

**NASHWAUK  
PUBLIC UTILITIES  
COMMISSION  
REGULAR AGENDA**

p: 218-885-1210



*City of*  
**NASHWAUK**  
**FROM TIMBER TO TACONITE**

301 Central Avenue, Nashwauk, Minnesota 55769

**NPUC COMMISSION**

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**TUESDAY, FEBRUARY 21, 2023**

**E. Milton Latvala**

*Chair*

**Mike Anderson**

*Commissioner*

**Edward Bolf**

*Commissioner*

**Greg Heyblom**

*Commissioner*

**Steve Dasovich**

*Commissioner*

**1. CALL TO ORDER**

**2. ADOPTION OF AGENDA**

**3. APPROVAL OF MINUTES**

- a. Minutes of the February 21, 2023, NPUC meeting.

**4. APPROVAL OF CLAIMS**

**5. OLD BUSINESS**

- a. East Itasca Joint Sewer Project Update
- b. Water System Controls/Monitoring Modification

**6. NEW BUSINESS**

- a. Discussion regarding the new high school:
  - i. Question posed by Steve Sherner— Does the NPUC want to serve the new high school or have Minnesota Power serve the school?
  - ii. If yes, consider approval of the purchase of wire and a transformer up to \$35,000 each.
- b. Discussion regarding 3<sup>rd</sup> Street Infrastructure Improvement project; community project requests have been submitted to Congressman Stauber, Senator Smith and Senator Klobuchar. Denial received from Congressman Stauber.

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**Steve Dasovich**

*Commissioner*

- 7. PUBLIC COMMENT.** Members of the public are welcome to address the Commission. Please provide your name, brief description of the subject matter, and keep comments to 5 minutes.

**8. ADJOURN**

**City of Nashwauk  
Nashwauk Public Utilities Commission  
February 21, 2023**

Chairman Latvala called the meeting to order at 1:00 p.m. in the Council Chambers of Nashwauk City Hall.

**Members present:** Commissioner Bolf, Commissioner Dasovich, Chairman Latvala.

**Members absent:** Commissioner Anderson, Commissioner Heyblom.

**Also present:** Jason Martire, Lance Hopke, April Kurtock, Preston Tripp.

**Adoption of Agenda**

\*Motion by Commissioner Bolf, seconded by Chairman Latvala to adopt the agenda of the February 21, 2023, Nashwauk Public Utilities Commission meeting.

Ayes: all present. Motion carried.

**Approval of Minutes**

\*Motion by Commissioner Bolf, seconded by Commissioner Dasovich to approve the minutes of the January 17, 2023, Nashwauk Public Utilities Commission meeting.

Ayes: all present. Motion carried.

**Approval of Claims**

\*Motion by Commissioner Dasovich, seconded by Commissioner Bolf to approve all claims signed and file the claims register as official record.

Ayes: all present. Motion carried.

**Old Business**

**East Itasca Joint Sewer Project Update**

Engineer Preston Tripp said that there was a delay in the project because of the electrical panel. Newest estimates said that it wouldn't arrive until May 2023. He stated that there was a meeting the following day to discuss the details of the electrical system and other outstanding items. He stated that he should know after that meeting if any change orders were needed. Commissioner Bolf stated that the Commission could call for a special meeting to address any change orders.

**Internet Service to Wastewater Facility**

Paul Bunyan had provided a quote to get broadband installed to the wastewater facility. Because the facility was not within their service area, it would require them to obtain a metro connection. With an 84-month service agreement, installation of the service would be \$26,000 plus \$400/month for service. April Kurtock stated that she had also reached out to AT&T for a wireless internet option. A Cradlepoint router was \$849 and unlimited data would be \$35/month. She stated that she had ordered the router from AT&T and if the wireless internet connection did not work well enough, the Commission may need to consider installation of broadband.

Additionally, Jason Martire expressed a need for a security camera system. Two quotes had been obtained and the topic would be on the agenda for the next meeting.

**Water System Controls**

\*Motion by Commissioner Bolf, seconded by Commissioner Dasovich to obtain a quote for a flow meter that would be installed at the County garage so the Commission could understand their water usage.

Ayes: all present. Motion carried.

**New Business****Water Booster Pump**

Jason Martire discussed the quote provided from Minnesota Pump Works for a booster pump. He stated that the new pump would be the pump installed and the current one, which was recently rebuilt, would be the spare pump.

\*Motion by Commissioner Dasovich, seconded by Commissioner Bolf to approve the quote from Minnesota Pump Works for a booster pump in the amount of \$13,840.00.

Ayes: all present. Motion carried.

**Other Business**

Jason Martire noted that the Red Rock business center recently sold, and the new buyer had stated that they would need three-phase power. April Kurtock stated that the buyer had also stopped in a city hall and was provided an application for a new service.

