turbine #4 to operate reliably for the next ten years. Turbine #4 is comprised of three main components: turbine blades, rotor, and the exciter. The rotor was recently repaired in 2023 at an unplanned cost of $574,130. No work was performed on the turbine's exciter. The exciter creates the electromagnetic field in the rotor. The excitation system of the generator controls the output voltage of the generator. In addition to the repair cost of the steam path, an overhaul of the exciter is needed at an estimated cost of $85,000, due to insulation deterioration and wearing of mechanical parts.

Currently, the estimated cost to return Turbine #4 to service is $1,077,500 ($992,500 for steam path repairs and $85,000 for exciter overhaul). This estimate does not include any additional repairs that may be identified during non-destructive evaluation. The FY 2024 Electric Fund Budget was approved with $650,000 of funding for the repair of Turbine #4. The required repairs exceed the budgeted amount by $427,500.

**Boiler #4:**

Due to the extent of repairs required to return Turbine #4 to service, and in conjunction with a significant capital expenditure planned in 2025 to address frequent tube failures in Boiler #4; staff elected to secure a formal cost estimate for the partial retubing of Boiler #4.

Boiler #4 was manufactured by Babcock and Wilcox Company in 1958. When installed, the original fuel source for the boiler was coal. In 1991, the boiler was converted to run on either natural gas or fuel oil. The boiler produces 110,000 lbs./hour of steam. Boiler #4 is the second largest boiler of the four boilers at the Electric Plant. Although not the oldest unit, this boiler is considered the least reliable. The boiler has experienced repeated failures of the generation tubes within the boiler. These tubes must withstand high pressure and high temperature within the boiler and experience direct contact with the burner's flame. In Boiler #4, there are approximately 1,100 three-inch generation tubes. This section of boiler tubes generates most of the steam produced by the boiler.

Boiler #4 has been prone to tube failures. During operation, one or more of the tubes will frequently fail. Depending on the size of the break in the tube(s) and the magnitude of steam loss, the plant staff determines whether the boiler can remain on-line or must be shut down (i.e. forced outage). If the boiler is shut down, there is a corresponding decrease in electrical output from the turbines.

In order to repair the boiler, a mechanical contractor would be utilized. After the boiler is taken off-line, cooled down, opened, and ventilated; the contractor enters the boiler to locate the tube(s) that have failed. After locating the failure, the contractor welds in a plug. After plugging

the tube, the boiler is pressure tested and, in many cases, other failed tubes are identified which also need to be plugged. Each failure results in an incremental loss of efficiency in the boiler's steam output. The general rule-of-thumb is a boiler should be retubed when 10% of the tubes have been plugged. At present, 95 tubes of the approximately 1,100 generation tubes have been plugged (8.6%.) In its current state, Boiler #4 can be used for generation, but its operation is unreliable and frequently results in the need to engage a mechanical contractor for repairs after use.

The FY 2025 Electric Fund 5-Year Capital Improvement Plan (CIP) contains $1.4 million in funding for the partial retubing of Boiler #4. Although other tubes in the boiler, such as the "waterwall" tubes, could experience a failure, the generation tubes, which are those tubes in direct contact with the burner's flame, have been the prominent source of tube failures in the boiler. The proposed CIP funding was targeted at replacement of only these problematic tubes.

To secure an estimated cost to partially retube the boiler, staff contracted with Independent Mechanical Industries Inc. to develop a cost estimate. The contractor's staff and subcontractors examined the site conditions and the interior of the boiler. To replace the boiler's generation tubes, the contractor will need to cut an entry point into the exterior of the boiler. This will require removal of the external casing, insulation, a section of waterwall tubes and some portions of internal refractory walls. This entry point is required to remove the old generation tubes and provide an access window to individually insert the preformed replacement tubes which are approximately 20 ft. in length. Each of the tubes is then welded into place. After the 1,100 tubes are replaced, the contractor will need to re-install refractory, waterwall tubes, insulation, and exterior casing.

In late December 2023, Independent Mechanical Industries Inc. provided staff with their budgetary price proposal to retube the generating tube section of the boiler. The cost of this work is estimated at $1.85 million with an anticipated project duration of 5-6 months.

**Analysis Of Repairs:**

The Electric Plant contains three turbines and four boilers. The turbines are not directly connected to a specific boiler. Each of the boilers supplies steam to a combined header system which supplies the turbines with steam. All four boilers are required to be in operation to provide the full electrical power output from the three steam turbines. Specific information on each of the boilers and turbines is as follows:

**Electric Plant Boilers**

| No. | Year of Commercial Operation | Manufacturer | Fuel (Primary/Alt.) | Input (MMBTU/hr.) | Design Rating (lbs./hr.) |
|---|---|---|---|---|---|
| 4 | 1958 | B&W | Gas/Oil | 145 | 110,000 |
| 5 | 1938 | B&W | Gas/Oil | 63 | 40,000 |
| 7 | 1948 | B&W | Gas/Oil | 102 | 69,000 |
| 8 | 1964 | Erie City | Gas | 174 | 125,000 |
| | | | Total: | 484 | 344,000 |

**Electric Plant Turbine Generating Units**

| Unit | Year of Commercial Operation | Manufacturer | Prime Mover | Net Capability (kW) | Steam Required (lbs./hr.) |
|---|---|---|---|---|---|
| 4 | 1953 | Westinghouse | Steam | 8,650 | 103,800 |
| 6 | 1948 | Westinghouse | Steam | 5,500 | 66,000 |
| 7 | 1960 | Westinghouse | Steam | 11,200 | 134,400 |
| | | | Total: | 25,350 | 304,200 |

As the steam requirements for Turbine #4 essentially match the steam output of Boiler #4, the decision to repair or not repair the turbine without consideration of the upcoming boiler retubing project may result in a "stranded investment" if the repair of the boiler is not undertaken in FY 2025. Based on the information compiled, the cost estimate for the repairs is as follows:

| | |
|---|---|
| Repair of Turbine #4 Steam Path | $992,500 |
| Partial Retube of Boiler #4: | $1,905,500 (2024 estimate + 3% escalation) |
| Overhaul of Turbine #4 Exciter: | $85,000 |
| Total: | $2,983,000 (Note: Budget: $2,050,000) |

The electrical generation capacity of the Electric Plant is dedicated to the IMEA. In return for the dedicated steam capacity, the Village receives a capacity credit of approximately $1.2 million annually on the Village's wholesale power bill. Capacity credits for the generation vary by the size of the generating unit. For the steam turbines, the Village receives a credit of $4.00 per kW/month. A summary of each unit's dedicated capacity and the associated capacity credits is shown below. (Note – this analysis excludes all diesel-powered generation.)

**Summary – Capacity Credits for Steam Turbines**

| Unit | | kW Dedicated | $/mo. Per kW | Monthly Capacity Credit | Annual Capacity Credit |
|---|---|---|---|---|---|
| Steam Turbines | #4 | 8,650 | $4.00 | $34,600 | $415,200 |
| | #6 | 5,500 | $4.00 | $22,000 | $264,000 |
| | #7 | 11,200 | $4.00 | $44,800 | $537,600 |
| | | | | **Total:** | **$1,216,800** |

As shown above, Turbine #4 provides an annual credit to the Village's wholesale electric bill in the amount of $415,200. If the Village elects to proceed with the identified repairs to the turbine, exciter and boiler, the equipment will need to be operated for 7.2 years to recover the investment.

Payback Period = $2,983,000 repair cost / $415,200 annual credit = 7.2 years

Under the IMEA contract, the Village has the sole determination regarding the continued operation or retirement of any and/or all generating units. When a generating unit is retired, the corresponding capacity credits are no longer applied to the monthly wholesale electric bill from IMEA.

