VILLAGE OF PARDEEVILLE
JOINT PUBLIC UTILITIES COMMISSION/ VILLAGE BOARD
MEETING AGENDA
Village Hall – 114 Lake Street, Pardeeville
Monday, Oct. 3rd, 2022 at 4:30 p.m.

I. Call to Order
II. Roll Call
III. Verification of the Posting of Agenda
IV. Agenda Approval
V. Minutes Approval
VI. Village Administrator/Director of Public Works Report
VII. Comments from the floor
    1. Comments from the commission
VIII. Tour electric facilities with Power Systems Engineering – Jamie Sieren

IX. OLD Business

1. EPA Lead and Copper Compliance
    A. Customer Piping Materials Inventory – Survey Incentive
2. Hauled in Waste to the WWTP

X. NEW Business

1. Power Systems Engineering
    A. Electric Study and Distribution Line Maintenance
        1. South Main St. Substation
        2. Maintenance – Morton St and Haskins St Maintenance
        3. Infrared (IR) Scan results
2. Sunrise Subdivision electric poles and 3 phase primary feeder additions
3. Simplified rate increase – water utility
4. Rate increase – sewer utility
5. Conventional rate case 2023 – Public Fire Protection Charge
6. Align bill cycle with purchased power
7. Wescott water tower internal repair

X. Adjourn

_____
Kayla Lindert, Clerk/Treasurer
Posted: 09/28/2022

The Village Hall is accessible to the handicapped. If you require additional assistance, please contact the village office no later than 48 hours prior to the meeting date. Phone 608-429-3121. If members are present from other recognized Boards, Commissions or Committees which may constitute a quorum, the meeting is presumed to be for the above-stated agenda/purpose. An updated agenda may be posted 24 hours before meeting time.

VILLAGE OF PARDEEVILLE
PUBLIC UTILITIES COMMISSION MINUTES
Village Hall – 114 Lake Street, Pardeeville
Monday, September 12, 2022 at 4:30 p.m.
DRAFT: Not Approved

Call to Order: The meeting was called to order at 4:30 p.m.

Roll Call: Babcock, L. Possehl, Haynes, Buzzell, Knadle

Absent: Bock, No longer village resident: Twombley

Also present were DPW/Administrator Erin Salmon, Clerk/Treasurer Kayla Lindert, and Village President Phil Possehl

Floor: Steven Sell, Brian Hood, Eric Sandvig, Robin Wendt, Rick Wendt, Tony Ziegler, Ron Griepentrog, Roy White, Ervin Keeling, Olga Keeling, Greg Gunderson

Verification of posting the Agenda: The agenda was properly posted on the website, at Pardeeville Village Hall, Pardeeville Public Library and the Pardeeville Post Office.

Agenda Approval:
MOTION Buzzell/Babcock to approve agenda as presented. Motion carried unanimously.

Minutes Approval:
MOTION Haynes/L Possehl to approve the previous meeting minutes as presented. Motion carried unanimously.

Communications and Reports
DPW Report – DPW/Administrator Salmon reviewed the written DPW report with the Commission. Among items discussed were the electric rate case, WTTP, well testing and the progress of the housing developments. She invited commissioners to call her anytime with questions.

Comments from the Floor/Commission: None & None

OLD BUSINESS:

717 E Chestnut St – Sewer Lateral Installation during 2004 E Chestnut St Reconstruction Project

Property owner, Anthony Ziegler, brought the commission up to speed on his sewer lateral issue starting with the history up to where the issue is at today. He states he is looking for a solution to protect his property for himself and future owners. His preference would be a mutually agreed upon written agreement with the village.

Commission reviewed options given at the last meeting. Salmon and Lead Water/Sewer Operator reported the findings on when sewer lateral was televised and the field work performed. Salmon stated there was a sag in the lateral that could possibly be taken out by replacing 20 ft of pipe. Field data that was collected indicated overall pitch of 1.32% on the lateral. DPW/Administrator Erin Salmon stated she had requested estimates from three contractors but has only heard back from one, cost of $5,000. Lead Operator pointed out that the customer's asphalt driveway could be compromised during the repair. Commission discussed cost to replace 20 ft of flat pipe that currently has a sag in it. Commission discussed cost for Village to inspect and clean lateral on a semi-annual basis with putting the pipe replacement out until spring when hopefully more estimates will come in.

Motion Haynes/Buzzell for DPW/Administrator Erin Salmon to make a written agreement with the property owner regarding periodical inspection and maintenance of the sewer lateral at 717 E Chestnut St and to replace a section of the lateral pipe in the spring of 2023 to eliminate the sag.

NEW BUSINESS:

MSA WWTP Updates

1. Sludge Removal Project in 2023 –MSA reported on the sludge removal project stating it should be done every 10-15 years. He highly recommended it be completed in 2023. He stated a measurement and sample would need to be taken before getting a cost estimate. He stated it could be around $200,000. Sludge removal is usually done in the spring or fall or both.

2. 2022 Groundwater Monitoring Well Project Update –MSA reported a condition of the permit being the installation of monitoring wells has been completed. The monitoring wells will be monitored quarterly. At this point the DNR is not sure which direction the water is flowing.

3. Hauled in Waste to WWTP –MSA discussed the pros and cons of whether hauled in waste should be allowed. DPW/Administrator Erin Salmon stated the issue is being brought up because of concerns it may be the contributor of some issues at the plant. She stated the plant test history shows a seasonal issue (June). A suggestion would be to test the loads as they come in. Roy White stated he could test the hauled in loads but results of the test take approximately 2 weeks so if the load has an issue there's nothing he can do after the fact. Commission members discussed the benefit of knowing if the loads were a contributing factor or not. Commission members discussed possibly testing industrial customers also. Roy White stated he agrees with the theory of testing industrial customers however he is unable to get to the Sonoco lateral to test. Testing for Sonoco at the sewer plant would not be an option as Sonoco is the last lateral coming in to the sewer plant so everybody else's is mixed in with it. Sewage pumper/hauler, Robin Wendt, spoke of his experience in the business and with the village. The village has temporarily stopped allowing them to haul in waste due to testing issues.

Commission held discussion regarding resuming hauler dumping, testing loads, establishing a lab for tests, checking on fees for sample testing, etc.

MOTION Knadle/L Possehl to approve waste hauler to resume dumping and to start testing loads with the village designating what to test for, finding a lab for testing, establishing fees for sample testing with revisiting issue at a later meeting. Motion carried unanimously.

Alliant Energy

1. Columbia Power Plant closing presentation - Eric Sandvig, Manager of Alliant Energy generation stations presented the history of the generation stations including some detailed history of Columbia Unit 1 and Unit 2. He discussed how MISO and renewable energy is affecting the viability of coal plants. He stated MISO pulls energy from the most cost effective generation stations first and so much renewable energy is coming in that coal plants are not needed to operate at full capacity. There are also supply and transport issues with coal. He stated solar and battery costs are becoming more cost effective as well. He explained Columbia is on track to being retired in 2026. He discussed how the labor force was being managed.

2. Rise of Energy Prices – Brian Hood, Lead Wholesale Account Manager, started out by thanking the Village of Pardeeville for being a wholesale customer and to the office staff for their efforts in explaining the rise of energy bills to the village utility customers. Brian explained the different parts of the wholesale bill. He stated the bill goes up and down each month in response to demand, energy charge, tariff, transmission costs, etc. These fluctuations show on the village customer bills as Power Cost Adjustment. The energy cost from MISO market has been extremely high the last few months. Items that affect the high cost of energy include natural gas prices, limitation of coal, higher temps, etc. He showed graphs for MISO and the natural gas market. He stated demand has gone up due to the cost of building quite a few new solar plants. These costs should level out in the future.

Power System Engineering (Electric Utility)

1. 2023 Planning Communication
   Completion on the South Main St Substation
   Other Planning

   The PSE representative was not able to attend the meeting. DPW/Administrator Erin Salmon reported on the South Main St Substation as well as other items.

2. Electric System Study – DPW/Administrator Erin Salmon stated PSE is planning a tour and presentation for the Commission to be held tentatively at the October 3rd meeting.

EPA Lead and Copper Compliance

Customer Piping Materials Inventory – Survey Incentive (recommended by the EPA) - DPW/Administrator Erin Salmon stated she has been working with MSA regarding customer piping material inventory customer survey to meet EPA compliance. She states the EPA is recommending a customer incentive for customers who complete the survey. The entire community needs to be surveyed by October 2024. Commission agreed to table any decision until the October meeting due to time constraints for current meeting.

Adjourn at 6:23 p.m. by Babcock

Submitted by: Linda Possehl, Commissioner/Secretary, Public Utilities Commission

ERIN M. SALMON, P.W.M.
Village Administrator/Director of Public Works
Reporting Period of Aug 15th – Sept. 16th
Village Board Meeting Date: Sept 20, 2022

Week of August 15th:

- Coordinate with additional kitten/Mom to LaToya's – exceptions being made
- File a docket with the PSC to re-evaluate the PCAC "U" factor for the Pardeeville rate file.
    - *See attached rate file for Pardeeville and the "U" factor*
- Coordinate for Engelman Electric service install, inspections, disconnect and re-connections
- Work on a long list of Public Works do-do items
- Working with Sheriff's Office and Public Protection on clarifications for some Ord. with no Bond amounts. Turned a full circle, ending up with no change needing to be made. *See attached email.*
- Everbrite primary service extension project being started by lineman
- Coordination with County surveyor and Paul Johnson and the West Alley easement project.
- Inquire on generator at the WWTP – June 2023 is estimated arrival for the generator.
- Talk with HomeTown Bank on Vehicle Loan for Electric Utility (Derrick)
- Prep to install underground electric primary service extension to the M&M Contracting Development – Foote's Site.
    - Tree removal starts 08/15. Underground contractor following for the laterals. Told on 08-18, they will be starting water/sewer later now, due to material taking longer to show up than what they were told in the beginning…..
- Work with Alliant Energy on the application process for Sunrise Subdivision and gas main/services. Since we are the developer, we need to cover the costs un-front, however they are all TIF eligible.
- Continue with FEMA documents and application for the June 15th storm. Only two MUNI's in Columbia County qualify. We are one of them after they reviewed submittal provided. Anticipating approx. $10K in funding coming our way.
- Send out Realtor RFP (Pat Johnson, Chris Schreiber, Mark Pawlowsky and Scotty Smith)
- On-site inspection with Columbia County Zoning at Broesch property; next step will be an action to clean up.
    - Vicious Dog Letter hand delivered at on-site meeting with resident at 200 Schwantz
- Review brush/tree removal for Village Lot near Library – crew work together and perform.
- Haskins poles – during procedures, learn two of the system poles need to be replaced. Was a targeted 2021 project, along with Morton St. Call in emergency locate, start replacement. *Will need to continue with this project in to 2023 – this was just a band-aid.*
    - Inform M&M (Foote's Site) we will be on delay until this is repaired (works out ok, since they are on delay now too).
- Blue-Green Algae testing on the Lake
- Budget prep
- Research Car Charging Stations and future locations/installations near West Alley.
- Chandler Park Ball Diamond Conversations with Boys Club and School – Field Solution/Crowding
- Follow up with JD Kath & Jesse Troestler on the Campground Property.

Week of August 22nd:

- Work with the Deputy on Ord. Violations – zoning violations, need to establish
- Newsletter for Utility – prep and work with Utility Clerk
- Planning for upcoming meetings, packet prep, etc. Out of office week, last week in August
- Talk with potential developers on lots for sale

- Library deed/titles, legal description docs…..work with Paul on legals
- A lot of traffic at Village Hall to work through while completion of projects in house.
- Derrick truck is struggling with setting poles, creating difficulty on efficiency for the utility.
- Research several property owners on zoning questions, conditional use, lot split questions, etc.
- Contact with DOT directly on behalf of the developer for 712 Lake St. - Campground
    - Other Milestones: starting the application process. Mound system all laid out (perk test done). Sam's well drilling was out, see no issues with the well. Still waiting on electrical components,
    - DNR has been out. They don't see any issues at all.
    - Cannot start construction until approval from the DATCP
    - Plan to meet soon on the required bath house/shelter.
- Attend the MEUW call in regarding the 3rd party Investor Owned, current PSC docket
- Work on the hydro computer relating to the hydraulic actuator – batteries replaced.
- Conversations with the County Commissioner on the BIL Application process for submittal questions.
- Work with the State Emergency Management Coordinator on FEMA application for funds from June 15th.
- Discussions with MSA on possible speed study for S. Main St./E. LaFollette St. and if needed for Schwantz Rd. Will discuss together, but Schwantz Rd. will need a study to alter the speed. On Agenda 09/20
- Work on documents for the Public Protection meeting and conversations with attorney
    - Zoning Ord. Violations need to have a Bond Fee or Fine established when there is a violation.
- Kayla and I look closer at the Publishing requirements for hearings, current Ord. and work towards a revision. Bring forth on Sept. 20th.
- Michelle Lickness (IKWE) has a very important meeting next week that just may seal the deal. Talk with Joe and Paul on getting a revised D.A. for IKWE after this.
- Finalized documentation for the WWTP generator claim. Total coming in will be $3,000. $5,000 already received, another $3,000 coming.
- Complete Annexation questionnaire for the DOA
- Submit questions and requests for new rate case proposals/considerations for the new rate file.
- Budget prep

August 29th to Sept 6nd

Out on Vacation

Week of Sept.7th – 9th:

- Blue/Green Algae results for the Lake tested low at 0.52 ug/l (dangerous level is 8.0).
- Rick Wendt – add to agenda for Sept. 12th!!!
- Monitoring Well Project – wells drilled at the WWTP on 09/07
- Discuss lake levels with the DNR regarding a petition of residents who live upstream from Park Lake.
- FEMA docs for possible funds on storm damage.
- Discussions with MSA on where IKWE is at with funding.
- Wisconsin Help for Homeowners Program – DOA and WHEAP. Approved our application for additional funding for our customers.
-
- Collect samples at Well #1 – 6 month sampling, per the sampling requirements by the DNR.
- DOT driveway permit app. and the campground – work with the DOT and County on speed study request.
- Prep for Interviewing the Realtors and the process
- Meeting with MSA – Waste Water group to prep for Utility Commission meeting on Monday.
- Meeting with PSE for prep for the Utility Commission meeting on Monday.
- Lineman continue with replacing poles and line on Morton St. (cross-arm at Haskin/Morton too). Move on to Gillette and Vince next.
- Meet with MSA – Water and GIS to prep for the new FDA guidelines on Lead and Copper.