**Adjourn**

\*Motion by Commissioner Bolf, seconded by Chairman Latvala to adjourn at 1:29 p.m.

Ayes: all present. Motion carried.

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Secretary

## April Kurtock

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**From:** Joe Peterson <jpeterson@ireacs.com>  
**Sent:** Friday, March 17, 2023 8:28 AM  
**To:** April Kurtock  
**Subject:** RE: Nashwauk Bid S013381109

Hi April,

One thought, I may have a line on a 500kVA that would fit the need locally. I've got a meeting later today and can find out then if it would be an option and idea on cost/etc. I'll keep you posted.

Hope you have a great weekend!  
Joe

**From:** Joe Peterson <jpeterson@ireacs.com>  
**Sent:** Thursday, March 16, 2023 8:11 PM  
**To:** April Kurtock <akurtock@cityofnashwauk.com>  
**Subject:** RE: Nashwauk Bid S013381109

Hi April,

After the service by exception situation came back up, I'm not sure what the best approach. Last I heard from Steve it was a fairly "tentative" as far as MP granting it. Has that moved forward with any better conclusion or is it waiting on the council vote on whether to serve the load? I'd hate to suggest a purchase and then have MP choose to serve them or something that disrupts things after a large purchase.

Thinking about how it has been working with CMTA/ICS too, it might be best to wait the week or 2 until the electrical contractor is chosen and they formally submit their signed application. Reason being is just about every time I've gotten details from them it goes up by 10-15% and has basically doubled since Steve got his numbers in October. I don't think there's a reasonable way that things would go up further, but anything seems possible. That at least gives us some certainty that they'll have to stand behind what they've provided. Would it be possible to get an approval to proceed on a purchase up to \$35k pending their formal application and the service by exception being resolved? Just thinking that would get the council's approval so we're ready to pull the trigger but doesn't set it in stone quite yet.

I found another option too, this one is used but reconditioned and with a pretty standard warranty.

Reconditioned 500 kVA 3-Ph Padmount Transformer

High Voltage: 4160 GY 2400

Low Voltage: 480 Y 277

HV Taps: 4370, 4265, 4160, 4055, 3950

HV Bushings: (3) 200A Wells & Inserts (dead front, radial feed)

LV Bushings: (4) 4-Hole Spades (common HO/XO)

Fluid: Mineral Oil

Frequency: 60 Hz

Temperature Rise: 65°C

Cooling Class: ONAN

Conductor: Al / Al

Features & Accessories:

-Drain and sample valve

-Dial-Type Thermometer

-Liquid Level Gauge  
-Pressure Vacuum Gauge  
-Pressure Relief Valve

Shipping: Free within contiguous US, FOB plant (5-7 day service)

Warranty: 3 Years

Lead Time: Ships within 3-5 weeks after release

**PRICE: \$24,640**

Thank you.  
Joe

**From:** April Kurtock <[akurtock@cityofnashwauk.com](mailto:akurtock@cityofnashwauk.com)>

**Sent:** Thursday, March 16, 2023 3:14 PM

**To:** Joe Peterson <[jpeterson@ireacs.com](mailto:jpeterson@ireacs.com)>

**Subject:** RE: Nashwauk Bid S013381109

Hi, Joe.

What is your recommendation for this next NPUC meeting in relation to the transformer? Should I try to move forward with a purchase?

Thank you,

*April Kurtock*

City Administrator/Clerk/Treas.

City of Nashwauk

301 Central Avenue

Nashwauk, MN 55769

(p) 218-885-1210

(f) 218-885-1305

**From:** Joe Peterson <[jpeterson@ireacs.com](mailto:jpeterson@ireacs.com)>

**Sent:** Wednesday, March 15, 2023 9:36 AM

**To:** Stephen Sherner <[stephensherner@gmail.com](mailto:stephensherner@gmail.com)>; April Kurtock <[akurtock@cityofnashwauk.com](mailto:akurtock@cityofnashwauk.com)>

**Subject:** FW: Nashwauk Bid S013381109

FYI, cable price and availability seems to have stayed about the same (available mid-May currently).

Transformer lead times are moving out (and the rewind option \$ up). Manufacturing/rewind timeframe is 60-70 weeks ARO from T&R (up from 36-38 for recondition previously).

My gut feel is that we will want to get moving on materials that we can sooner than later to avoid being worked into a corner. The sooner we can decide on trying to save on cable costs with the stuff on hand and whether we're willing to take risks with downsizing transformer, the better. The cable we use will determine what elbows/terminators/etc. and those can end up with longer lead times too. The most urgent items would be those on the "Both" or "Construction" portions of my breakout and needed in service for July 10 construction start (per CMTA's informal statement).