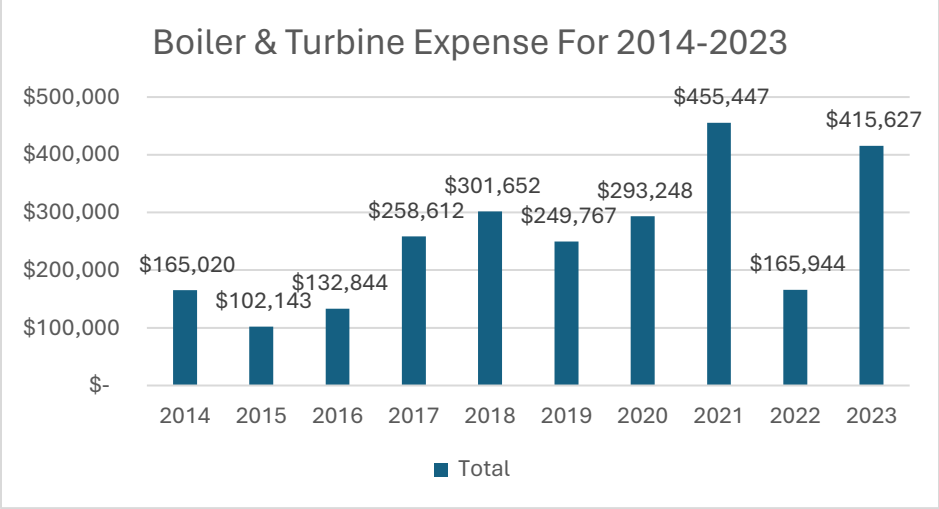
Until Turbine #4 is repaired and performance tested, the Village will not receive the corresponding capacity credits ($34,600/month or $415,200/year). For FY 2023, this reduction in credit did not adversely impact the Electric Fund budget as it was offset by a positive budget variance - IMEA's actual cost of power and actual sales were lower than the budgeted amount by $1.4 million.

**Cost Of Continued Steam Turbine and Boiler Operation:**

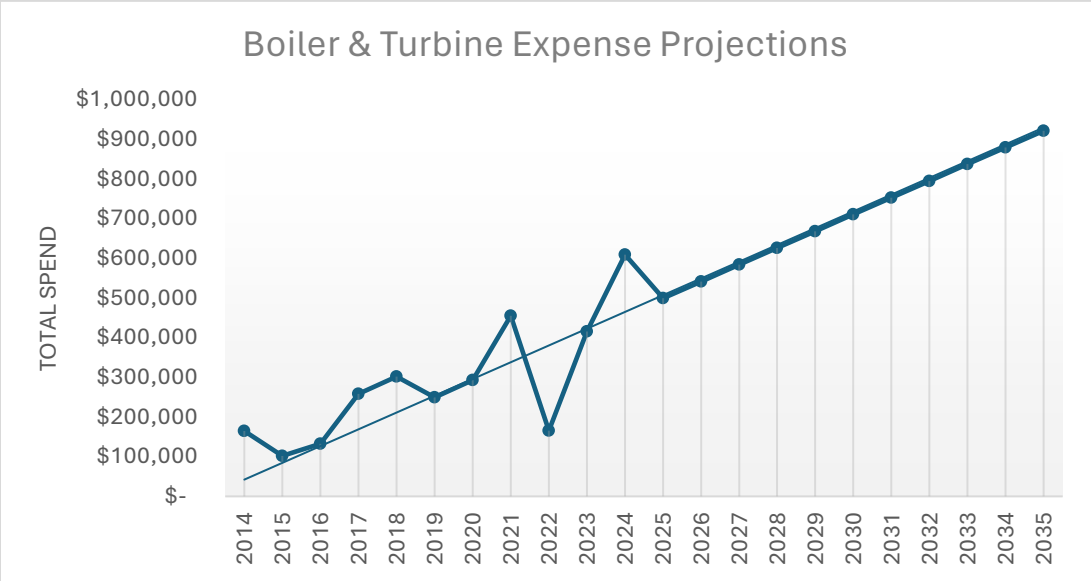
The Electric Fund Capital Improvement Plan (CIP) contains $3.6 million in capital improvements associated with the continued operation of steam generation during the period of 2024-2035. These include the following projects:

| | |
|---|---|
| 2024: Turbine #4 overhaul: | $650,000 |
| Hotwell pump overhaul: | $75,000 |
| 2025: Boiler #4 tube replacement: | $1,400,000 |
| Turbine #7 overhaul: | $764,000 |
| Boiler feedwater pump overhaul: | $185,000 |
| Hotwell pump overhaul: | $75,000 |
| 2026: Boiler feedwater pump overhaul: | $185,000 |
| Hotwell pump overhaul: | $75,000 |
| 2027: Hotwell pump overhaul: | $75,000 |
| 2029: Replacement of turbine field breaker: | $35,000 |
| 2030: Replacement of turbine field breaker: | $35,000 |
| Total (2024-2035): | $3,554,000 |

As part of the analysis, staff reviewed the historical operating and maintenance expenses for the Electric Fund boiler and turbine expense account (account #500.41.28-567). Enclosed below is a graph showing the actual annual expense during the period of 2014-2023.

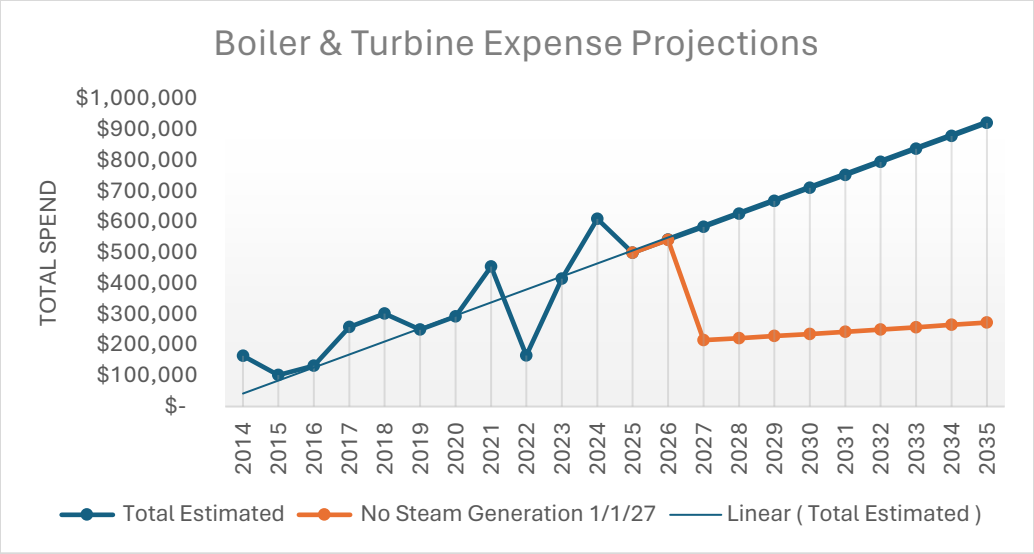


Based on a review of historical expenses, it is apparent that operating and maintenance expenses for the steam plant are trending upward. Using these historical actual expenditures, a future projection of the boiler and turbine expenses was developed for the years 2025-2035 as shown on the following page.




Based on the trend, the boiler and turbine expenses are anticipated to reach $921,717 by the year 2035.

Additional review and analysis were performed on the boiler and turbine expenses for the years 2019-2024. It was determined that if boiler and turbine operations had been halted, the operating and maintenance expenses would be reduced by approximately 68%. The remaining 32% of expense would still be incurred by the Electric Fund for other items such as: water treatment equipment and chemicals still required for the heating boiler, regulatory permit costs which are currently allocated to both the diesel generation and steam generation accounts, intake maintenance, pier repairs, and exhaust stack maintenance. This reduction in expense was applied to the projected trend of expenses. As noted in the graph on the following page, the projected 2035 expense amount without steam generation is $273,477. It is important to note that the analysis assumes the continued operation and eventually replacement of the two 2.5MW diesel generators. As such, some of the previously shared maintenance expense between diesel and steam generation would still be incurred.