- Chandler Park – install horse stations, signs and investigate location for horse/carriage slab
- Site visits to Vince St. (Foote's Phase 1) and Doug Hare Way Project (site grading) – set points for dewatering before they start underground
- Have a discussion with the DNR on the current lake level and the current DNR order (stemming from a petition created by a resident within the PLMD).
    - Inquire with PLMD on the amount of people on the PLMD tax roll/mailing list (petition has 108 signatures).

Week of Sept. 12th:

- Reach out to Brad Cook and other realtors
- Reach out to Dan Bullock and Rick Rogers with Holtz Companies – send the revised Plat and Phase Map
- Talk with Paul Johnson on revising the D.A. with new deadline – plan to meet with him next week
- Work on obtaining West Alley easements
- West Alley Line Project – Precon meeting. Start on 09/26.
- Coordination of testing hauled in waste
- ATV usage in other communities – start time in the AM
- Discussion with Chris Hardy on additional Muni LRIP dollars that needs to be burned up.
- Prep for Sludge testing and 2023 Pond Dredging
- PSC data request came in – working with Johnson Block on this
- Budget prep every day
- Lineman start trenching/installation of the primary electric wire for the Pardeeville Ventures Subdivision.
- Work with Power Systems on electric system planning, based on the IR scanning, future subdivision, existing system needs, new businesses, etc.
- Cat Colony – recently paid out $920 for 23 additional cats. However, LaToya's Paid the Vet $2,193
- M&M's Contractor's continue with site grading. Underground crew been dewatering. Plan to tie-in with 1 sewer and water connection on 09/16.
- Kopplin & Kinas are dewatering the Doug Hare Way project as well. Plan to start utilities next week.
- Discussions with Brent and Jamie on the depreciation rate that was established for the system back in 2015. Electric system appears to be being depreciated too rapidly, which adversely affects the balance of plant. Rate study considerations, etc.
- Virtual meeting with PSE and GIS steps on the Electric

Power Cost Adjustment Clause

All metered rates shall be subject to a positive or negative power cost adjustment charge equivalent to the amount by which the current cost of power (per kilowatt-hour of sales) is greater or lesser than the base cost of power purchased and produced (per kilowatt-hour of sales).

The current cost per kilowatt-hour of energy billed is equal to the cost of power purchased and produced for the most recent month, divided by the kilowatt-hours of energy sold. The monthly adjustment (rounded to the nearest one one-hundredth of a cent) is equal to the current cost less the base cost. The base cost of power (U) is $0.0815 per kilowatt-hour.

Periodic changes shall be made to maintain the proper relative structure of the rates and to insure that power costs are being equitably recovered from the various rate classes. If the monthly adjustment (A) exceeds $0.0150 per kilowatt-hour, for more than three times in a 12-month period (current plus preceding 11-months), the company shall notify the Public Service Commission of Wisconsin separate from its monthly PCAC report of the need to evaluate a change in rates to incorporate a portion of the power cost adjustment into the base rates.

For purposes of calculating the power cost adjustment charge, the following formula shall be used:

$$A = \frac{C}{S} - U$$

A is the power cost adjustment rate in dollars per kilowatt-hour rounded to four decimal places applied on a per kilowatt-hour basis to all metered sales of electricity.

S is the total kilowatt-hours sold during the most recent month.

U is the base cost of power, which equals the average cost of power purchased and produced per kilowatt-hour of sales for the test year period. This figure remains constant in each subsequent monthly calculation at $0.0815 per kilowatt-hour until otherwise changed by the Public Service Commission of Wisconsin.

C is the cost of power purchased and produced in dollars in the most recent month. Cost of power purchased and produced for calculation of C are the monthly amounts which would be recorded in the following accounts of the Uniform System of Accounts:

Class A & B utilities	Accounts 555
Class C utilities	Accounts 545

Erin Salmon

From: Menard, Matthew <Matthew.Menard@columbiacountywi.gov>
Sent: Monday, August 8, 2022 9:48 AM
To: Erin Salmon
Subject: Re: 58-190: Permitted Parking or storage - No Bond Amounts

It's already established. No changes needed for those.

Lt Matthew Menard
Columbia County Sheriff's Office

On Aug 8, 2022, at 08:24, Erin Salmon <dpw@villageofpardeeville.net> wrote:

Ok, thanks Matt. This was brought up on June 22nd, indicating a citation could not be issued since there was no bond amount? See highlighted below. From there, we took the spreadsheet to Public Protection.

Do we need to bring this back to the Public Protection Committee to say we are *going to follow state statues*? Or, it's already established and everyone can fill in the blanks on the spreadsheet to indicate to, avoid confusion moving forward?

Thanks much!

Erin M. Salmon, P.W.M.
Village Administrator & Director of Public Works
Village of Pardeeville/Pardeeville Public Utilities
114 Lake St.
Pardeeville, WI
P: 608-429-3121
F: 608-429-3714

"A mistake which makes you humble, is much better than an achievement that makes you arrogant."

From: Menard, Matthew <Matthew.Menard@columbiacountywi.gov>
Sent: Friday, August 5, 2022 7:40 PM
To: Erin Salmon <dpw@villageofpardeeville.net>
Cc: Kayla Lindert <clerk-treasurer@villageofpardeeville.net>; Jones, Kevin <Kevin.Jones@columbiacountywi.gov>
Subject: RE: 58-190: Permitted Parking or storage - No Bond Amounts

Those are ordinances that allow the village to adopt the state statutes for those violations, therefore there is no bond associated.

From: Erin Salmon <dpw@villageofpardeeville.net>
Sent: Wednesday, August 3, 2022 7:03 AM
To: Menard, Matthew <Matthew.Menard@columbiacountywi.gov>

Cc: Kayla Lindert <clerk-treasurer@villageofpardeeville.net>; Jones, Kevin <Kevin.Jones@columbiacountywi.gov>
Subject: RE: 58-190: Permitted Parking or storage - No Bond Amounts

Hi Matt,

We took the attached to Public Protection but got confused. There are 4 ordinances that don't have a bond amount. Can you guide or give advice on what to assign for line items:
99
124
134
137

Thanks much!

Erin M. Salmon, P.W.M.
Village Administrator & Director of Public Works
Village of Pardeeville/Pardeeville Public Utilities
114 Lake St.
Pardeeville, WI
P: 608-429-3121
F: 608-429-3714

"A mistake which makes you humble, is much better than an achievement that makes you arrogant."

From: Jones, Kevin <Kevin.Jones@co.columbia.wi.us>
Sent: Wednesday, June 22, 2022 1:20 PM
To: Erin Salmon <dpw@villageofpardeeville.net>
Cc: Menard, Matthew <Matthew.Menard@co.columbia.wi.us>
Subject: RE: 58-190: Permitted Parking or storage - No Bond Amounts

Erin,

Attached is the excel spreadsheet we spoke about. At this time the camper trailer has been moved out of the On the Way Café parking lot. I do not plan to seek any further enforcement action as we have received compliance.

Thank you,
Deputy Kevin Jones
Columbia County Sheriff's Office
711 E. Cook St
Portage, WI 53901
608-742-4166 (Ext. 1 for dispatch, Ext. 3345 for desk)
kevin.jones@co.columbia.wi.us

From: Erin Salmon <dpw@villageofpardeeville.net>
Sent: Wednesday, June 22, 2022 11:49 AM
To: Jones, Kevin <Kevin.Jones@co.columbia.wi.us>; Menard, Matthew <Matthew.Menard@co.columbia.wi.us>
Cc: Kevin Henrikson <khenrikson@generalengineering.net>
Subject: FW: 58-190: Permitted Parking or storage - No Bond Amounts

Hi Kevin,

Please see below. I accidentally sent this to our building inspector Kevin before.

Thanks much!

Erin M. Salmon, P.W.M.
Village Administrator & Director of Public Works
Village of Pardeeville/Pardeeville Public Utilities
114 Lake St.
Pardeeville, WI
P: 608-429-3121
F: 608-429-3714

From: Erin Salmon
Sent: Wednesday, June 22, 2022 11:48 AM
To: 'Menard, Matthew' <Matthew.Menard@co.columbia.wi.us>; Kevin Henrikson <khenrikson@generalengineering.net>
Cc: Kayla Lindert <clerk-treasurer@villageofpardeeville.net>; pvillepresident (pvillepresident@gmail.com) <pvillepresident@gmail.com>; Trustee Balsiger (pvtrustee7@gmail.com) <pvtrustee7@gmail.com>; Trustee Holtan (pvtrustee3@gmail.com) <pvtrustee3@gmail.com>; Erin Salmon <dpw@villageofpardeeville.net>
Subject: 58-190: Permitted Parking or storage - No Bond Amounts

Matt,

What is the process to ensure bond amounts get set to our ordinances? This one needs a bond amount assigned to it. Deputy Jones is wanting to issue a citation, but can't, since 58-190 doesn't have one.

Kevin is going to provide me the spreadsheet that shows ordinances and their bond amounts for the violation. I/We will be able to identify all other ordinances with *missing* bond amounts. From there, Public Protection will likely have to meet, set the bond amounts and make a recommendation to the Board? Phil, thoughts???
Thanks much!

Erin M. Salmon, P.W.M.
Village Administrator & Director of Public Works
Village of Pardeeville/Pardeeville Public Utilities
114 Lake St.
Pardeeville, WI
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ERIN M. SALMON, P.W.M.
Village Administrator/Director of Public Works
Reporting Period of Sept. 19th – Sept. 30th
Village Board Meeting Date: Oct. 4, 2022

Week of Sept. 19th:

- Meet with Paul Johnson and Joe regarding the D.A. with IKWE. Schedule meeting with IKWE to discuss
- Set out approx. 40-45 door hangers for disconnects
- Foote and Doug Hare Way project moving along. Ground water issues will set back Doug Hare Way a bit.
- Subd. is out to bid – open until Sept. 30th
- New D.A. is underway – work with Paul and Joe
- Egbert & Foote underway with construction – slow going due to groundwater
- ALPR Camera project with Sheriff and Lead Lineman
- Field meeting with the County Commissioner regarding extra LRIP funds, possible locations for the Village.
- Crew excavate at for Green/Elliot St. Remove existing 6" PVC to a 10" pipe at the existing inlet.
- Revisit the Vicious Dog Ord with the Sheriff and the attorney. Need to bring this back to Public Protection
- West Alley Line Project Prep
- Cat Colony near Chandler Park - all cats trapped
- Prep for the sludge testing needed at the WWTP – will be performed on Oct. 4th.
- Start incorporating testing loads brought in to the plant by pumper. Coordinate with CT labs prior to starting.
- PSE on site – GIS site is live for the Electric Utility
- 8-acre site inspection and annual report for storm water compliance
- LRIP – extra funds from the County in 2022. Worked with County Commissioner for Village to use. Have a project worth $28K, get $14 back. Propose Roosevelt overlay, 10 year fix? Other smaller jobs to knock out too.
- Discuss planning of the agreement with Brad Cook
- Review plans for Sunrise Subdivision, road project is out to bid
- Egbert has to pull off site and set up dewatering system to pump for 7-10 days. Will return after that.
- Continue working on the WWTP's case of high BOD's and 2 violations of exceedance. Everbrite exceeded their Zinc limits in May and August. August did not impact our plant. Still researching via testing loads of septic too, PH for phosphates now.
- Jody talk with Poynette on the Ballfield Poles and Lights. They have not yet been removed. The poles are at their life expectancy (did a pole study). Only good for approx. 5 years, asking price was $30K.
- Continue working on Budget
- Communications with Gerber on the Truck – revised estimate for repair at $14K
- Sunrise Subdivision – coordination with Frontier, Charter, Alliant. We are the Developer, we will be fronting the costs of installation, then get reimbursed as homes go in.