**From:** HILLMER Susan <[hillmer@irby.com](mailto:hillmer@irby.com)>

**Sent:** Tuesday, March 14, 2023 2:10 PM

**To:** [jpeterson@ireacs.com](mailto:jpeterson@ireacs.com)



STUART C IRBY BR673 EAGAN  
 980 LONE OAK ROAD  
 SUITE 145  
 EAGAN MN 55121-2508  
 763-588-0545

Quotation

QUOTE DATE	ORDER NUMBER
01/25/23	S013381109
REMIT TO: STUART C IRBY CO POST OFFICE BOX 741991 ATLANTA GA 30384-1991	PAGE NO.  1

SOLD TO:  
 NASHWAUK PUBLIC UTILITIES  
 301 CENTRAL AVENUE  
 NASHWAUK, MN 55769-1131

SHIP TO:  
 NASHWAUK PUBLIC UTILITIES  
 301 CENTRAL AVENUE  
 NASHWAUK, MN 55769-1131  
 218-885-1210

ORDERED BY: Joe

CUSTOMER NUMBER		CUSTOMER ORDER NUMBER		JOB/RELEASE NUMBER		OUTSIDE SALESPERSON	
117849						Michael J Uphoff	
INSIDE SALESPERSON			REQD DATE	FRGHT ALLWD	SHIP VIA		
Susan K Hill			01/25/23	Yes	BW BEST-WAY		
ORDER QTY	SHIP QTY	LINE	DESCRIPTION			Prc/UOM	Ext Amt
8250FT		1	*OKON 161-23-3069 1/0-SOL AL 220M EPR 15KV 16X14 2750' (+/-) Available Mid-April 3 x 2750' +/-05% Tolerance Metals Escalation based on Cu=\$4.00 Al=\$1.50			3824.000M	31548.00

**\* This is a quotation \***

Prices firm for acceptance within 30 days with the exception of commodity prices which are subject to change daily. Quotation is void if changed. Complete quote must be used unless authorized in writing.

Subtotal	31548.00
S&H CHGS	0.00
Sales Tax	0.00
<b>TOTAL</b>	<b>31548.00</b>

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\*\* Reprint \*\* Reprint \*\* Reprint \*\*

## April Kurtock

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**From:** Joe Peterson <jpeterson@ireacs.com>  
**Sent:** Tuesday, March 14, 2023 10:48 AM  
**To:** April Kurtock; Stephen Sherner  
**Subject:** School Budgetary Estimate  
**Attachments:** MapMarkup.pdf; BudgetNotes.xlsx; BudgetaryEstimateNotes.docx

Hello,

Below are details/explanations on the costs I anticipate for the extension to the school and serving the temporary construction power. If it is easier, I can meet in town and we can talk through everything and look at options for any potential savings, but I'll remind that the end customer and plans are still only preliminary at this time.

One main question is whether or not we will want to try to save the cost for new cable vs using the existing. It is ~\$32k material price for the new, but I would consider whether the cable in hand is better to use for other system needs. Either way can be accommodated. A second question is whether to proceed with pursuit of a 500kVA transformer or try to make a 300kVA work. My summary explains my recommendation for the 500kVA, but a higher tolerance for risk could consider the 300kVA to possibly save money.

Attached is a tentative breakout of costs as things currently sit. Please keep this is still early since the design contractor hasn't finalized details, electrical contractor has not applied for construction power nor permanent, locations/needs not finalized on the school project to dial in transformer location, etc. The total overall cost for everything is likely to be near \$145k. I do believe this to be a very reasonable estimate for the different aspects/phases of the work but still recommend considering it with a +/- 15% for variability at this stage.

My breakout lists 3 main categories for the costs: Construction Power, Permanent Power, and applicable to Both. This is because certain portions of work/costs are applicable to the construction/"temporary" needs, some only for permanent, and some needed for both. I'm not sure on the plan for billing/covering of costs, but figured the breakout helps to understand and plan for any billing/cost recovery.

The plan for the earlier needs would be the construction power. My current plan for that would be bringing 3-phase cable from the existing primary pedestal across the road and up the east edge of the MN Power 23kV line. At the end, one phase will be used to power a 50kVA overhead transformer on a riser pole and I assume need to bring secondaries to a service pole. One opportunity to save costs here is if the contractor provides underground secondary cable all the way to the transformer pole and we can do a simple riser, but that depends on their plans. That could save in the area of \$3k-\$5k and simplify cleanup/removal later. Note there are materials that will be recovered after this work is complete.

The plan for permanent assumes the transformer near where it is indicated on the latest CMTA plans. I assume the contractor/customer will provide the transformer foundation and conduits/etc. for all secondary side equipment and will cover costs for customer premise installation.

It would be possible to save money by using the existing cable from the Mesabi Metallics work. It will be large for this project and could be useful for undergrounding some of the lines in/near town or other needs, but is an option. Depending on updated quotes from the vendors, that could save up to ~\$32k (assuming its style/type doesn't increase costs of elbows, terminators, etc.). I'll note that the standard reel size of 2,750' will not leave much "spare" based on current locations/routing. I had planned a site visit to verify the cable details, but I wanted to pose the question on plans before spending the time/expense.