As part of the analysis, staff reviewed the historical unplanned capital investments for the steam plant which exceeded $25,000 during the period of 2007-2023. The Electric Fund's Capital Improvement Plant for the year 2025-2035 does not currently contain a placeholder for an unplanned capital expense. After reviewing the data which included emergent repairs to rotors on Turbines #4 and #6, it was concluded that the most likely unplanned capital expense would be a similar repair for the Turbine #7 rotor. Prior repairs to the rotor for Turbine #6 cost $342,246 in 2019 and the 2023 repair of Turbine #4 rotor cost $574,130. The rotor on Turbine #7 is larger and depending on the type of required repair, it would likely easily exceed the cost of prior rotor repairs. For the purposes of capital planning, it was assumed that an unplanned rotor repair on Turbine #7 would cost $850,000.

**Capacity Credit Vs. Operating Cost Analysis:**

An analysis has been used in past budget analysis to compare the operational cost of generation versus the IMEA capacity credits. A similar analysis has been performed to determine whether projected expenses over the life of the existing IMEA contract (which expires in September 2035) will result in a positive financial benefit to the Village. The projected operating costs of the steam generation units are projected to significantly exceed the amount of the capacity credits by $2.3 million, as shown below:

| | |
|---|---|
| Total Capacity Credits Available For 2024 - Sept. 2035: | $14,297,400 |
| Less: Lost capacity credits for outage (6 months) | ($207,600) |
| Less: Turbine #4 Repair (w/exciter) | ($1,077,500) |
| Less: Partial Retube of Boiler #4 | ($1,905,500) |
| Less: Other Identified Capital Projects | ($1,504,000) |
| Less: Projected O&M Expense | ($5,720,575) |
| Less: Unplanned Capital Repair (1 event) | ($850,000) |
| Less: Utility expense | ($477,455) |
| Less: Labor Cost 2 FTE's | ($4,860,168) |
| Net: | ($2,305,398) |

This analysis assumes the generating units do not experience any forced outages (i.e. equipment problems) that would result in a reduction of capacity credits through the remaining term of the IMEA contract. This is not likely as over the last three-year period, the average amount of lost capacity credits related to equipment problems was $183,933 per year.

**Financial Projections:**

The Finance Department compiled three financial scenarios to examine the impact of proceeding with the repairs or retirement of one or more generating units.

- Scenario #1 assumes the Village proceeds with the continued operation of all steam turbines and boilers. The analysis includes the cost of the Turbine #4 repair, exciter overhaul and the partial retubing of Boiler #4 in 2025 as well as all contemplated capital repairs associated with steam generation. This scenario also assumes one large unplanned repair of $850,000 in 2031.

- Scenario #2 includes all of the Scenario #1 assumptions, except that the repair of Turbine #4 in 2024 and the partial retubing of Boiler #4 in 2025 are not performed.

- Scenario #3 is based on the retirement of Turbine #4 in 2024, not retubing Boiler #4 in 2025 and retiring the remaining steam generation facilities on December 31, 2026. In addition to the reduction of capital investment and maintenance expense; this scenario also contemplates the reduction of two full time equivalent positions due to the retirement of boiler/turbine operations and an anticipated reduction in the maintenance work at the Electric Plant.

The results of the analysis are as follows:

**Summary Electric Fund Year End Cash Balance For 2024-2029**

| Scenario | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|---|---|---|---|---|---|---|
| 1 | $4,905,532 | $3,886,738 | $3,816,067 | $4,769,624 | $6,622,061 | $2,302,296 |
| 2 | $5,984,307 | $6,741,638 | $6,255,767 | $6,794,124 | $8,231,361 | $3,496,396 |
| 3 | $5,984,307 | $7,765,638 | $7,279,767 | $7,829,809 | $9,322,787 | $4,723,225 |

**Summary Electric Fund Year End Cash Balance For 2030-2035**

| Scenario | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|---|---|---|---|---|---|---|
| 1 | $4,461,870 | $5,452,974 | $6,741,321 | $7,563,147 | $7,877,798 | $6,873,754 |
| 2 | $5,240,770 | $5,816,674 | $6,689,821 | $7,096,447 | $6,995,898 | $5,576,654 |
| 3 | $6,648,301 | $8,265,867 | $9,377,321 | $10,069,615 | $10,302,843 | $9,266,258 |

As shown in the financial analysis, the Electric Fund's year end cash balance under Scenario #3 is better than in Scenarios #1 and #2. As noted earlier, this scenario is based on the retirement of Turbine #4 in 2025, canceling the planned Boiler #4 retubing project in 2025, and retiring the remaining steam generation on December 31, 2026. Continued operation of the steam generating units is projected to have an adverse financial impact on the Electric Fund's Fund Balance.

In the financial analysis, staff assumed that the remaining steam generation would not be retired until December 31, 2026. This date was selected for multiple reasons which included the following:

- The proposed retirement date provides the Water Fund sufficient time to budget, design and install a zebra mussel control system in the raw water intakes. This is currently performed using heated water from the generating units that is flowed backward into the intake; therefore, if steam generation ceases an alternate zebra mussel control method would be required.
- Operation of the remaining steam generation units until this date provides backup power supply contingency to the Village's electrical system if the new Northfield transformer is taken out of service for an extended warranty repair.
- Under the IMEA contract, the Village is to provide at least one year's notice of a unit's retirement unless it has experienced a failure.
- The proposed financial plan contemplates the reduction of two full-time equivalents. In the near term, this staffing will be required to operate the two steam units. In the next 1-2 years, the department expects the retirement of one individual at the plant. A staffing transition plan needs to be developed.

**Recommendations:**

Based on staff's review of the known cost to repair Turbine #4, potential for additional cost to be identified in the non-destructive evaluation, cost to overhaul the exciter and the anticipated cost to partially retube Boiler #4 in 2025, staff is recommending that the Village Council consider retirement of Turbine #4 and leaving Boiler #4 in service until such time that it experiences another tube failure, at which point, it would also be retired.

After examining the capital and expense costs required to support the continued operation of the remaining turbines and boilers through the year 2035, staff is recommending the Village Council consider the following:

- Continue operation of the two remaining steam turbines and three boilers until December 31, 2026. Effective January 1, 2027, the Electric Plant steam generating units would be retired. Operation of these units until this date provides backup power supply contingency to the Village's electrical system if the new Northfield transformer is taken out of service for an extended warranty repair and provides the Water Fund sufficient time to install a zebra mussel control system in the raw water intakes. In addition, under the IMEA contract, the Village is to provide at least one year's notice of a unit's retirement unless it has experienced a failure.
- Continue to maintain Boiler #7 after the December 31, 2026, retirement date. This boiler can be used as a backup unit to the (non-generating) boiler used for building heat.
- Consider directing staff to cancel any planned capital investments associated with steam generation except for any short-term capital repairs required to support the operation of the remaining steam boilers and turbines through 2026.

**AGENDA REPORT**

**SUBJECT:** **Winnetka Electric System & Power Plant Overview**

**PREPARED BY:** Brian Keys, Director Water & Electric

**REF:** **Informational Only – No Action Requested**

**DATE:** July 11, 2023

**Executive Summary:**
This report provides background information on the Village's electric distribution system, power supply agreements and electrical generating resources located at the Electric Plant. The purpose of this report is to provide a broad overview of the various elements that comprise this system to assist the Council with making policy decisions with respect to future capital investments. The Electric Fund's 5 Year Capital Plan contains $3.6M of capital improvements required for the on-going operation of the Electric Plant. During future Village Council meetings and annual budget reviews, staff will be requesting policy direction related to funding capital projects such as turbine overhauls and boiler tube replacement.