Week of Sept. 26th:

- Contractor for the West Alley project will be delayed – they are heading South to help out in the aftermath from the Hurricane in Florida
- Lateral installation for the 2nd building on the S. side of Vince St.
- Kelsea follow up with PSC regarding the PCAC – exceeded the limit again, we haven't heard from them since we let them know the first time.
- Continue to review the 700 page plan set for LaFollette St. Area Development – bid opening pushed back to 10/04 in the AM.
- Talk with Joe on our banners for Sunrise vs. what is included with the Realtor's plan – discuss on 10/04
- Furnaces services at Village Hall – Substation will need to replace the furnace immediately. Get two estimates. Village Hall will need a new heater exchange in 2023.
- Work on RFP for Tower 2 – Interior Full Blast and Paint for 2023
- Pressure wash/paint Siren Tower at Village Hall
- Review RFP from Brad Cook and send on to MSA and Paul Johnson for review.
- Talk with Holtz VP and their Engineer, they want in on the multi-family and may be ready later this year if possible. Ask for their proforma. Update Joe.
- Meet with staff and work toward reimbursing the Village accounts regarding all TIF expenditures to date and invoicing developers to date.
- Joe, Phil and I meet with Michelle (IKWE) at Village Hall 09/29

EPA Lead and Copper Rule Compliance – Is Your Community Ready?

The inventory and replacement of all lead service lines in America is now mandatory.

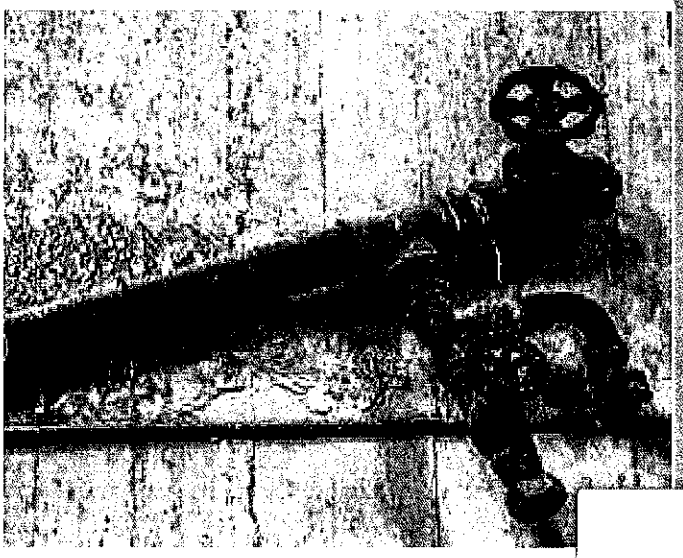
Revisions to the EPA Lead and Copper Rule from December 22, 2020, signify the first major updates to the rule in nearly 30 years. Contained in the new rule are updated requirements for lead testing and mitigation, the replacement of lead service lines (LSL) and managing corrosion control treatment. The new rule also fortifies testing in schools and child care facilities, helps remove lead from our nation's drinking water supply and improves the lines of communication regarding potential risk. It applies to all community and non-transient, non-community public water supply systems in the country.

Inventory Requirements

The new rule requires a thorough inventory and catalog of all affected water systems — whether municipally or privately owned — to identify lead service lines (LSLs). This applies to residential, commercial, school and industrial systems. The inventory must be completed and submitted at the state level by October 16, 2024. Water systems that do have lead service lines must also submit an LSL replacement plan by that same date. The full results of the inventory must be publicly available and accessible. Further, utility companies will now be required to notify customers of any known or potential LSLs in their immediate area, with recommendations on how to reduce risk of exposure.

Improved Testing Requirements

More comprehensive testing of lead service lines is also a requirement of the new Lead and Copper Rule, which expands the sample site criteria from three to five tiers.



Lateral lines, which are frequently composed of lead pipes, connect tap water service to a home or building from a larger adjacent water main. New testing methods now require a "fifth liter" sample, which collects lead that may exist in the LSL and which may have previously been missed

or underestimated by the four-liter sample requirement of the old standard. Scientists have found that the first four liters of water collected are likely to come from the internal plumbing of a building, but the fifth is more apt to capture any lead-compromised water coming from those lateral service lines. If no LSLs exist at a property, samples must be collected from other leaded plumbing. When an individual sample exceeds 0.015 mg/L (15 ppb), a follow-up sample must be collected as part of a find-and-fix process to identify the source and remediate the contamination.

An added trigger level has been set at 0.010 mg/L (10 ppb) that largely addresses system corrosion. Lead is known to corrode or leach from leaded plumbing as water flows through. Systems that test at this 10 ppb level with corrosion control treatment programs already in place will need to re-optimize their treatment processes. Systems that do not have a corrosion control treatment program established will now be required to conduct a corrosion control study to determine the best treatment approach.

Enforced LSL Replacement

With the new rule, communities should be prepared to replace at least a portion of their existing lead service lines if water sampling results are found to be above 15 ppb. If at least 10 percent of their sampling results surpass that 15 ppb mark, water utility systems will be required to fully replace at least 3 percent of their LSLs per year. Communities with questionable systems need to have a plan in place and must start replacing lines as soon as sample results prove necessary. In addition, as a change to the rule, partial lead service line replacements will no longer be allowed.

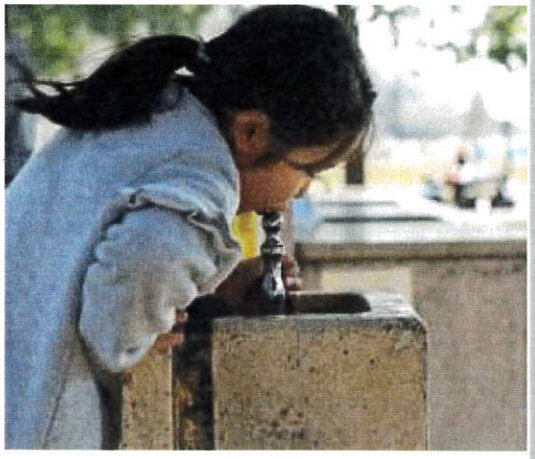
This marks a change from the prior rule, which had loopholes such that that only 1 percent of utilities replaced lead pipes as a result of reaching or exceeding an actionable level of contamination. The prior rule also allowed up to 48 months to pass before requiring the implementation of corrosion control measures after exceeding an action level of contamination.

Boosted Protection for Kids

The prior rule also failed to require testing at schools and in child care facilities, placing some of our most vulnerable citizens at risk. The new rule changes this. It now requires municipal water systems to sample 20 percent of both elementary school and child care facilities. It also requires annual sampling at secondary schools, if requested by the school department, for five years, and as requested thereafter.

Public Communication

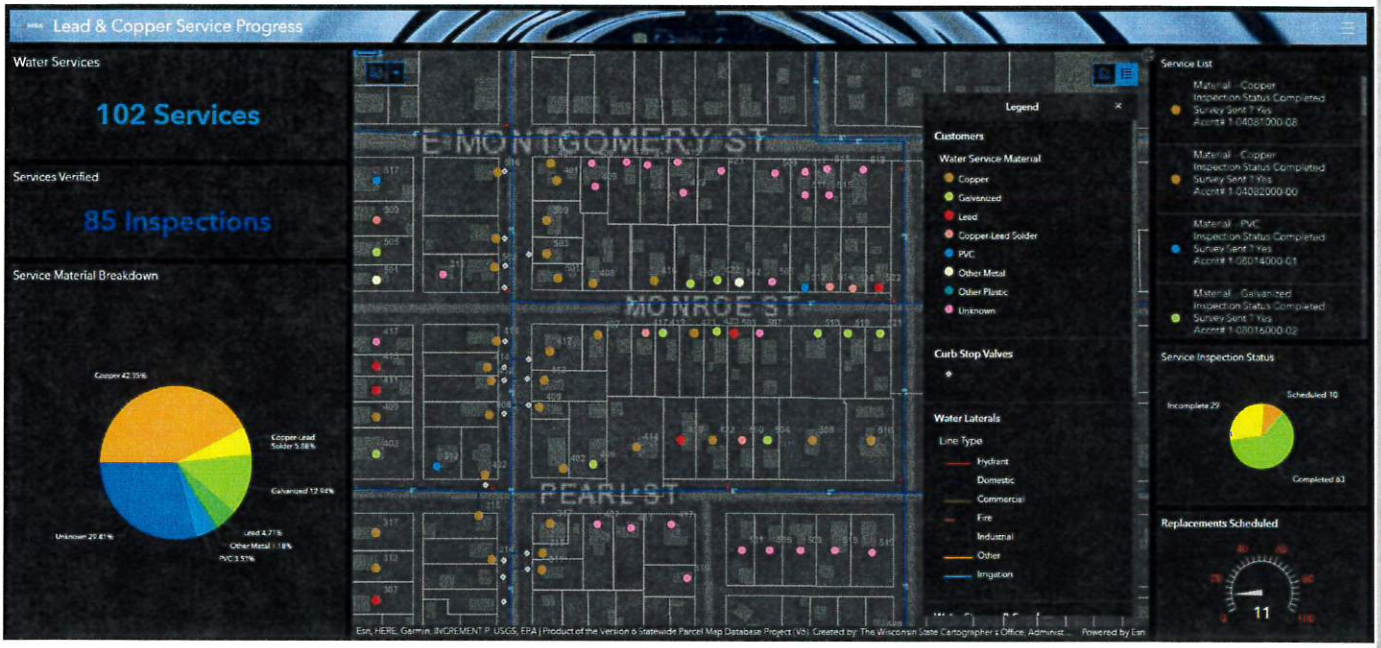
The new rule also requires a more robust public communication campaign. Utility companies must notify customers within three days if drinking water samples are found to have concentrations of lead in excess of 15 ppb. They must also notify customers within 30 days if concentrations are found, but below the 15 ppb threshold. If an entire system is found to exceed the limit, all utility customers must be notified within 24 hours. This push for early notification will help users immediately reduce their exposure.



GIS for Lead Service Line Inventory

Municipal leaders and water service utilities should prepare now to position their systems for the new levels of testing and compliance, beginning with a complete inventory of their lead service lines.

An efficient means of conducting such an inventory is by utilizing GIS. GIS streamlines the identification and location of LSLs and organizes and analyzes the data for both reporting and public educational purposes. If a community already has a GIS system in place, it can easily be configured to help collect lead line information through a variety of GIS platforms. Investing in the comprehensive identification and mapping of lead services lines now can help communities with the first step of compliance with the new rule. A GIS platform also allows for both public facing and internal data management and visualization. Program progress and key metrics can easily be tracked and presented using numerous "dashboard" applications.



Funding Assistance

Communities have a variety of funding options to get started. The American Rescue Plan Act (ARPA) passed in March 2021 promises funding for drinking water and wastewater infrastructure, with a major focus on eliminating all lead pipes and services lines in our nation's drinking water systems. Through the ARPA program, state and local governments will likely allocate even more lead replacement line dollars through the EPA's Drinking Water State Revolving Fund (DWSRF). The USDA Rural Development Water and Waste Disposal Loan and Grant Program and Community Development Block Grants (CDBG) may also be sources of assistance. Furthermore, the proposed American Jobs Plan Act is expected to carry funding for the replacement of lead pipes and service lines, as well as other critical upgrades to the nation's aging water systems.

The DWSRF and USDA-RD programs can assist with paying for the public side of a street or water service line improvement project. For the private service line sections, some states have lead service line replacement programs that can lend principal forgiveness funding for the replacement of lead service lines on private property. Program eligibility does vary per state, as do requirements for replacing either full or partial lines. Many agencies, for instance, will pay all or part, but only if the full line is replaced. In addition, some state regulatory agencies will permit utilities to set up incentive programs to assist owners. For private homes, funds such as the CDBG Small Cities Housing Program may (under certain circumstances) be able to assist individuals with replacement of household plumbing as a docum health and safety issue.

As always, MSA water resources, GIS, and funding experts are here to help and available to help communities navigate the new rule. Ask about our GIS-based systems to locate and organize water

Chapter 1: Introduction

This introductory chapter provides:

- The benefits of a comprehensive and accurate service line inventory (Section 1.1);
- The purpose of the guidance and its intended audience (Section 1.2);
- An overview of the inventory and related requirements of the January 15, 2021 Lead and Copper Rule Revisions (LCRR) and related requirements under the Lead and Copper Rule (LCR) (Section 1.3); and
- A brief discussion of how the remainder of the guidance is organized (Section 1.4).

1.1 The Benefits of a Comprehensive and Accurate Inventory

Given the many benefits of LSLR, EPA encourages water systems to begin LSLR as soon as possible, regardless of the stage of their inventory development.