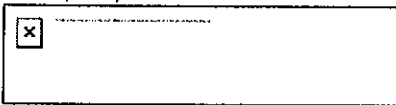


I've provided a rough/informal narrative on transformer sizing and cable thoughts since there's been a lot of information over the last ~year or so. We may be able to save some money with a 300kVA transformer, but I would be cautious since it is likely to cause complications with power/voltage quality to the customer (which is risky since they are using a long run of service conductors as well). I'll get some requests for quotes out this week to dial in that number, but based on the info from the 300kVA transformer this is a reasonable estimate for a new or refurbished unit. If a spare/used unit is available in-house or from another cooperating municipal, it could cut that cost substantially.

Please let me know any questions, concerns, etc.

Thank you.

Joe Peterson, PE (MN, IA, MI, IA, ND)  
Owner/Principal Engineer  
Iron Range Engineering and Consulting Services, PLLC  
PO Box 397  
Forbes, MN 55738  
Cell: (218) 996-5301



Construction, Permanent, Both	Material/Service	Description	Cost	Comment
Both	Elbows	6x 200A	\$6,000.00	For existing primary pedestal and 3 spares
Both	Primary Modules	3x 3-position	\$2,000.00	For existing primary pedestal, if existing is only 2 position
Both	Primary Cable	3x 1900' 1/0 ACSR	\$22,000.00	Part of full 2750' reels
Both	Conduit	3x 600' 1.5" or 2"	\$4,000.00	Part of 1500' or longer reels
Both	Conduit Sweeps	3x 90deg	\$75.00	
Both	Splice Kits		\$4,000.00	For project in case of dig-ins or other issues
Both	Installation - Boring	600' of 3-phase	\$5,000.00	Assuming plow/bore done at same time
Both	Installation - Plow/Trench	1400' of 3-phase	\$4,000.00	Assuming plow/bore done at same time
Both	Installation - Terminating/etc.		\$5,000.00	
Both	Freight/Large Equipment Handling		\$2,500.00	
	Total		\$52,575.00	
Construction	Riser Pole	40' Class 3	\$1,250.00	
Construction	OH Transformer	50KVA, 120/240V	\$2,500.00	No request yet, so this is an estimate of size/plans, could use spare if one on hand
Construction	Cutout	100A LB, 15KV	\$300.00	
Construction	Arrester		\$50.00	
Construction	Cutout/Arrester Bracket		\$300.00	
Construction	Ground Rod and Wire		\$75.00	
Construction	Secondary Pole	30' Class 7	\$500.00	No request yet, so this is an estimate of size/plans
Construction	Anchoring/Guying	2 Sets	\$1,000.00	Anchor, Guys, Etc. for Xlrm Pole and Secondary Pole
Construction	Uguard - Metal	2x 5'	\$200.00	No request yet, so this is an estimate of size/plans
Construction	Terminator and Stress Cone	1x	\$750.00	No request yet, so this is an estimate of size/plans
Construction	Secondary Conductor	100' 2/0 Triplex	\$250.00	No request yet, so this is an estimate of size/plans
Construction	Installation		\$8,000.00	Set poles, anchoring, terminating, etc. (customer may need to provide meter base, conduit, weatherhead, etc. for service pole, depends on standard approach)
	Total		\$15,175.00	Most of these materials will be recovered with removal
Permanent	Primary Pedestal w/ 4-Position Modules		\$4,000.00	
Permanent	Basement/Ground Sleeve for Primary Pedestal		\$2,500.00	
Permanent	Ground Rods and Wire		\$150.00	Add second at ped and 2 at transformer
Permanent	Elbows	6x 200A	\$6,000.00	For new primary pedestal and transformer
Permanent	Primary Cable	3x 650' 1/0 ACSR	\$10,000.00	Part of full 2750' reels
Permanent	Conduit	3x 900' 1.5" or 2"	\$3,000.00	Part of 1500' or longer reels
Permanent	Conduit Sweeps	9x 90deg	\$225.00	Part of 1500' or longer reels
Permanent	Transformer		\$30,000.00	3 for ped to school, 3 for transformer from ped, 3 for future to solar from ped
Permanent	Elbow Arresters		\$250.00	500KVA, Straight 4, 16KV, Taps, Radial
Permanent	Secondary Cable		\$250.00	On transformer high-side bushings
Permanent	Transformer Foundation, Basement, Conduit		\$0.00	Assuming customer provides cable that terminates on transformer
Permanent	Meter Cabinet, CT, PT, Meter Base, Etc.		\$0.00	Assuming customer provides per spec (may change if transition cabinet used instead of just metering cabinet)
Permanent	Removal of Construction Pole, Secondary, etc.		\$5,000.00	Assuming customer provides/covers costs
Permanent	Installation - Boring	900' of 3-phase	\$5,000.00	
Permanent	Installation - Terminating/etc.		\$5,000.00	
Permanent	Freight/Large Equipment Handling		\$76,125.00	