**Power Supply Overview**
Winnetka receives its electric power supply from either the Electric Plant or two substations that connect the Village's distribution system to the surrounding electric grid. One substation is located in Northbrook and owned by ComEd. The Village's interconnection point with this substation is near the Car Max dealership, located on Skokie Boulevard. The Village can receive about 21,000 kW from this source. The second substation is located in Northfield near New Trier's west campus, adjacent to ComEd's transmission line corridor. The Village owns this substation located on property leased from the Cook County Forest Preserve. It was constructed in the mid-1990's with an initial capacity of about 30,000 kW. A second substation transformer was installed in 2022, providing an additional 30,000 kW of capacity. The third source of power is the Electric Plant located at Tower Road and Lake Michigan. Through a combination of steam boilers and turbines fueled by natural gas and diesel engines, the Plant has a production capacity of about 30,000 kW.

This redundancy of the sources of power mitigates the risk of a long-term outage due to a failure of a substation transformer or turbine at the Electric Plant. Based on historical demand, the electric system's historical peak demand on a hot summer day is 40,600 kW. If the Village were to lose a key component of its source of power, the electrical needs of the Village can still be met.

Since March 1, 1991, the electricity required to meet the Village's power and energy requirements has been provided pursuant to contractual agreements between the Village and the Illinois Municipal Electric Agency (IMEA). On the Village's behalf, IMEA acquires power and energy by generating it at an IMEA-owned plant; purchasing it from other entities; and/or utilizing the capabilities of the Village's Electric Plant or of other members' plants.

By contract with IMEA, the output capacity of the Electric Plant is dedicated to the agency. Upon IMEA request, Village staff operates the generating units to produce electricity that is used by the agency to meet electrical demand or offset the cost of higher priced wholesale power from another source. In return for IMEA's right to use the plant's capacity, the Village receives a credit of approximately $1.4 million annually on the Village's wholesale power bill from IMEA. The IMEA contract extends through September 20, 2035, and IMEA is in the preliminary stages of seeking renewal energy contracts with its members.

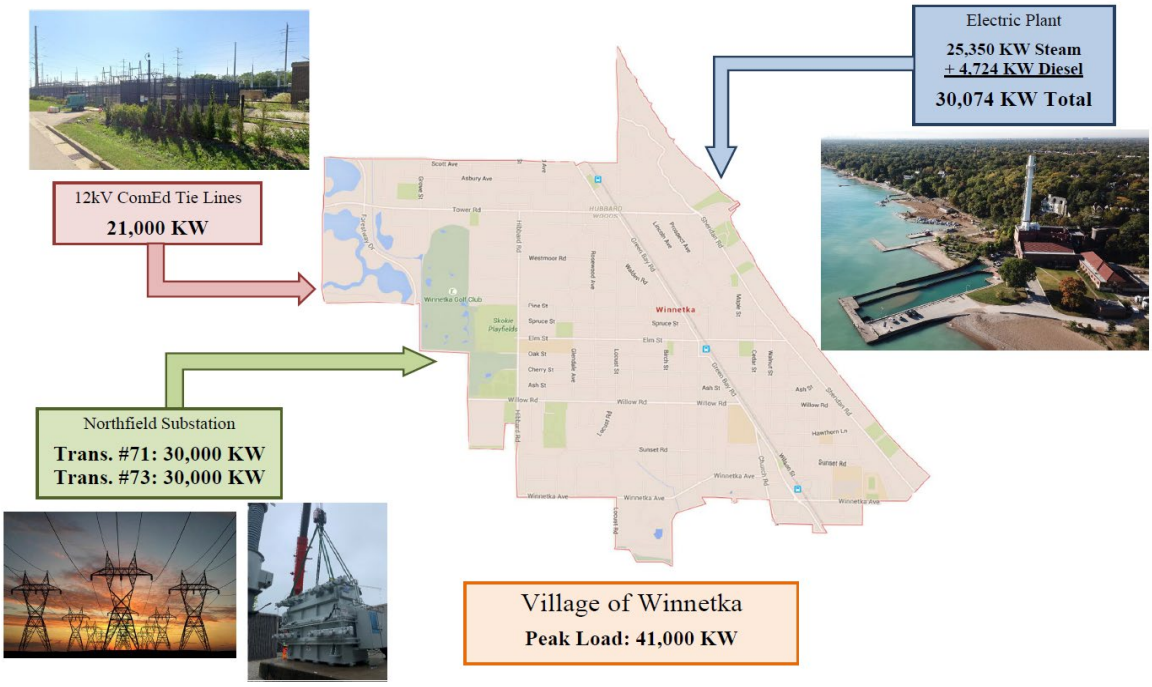



**Illustration: Overview of Electric System Power Sources**

## Winnetka's Electric Generating Plant

When the electric plant first opened, electricity was originally generated by small reciprocating engines. Service was limited to a few residents, businesses, and street lighting. Over time, the Village's electric utility evolved from this small beginning with the little steam driven units, to a modern plant that used steam turbine generators and boilers. The nearly constant increase in the use of electricity made it necessary to add generating capacity regularly. The following table shows the dates when generating units were added and the kilowatt capacity of the plant after adding the unit:

| Plant Capacity After Adding Unit | | Plant Capacity After Adding Unit | |
|---|---|---|---|
| Year | kW Capacity | Year | kW Capacity |
| 1900 | 50 | 1926 | 3,750 |
| 1902 | 125 | 1930 | 6,250 |
| 1907 | 2,125 | 1937 | 7,500 |
| 1913 | 450 | 1948 | 10,500 |
| 1914 | 750 | 1953 | 15,500 |
| 1921 | 1,350 | 1960 | 25,500 |
| 1924 | 2,050 | 1978 | 31,900 |

Coal, the historical fuel of choice, was delivered to the Plant by truck to a concrete unloading platform at the top of the bluff, from which it flowed by gravity to bunkers and a coal silo having a combined capacity of approximately 1,000 tons. Coal conveying equipment moved the coal from these storage bunkers and silo through a series of conveyors, weighed it, and delivered it to the overhead coal hoppers located at the front of each boiler. Coal was used at the plant through 1990 and then discontinued.

Due to EPA air regulations, the plant's boilers were converted to natural gas as the primary fuel source. It is purchased through a gas supplier and delivered to the Electric Plant by North Shore Gas. Except for building heat, the fuel costs are reimbursed to the Village through our IMEA contract. All of the presently operating boilers can use natural gas for fuel. Three boilers, #4, 5, and 7, have the additional capability of using diesel fuel as a backup, which is only permitted to be used under emergency situations.

Diesel fuel is stored in a 20,000 gallon permanent storage tank and confinement structure at the Electric Plant. Diesel fuel is principally used in the two 2,400 kW diesel engines. Diesel fuel costs are also reimbursed by IMEA.

**Boiler Room**

The boiler room contains four boilers, designed for 450-lb. pressure, 775° F. total temperature, with a total rated steaming capacity of 344,000 pounds per hour. A fifth boiler was taken out of service when the Plant stopped using coal as fuel. The units are set side-by-side with a passage between each boiler leading to the turbine room. The boilers are fired by natural gas, with the combustion controlled automatically. This system maintains constant steam pressure and controls the fuel feed and air flow by means of electronic equipment. Combustion control panels are located directly in front of the boilers. The panels contain draft gauges and recording instruments for all boiler performance indicators as well as the combustion control devices.

**Photo: Boiler Controls**

**Photo: Lower Section of Boiler**

Specific information on each of the boilers is as follows:

**Electric Plant Boilers**

| No. | Year of Commercial Operation | Manufacturer | Fuel (Primary/Alt.) | Input (MMBTU/hr) | Design Rating (lbs./hr.) |
|---|---|---|---|---|---|
| 4 | 1958 | B&W | Gas/Oil | 145 | 110,000 |
| 5 | 1938 | B&W | Gas/Oil | 63 | 40,000 |
| 7 | 1948 | B&W | Gas/Oil | 102 | 69,000 |
| 8 | 1964 | Erie City | Gas | 174 | 125,000 |
| | | | Total: | 484 | 344,000 |

Forced draft air is supplied to each boiler unit by a fan located either on the operating floor in back of the boiler. The induced draft fans on the smaller boilers are located in the basement, while on the "new" larger boilers, the induced draft fan is placed above the boiler drums. These fans discharge the exhaust gases into a common horizontal breaching in the upper part of the boiler room from which, in turn, they are delivered to the stack. Both the forced and induced draft fans are electric motor driven; they operate at a constant speed with combustion control regulators acting on the fan dampers.