Service line inventories are the foundation from which water systems take action to address a significant source of lead in drinking water – lead service lines (LSLs). Establishing an inventory of service line materials and identifying the location of LSLs is a key step in getting them replaced and protecting public health. Lead service line replacement (LSLR) is not dependent on knowing the location of all LSLs; in fact, simultaneously developing an inventory while conducting LSLR can have many benefits. For example, systems can save costs by replacing LSLs when crews find them onsite during service line investigations. Systems can also leverage the opportunity for LSLR by seeking customer consent and private property access during service line investigation. Replacing LSLs in a safe and prompt manner while crews are in the field for inventory development provides an opportunity for public health benefits for consumers by more quickly eliminating this potential source of lead exposure from drinking water.

Congress recognized the importance of LSLR when it appropriated supplemental Drinking Water State Revolving Fund (DWSRF) funding as part of the 2021 Bipartisan Infrastructure Law (BIL) (P.L. 117-58). The BIL contains a historic $15 billion in dedicated funding through the DWSRF for LSL identification and replacement. This funding is being provided to states with no match requirement. The BIL also provided $11.7 billion over five years to enhance DWSRF base funding. EPA is collaborating with state DWSRF programs to share models, guidance, and build state capacity to assist local communities and ensure LSL funding is effectively and equitably deployed (USEPA, 2022). DWSRF BIL LSLR funding, DWSRF BIL General Supplemental funding, and base appropriations for the DWSRF can all be used for LSL identification, such as service line material classification and validation, and replacement. The new resources available under BIL, in particular, provide a tremendous opportunity to make rapid progress on permanently removing a significant source of lead in drinking water and achieving major improvements in public health.

For the DWSRF, 49 percent of the DWSRF funding must be provided to disadvantaged communities. Other federal programs also have available funding available for LSLR and related technical assistance.[1]

A comprehensive and accurate inventory has many additional benefits beyond regulatory compliance. Inventorying service line material permits notification to consumers about potential lead risks affecting them, which can facilitate customer actions to reduce lead in drinking water, including flushing, use of filters certified to reduce lead, and customer-initiated LSLR. Inventories allow water systems to publicly track their progress on LSL identification and replacement, engaging the community and enhancing transparency. Inventories can also help water systems and consumers determine the source of high lead levels in drinking water at a home or building and the possible solutions for reducing exposure. Water systems with inventory information can also proactively mitigate lead exposure caused by disturbances of a lead or galvanized requiring replacement (GRR) service line, for example, during street construction. Inventories can also make LSLR programs more efficient. Even incomplete inventories may create cost-saving opportunities for water systems by better targeting locations served by LSLs, stretching the value of internal or external funding that water systems receive, such as from the BIL. In addition, service line inventories can help inform decisions for other drinking water rules and could inform future needs surveys and potential future costs.

1.2 Purpose and Audience

The purpose of this document is to guide water systems as they develop and maintain service line inventories and to provide states with needed information for oversight and reporting to EPA. The guidance contained in this document can also position water systems to begin replacing LSLs as soon as possible. Locating LSLs is the first and critical step to replacing them; however, water systems do not need to complete the entire inventory process before designing and implementing their LSLR programs.

This guidance covers the lifecycle of the inventory, including inventory creation, material investigations, system reporting, state review, public accessibility of service line information, and service line consumer notification. In addition, the guidance provides best practices, case studies, and templates related to topics such as the classification of unknowns, goosenecks, and galvanized plumbing; best practices for service line material investigations; inventory form and format; inventory accessibility; tools to support inventory development and data tracking; and ways to prioritize service line investigations.

[1] Additional information is available at https://www.epa.gov/ground-water-and-drinking-water/funding-lead-service-line-replacement.

The practices surrounding service line material inventories are rapidly evolving as water systems create their inventories and improve them over time. Additionally, emerging research on service line identification methods is ongoing. Given the potential for new, relevant information to become available, EPA anticipates that future updates to the guidance are possible. In addition, although EPA anticipates this guidance will be useful for water systems of all sizes, EPA intends to develop an additional tailored guidance for small community water systems (CWSs) and non-transient non-community water systems (NTNCWSs).

1.3 Overview of Regulatory Requirements and LCRR Review

Section 1.3.1 provides an overview of the initial inventory requirements specified in the January 15, 2021 LCRR. Section 1.3.2 provides information on EPA's review of the LCRR and plans to develop the Lead and Copper Rule Improvements (LCRI). Section 1.3.3 discusses inventory-related regulatory requirements under the LCR.

1.3.1 Overview of the LCRR Inventory Requirements

EPA published the LCRR in the *Federal Register* on January 15, 2021 (USEPA, 2021c). It applies to all CWSs and NTNCWSs. The initial inventory requirements of the LCRR specify:

- Information that water systems must include in their service line inventory,
- When water systems must submit their initial inventories to their primacy agency[2],
- Requirements for water systems to make their information publicly accessible and to notify all persons served by the water system at the service connection with a lead, GRR, or lead status unknown service line, and
- Reporting requirements for states.

> *Note that this guidance addresses **inventory** requirements of the LCRR only. All LCRR requirements aside from the initial inventory are subject to change under the LCRI. See Section 1.3.2 for discussion.*

Exhibit 1-1 provides a summary of these requirements with the relevant LCRR citations and the section(s) in this guidance with additional information. Note that Exhibit 1-1 includes only the LCRR initial inventory requirements that EPA stated would be retained for the LCRI. The LCRR contains additional requirements that may be subject to change under the LCRI and are therefore not included in the exhibit below.

[2] EPA delegates primacy, which is primary enforcement responsibility to implement SDWA's Public Water System Supervision Program, for public water systems to states, territories, and Indian tribes if they meet special requirements. Throughout this guidance, the terms "state" or "states" are used to refer to all types of primacy agencies including U.S. territories, Indian tribes, and EPA Regions.

Exhibit 1-1: LCRR Inventory Requirements

Inventory Requirement	40 CFR Citation	Information Provided in:
WATER SYSTEM REQUIREMENTS		
Inventory Specifications		
Material Classification: Classify each service line or portion of the service line where ownership is split as lead, galvanized requiring replacement, non-lead, or lead status unknown.	§141.84(a)(4)	Section 2.1
All service lines and ownership: Prepare an inventory that includes the system- and customer-owned portions of all service lines in the system's distribution system.	§141.84(a), (a)(2)	Section 2.2
Information to Identify Material: Use previous materials evaluation, construction and plumbing codes/records, water system records, distribution system inspections and records, information obtained through normal operations, and state-specified information.	§141.84(a)(3), (a)(5)	Sections 3.4 & Chapter 4
Deadlines for Submission		
Initial Inventory: Submit an initial inventory or demonstrate the absence of LSLs by October 16, 2024.	§141.80(a)(3)[1]	Section 1.3.2 & Section 6.4
Updates to Primacy Agency: Submit updated inventories to the primacy agencies annually or triennially based on lead tap sampling frequency, but not more frequently than annually Water systems that have demonstrated the absence of LSLs by October 16, 2024 are not required to provide an update. However, if these systems subsequently find any LSL or galvanized requiring replacement service line, they have 30 days to notify the state and prepare an updated inventory on a schedule established by the state.	§141.90(e)(3), §141.90(e)(3)(ii)	Sections 6.3 & 6.6
Public Accessibility and Consumer Confidence Report		
Public Accessibility: Make the inventory publicly available and include a locational identifier for LSLs and galvanized requiring replacement. Water systems serving more than 50,000 people must provide inventories online.	§141.84(a)(8)	Section 2.3 & Chapter 7

Inventory Requirement	40 CFR Citation	Information Provided in:
Consumer Confidence Report (applies to CWSs only): • **CWSs with LSLs**: Indicate how the public can access the service line inventory information. • **CWSs with only non-lead service lines:** Provide a statement there are no LSLs and how to access the service line inventory (or a statement in lieu of the publicly accessible inventory with a description of methods used to make this determination in 40 CFR §141.84(a)(9)).	§141.84(a)(9), §141.153(d)(4)(xi)	Section 7.4
Service Line Consumer Notification		
Provide notification to persons served by the water system at the service connection with an LSL, GRR, or lead status unknown service line. If the water system serves communities with a large proportion of non-English speaking consumers, as determined by the state, public education materials must be in appropriate languages or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the materials or to request assistance in the appropriate language. **Timing:** Notification within 30 days after completing of initial inventory and repeated annually until only non-lead remains. For new customers, water systems must also provide this notice at the time of service initiation. **Content:** Statement about service line material, lead health effects, and steps to minimize lead exposure in drinking water. If: • Confirmed LSL, must include opportunities to replace the LSL, any available financing programs, and statement that the system must replace its portion if property owners notify the system they are replacing their portion. • GRR, must also include opportunities for service line replacement. • Lead status unknown, must also include opportunities to verify the material of the service line. **Delivery:** By mail or by another method approved by the state. **Reporting to states:** Demonstrate that the water system delivered the notification and provide a copy of the	§141.85(a)(1)(ii), §141.85(e) & §141.90(f)(4)	Section 6.5

Inventory Requirement	40 CFR Citation	Information Provided in:
notification and information materials to their states annually by July 1 for the previous calendar year.		
STATE REPORTING		
Reporting to EPA: For each water system, the number of lead, galvanized requiring replacement, and lead status unknown service lines in its distribution system, reported separately.	§142.15(c)(4)(iii)(D)	EPA will include additional details in the data entry instructions guidance for the LCRR.
Special Primacy: The LCRR specifies special primacy requirements for states to adopt in 40 CFR §142.16(d)(5) that include: (1) providing or requiring the review of any resource, information, or identification method for the development of the initial inventory or inventory updates, and (2) requiring water systems whose inventories contain only non-lead service lines and the water system subsequently finds an LSL to prepare an updated inventory on a schedule determined by the state.	§142.16(d)(5)	Chapters 4 – 6 EPA plans to include additional information in a separate state implementation guidance.

Notes:

[1] On June 16, 2021, EPA published a rule to extend the compliance date from January 16, 2024 to October 16, 2024 (40 CFR §141.90(e)(1), USEPA, 2021d).

Note that this guidance uses the terms "system-owned" and "customer-owned" because they are consistent with the LCRR language. EPA recognizes that states and systems may use other terms to describe ownership status such as "public" and "private" or other terms besides "ownership" to describe the division of responsibility between the water system and the customer. EPA recommends water systems using different terminology to provide clear explanations of those terms to the state and the public.

> *States may have laws or regulations for initial service line inventories that are **more stringent** than federal requirements. For the most accurate and up-to-date requirements, systems should reach out to their state primacy agencies.*

1.3.2 Outcome of EPA Review of the LCRR

On June 16, 2021, EPA published the agency's decision to delay the effective and compliance dates of the LCRR, published on January 15, 2021. The effective date was extended from March 16, 2021 to December 16, 2021, while the compliance date was extended from January 16, 2024 to October 16, 2024 to ensure drinking water systems and primacy states continued to have the full

three years provided by the Safe Drinking Water Act to take actions needed for regulatory compliance. They delay allowed time for EPA to review the LCRR in accordance with Presidential directives issued on January 20, 2021, to the heads of federal agencies to review certain regulations and conduct important consultations with affected parties (USEPA, 2021d). The agency's review included a series of virtual public engagements to hear directly from a diverse set of stakeholders.

EPA published the outcome of its review on December 17, 2021. The review stated that EPA actions to protect the public from lead in drinking water should consider the following priority areas for improvements: replacing 100 percent of LSLs is an urgently needed action to protect all Americans from the most significant source of lead in drinking water systems; equitably improving public health protection for those who cannot afford to replace the customer-owned portions of their LSLs; improving the methods to identify LSLs and trigger action in communities that are most at risk of elevated drinking water lead levels; and exploring ways to reduce the complexity of the regulations. In the notice, EPA explained it would also consider changes to other areas of the rule to equitably improve health protections and improve implementation of the rule to ensure that it prevents adverse health effects of lead to the extent feasible (USEPA, 2021a). This could include changes to the requirements applicable to the inventory updates.

To achieve these policy objectives, EPA announced its decision to proceed with a proposed rule that would revise the LCRR while allowing the January 2021 rule to take effect. Through the LCRI, EPA stated that it does not expect to propose changes related to the initial service line inventory requirements because continued progress to identify LSLs is integral to lead reduction efforts regardless of potential revisions to the rule. The LCRR effective date is December 16, 2021, and the compliance date is October 16, 2024. In the review notice, EPA also highlighted non-regulatory actions that EPA and other federal agencies can take to reduce exposure to lead in drinking water.

1.3.3 Related Requirements under the LCR

As mentioned in the previous section, EPA reviewed the requirements in the LCRR and published its intent to revise the rule with the exception of the initial inventory requirements (USEPA, 2021a). Thus, this document focuses on guidance related to the LCRR initial inventory requirements, while also including general best practices applicable to the later stages of the inventory lifecycle.