## Budgetary Estimate Notes

### Summary:

#### Recommended Transformer:

- 2.4/4.16kV to 277/480V wye-wye, 500kVA, taps of +/- 2.5% and 5%

#### Recommended Cable:

- 1/0 ACSR or larger, 15kV rated, 1/3 concentric neutral (full is acceptable)

### Permanent Transformer Size Estimate:

Information is still incomplete from the contractor, but the following approaches were used to estimate the applicable transformer to serve the load. Target reasonably expected service voltage range is within 95-105% (ANSI standard requirements) and loading to be ~40-70% (typical estimated range of best efficiency for a distribution transformer if test results are not known).

Initial estimates started from correspondences between Steve S and ICS/CMTA. The first was from May 2022. Kent K from ICS included billing information from 2 similar builds in Grand Rapids that showed demand charges of 156kW-164kW but mentioning the difference in square footage (these were ~100ksqft vs the planned new school 125ksqft) and types of rooms. The point mentioned was increasing the existing by 5% would be reasonable.

The second email chain continues the first. Scott H from CMTA gives an estimate of 10W/sqft x 125ksqft at 35% leading to 437kW peak demand. He goes on to mention the Grand Rapids schools ended at around 2.5W/sqft. He comments about decisions up front possibly leading to 150kW range. Steve S questions this nearly 500kW peak demand in Oct 2022 and Jordan W from CMTA responds. Jordan indicates an NEC service range of 1600-2000A as his plan. He talks about 10-11W/sqft as a good estimate, but they're looking to cut square footage. With this, he states it is unlikely to stay below 150kW.

In February I received the initial information from Chris H at CMTA. These were very tentative and only NEC based (overly conservative for actual load expectations), now showing a 3000A service, 2.00MVA connected load, 1.85MVA demand. At face value these numbers are not directly usable for transformer sizing. Considering demand factor (DF, ratio of peak demand to connected load) and load factor (LF, ratio of average demand to peak demand) applicable to this type of industry/building brings them into a better context. One concern/observation was early discussions were a 1600-200A service but reducing footprint and the more recent sizing nearly doubled to 3000A. Later in February Chris H provided a more detailed load schedule that now showed total NEC connected load near 2.26MVA and demand 2.23MVA. Similar to the other NEC values, these need to be considered with DF and LF to be more applicable to transformer sizing.

I reviewed the panel schedules provided by Chris H and used reasonable load factors and estimates of what equipment would likely run at the same time as others, what are unlikely to run together, actual demand (vs connected load calculation), etc. As a reasonable estimate, this led to a 0.32 LF and reasonable peak load around 311kVA. This panel schedule was still not complete, so could go up slightly.

Multiple references were reviewed to get an idea of typical values from industry. There were broad ranges, but the values could still be used to better leverage the NEC calculated numbers.

<https://electrical-engineering-portal.com/demand-factor-diversity-factor-utilization-factor-load-factor>

<https://electricalnotes.wpcomstaging.com/2011/10/31/demand-factor-diversity-factor-utilization-factor-load-factor/>

Type	DF	LF
College/School	0.50	0.20
Academic Instruction Building	0.40-0.60	0.22-0.26
Applied Instruction Building	0.35-0.65	0.24-0.28
K-6 School	0.75-0.80	0.10-0.15
7-12 School	0.65-0.70	0.12-0.17

From these values, it appears a reasonable DF of 0.35 – 0.65 and LF of 0.15 – 0.25 could be used, acknowledging there would be variation. This leads to:

NEC connected load 2.26MVA

Peak demand range =  $0.35 * 2.26\text{MVA}$  to  $0.65 * 2.26\text{MVA}$  => 791kVA to 1,469kVA

Average demand range =  $0.15 * 791\text{kVA}$  to  $0.25 * 1,469\text{kVA}$  => 119kVA to 367kVA

Looking at these peak and average demands, there is a high probability that a 300kVA transformer would be overloaded for a significant portion of time from a capacity standpoint (~40% - ~123%). Beyond that, the peak values (even if temporary) could be a problem for a 300kVA. The next standard size would be a 500kVA. Average loading would be between ~24% and ~73.4%, which would be acceptable and mostly within the 40-70% higher efficiency range. Peak loading approaching the potential max of 1.47MVA could still pose temporary voltage fluctuations, but it is unlikely to be sustained at that magnitude for any duration of time based on the load schedule. Hopefully the mechanical contractor and others involved in the sequencing/scheduling/operations of the equipment will avoid unnecessary large spikes due to simultaneous startup of large amounts of equipment.