**Turbine Room**

The turbine room contains three Westinghouse Electric Corporation turbo-generating units set with their shafts parallel to each other. They have a total net capacity of 25,400 kilowatts. All of the units were manufactured by Westinghouse and have direct-connected exciters and utilize Allis-Chalmers surface condensers to condense the steam into water for return to the boilers. The lower level of the turbine room also contains two Fairbanks-Morse diesel engines with a total nameplate capacity of 4,700 kilowatts.


**Photo: Steam Turbine #6**

**Photo: Diesel Generator #8**

Specific information on each of the generating units is as follows:

**Electric Plant Generating Units**

| Unit | Year of Commercial Operation | Manufacturer | Prime Mover | Net Capability (kW) | Steam Required (lbs./hr.) |
|---|---|---|---|---|---|
| 4 | 1953 | Westinghouse | Steam | 8,650 | 103,800 |
| 6 | 1948 | Westinghouse | Steam | 5,500 | 66,000 |
| 7 | 1960 | Westinghouse | Steam | 11,200 | 134,400 |
| 8 | 1978 | Fairbanks/Morse | Diesel | 2,365 | |
| 9 | 1978 | Fairbanks/Morse | Diesel | 2,359 | |
| | | | Total: | 30,074 | 304,200 |

Metal-enclosed switchboard with removable truck-type circuit breakers and equipped with the necessary metering and protective relaying equipment is installed at the north end of the turbine room. The switchboard is in two sections, separated by a brick wall and distance, so that a complete failure of one section would still permit partial operation from the other section. The switchboard controls and distributes the current from the generators to the circuits supplying the Village.

**Photo: North – South 4kV Bus**

**Photo: East 4kV Bus**

## ComEd Tie Lines

The Village is served by three 12,470 volt tie lines from ComEd. The lines were originally installed in the 1970's and originate from ComEd's Northbrook Substation. The interconnection point is a piece of switchgear located near the CarMax dealership on Skokie Boulevard. At this location, ownership and maintenance of the facilities transfers from ComEd to Winnetka. Since their original installation, Winnetka has replaced their portion of the three underground tie lines with new cable. The cable lines are routed in a common duct bank along Tower Road. Two lines terminate at the Village's South Load Center on Spruce Street and one line terminates at the Electric Plant.

## Northfield Substation

In 1996, the Village constructed the Northfield Substation to provide additional capacity for the Village's electrical distribution system. The substation is located in Northfield, near the New Trier West campus on Happ Road. The 30,000 kW transformer is connected to ComEd's

transmission system. The transformer reduces the electric voltage from 138,000 volts to 12,470 volts for distribution on the Village's electrical system. The substation is located on property owned by the Forest Preserve with a lease that extends through 2056.

In 2022, the Village completed the expansion of the Northfield Substation which provided an additional source of power to the electric distribution system. The multi-year project included the installation of a transformer fire wall, new 15kV switchgear and circuit breakers, a fire protection system and a second 30,000 kW substation transformer. Expansion of the Northfield Substation was undertaken to address system contingency issues related to the electric system's sources of power. Prior to the substation's expansion, electric system contingency was reliant on aging generation assets at the Electric Plant that require several hours to place in service and have started to experience an increasing number of repairs. The second transformer also services as an in-service spare to the original transformer which is twenty-eight years old.

**Electric Distribution System**

The Village's electric distribution system is comprised of nine 7,200/12,470 volts (referred to as 12kV) circuits and four 4,160 volts (referred to as 4kV) circuits. The 4kV circuits originate from the Electric Plant and serve New Trier High School, the Public Safety Building, AT&T building, two properties near the intersection of Oak Street and Chestnut Street, and the Village Yards. The 12kV circuits originate from either the Plant Load Center (at the Electric Plant), South Load Center (Spruce & Berkeley) or the Public Works Facility.

Three transformers located outside of the Electric Plant, referred to as the Plant Load Center, are used to convert 4kV energy into 12kV energy when the generating units are in operation. During periods that the generation is not in operation, these same transformers have the ability to convert 12kV energy into 4kV energy to supply the four 4kV circuits along with the 4kV circuits to serve the Electric Plant and Water Plant. Specific information on each of the transformers is as follows:

**Step Up/Step Down Transformers Located At The Plant Load Center**

| Unit | Manufacturer | KVA | Voltage | Manufacture date |
|---|---|---|---|---|
| TR Spare | GE | 5000 | 4160/12470 | 1970 |
| TR #1 | GE | 7500 | 4160/12470 | 1970 |
| TR #2 | GE | 5000 | 4160/12470 | 1970 |
| TR #3 | Magnetek | 10500 | 4160/12470 | 1995 |

In addition to the distribution circuits, there are three 12kV underground circuits that connect the Northfield Substation, South Load Center, and Plant Load Center. This arrangement allows the Village to use either or both the Electric Plant and its interconnections at all times to supply the energy needs of the residents.

Distribution transformers, for reducing the 4kV or 12kV voltage to a customer's service voltage, are located at various points on the distribution system or on a customer's property. The typical service voltage for a residential customer is single phase 120/240 volts and the typical service voltage for large residential and commercial customers is three phase 120/208 volts.

**IMEA Generation Contract**

The electrical generation capacity of the Electric Plant is dedicated to the IMEA. On an annual basis, the Village is required to demonstrate the capability of each generating unit and affirm the net "dedicated capacity." In return for the dedicated capacity, the Village receives a credit of approximately $1.4M annually on the Village's wholesale power bill. Capacity payments for the generation vary by the type and size of the generating unit. For the steam turbines, the Village receives a credit of $4.00 per kW/month. The diesel units receive a credit of $3.20 per kW/month. A summary of each unit's dedicated capacity and the associated capacity credits is shown below.

**Summary – Capacity Credits**

| Unit | | kW Dedicated | $/mo. Per kW | Monthly Capacity Credit | Annual Capacity Credit |
|---|---|---|---|---|---|
| **Diesel Engines** | #8 | 2,365 | $3.20 | $7,568.00 | $90,816.00 |
| | #9 | 2,359 | $3.20 | $7,548.80 | $90,585.60 |
| **Steam Turbines** | #4 | 8,650 | $4.00 | $34,600.00 | $415,200.00 |
| | #6 | 5,500 | $4.00 | $22,000.00 | $264,000.00 |
| | #7 | 11,200 | $4.00 | $44,800.00 | $537,600.00 |
| | | | | **Total:** | **$1,398,201.60** |

At various times during the year, especially during summer months and/or extreme winter weather, the agency will request generation from the Village. When generation is scheduled, the Electric Plant is required to deliver at a minimum of 95% of the requested capacity for the specified time period. To the extent possible, the agency provides advance notification, of the need for generation. Under emergency conditions, IMEA can request output from the diesel generators within an hour and the steam driven generation output in an eight hour period.

For all generation scheduled and requested by IMEA, the Village is reimbursed the fuel cost (natural gas or diesel) required to operate the units. The agency also provides a generation payment of 3 Mills ($0.003) per kWh. All other costs associated with maintenance, repairs, and labor are funded by the Village's Electric Fund.

Each generating unit is required to perform a mandatory generation exercise every four months. During a mandatory exercise, the unit must produce at least 90% of the declared net tested capability. In the event of an equipment failure or any type of inability to respond, the Village incurs a deduction in the monthly capacity credits for the unit(s) unable to produce the requested output. Depending on the time of year (peak vs. non-peak) and the nature of the event (maintenance exercise vs. dispatch), the agency applies a penalty, a reduction in that month's capacity credits. In no circumstance is a penalty an amount greater than a unit's monthly capacity credit.