This section describes existing LCR requirements that rely on service line inventory information and provides recommendations on how these requirements can be supported by initial inventory efforts. Water systems must comply with the requirements of the LCR (40 CFR §§141.80-141.91 as codified on July 1, 2020) between December 16, 2021 and October 16, 2024 (40 CFR §141.80(a)(3)).

Inventory-Related Requirements in the Event of Action Level Exceedance

Under the LCR (40 CFR §141.84(b)), systems subject to LSLR requirements[3] must replace annually at least seven percent of the initial number of LSLs in their distribution system. The initial number of LSLs is the number of lead lines in place at the time the replacement program begins. Water systems must identify the initial number of LSLs in their distribution system under this requirement. EPA recommends that systems use information gathered for the initial inventory under the LCRR to help identify the required initial number of LSLs.

How the Inventory Relates to the Tap Monitoring Requirements

Required lead and copper tap monitoring under the LCR is based on a tiering system for prioritizing sample sites (40 CFR § 141.86(a)). Single family homes with LSLs are in the highest tier (*i.e.*, Tier 1), meaning systems should prioritize these locations for lead and copper tap monitoring. Systems may gather more information on the location of LSLs under their initial inventory efforts.

1.4 Document Organization

The remainder of this document is organized as follows:

- **Chapter 2: Elements of the Inventory** includes information that must be included in the service line inventory to meet LCRR requirements as well as additional information EPA recommends that water systems consider tracking in their inventory.
- **Chapter 3: Inventory Planning** includes approaches for developing an inventory, considerations for choosing an inventory format, procedures for collecting information during normal operation, and guidelines for developing partnerships with third parties.
- **Chapter 4: Historical Records Review** summarizes the rule requirements for reviewing historical records and provides additional recommendations on how the various types of historical records can be used and where to find them.
- **Chapter 5: Service Line Investigation Methods** summarizes and compares service line identification methods, including visual inspection, water quality sampling, excavation, statistical data analyses, and emerging methods.
- **Chapter 6: Developing and Updating the Inventory** provides recommendations for classifying service line materials, planning for proactive investigations, submitting the initial inventory, and inventory updates. It includes requirements and recommendations specific to systems with no LSLs and provides guidance to states related to inventory

[3] Under the LCR, systems that exceeded the lead action level of 15 µg/L based on their 90th percentile sample result after installing corrosion control and/or source water treatment (whichever sampling occurred later) are required to replace 7 percent of their LSLs annually until they no longer exceeded the lead action level for two consecutive monitoring periods (40 CFR §141.84(a)).

review and reporting. This chapter also contains requirements and recommendations for notifying customers with LSLs, GRR, or unknown service lines.

- **Chapter 7: Public Accessibility** includes LCRR requirements for water systems to make their inventory publicly accessible and provides suggestions for inventory content and effective presentation, promoting public input, considerations for states, and Consumer Confidence Report inventory-related requirements.
- **Chapter 8: References** provides a full list of references that were used in the development of this document.

This guidance also includes key points to remember at the end of Chapters 1 through 7. In addition, these chapters are supported by the following appendices:

- **Appendix A** provides blank forms from EPA's Service Line Inventory Template, which is a companion tool to help water systems and states comply with the LCRR service line inventory requirements. The blank forms can be used for documenting inventory methods and an inventory summary. The appendix also contains a blank form for the state review checklist.
- **Appendix B** includes case studies for three water systems that have begun developing their service line inventories.
- **Appendix C** includes example instructions on how customers can identify their service line materials and example customer materials when the water system conducts the material service line verification of the customer-owned portion.
- **Appendix D** provides a summary of 1986 SDWA lead ban provisions by state.
- **Appendix E** includes Michigan's Minimum Service Line Verification Requirements.
- **Appendix F** includes examples of data quality disclaimers regarding the accuracy of the inventory provided to the public.

Key Points to Remember

LCRR Requirements

- All CWSs and NTNCWSs must develop an inventory of service lines that meets the LCRR requirements, including service line materials classification, information sources, and public accessibility (40 CFR § 141.84(a)).
- Water systems must submit their initial inventories to their state by October 16, 2024 (40 CFR § 141.84(a)(1)) and 141.90(e)(1)).
- All CWSs and NTNCWSs must notify all persons served by the water system at the service connection with a lead, GRR, or lead status unknown service line within 30 days of completing their service line inventory (40 CFR § 141.85(e)).
- All LCRR requirements other than the initial inventory requirements are subject to change under the LCRI.

Recommendations (Not Required under the LCRR)

- Water systems should not wait until their inventories are complete to begin conducting LSLR. Replacing LSLs while developing the inventory may create synergies or introduce opportunities for cost-savings.
- This guidance covers the lifecycle of the inventory, including inventory creation, inventory updates, material investigations, system reporting, state review, and public accessibility of service line information. The inventory is based on the best available data and should improve over time with updated information.
- States may have passed laws or regulations for a service line inventory that are more stringent than the federal inventory requirements.
- For water systems, a comprehensive and accurate service line inventory will facilitate LCRR compliance, improve LSLR program efficiency, provide greater public health protection, potentially assist in obtaining external funds for inventory development and LSLR, and provide potential cost savings.
- For states, a robust inventory will provide information for oversight and reporting.

Chapter 2: Elements of the Inventory

This chapter contains the required elements of the service line inventory based on the January 15, 2021 Lead and Copper Rule Revisions (LCRR) (USEPA, 2021c) and is organized as follows:

- Section 2.1 presents requirements and recommendations for materials classification for service lines and other related infrastructure,
- Section 2.2 presents requirements and recommendations for what to include in the inventory,
- Section 2.3 includes a discussion of location identifiers for service lines, and
- Section 2.4 provides other suggested service line information for inclusion in the inventory.

2.1 Inventory Materials Classifications

This section summarizes the required service line material classifications and presents additional classifications and subclassifications for states and water systems to consider.

2.1.1 Required Service Line Inventory Material Classifications

Under the LCRR, the inventory must use one of the following four material classifications to describe the entire service line, including separate material classifications for the water system-owned and customer-owned portions of each service line where ownership is split:

- Lead
- Galvanized requiring replacement (GRR)
- Non-lead (or the actual material, such as copper or plastic)
- Lead status unknown service lines (or unknown)[4]

Exhibit 2-1 provides the required criteria for assigning each of the four material classifications and additional information that may be helpful to states and water systems.

[4] This guidance document uses the term lead status unknown interchangeably with unknown.

Exhibit 2-1: Required Inventory Materials Classifications

Material Classification	Use This Classification If:
Lead	The service line is made of lead (40 CFR §141.84(a)(4)(i)). ***Keep in Mind**:* • The LCRR updates the definition of a lead service line (LSL) as "a portion of pipe that is made of lead, which connects the water main to the building inlet" (40 CFR §141.2). • If the only lead pipe serving the building is a lead gooseneck, pigtail, or connector[1], the service line is **not** considered an LSL under the initial inventory requirements of the LCRR. EPA recommends that the system track the material of all components that potentially contain lead, including connectors.[2]
Galvanized Requiring Replacement (GRR)	The galvanized service line is or ever was at any time downstream of an LSL or is currently downstream of a lead status unknown service line. If the water system is unable to demonstrate that the galvanized service line was never downstream of an LSL, it must presume there was an upstream LSL (40 CFR §141.84(a)(4)(ii)). ***Keep in Mind**:* • Galvanized service lines that are or ever were downstream from an LSL can adsorb lead and contribute to lead in drinking water. • An example of a GRR service line is when the customer-owned portion from the meter to the building is galvanized, and the system-owned portion from the water main to the meter was previously lead but has been replaced. The customer-owned portion of the service line would be GRR. • Under the initial inventory requirements of the LCRR, a galvanized service line that was never downstream of an LSL but is downstream or previously downstream of a lead gooseneck, pigtail, or connector is not considered GRR. However, systems should check with their states if they have more stringent requirements.
Non-Lead	The service line is determined through an evidence-based record, method, or technique that it is not lead or GRR (40 CFR §141.84(a)(4)(iii)). ***Keep in Mind**:* • If a system can demonstrate that a galvanized service line was never downstream of an LSL, it may be classified as non-lead. • The water system may classify the actual material of the service line (for example, galvanized, plastic, or copper) as an alternative to classifying it as non-lead. • The term "non-lead" refers to the service line material only and does not include other potential lead sources present in solder, connectors, and other plumbing materials.

Material Classification	Use This Classification If:
Lead Status Unknown	The service line material is not known to be a lead, GRR, or non-LSL, such as where there is no documented evidence supporting material classification (40 CFR §141.84(a)(4)(iv)). ***Keep in Mind***: • Water systems have the option to use the terminology of unknown instead of lead status unknown service line (40 CFR §141.84(a)(4)(iv)). • Water systems may elect to provide more information regarding their unknown lines as long as the inventory clearly distinguishes unknown service lines from those where the material has been determined through records or inspections (40 CFR §141.84(a)(4)(iv)).

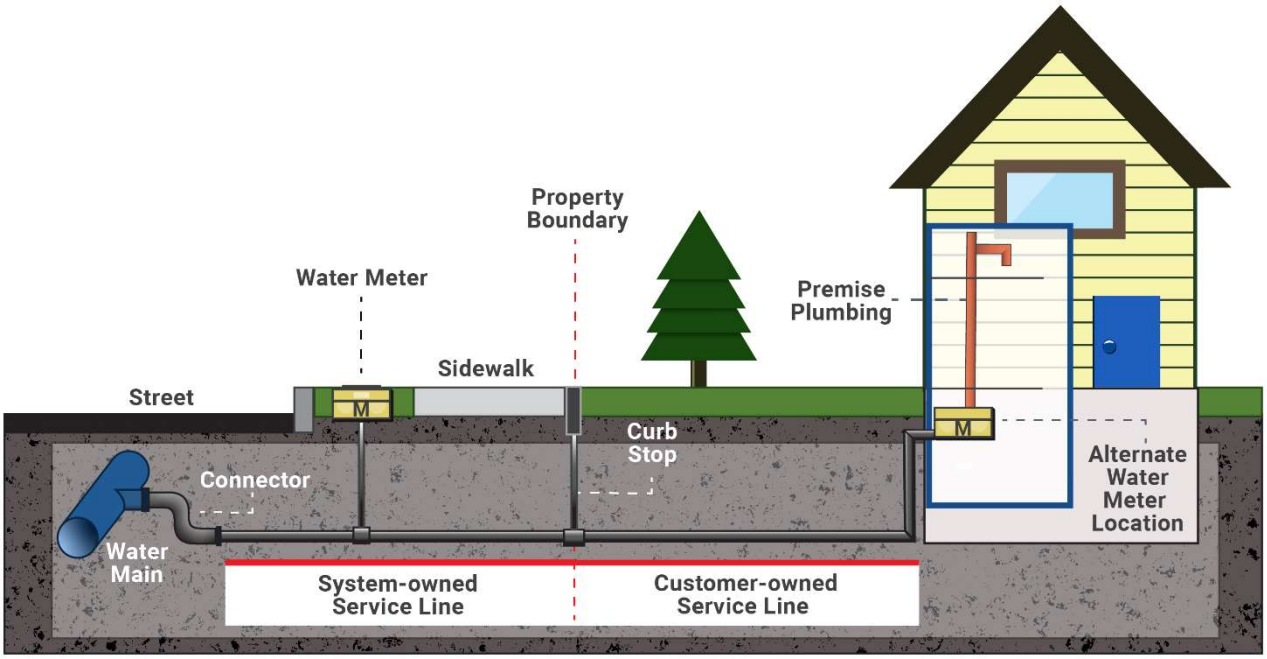
Note:

[1] A lead gooseneck, pigtail, or connector is defined as "a short section of piping, typically not exceeding two feet, which can be bent and used for connections between rigid service piping" (40 CFR §141.2).

[2] Some states include lead connectors in their definition of an LSL. In these instances, the state requirements are more stringent than the LCRR and water systems must follow these requirements.

Exhibit 2-2 is a diagram of a possible division in service line ownership (or responsibility) between the customer and water utility in which the system-owned portion of the service line is from the water main to the curb stop and the customer-owned portion is from the curb stop to the water meter. For some systems, the delineation may be different, (*e.g.*, the ownership or responsibility distinction is at the water meter or property line). In other instances, the water system may share ownership with customers, or the water system or customer may have sole ownership of the service line. Note that ownership of the property on which the service line is located does not always equate to ownership or responsibility of the service line.

Exhibit 2-2: Example of Service Line Ownership Distinction between the Water System and Customer



While the LCRR requires the inventory to categorize each service line or portions of the service line where ownership is split, a single classification per service line is also needed to support various LCRR requirements, such as lead service line replacement (LSLR), tap sampling, and risk mitigation. Systems should follow these guidelines to comply with the LCRR requirements when classifying the entire service line when ownership is split:

- Service line is lead if either portion is a lead service line (LSL) (40 CFR §141.84(a)(4)(i)).
- Service line is GRR if the downstream portion is galvanized and the upstream portion is unknown or currently non-lead, but the system is unable to demonstrate that it was never previously lead (40 CFR §141.84(a)(4)(ii)).
- Service line is lead status unknown if both portions are unknown, or one portion is non-lead and one portion is unknown (40 CFR §141.84(a)(4)(iv)).
- Service line is non-lead only if both portions meet the definition of non-lead (40 CFR §141.84(a)(4)(ii)).