#### C84.1 Voltage Limits

Range A – Designed to operate in the range of 95%-105% of nominal under most conditions (within limits, not average)

Range B – Allowed to operate in the range of 91.7% - 105.8% of nominal for brief/temporary excursions (such as while a regulator adjusts, after tie switching conditions, etc.)

Assuming a 5%Z 500kVA transformer and loading from 25 – 75%, voltage drop would be 1.25% - 3.75% for the transformer alone. Being near the end of the 4kV feeder will add voltage drop during higher load times. By adjusting the voltage regulator at the sub to bias it towards the upper end of acceptable range (likely around 124V +/-2V), it would be reasonable to expect the typical voltage to be well within Range A. A transformer with taps would allow even further adjustment and should be able to stay under the

upper limit even with no load. Since there are no large across the line started motors, it isn't expected for large voltage fluctuations due to motor starts or similar. Considering a similar 5%Z 300kVA transformer with 40 – 125% loading would lead to a voltage drop of 2-6.25%. Near the end of line where the feeder voltage will likely be on the mid to lower end of the range, especially under heavier loading, this would pose a challenge maintaining minimum voltage. Taps could be adjusted to provide a boost, but would lead to likely high voltages under no/minimal loading and/or if there is ever solar introduced onto the 4.16kV system. It should be noted that standard transformer impedances for the 300kVA and 500kVA size could be as high as 5.75%, but in practice they would be expected closer to the 4-5% range.

Along with the service voltage considerations would be utilization voltage. This is the customer side concern for the voltages at the point of use. The secondaries from the transformer will be fairly long with the location of the transformer, so it is possible they will experience additional voltage drop during high loading. This is not a driving factor for decisions on the utility side, but conditions would be improved by avoiding operations at the very low end of the service voltage limits.

The recommended transformer, based on this information and considering possible changes or variations in assumptions, would be a 500kVA transformer. If possible, taps would provide additional flexibility, but it is likely that one without could provide sufficient performance without being unreasonable.

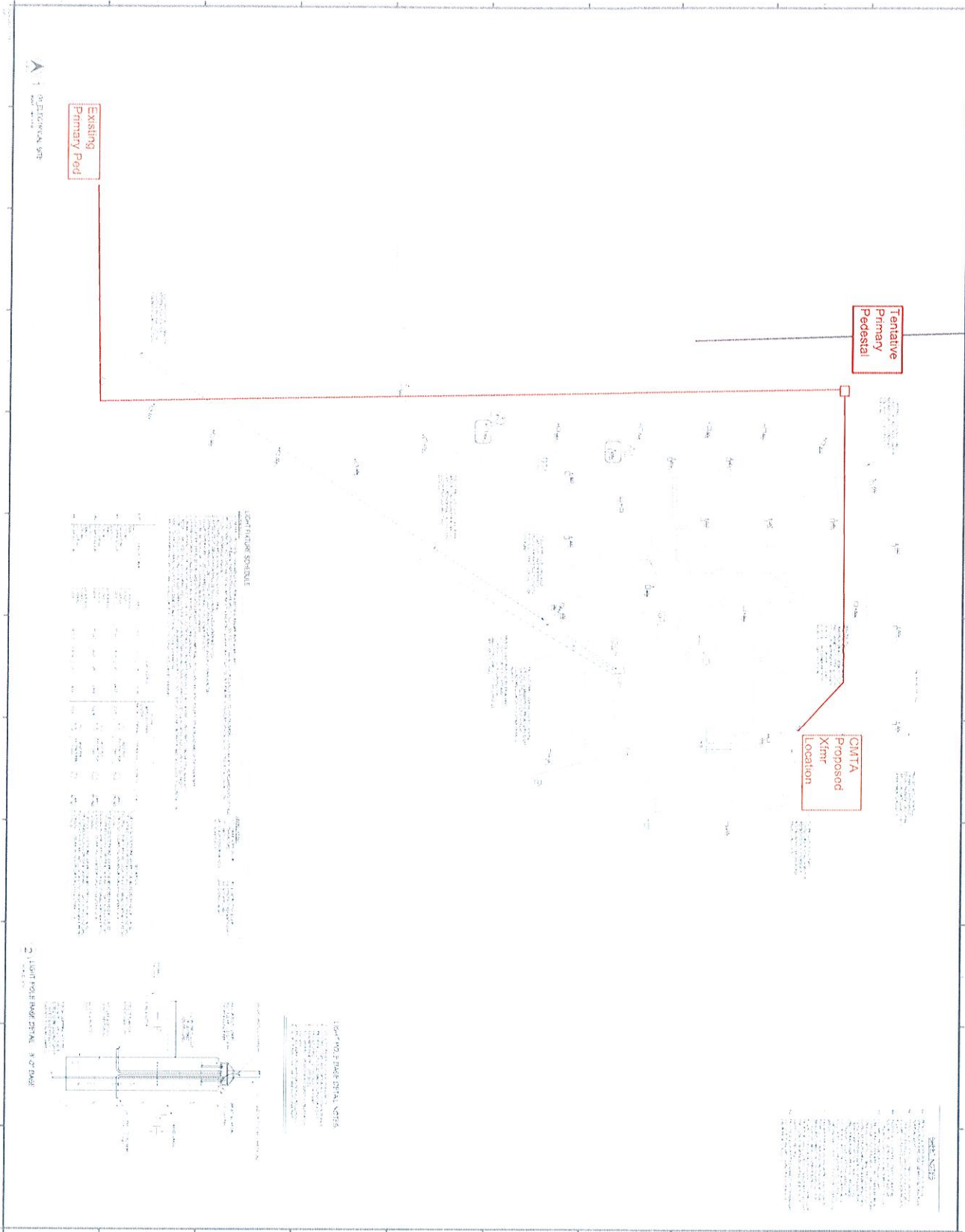
#### Cable Sizing:

The recommended 500kVA transformer would use ~70A at full load. Excursions above that level would be temporary and it is not necessary to size the cable for them. Considering a typical minimum cable size and allowing for oversizing to minimize voltage fluctuations when going from light/no load to large load, a minimum 1/0ACSR cable size (215A) is recommended. This cable would carry 1.55MVA at 4.16kV and as much as the switchgear bay sourcing the feeder can support (200E fusing, 200A continuous rated hardware).

There is spare 4/0 cable available from previous work. Depending on if this is aluminum or copper, this cable would be good for 310-395A. Though the cost may be low to use it, it would be oversized for this application and could be put to more valuable use elsewhere in the system where more capacity is needed (strategically undergrounding some of the small capacity overhead wire in town, perhaps). This option will still be provided for consideration but may not be the best approach.

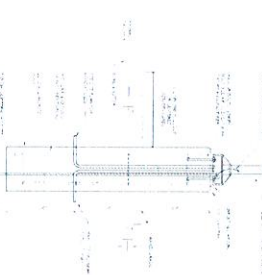
#### Solar Considerations:

There has been mention of up to 1200kW of solar in a nearby solar field (or on top of the school). It has already been stated to the contractor that back feeding the service transformer with that size load will be a problem for voltage quality and that it would need to be a second transformer for interconnection. There will be several options if/when a solar field is installed. It could be tied in at the primary pedestal near the northwest of the route, the cable could be cut and a transformer with feed through bushings or a primary pedestal or switchgear installed, etc. In the end, considering anything substantial for solar capacity should include a proper system model and study since adding that type of input into the 4.16kV system with a 3MVA substation transformer and all feeders regulated as one could cause problems for other customers.



**CONTINGENCY SCHEDULE**

NO.	DESCRIPTION	AMOUNT
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**NOTES**

1. SEE PLAN FOR DIMENSIONS AND LOCATIONS.


2. SEE PLAN FOR DIMENSIONS AND LOCATIONS.

**NOT FOR CONSTRUCTION**  
12-07-22

**PROJECT INFORMATION**  
Project No. 12-07-22  
Client: CMTA  
Date: 12-07-22

**Sheet Number**  
E1.0

**Logos:** ICS, dsgw ARCHITECTURE, ENDRY, CMTA, Northland, National Knowledge Special & Wellness Center.



Nashwauk Public Utilities  
301 Central Ave.  
Nashwauk, MN 55769

RE: 02-24-2023 Project Status Update

Project 002-0001: Oversight of MP Scope 1-3

Progress Last Two Weeks:

Scope 1 (transfer old side of sub load to new): There has been no progress on this work by MN Power, so no change from my side.

Scope 2 (substation station service): This scope has been completed previously.

Scope 3 (reconductor in alley): There has been no progress on this work by MN Power, so no change from my side.

Planned Next Two Weeks: My work will be based on any details communicated by MN Power for their scopes 1 and 3. Based on previous discussions, there may be no changes in the next 2 weeks.


Budget: \$720 out of \$3,180 used (\$2,460 remaining)

Anticipated Changes or Deviation: None at this time

Risks/Concerns: There are no newly identified risks or concerns for this work.

Project 002-0002: Design New High School Service

Progress Last Two Weeks: There has been more communications sent ICS/CMTA on service needs. They are not complete with loads yet and have defaulted a fair amount of information until construction bids are out and an electrical contractor is chosen (mid-March bid, selection early April). CMTA sent drawings with a panel and equipment schedule late on 2/24, but noted it is not complete.



Nashwauk Public Utilities  
301 Central Ave.  
Nashwauk, MN 55769

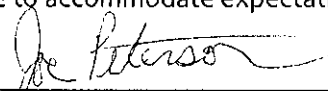
RE: 02-24-2023 Project Status Update

Planned Next Two Weeks: I requested load details on 2/14 to allow determination of a reasonable estimate of the new building's actual energy needs so I can properly size the service transformer and recommend any system modifications. I also requested better information regarding the temp/construction power needs they mentioned so it can be planned for. Ideally CMTA/ICS will provide the information with adequate time to accommodate their expectations. I plan to review the partial set of information CMTA provided since each round of information seems to have significant changes from previous.