Under the IMEA contract, the Village has the sole determination regarding the continued operation or retirement of any and/or all generating units. In the absence of an equipment failure requiring the unplanned retirement of a unit, the Village is to provide at least one year's notice to IMEA. When a generating unit is retired, the corresponding capacity credits are no longer

applied to the monthly wholesale electric bill from IMEA. There are also provisions in the agreement for the Village to replace a generating unit. If it is determined by the Village that a unit should be permanently retired from service, the Village is allowed to replace any or all of its dedicated capacity within one year, provided the replacement generation is not greater in capacity than what was in service prior to replacement.

**Annual Operation**

For the vast majority of the year, the Electric Plant is maintained in a stand-by mode. On a periodic basis, the units are operated to train staff and ensure operational readiness and also to fulfill IMEA's requirement to demonstrate unit output every four months. At various times during the year, the agency will request generation from the Village due to market conditions, transmission system conditions or other requirements such as load shedding obligations. These requests are typically associated with extended periods of extremely hot or cold weather. The most recent generation request occurred in December 2022. Due to the frigid weather conditions prior to the Christmas holiday weekend, various power plants experienced difficulty operating, and transmission system operators in both northern and southern Illinois requested additional generation. Below is a two year summary of the operational hours for each generating unit.

**Summary Of Generating Unit Operating Hours**

| Unit | Type | 2021 Operating Hours | 2022 Operating Hours |
|---|---|---|---|
| 4 | Steam | 300 | 380 |
| 6 | Steam | 280 | 521 |
| 7 | Steam | 347 | 579 |
| 8 | Diesel | 61 | 132 |
| 9 | Diesel | 60 | 121 |

**Next Steps**

At a future Council meeting, staff will provide additional detail on the Electric Plant's generating components, capital investment and financial considerations related to maintaining the current generating capacity through the existing IMEA contract period. The Electric Plant has reached a transition point at which an increasing amount of capital funding is required for the long-term operation of the plant. Policy direction will be required in conjunction with the preparation of the 2024 Electric Fund Budget and 5 Year Capital Plan.

**RECOMMENDATION:**

Informational Only - No policy direction requested at this time.

Village of
WINNETKA, IL

## Agenda Item Executive Summary

**TITLE:** Resolution No. R-87-2023: Waiving Competitive Bidding and Approving a Contract with the Progress Group, Inc. for Evaluation Services Related to Turbine #4 (Adoption)

**PRESENTER:** Brian Keys

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**AGENDA DATE:** September 19, 2023

**CONSENT:** No

**ITEM TYPE:** Consent Agenda

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**ITEM HISTORY:**
None.

**EXECUTIVE SUMMARY:**
Staff is requesting approval to proceed with an internal inspection of Turbine #4. The turbine was taken out of service after it exhibited abnormal vibrations during operation. An internal inspection is required to develop a repair plan. Funding authorization in the amount of $168,402 is being requested.

Abnormal and excessive amounts of vibration were noted during the last operation of Turbine #4. Steam Turbine #4 is a 1953 unit manufactured by Westinghouse with a rated output of 8,700 kW. Prior to the unit being shutdown, vibration analysis was performed on the turbine. The analysis points to the vibration originating from the outboard end of the turbine, potentially associated with a bearing failure. Measurements taken on the exterior of the generating unit also indicate that the rotor has shifted. To determine the cause of the vibration, the turbine needs to be disassembled for inspection.

Staff requested proposals to perform an "open and inspect" from two contractors that work on generating units. The Progress Group quoted $168,402 for the inspection. This amount does not include the performance of any non-destructive evaluating (N.D.E) testing or the re-assembly of the turbine. The second contractor, Power Services Group, did not submit a quote. The Progress Group has previously performed a turbine overhaul for the Village and completed various smaller repairs on the generating units. The Progress Group recently provided a competitive quote for the seal repair on Unit #6. For these reasons, staff recommends proceeding with the Progress Group.

As part of the 2023 Electric Fund Budget, Turbine #4 was scheduled for an overhaul. While the unit is opened to determine the source of the abnormal vibration, the contractor will perform an internal inspection, check measurements and alignment points and look for worn and/or deteriorated parts. During a typical overhaul project, the diaphragms are removed and sent offsite to be media blasted and non-destructively examined. The rotor is also removed and transported offsite for non-destructive examination. At this time, staff is requesting authorization to proceed with the internal inspection to facilitate the development of a repair and overhaul plan. At a future Village Council Meeting, staff will present a cost estimate after the inspection has been completed. In conjunction with the cost estimate

for Turbine #4, staff will be also be reporting on the estimated cost to address tube leaks in Boiler #4. The steam output capacity of Boiler #4 is essentially equivalent to the steam requirements for Turbine #4. As such, a comprehensive overview of the repairs required for continued operation of both the boiler and turbine is planned.

Until such time that Unit #4 is repaired and returned to service, the Village will incur a reduction in monthly capacity credits from the Illinois Municipal Agency (IMEA). In accordance with the Village's contract with IMEA, the unit earns $417,600 of capacity credits on an annual basis.

The 2023 Electric Fund Budget contains $764,000 (account #500.41.28-625) for the inspection and overhaul of Unit #4 turbine.

**RECOMMENDATION:**

Consider adoption of Resolution No. R-87-2023; waiving competitive bidding and approving a contract with the Progress Group, Inc for the evaluation of Turbine #4 in an amount not to exceed $168,402.

**ATTACHMENTS:**

1. Resolution No. R-87-2023: Waiving Competitive Bidding and a Approving Contract with the Progress Group, Inc for Evaluation Services - Turbine #4

**RESOLUTION NO. R-87-2023**

**A RESOLUTION WAIVING COMPETITIVE BIDDING AND APPROVING A CONTRACT WITH THE PROGRESS GROUP, INC. FOR EVALUATION SERVICES RELATED TO TURBINE #4**

**WHEREAS,** Article VII, Section 10 of the 1970 Illinois Constitution authorizes the Village of Winnetka (***"Village"***) to contract with individuals, associations, and corporations in any manner not prohibited by law or ordinance; and

**WHEREAS,** generator turbine #4 at the Village's Water and Electric Plant (***"Turbine #4"***) was taken out of service after it exhibited abnormal vibrations during operation; and

**WHEREAS,** in order to repair Turbine #4, an internal inspection is required to develop a repair plan (***"Evaluation Services"***); and

**WHEREAS,** Village staff contacted two companies that have performed work on turbines at the Water and Electric Plant and received one quote for the Evaluation Services from The Progress Group, Inc. (***"Contractor"***); and

**WHEREAS,** Village staff has recommended that the Village Council (i) waive competitive bidding for the Evaluation Services pursuant to Chapter 4.12.010.C of the Village Code, Section IV.3.D of the Village's Purchasing Manual, and the Village's home rule authority; and (ii) enter into a contract with Contractor for Contractor to provide the Evaluation Services in an amount not to exceed $168,402.00 (***"Contract"***); and

**WHEREAS,** the Village Council has determined that it is in the best interests of the Village to (i) waive competitive bidding for the Evaluation Services; and (ii) enter into a Contract with Contractor for Contractor to provide the Evaluation Services;

**NOW, THEREFORE, BE IT RESOLVED**, by the Council of the Village of Winnetka, Cook County, Illinois, as follows:

**SECTION 1: RECITALS.** The Village Council hereby adopts the foregoing recitals as its findings, as if fully set forth herein.

**SECTION 2: WAIVER OF COMPETITIVE BIDDING.** Pursuant to Sections 4.12.010.A and 4.12.010.C of the Village Code, Section IV.3.D of the Village's Purchasing Manual, and the Village's home rule authority, the Village Council waives the requirement of competitive bidding for the procurement of the Evaluation Services.