EPA recognizes that some segments of the system- or customer-owned service lines could be made of more than one material. EPA recommends that systems follow the guidelines above to classify the system-owned or customer-owned portion in these cases. Exhibit 2-3 provides

Customer Piping Materials Inventory

(Please answer all questions to the best of your ability)

Date:*

9/9/2022

Owner Information

Building Information

Pipe Material Information

Identify Pipe Material at Meter Location

To help identify the pipe material, follow the steps listed below.

Follow these steps:

You will need:

- Key or a coin
- Strong refrigerator magnet

1. Find the water meter in your basement. Look at the pipe that comes through the outside wall of your home and connects to your meter.
2. Carefully scratch the pipe (like you would a lottery ticket) with a key or a coin. Do not use a knife or other sharp tool. Take care not to make a hole in the pipe. If the scratch turns a shiny silver color, it could be lead or steel. **NOTE:** If pipe is painted, use sandpaper to expose the metal first.
3. Place the magnet on the pipe. If a magnet sticks, it is a steel pipe.

Inlet Side (from Street) Water Pipe Type

- ○ Lead - shiny silver color and magnet will not stick to material
- ○ Galvanized - dull gray color and magnet will stick to material
- ○ Copper - tarnished penny color
- ○ Plastic - gray, white, blue, clear or black in color

Inlet Side Water Pipe Size

-Please select-

Need help identifying Pipe Material?

Review this Pipe Material Identification Guide

Outlet Side (to Home) Water Pipe Type

Check all that Apply

- ☐ Lead - shiny silver color and magnet will not stick to material
- ☐ Galvanized - dull gray color and magnet will stick to material
- ☐ Copper - tarnished penny color
- ☐ Plastic - gray, white, blue, clear or black in color

Inside Building Plumbing Material

Check all that Apply

- [ ] Lead - shiny silver color and magnet will not stick to material
- [ ] Galvanized - dull gray color and magnet will stick to material
- [ ] Copper - tarnished penny color
- [ ] Plastic - gray, white, blue, clear or black in color
- [ ] Other

Questions or Comments

Submit

Pipe Identification Procedures

How To Identify A Lead Water Service Pipe

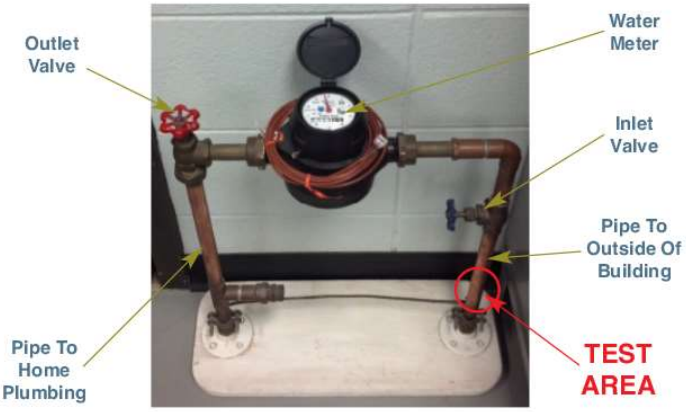
Tools Needed:

Flathead Screwdriver, Refrigerator Magnet & A Penny (or other coin)

Step 1:
Locate the water service line coming into the building.

This is typically found in the basement. An “inlet valve” and the water meter are installed on the pipe after the point of entry.

Identify a test area on the pipe between the point where it comes into the building and the inlet valve. If the pipe is covered or wrapped, expose a small area of metal.



Step 2:
Scratch the surface of the pipe.

Use the flat edge of a screwdriver or other tool to scratch through any corrosion that may have built up on the outside of the pipe.

Step 3:
Compare your pipe to the chart below.

Each type of pipe will produce a different type of scratch, react to the magnet differently and produce a unique sound when tapped with a metal coin.

Lead Pipes

The Scratch Test
If the scraped area is shiny and silver, your service line is lead.

The Magnet Test
A magnet will not stick to a lead pipe.

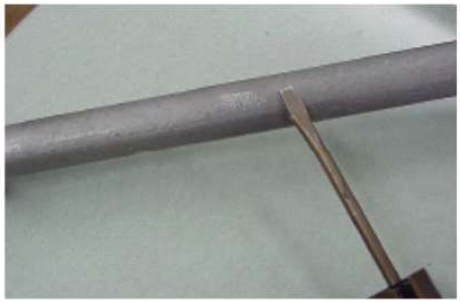
The Tapping Test
Tapping a lead pipe with a coin will produce a dull noise.

Copper Pipes

The Scratch Test
If the scraped area is copper in color, like a penny, your service line is copper.

The Magnet Test
A magnet will not stick to a copper pipe.

The Tapping Test
Tapping a copper pipe with a coin will produce a metallic ringing noise.



Galvanized Pipes

The Scratch Test
If the scraped area remains a dull gray, your service line is galvanized steel.

The Magnet Test
A magnet sticks to a galvanized pipe.

The Tapping Test
Tapping a galvanized pipe with a coin will produce a metallic ringing noise.

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ANALYTICAL REPORT

PARDEEVILLE PUBLIC UTILITIES
ROY WHITE
114 LAKE ST
PARDEEVILLE, WI 53954

Project Name: WENDTS SEPTIC
Project Phase:
Contract #: 85
Project #:
Folder #: 172227
Purchase Order #:

Arrival Temperature: See COC
Report Date: 9/29/2022
Date Received: 9/15/2022
Reprint Date: 9/29/2022

CT LAB Sample#: 1235422 Sample Description: WENDTS SEPTIC August Daily Average at the Plant Sampled: 9/15/2022 11:30

Analyte	Result	Units		LOD	LOQ	Dilution	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Inorganic Results											
BOD 5-Day	**2300**	mg/L	230	1200		1		9/16/2022 11:09	9/21/2022 12:00	BRB	SM 5210B
Total COD	**340**	mg/L	No test	18	60	1		9/16/2022 16:19	9/21/2022 14:02	RLB	EPA 410.4
Total Kjeldahl Nitrogen	**160**	mg/L	45	7.8	26	10		9/21/2022 09:00	9/22/2022 13:50	RLB	EPA 351.2
Total Phosphorus	**80**	mg/L	4.9	2.1	7.0	10			9/16/2022 14:29	HLB	EPA 365.1
Total Suspended Solids	**12000**	mg/L	270	290		1			9/19/2022 15:55	SJP	SM 2540D
Ammonia Nitrogen Total	**100**	mg/L	38	2.0	7.0	10			9/19/2022 12:00	HLB	EPA 350.1
Solids, Total	**12000**	mg/L	No test		20	1			9/15/2022 16:25	RLB	SM 2540B
Total Chloride	**64**	mg/L	332	10	32	10			9/27/2022 09:00	TMG	SM 4110B
pH	**7.21**	S.U.	7.82			1			9/16/2022 14:10	ATJ	SM 4500H+B
Metals Results											
Total Potassium	**26.00**	mg/L	No Test	0.12	0.50	1		9/16/2022 12:18	9/19/2022 20:52	NAH	EPA 200.7

Unless specifically stated to the contrary, soil/sediment/sludge sample results/LOD/LOQ/RLs were reported on a Dry Weight Basis

Pardeeville Utilities

Hauled Waste Fee Analysis

28-Sep-22

Community	Holding Tank	Fee for Holding Tank	Septic Tank	Fee for Septic Tank	Notes
Cambria	No	-	No	-	Do not accept and have never accepted hauled waste
Rio	No	-	No	-	Do not accept and have never accepted hauled waste
Wyocena	No	-	No	-	Do not accept and have not since before February 2014
Portage	Yes	$7.25/1000 gal (Cascade Mtn. ONLY)	No	-	Do not accept and have since around 2011 due to high strength waste
Poynette	No	-	No	-	NO RESPONSE TO EMAIL
Columbus	Yes	$7.17/1000 gal and $10 gate fee	No	-	
Fall River	No	-	No	-	Do not accept and have never accepted hauled waste
DeKorra	Yes	Yearly Fee and permit $50.00	No	-	
Reedsburg	Yes	$12.85/1000 gal	Yes	$50.00-$90.70/1000 gal based on size and Admin. Fee of $20.00/load	
Coloma	No	-	No	-	NO RESPONSE TO EMAIL
Pardeeville (existing)	Yes	$6.75/1000 gal and $9.65 per MONTH	Yes	$6.75/1000 gal and $9.65 per MONTH	
Pardeeville (Increases)	Yes	$10.00/1000 gal and $10/load	Yes	$25.00/1000 gal and $10/load	
Approved 09/09/2019					
Load Fee was then removed in December of 2019 and NOT implemented.					
Pardeeville Revised	Yes	$10.00/1000 gal	Yes	$25.00/1000 gal	
Approved and implemented 01/01/20					

Erin Salmon

From: Greg Gunderson <ggunderson@msa-ps.com>
Sent: Friday, September 16, 2022 4:49 PM
To: Erin Salmon; Steven Sell
Cc: pardeevillewwtp@gmail.com; aaron; babcockmc@frontier.com
Subject: RE: Fees for hauled waste to the WWTP

Follow Up Flag: Follow up
Flag Status: Flagged

Yes – pH can absolutely be of concern. If it's significantly outside the normal range of 6.0-9.0 (either acidic <6.0 or basic >9.0), it may cause problems.

From: Erin Salmon <dpw@villageofpardeeville.net>
Sent: Friday, September 16, 2022 4:45 PM
To: Greg Gunderson <ggunderson@msa-ps.com>; Steven Sell <ssell@msa-ps.com>
Cc: pardeevillewwtp@gmail.com; aaron <ajtorger31@gmail.com>; babcockmc@frontier.com
Subject: Re: Fees for hauled waste to the WWTP

Thanks Greg, I appreciate it. What concerns me is the conversation I had with Portage Plant, Superintendent. He said that their plant can't handle any septic, period. Only holding tanks. And their facility is much bigger. Reasoning is the level of PH is supposed to be adjusted. If it's not it's over 12, it will kill the bacteria.
When I think about the customers, some farmers, etc. I think it COULD possibly be an issue, especially now after speaking with Portage today.
Thoughts?

Erin M. Salmon, P.W.M.
Village Administrator &
Director of Public Works
Village of Pardeeville

EMAIL SENT TO SURROUNDING COMMUNITIES – HAULED WASTE

Good Morning,

My name is Kelsea I am the Utility Clerk for Pardeeville Utilities. Pardeeville is currently doing some research on accepting hauled waste into out waste water treatment plant. It is our understanding your community does not accept hauled waste. We are reaching out to surrounding communities with some questions.

- Have you every accepted hauled waste? (Septic and/or Holding)

-When did you stop accepting hauled waste?

-Why did you stop accepting hauled waste?

Thank you so much for taking time out of your day to answer the questions above. It is greatly appreciated.

Cambria sent at 09/13/2022 @ 10:02am

Hi Kelsea,

We do not and have never accepted hauled waste. Being a small community with three large industries already we do not want to start accepting additional outside waste and any issues they may bring. It seems at least once each year we have an issue that we have to track down and find that one of them is "dumping" stuff they aren't supposed to into our system…from lots of corn to an abundance of cleaning rags to who knows what. We can track it down within our system but if we were to bring in outside waste it would be so much harder to prove where problematic stuff is coming from so we can get them to stop.

We did accept direct piped waste from an industry just outside our village that was supposed to be just from their restrooms only. However, we started getting lots more than just restroom waste (lots of black sulfur smelling industrial waste). According to them "they didn't know where it was coming from". When they wouldn't stop we capped off their service and stopped taking their waste altogether. For what little bit of revenue we were getting from this industry outside of our village it was not worth all of the extra costs for testing, treatment and employee time.

Hope some of this info is helpful. Have a great day!

Lois Frank MMC, WCPC, CMTW

Clerk/Treasurer

Village of Cambria (pop. 767)

Rio sent at 09/13/2022 @10:05am

Hello Kelsea,

We do not accept hauled waste and have not accepted.

Sincerely,

Amy Stone

Administrator Clerk/Treasurer

Village of Rio

207 Lincoln Avenue

PO Box 276

Rio, WI 53960

(920) 992-5454 phone

(920) 992-6108 fax

astone@riowi.us

www.riowi.us

Wyocena sent at 09/13/2022 @ 10:33am

Hi Kelsea,

Wyocena has not accepted waste since sometime before I started in February 2014. I don't have answers for all your questions. Sorry.

Have a great day!