Budget: \$1,440 out of \$6,180 used (\$4,740 remaining)

Anticipated Changes or Deviation: None at this time

Risks/Concerns: Many details continue to evolve quickly and it does not appear that they will be decided by ICS/CMTA (they default to the subcontractors for most responses). This loses opportunities for efficiency and possibly increases costs for the school's service installation and the city's utility serving it. I believe there are assumptions that can be made to keep things reasonably efficient and hopefully still time to accommodate expectations, but feel much of this could be avoided.

  
\_\_\_\_\_  
Signature of Owner/Principal Engineer

2/24/2023  
Current Date

Joseph A. Peterson, PE



**FY24 General Community Project Form**  
**Pete Stauber (MN-08)**

*The office of Congressman Pete Stauber is seeking local community project requests for fiscal year 2023. Although House rules for funding requests for 2024 have not been released yet, please provide some preliminary information about your request below.*

*Funding for FY24 will not begin consideration until Spring 2023 but this form will ensure that your project gets due consideration for potential inclusion in Congressman Stauber's project requests.*

*To ensure your project is included for consideration please have this form submitted to [StauberProjects@mail.house.gov](mailto:StauberProjects@mail.house.gov) by 3/3/2023.*

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**Name of Project:** City of Nashwauk, MN Third Street Infrastructure Improvements

**Recipient Point of Contact:**

April Kurtock, City Administrator/Clerk/Treasurer  
301 Central Avenue  
Nashwauk, MN 55769  
218-885-1210  
[akurtock@cityofnashwauk.com](mailto:akurtock@cityofnashwauk.com)

**Project Address:** Third Street, Nashwauk, MN

**Project website link:** [www.cityofnashwauk.com](http://www.cityofnashwauk.com)

**Agency/Account:** Interior and Environmental / EPA, STAG, Clean Water SF, Clean Water & Drinking Water

**General description of the project and why it is needed:**

This infrastructure project replaces the water, sewer, and stormwater systems for the six blocks of Third Street that pass through the center of the City of Nashwauk. This street provides access and utility service to the Nashwauk-Keewatin High School, churches, businesses, and residential neighborhoods. The improvements are part of a 5-year Capital Improvement Plan which outlined all city streets, alleys, and buildings and the repairs that will be needed for them. The City's Capital Improvement Plan is updated annually and identifies Thirds Street as needing imminent repairs.

The project area includes Third Street from Central Avenue to Fern Avenue and consists of replacing/fixing old VPC sanitary sewer mains, manholes, and water mains as well as the reconstruction of the existing storm sewer and street. The old VCP sanitary sewer mains will be replaced with 6" PVC. Water mains will be constructed with 6" DIP, hydrants and gate valves will be replaced and all water services will be replaced with copper tubing and new curb stops. Restoration will include full restoration of the sidewalk, curb, bituminous surface, and other project-related restoration (32' curb and gutter sections) and replacement of storm sewer, catch basins, and storm manholes within the project limits.

**What are the benefits of this project and why is it a priority?**

These infrastructure improvements promote health and economic growth, reduce poverty and provide efficient access to schools, businesses, housing, and recreation. This project is a priority as Third Street is the street in the poorest condition in Nashwauk. Near the high school, there have been multiple water line breaks during the winter months. This has caused the school district to cancel school multiple times due to waterline repairs, as the school cannot operate without water. Replacing these waterlines will allow the high school to operate normally and reduce contamination of the City's drinking water system.

**Amount Requested for FY24:** \$1,500,000

**Total Project Cost:** \$1,666,000

**Estimated start and completion dates:** 09/30/2023 – 10/31/2024

**Has the project received federal funds previously? If so, please describe.** No.

**What kind of community support has this project received?**

This project has received widespread community support from residents, the school district, and local churches and businesses whose health, safety, and ability to operate have been affected by the critical condition of Third Street.

## April Kurtock

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**From:** StauberProjects <StauberProjects@mail.house.gov>  
**Sent:** Saturday, March 11, 2023 7:55 AM  
**Subject:** FW: Project submission

Thanks for reaching out with your community project request. After considering numerous project submissions from across the district, we are unable to include this request in our final community projects request this year.

As you know, members are limited this year as to the quantity and scope of projects eligible for submission.

Although we are not able to submit this request for FY24, we still stand ready to help with grant requests for this or other projects. We also would like to consider this request again next year should community projects be permitted under the rules for FY25.

Best,  
**Allie Esau**  
Legislative Director  
Congressman Pete Stauber (MN-08)