**SECTION 3: APPROVAL OF CONTRACT.** The Village Council approves a Contract with Contractor for Evaluation Services in substantially the form attached to this Resolution as **Exhibit A** and in a final form approved by the Village Attorney.

**SECTION 4: AUTHORIZATION TO EXECUTE CONTRACT.** The Village Council authorizes and directs the Village President and the Village Clerk to execute and attest,

respectively, on behalf of the Village, the final Contract after receipt by the Village Manager of two executed copies of the final Contract from the Contractor; provided, however, that if the Village Manager does not receive two executed copies of the final Contract from the Contractor within 60 days after the date of adoption of this Resolution, then this authority to execute and seal the Contract will, at the option of the Village Council, be null and void..

**SECTION 5: EFFECTIVE DATE.** This Resolution shall be in full force and effect from and after its passage and approval according to law.

**ADOPTED** this 19th day of September 2023, pursuant to the following roll call vote:

AYES: _____

NAYS: _____

ABSENT: _____

ABSTAIN: _____

Signed

_____

Village President

Countersigned:

_____

Village Clerk

# EXHIBIT A

## CONTRACT

**VILLAGE OF WINNETKA**

**CONTRACT FOR**
**EVALUATION OF GENERATOR NO. 4**

Full Name of Contractor: THE PROGRESS GROUP, INC. ("***Contractor***")

Principal Office Address: 918 Kennedy Avenue, Schererville, IN 46375

Contact Person: Mr. Bryan Klassen Telephone Number: (219) 322-3700

TO: Village of Winnetka ("***Village***")
510 Green Bay Road
Winnetka, Illinois 60093
Attention:

1. **Work**

A. Contract and Work. Contractor shall, at its sole cost and expense, provide, perform, and complete, in the manner specified and described, and upon the terms and conditions set forth in this Contract, to all of the following, all of which is herein referred to as the "Work":

1. Labor, Equipment, Materials, and Supplies. Provide, perform, and complete, in the manner specified and described in this Contract, all necessary work, labor, services, transportation, equipment, materials, supplies, information, data, and other means and items necessary for:

   The disassembly of the outboard generator end, removal of damaged seal, reverse engineering, manufacture of a new seal and re-assembly of Generator No. 6 located at the Village of Winnetka Electric Power Plant (***"Work Site"***), all as more fully detailed in the proposal attached hereto and incorporated herein as ***Exhibit A***.

2. Permits. Procure and furnish all permits, licenses, and other governmental approvals and authorizations necessary in connection therewith;

3. Bonds and Insurance. Procure and furnish all bonds and all insurance certificates and policies of insurance specified in this Contract;

4. Taxes. Pay all applicable federal, state, and local taxes;

5. Miscellaneous. Do all other things required of Contractor by this Contract; and

6. Quality. Provide, perform, and complete all of the foregoing in a proper and workmanlike manner, consistent with the standards of recognized professional firms in performing Work of a similar nature, in full compliance with, and as required by or pursuant, to this Contract, and with the greatest economy, efficiency, and expedition consistent therewith, with only new, undamaged, and first quality equipment, materials, and supplies.

B. Performance Standards. Contractor agrees that all Work shall be fully provided, performed, and completed in accordance with the Proposal in Exhibit A.

C. Responsibility for Damage or Loss. Contractor proposes, and agrees, that Contractor shall be responsible and liable for, and shall promptly and without charge to Village repair or replace, any damage done to, and any loss or injury suffered by, the Village, the Work, the Work Site, or other property or persons as a result of the Work.

D. Inspection/Testing/Rejection. Village shall have the right to inspect all or any part of the Work and to reject all or any part of the Work that is, in Village's judgment, defective or damaged or that in any way fails to conform strictly to the requirements of this Contract and the Village, without limiting its other rights or remedies, may require correction or replacement at Contractor's cost, perform or have performed all Work necessary to complete or correct all or any part of the Work that is defective, damaged, or nonconforming and charge Contractor with any excess cost incurred thereby, or cancel all or any part of any order or this Contract. Work so rejected may be returned or held at Contractor's expense and risk.

2. **Contract Price**

The Contractor shall take in full payment for all Work and other matters set forth under Section 1 above, including overhead and profit; taxes, contributions, and premiums; and compensation to all subcontractors and suppliers, the compensation set forth below.

A. SCHEDULE OF PRICES

For providing, performing, and completing all Work, the total Contract Price of:

TOTAL CONTRACT PRICE:

$168,402.00

B. BASIS FOR DETERMINING PRICES

It is expressly understood and agreed that:

1. All prices stated in the Schedule of Prices are firm and shall not be subject to escalation or change;

2. The Village is not subject to state or local sales, use, and excise taxes, that no such taxes are included in the Schedule of Prices, and that all claim or right to claim any additional compensation by reason of the payment of any such tax is hereby waived and released; and

3. All other applicable federal, state, and local taxes of every kind and nature applicable to the Work are included in the Schedule of Prices.

C. TIME OF PAYMENT

It is expressly understood and agreed that all payments shall be within 60 days after receiving an invoice from Contractor and the Work is completed.

All payments may be subject to deduction or setoff by reason of any failure of Contractor to perform under this Contract. Each payment shall include Contractor's certification of the value of, and partial or final waivers of lien covering, all Work for which payment is then requested and Contractor's certification that all prior payments have been properly applied to the payment or reimbursement of the costs with respect to which they were paid.

3. **Contract Time**

Contractor shall commence the Work in accordance with a schedule agreed to between Contractor and the Village provided Contractor shall have furnished to the Village all bonds and all insurance certificates and policies of insurance specified in this Contract ("***Commencement Date***"). Contractor shall perform the Work diligently and continuously and shall complete the Work not later than December 31, 2023 ("***Time of Performance***"). The Village may modify the Time of Performance at any time upon 15 days prior written notice to the Contractor. Delays caused by the Village shall extend the Time of Performance; provided, however, that Contractor shall be responsible for completion of all Work within the Time of Performance, notwithstanding any strike or other work stoppage by employees of either Contractor or of the Village.

4. **Financial Assurance**

A. Bonds. Contractor proposes, and agrees, that Contractor shall provide a Performance Bond and a Labor and Material Payment Bond, on forms provided by, or otherwise acceptable to, the Village, from a surety company acceptable to the Village, each in the penal sum of the Contract Price, within 10 days following the execution of this Contract by both parties.

B. Insurance. Contractor shall provide certificates and policies of insurance evidencing the minimum insurance coverages and limits set forth below within 10 days following the execution of this Contract by both parties. Such policies shall be in form, and from companies, acceptable to the Village. The insurance coverages and limits set forth below shall be deemed to be minimum coverages and limits and shall not be construed in any way as a limitation on Contractor's duty to carry adequate insurance or on Contractor's liability for losses or damages under this Contract. The minimum insurance coverages and limits that shall be maintained at all times while providing, performing, or completing the Work are as follows:

1. Workers' Compensation and Employer's Liability

Limits shall not be less than:

Worker's Compensation: Statutory

Employer's Liability: $500,000 ea. accident-injury
$500,000 ea. employee-disease
$500,000 disease-policy

Such insurance shall evidence that coverage applies to the State of Illinois.

2. Comprehensive Motor Vehicle Liability

Limits for vehicles owned, non-owned or rented shall not be less than:

$1,000,000 Bodily Injury and Property Damage Combined Single Limit

3. Comprehensive General Liability

Limits shall not be less than:

$1,000,000 Bodily Injury and Property Damage Combined Single Limit.

Coverage is to be written on an "occurrence" basis.

Coverage to include:

- Premises Operations
- Products/Completed Operations
- Independent Contractors
- Personal Injury (with Employment Exclusion deleted)
- Broad Form Property Damage Endorsement
- "X," "C," and "U"
- Contractual Liability

Contractual Liability coverage shall specifically include the indemnification set forth below.