Lori Kratky MMC, WCPC, CMTW
Village of Wyocena
165 E Dodge Street
PO Box 913
Wyocena, WI 53969
(608) 429-2349
Population 768

Portage sent at 09/13/2022 @ 10:31am

Hello Kelsea

We stopped accepting holding tank waste back around 2011, 2012. We had a septic hauler come into our facility on a regular bases. There was a certain hauler that started to mix his loads with Septic waste and called it holding tank waste. After a few loads the wastewater plant was close to violating its permit due to the high strength waste. So now we only except holding tank from Cascade Ski Resort in the winter.

If you have any other questions please let me know.

David Hornischer Superintendent

Portage WWTF

Fall River at 09/13/2022 @ 10:11am

I will check with DPW tomorrow. It seems like we may have but it's been awhile since we've had a treatment plant (lagoons).

We now send our waste to Columbus. But I will check about the past if he remembers.

I check with DPW today. We do not and have not accepted that type of waste. Craig thought that the City of Columbus did and not sure if they still do.

The other mention was the City of Sun Prairie.

This isn't much help for you – sorry.

Marie

Poynette Emailed 09/13/2022 @ 10:09am- did not respond to email

Coloma Emailed 09/13/2022 @ 10:15am- did not respond to email

Power System Engineering, Inc.

Full-service consultants

Electric System Study and Work Plan

Prepared for:

Pardeeville Public Utilities
Pardeeville, WI

Prepared by:

Power System Engineering, Inc.

September 26, 2022

Electric System Study and Work Plan
for
Pardeeville Electric Utility

Principal Contributors:

Jamie Sieren

Contact: Jamie Sieren

sierenj@powersystem.org

Direct: 608-268-3552

Mobile: 608-438-1643

2424 Rimrock Rd., Suite 300
Madison, WI 53713

www.powersystem.org

I hereby certify that this plan and report was prepared by me or under my direct supervision and that I am a duly Registered Designer of Engineering Systems under the laws of the State of Wisconsin.

Jamie J. Sieren
DATE Reg No. D-1816-7

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Table of Contents

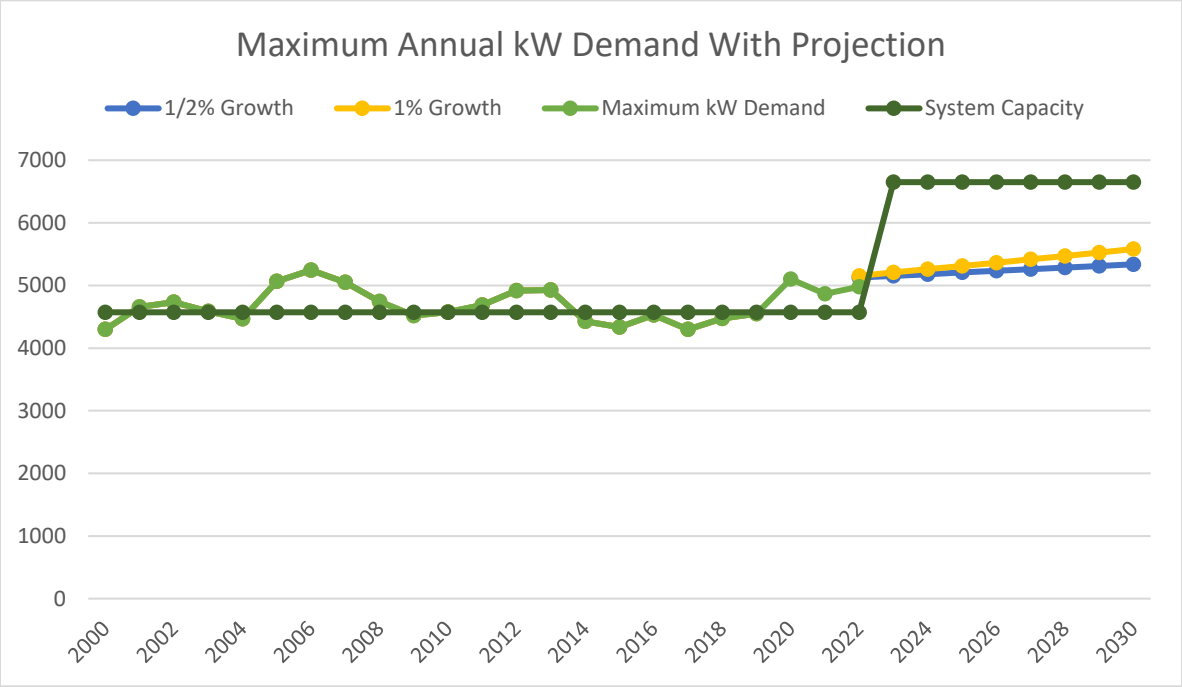
Figures and Tables

Exhibits

1 Executive Summary

The purpose of this report is to review the existing electric system for reliability purposes, to plan for future load growth on the electric system, and to develop an orderly plan for carrying out construction and other improvements of the electric system facilities from 2023 through 2026 for the Village of Pardeeville Electric Utility. This report provides cost estimates for budgeting the proposed projects over the next four years. The cost estimates provided will assist the Village with the data necessary for completion of the work plans and budgets, as well as a basis for long-term financial forecasts.

System growth from 2000 to 2020 was approximately 0.7% per year with the largest peak occurring in 2006 at 5,244 kW. Over that 20-year timeframe, the system peak has increased from 4,298 kW in 2000 to 5,104 kW in 2020 with the largest peak occurring in 2006 at 5,244 kW. Over the last 15 years, the peak load of the electric system has been relatively flat with higher peaks corresponding to years with warmers summers or times of increased economic activity. The Maximum Annual kW Demand table below provides an overview of the yearly peaks as well as the reliable system capacity when the Sanborn Substation is out of service.



The electric system continues to be able to support all electric loads when both substations and all feeders are in service. Contingency analysis with the Sanborn Substation out of service revealed that the system peak exceeds the reliable capacity of the Southside Substation as shown in the table above. Based on the electric system peak data, the system exceeds the reliable capacity in about 10 of the 20 years and typically occurs only between the months of June and September, or 4 of 12 months in a given year. Another system constraint occurs with Circuit 5 being loaded to 125% of its reliable capacity when backing up Circuit 7 during peak loading conditions.

The system constraints limit the ability to serve all customers when the weather conditions are very hot and humid and the Sanborn Substation is out of service for emergency purposes such as during an equipment failure or other unplanned maintenance.

Pardeeville Electric Utility has invested in the electric system as needed over the years to provide reliable electric service to the customers. Continued investment in the electric system is required to provide the reliable service that is expected from the Utility.

Over the next four years, the recommended work consists of increasing the substation capacity at the Southside Substation, reconductoring certain portions of Circuits 5 and 7 for both maintenance and load transfer capabilities, and continued maintenance replacement of aging electric infrastructure. The work plan items are described later in this report and their location is shown on the Work Plan map in Exhibit IX. The recommended budget for the proposed work is approximately $266,000 to $339,000 per year for the next four years and is detailed in Exhibit X.

The recommendations presented in this report should be considered as a general guide for system development to address system constraints. Actual future loads may increase or decrease based on numerous factors. The recommended work plan does not unreasonably increase system capacity in excess of foreseeable future loads. Periodic review and possible modification of plans may be required should unknown loading occur, or parameters and assumptions change from those used in this study. Plans may be accelerated or adjusted as needed to address changing conditions.

The following pages provide additional detail, forming the basis of the recommendation.

2 Existing Conditions

2.1 Introduction

Reliability and quality of service are the foundation of operation for any electric utility. The function of system planning is to evaluate the existing conditions and projected system configurations, current constraints, voltage levels, and load balance in a manner that strives to maintain or increase reliability and quality of service. This study provides a description of the existing electrical system and provides recommendations for upgrading the system as necessary to provide adequate service to both new and existing customers in accordance with criteria and guidelines established by Power System Engineering, Inc. (PSE) and Pardeeville Electric Utility.

2.2 Description of System

The Pardeeville Electric Utility provides electric service within the Village of Pardeeville, Wisconsin as well as a limited rural area outside the Village, all of which are located within Columbia County. The population of Pardeeville has been relatively stable over the last 20 years with a population of 1,982 in the year 2000, a population of 2,115 in 2010, and a population of 2,069 per the 2020 census. This equates to a growth rate of approximately 0.1% over 20 years. There is some development occurring which may provide limited growth in population in the future; however, it is not expected to be a dramatic increase at this time.

The areas of land use are shown on the Village of Pardeeville Zoning Map which is included in Exhibit I for reference. Areas of possible growth or development are located on the south and southwest side of the Village which may accommodate multi-family and light commercial/business development.

2.2.1 Distribution System

The Village's distribution system is made up of approximately 18 miles (+/-) of 4.16 kV distribution line, consisting of both overhead and underground facilities. The system is constructed and operated at 4.16 kV with limited areas built to 15 kV standards for future considerations.

There are six (6) 4.16 kV distribution circuits of varying lengths throughout the system. The 4.16 kV circuits known as Circuits 2, 4, and 5 are fed from the Southside Substation located on the south side of Pardeeville near Industrial Drive and Hwy 22. The remaining 4.16 kV circuits known as Circuits 6, 7, and 8 are fed from the Sanborn Substation located on the east side of Pardeeville near the intersection of E. Chestnut St. and Schwantz Rd. The electric distribution system is configured for backup considerations so Circuit 2 ties to Circuit 6, Circuit 4 ties to Circuit 8, and Circuit 5 ties to Circuit 7. Conductor sizes generally range from single-phase #4 ACSR to three-phase 4/0 or 336 ACSR overhead conductor, or single-phase 1/0 aluminum to three-phase 4/0 AWG aluminum underground cable.

An Existing System Circuit Map is included in Exhibit II.

2.2.2 Substations

The Village owns and operates two 69 kV to 4.16 kV distribution substations. Southside Substation is located on the south side of the village and Sanborn Substation is located on the east side of the village. The Village also has a limited emergency-only backup interconnection to an Alliant Energy distribution line via a 12 kV to 4.16 kV step down transformer located adjacent to the Southside Substation.

Substation transformer nameplate capacity at the Southside Substation is 3.75/5.25 MVA and 5/7 MVA at the Sanborn Substation. The nameplate for the transformer to the Alliant Energy tie at the Southside Substation is 5 MVA. It should be noted that the full 5 MVA capacity may not be available at all times of the year. This connection is not intended for use and would be an emergency backup tie requiring some manual connection and should not be counted on as part of most contingency planning.

One-line diagrams of the Southside and Sanborn Substation are included as Exhibits III & IV respectively.

2.2.3 Transmission Line

Bulk transmission services are provided by American Transmission Company (ATC). The Pardeeville substations are supplied from a networked 69 kV ATC transmission line approximately 3.25 miles east of Pardeeville. That transmission line is tapped with a 3-way switch and Pardeeville is fed from a 3.25 mile long radial 69 kV transmission line tap to the Sanborn Substation. The 69 kV transmission line then continues approximately 1.25 miles southwest to serve the Pardeeville Southside Substation. The radial transmission line ends at the Southside Substation.

An ATC Zone 3 Planning map and a 10-Year Assessment Map showing Columbia County are included as Exhibits V and VI respectively. The exhibits show the overall transmission system in the area of Pardeeville and beyond as well as planned projects for 2019 through 2028. ATC's planned projects do not appear to have a direct impact on Pardeeville's connection to the transmission system.

In addition to the transmission facilities, a backup connection to an Alliant Energy distribution line with a 12.47 kV to 4.16 kV, 5000 kVA (5 MVA) pad mounted transformer was installed and paid for by ATC a number of years ago to facilitate rebuilding of the radial transmission line feeding Pardeeville. This was needed in order to serve Pardeeville while the 4.5 mile radial transmission line was rebuilt. The backup transformer and distribution connection still exist for emergency backup purposes only and full capacity may not be available for future use. Coordination is required with Alliant Energy at the time of any backup from this transformer to verify adequate capacity is available on the Alliant distribution system to serve Pardeeville at that time.

2.2.4 Power Supply

Pardeeville Electric Utility purchases power from Alliant Energy under a wholesale power contract.

2.2.5 Age of Major Equipment and General Distribution System Age

The ages of the existing substation major components are summarized as follows:

Table 2-1 Age of Substation Equipment

Sanborn Substation			
Equipment	Year of Manufacture	Age	Type/Rating
Transformer	*Est. 1998*	*24 years*	General Electric 5/7 MVA, 927 Amp
Voltage reg A	Sept 1998	24 years	Cooper, 1000/1120 Amp
Voltage regs B & C	Oct 2002	20 years	Cooper, 1000/1120 Amp
Ckt 6 recloser	*Est. 1998*	*24 years*	Type WE w/ Form 6 control, 560 Amp
Ckt 7 recloser	*Est. 1998*	*24 years*	Type WE w/ Form 4C control, 560 Amp
Ckt 8 recloser	*Est. 1998*	*24 years*	Cooper Nova w/ Form 6 control, 600 Amp
Southeast Substation			
Transformer	*Estimated*	*40+ years*	General Electric 3.75/5.25 MVA, 483 Amp
Voltage regs	*Estimated*	*40+ years*	Allis-Chalmers, 668 Amp
Ckt 2 recloser	Aug 1998	24 years	Type WE, 560 Amp
Ckt 4 recloser	Aug 1998	24 years	Type WE, 560 Amp
Ckt 5 recloser	Aug 1998	24 years	Type WE, 560 Amp

It is important to know the age of the existing equipment to plan for long term maintenance and eventual replacement.