4. Umbrella Liability

Limits shall not be less than:

$2,000,000 Bodily Injury and Property Damage Combined Single Limit.

This Policy shall apply in excess of the limits stated in 1, 2, and 3 above.

C. Indemnification. Contractor shall indemnify and save harmless the Village against all damages, liability, claims, losses, and expenses (including attorneys' fee) that may arise, or be alleged to have arisen, out of or in connection with Contractor's performance of, or failure to perform, the Work or any part thereof, or any failure to meet the representations and warranties set forth in Section 5 of this Contract.

D. Penalties. Contractor shall be solely liable for any fines or civil penalties that are imposed by any governmental or quasi-governmental agency or body that may arise, or be alleged to have arisen, out of or in connection with Contractor's performance of, or failure to perform, the Work or any part thereof.

## 5. Contractor's Representations and Warranties

Contractor hereby represents and warrants as follows:

A. The Work. The Work, and all of its components, shall strictly conform to the requirements of this Contract, including, without limitation, the performance standards set forth in Subsection 1B of this Contract; and shall be fit, sufficient, and suitable for the purposes expressed in, or reasonably inferred from, this Contract and the warranties expressed herein shall be in addition to any other warranties expressed or implied by law, which are hereby reserved unto the Village.

B. Compliance with Laws. The Work, and all of its components, shall be provided, performed, and completed in compliance with, and Contractor agrees to be bound by, all applicable federal, state, and local laws, orders, rules, and regulations, as they may be modified or amended from time to time, including without limitation the Prevailing Wage Act, 820 ILCS 130/0.01 et seq.; if the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid, the revised rate shall apply to this Contract); any other prevailing wage laws; any statutes requiring preference to laborers of specified classes; any statutes prohibiting discrimination because of, or requiring affirmative action based on, race, creed, color, national origin, age, sex, or other prohibited classification; and any statutes regarding safety or the performance of the Work. Further, Contractor shall have a written sexual harassment policy in compliance with Section 2-105 of the Illinois Human Rights Act during the course of the work.

C. Not Barred. Contractor is not barred by law from contracting with the Village or with any other unit of state or local government as a result of (i) a delinquency in the payment of any tax administered by the Illinois Department of Revenue unless Contractor is contesting, in accordance with the procedures established by the appropriate Revenue Act, its liability for the tax or the amount of tax, as set forth in 65 ILCS 5/11-42.1-1; or (ii) a violation of either Section 33E-3 or Section 33E-4 of Article 33 of the Criminal Code of 1961, 720 ILCS 5/33E-1 et seq.

D. Qualified. Contractor has the requisite experience, ability, capital, facilities, plant, organization, and staff to enable Contractor to perform the Work successfully and promptly and to commence and complete the Work within the Contract Price and Contract Time set forth above.

## 6. Acknowledgements

Contractor acknowledges and agrees that:

A. Reliance. The Village is relying on all warranties, representations, and statements made by Contractor in this Contract.

B. Remedies. Each of the rights and remedies reserved to the Village in this Contract shall be cumulative and additional to any other or further remedies provided in law or equity or in this Contract.

C. Time. Time is of the essence in the performance of all terms and provisions of this Contract and, except where stated otherwise references in this Contract to days shall be construed to refer to calendar days and time.

D. No Waiver. No examination, inspection, investigation, test, measurement, review, determination, decision, certificate, or approval by the Village, whether before or after the Village's acceptance of this Contract; nor any information or data supplied by the Village, whether before or after the Village's acceptance of this Contract; nor any order by the Village for the payment of money; nor any payment for, or use, possession, or acceptance of, the whole or any part of the Work by the Village; nor any extension of time granted by the Village; nor any delay by the Village in exercising any right under this Contract; nor any other act or omission of the Village shall constitute or be deemed to be an acceptance of any defective, damaged, or nonconforming Work, nor operate to waive or otherwise diminish the effect of any representation or warranty made by Contractor; or of any requirement or provision of this Contract; or of any remedy, power, or right of the Village.

E. Severability. It is hereby expressed to be the intent of the parties to this Contract that should any provision, covenant, agreement, or portion of this Contract or its application to any Person or property be held invalid by a court of competent jurisdiction, the remaining provisions of this Contract and the validity, enforceability, and application to any Person or property shall not be impaired thereby, but the remaining provisions shall be interpreted, applied, and enforced so as to achieve, as near as may be, the purpose and intent of this Contract to the greatest extent permitted by applicable law.

F. Amendments and Modifications. No amendment or modification to this Contract shall be effective until it is reduced to writing and approved and executed by the corporate authorities of the parties in accordance with all applicable statutory procedures.

G. Assignment. Neither this Contract, nor any interest herein, shall be assigned or subcontracted, in whole or in part, by Contractor except upon the prior written consent of the Village.

H. Governing Law. This Contract shall be governed by, construed and enforced in accordance with the internal laws, but not the conflicts of laws rules, of the State of Illinois.

I. Certified Payrolls. Contractor shall, in accordance with Section 5 of the Illinois Prevailing Wage Act, 820 ILCS 130/5, submit to the Village, on a monthly basis, a certified payroll. The certified payroll shall consist of a complete copy of those records required to be made and kept by the Prevailing Wage Act. The certified payroll shall be accompanied by a statement signed by the Contractor or subcontractor which certifies that: (1) such records are true and accurate; (2) the hourly rate paid is not less than the general prevailing rate of hourly wages required by the Prevailing Wage Act; and (3) Contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class B misdemeanor. A general contractor may rely upon the certification of a lower tier subcontractor, provided that the general contractor does not knowingly rely upon a subcontractor's false certification. Upon two business days' notice, Contractor and each subcontractor shall make available for inspection the records required to be made and kept by the Act: (i) to the Village, its officers and agents, and to the Director of the Illinois Department of Labor and his or hers deputies and agents; and (ii) at all reasonable hours at a location within this State.

J. Conflicts of Interest. Contractor represents and certifies that, to the best of its knowledge, (1) no elected or appointed Village official, employee or agent has a personal financial interest in the business of the Contractor or in this Contract, or has personally received payment or other consideration for this Contract; (2) as of the date of this Contract, neither Contractor nor any person employed or associated with Contractor has any interest that would conflict in any manner or degree with the performance of the obligations under this Contract; and (3) neither Contractor nor any person employed by or associated with Contractor shall at any time during the term of this Contract obtain or acquire any interest that would conflict in any manner or degree with the performance of the obligations under this Contract.

K. Third Party Beneficiaries. No claim as a third party beneficiary under this Contract by any person, firm, or corporation shall be made or be valid against the Village.

L. Conflicts; Exhibits. If any term or provision in this Agreement conflicts with any term or provision of an attachment or exhibit to this Contract, the terms and provisions of this Contract shall control.

DATED this _____ day of _____, 2023.

**[SIGNATURE PAGE FOLLOWS]**

ATTEST:

By: _____
Village Clerk

**VILLAGE OF WINNETKA**

By: _____
Village President

ATTEST:

By: _____

Title: _____

**THE PROGRESS GROUP, INC.**

By: _____

Its: _____

**EXHIBIT A**

**PROPOSAL**

Scope of work is as follows:

- Provide engineering, labor, machinery, material, tools and supplies to open and inspect steam turbine #4.
- Mobilization and demobilization of crew, tools, and equipment.
- Open and inspect bearing.
- Remove cover.
- Check thrust.
- Perform visual inspection of rotor and diaphragms.
- Prepare a report of findings and estimated cost to repair for Village's review prior to authorization of N.D.E..

Clarification and Exceptions:

- Note Additional repairs may be required following N.D.E.
- Village to provide reasonably free and unobstructed access to all work areas.
- Proposal is based on the work being performed, Monday through Friday schedule 7:00 a.m. - 3:30 p.m., weekends and holidays are excluded.