Transformers and other substation equipment have an estimated life expectancy of 30+ years and are regularly depreciated in utility plant accounts at that rate. Many transformers exceed 30 years of operation and can remain in service for 40, 50, or more years with proper maintenance and system protection. A transformer will typically remain in service until it shows signs of advanced aging, fails, or needs to be replaced due to increased load and planning requirements. Substation equipment should be tested on a regular basis to assess the equipment's condition and long-term maintenance requirements.

The age of the transformer and regulators at the Southside Substation is estimated at approximately 40 years old at this time.

It is recommended to perform regular oil testing on the substation transformers, regulators and other oil-filled equipment such as reclosers to assess the overall health of the equipment.

Electronic controls have a typical life span of 10 years, although they can also last longer. Like all computer equipment, these electronic controls should be considered for replacement when their performance does not keep up with requirements, or as they begin to have issues. The controls at the Southside Substation are of significant age. The recloser control on Circuit 7 at the Sanborn Substation is of significant age and is no longer supported by the manufacturer. The remaining two reclosers at Sanborn Substation are of a newer vintage and are still supported by the manufacturer.

From a review of the Pardeeville pole inventory records, there are poles from each of the decades from the 1950s through the 2020s. Pardeeville has continued to inspect and replace poles and other equipment over the decades as they deteriorate or are in need of upgrade. This is good utility practice and Pardeeville personnel should continue to inspect/monitor the system and change out aged infrastructure as needed. A budget should be set aside every year for continued maintenance and repairs of the system for the long-term health of the utility.

2.2.6 System Loading - Monthly Peak kW Demand

The system peak for 2020 was 5,104 kW and occurred in September 2020. A summary of historical monthly peaks from 2015 through 2020 for the Pardeeville electric system is shown in Figure 2-1 below. Recent peaks are in line with the 2020 peak.

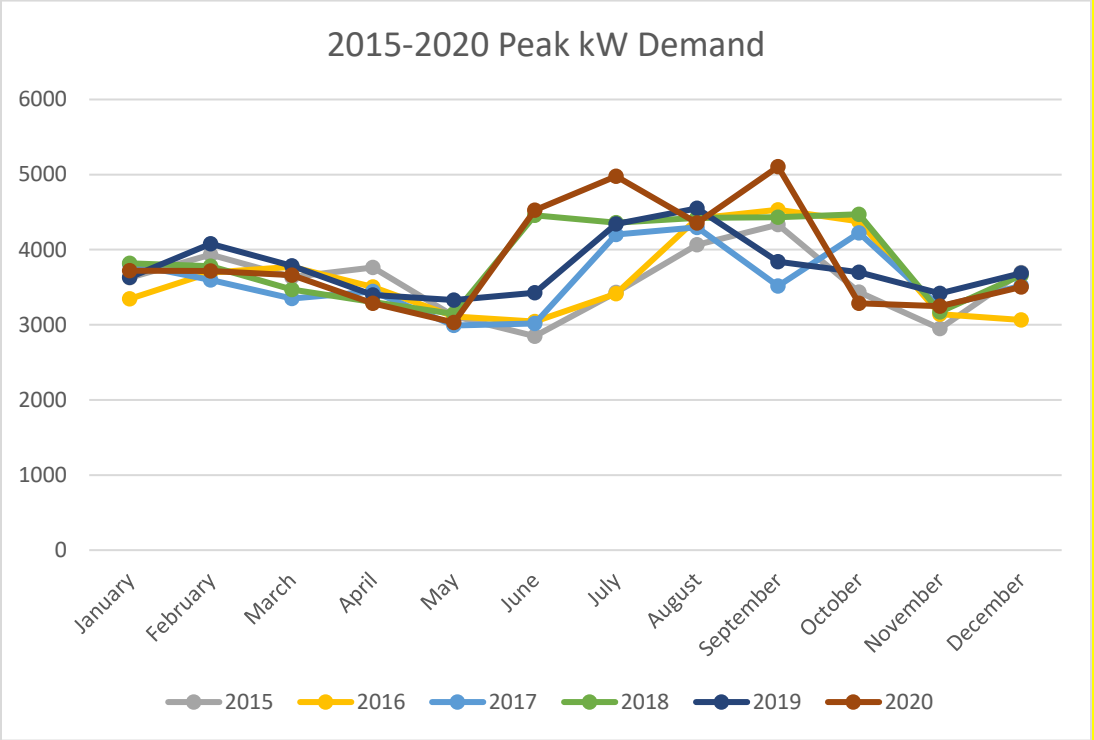


Figure 2-1 2015-2020 Monthly Historical Peak Demand

Pardeeville is predominantly summer peaking, with peak demands occurring in June, July, August, and September. Spring and fall peaks represent the Village's typical load without the effects of hot or cold weather. Weather-related load increase due to air conditioning and other possible loads appears to account for approximately 20 to 35 percent of the Village's peak summer demand and varies from year to year.

2.2.7 System Loading - Yearly Peak kW Demand

Pardeeville's historical annual electric system peak has been relatively flat over the last 15 years. A summary of historical yearly peaks for the Pardeeville electric system is shown in Figure 2-2 below.

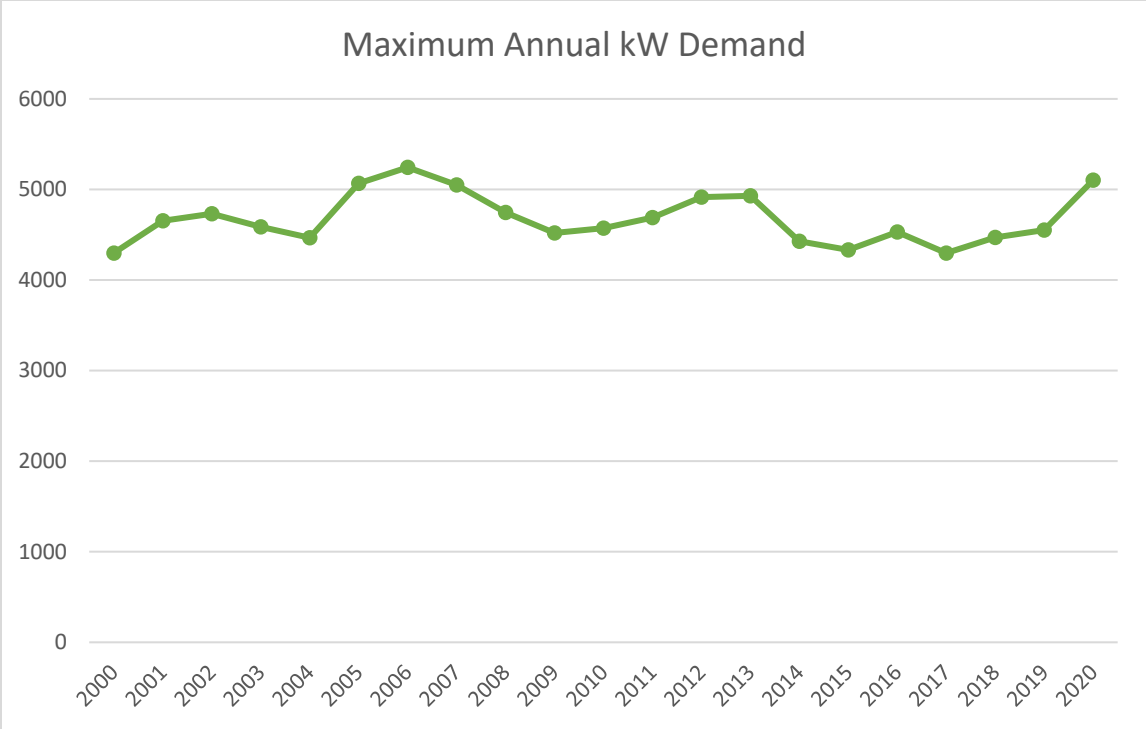


Figure 2-2 2000-2020 Yearly Historical Peak Demand

The Pardeeville electric system peaks in the summer of any given year. Hotter summers tend to create years with larger peaks. This was the case with the summer peaks of 2005 and 2006 when temperatures were recorded at 94° F in July 2005 and 97° F in July 2006. Although not shown on the chart, the peak in 1999 was 5,332 kW which corresponded with temperatures recorded at 97° F in July 1999. The 2020 peak corresponded with July and August temperatures hovering around 91° F. Lower peaks occur in cooler summers such as 2000, 2004, 2007 and 2008 where summer high temperatures were in the mid-80s. Hot, humid summers likely created more air conditioning usage, which contributed to Pardeeville's summer system peaks.

2.2.8 Purchased and Sold Energy

The amount of energy (kWh) purchased and sold by Pardeeville Electric Utility has been relatively flat for the past 20 years, with a slight decrease from the mid-2000s to 2020. A summary of historical energy purchase and energy sales for the Pardeeville electric system is shown in Figure 2-3 below.

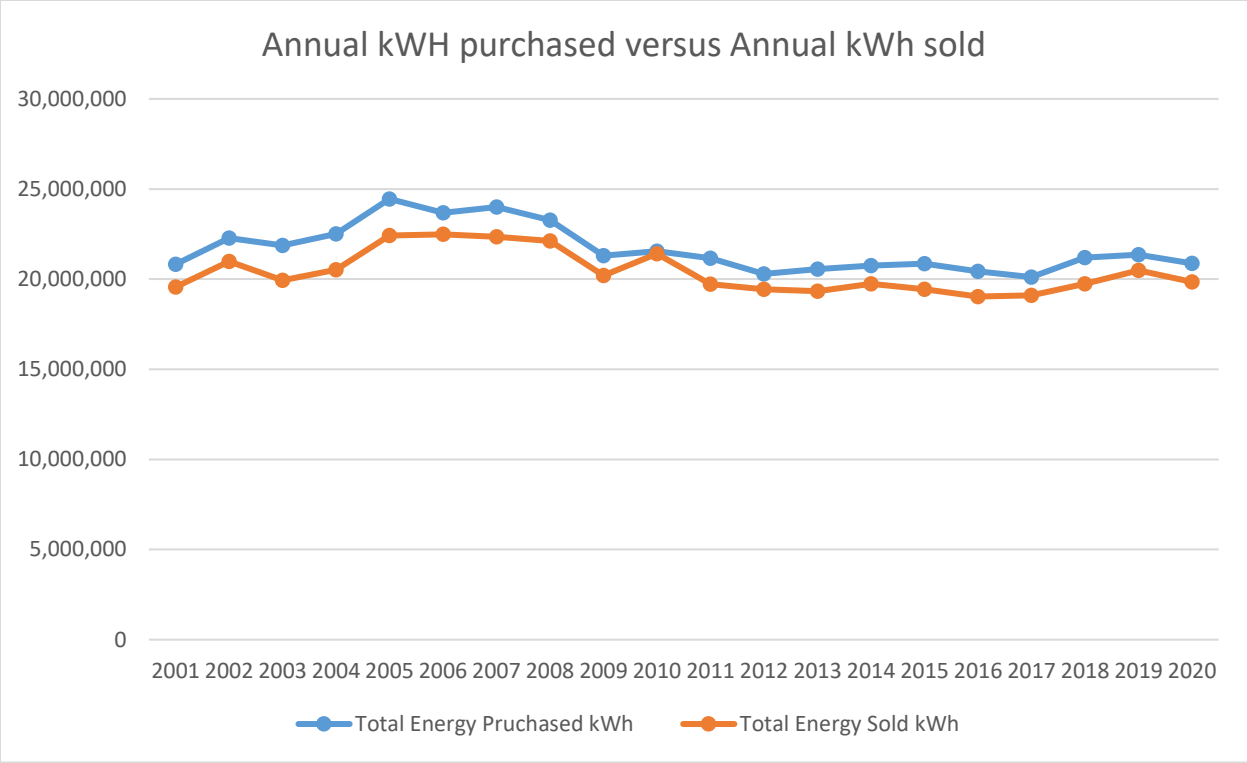


Figure 2-3 2001-2020 Energy Purchased and Sold

The difference between the amount of energy purchased and sold in a given year is the percentage of loss. There are many factors that can contribute to electric system losses, such as transformer size and loading, conductor size and loading, power factor, meter reading errors, energy theft, and more. The US Energy Information Administration (eia.gov) estimates that electric transmission and distribution losses average about 6% annually. The Pardeeville electric system losses range from approximately 4.1% to 6.8% annually over the last 10 years, which is considered average. Newer equipment tends to be more efficient, and as older areas of the electric system are upgraded or replaced, the percentage of losses may improve slightly. Increasing the distribution system voltage in the future would likely reduce system losses. Any new construction and equipment going forward is to be built with the long term goal of being able to convert the distribution system to 12.47 kV. This adds minimal cost to a typical project when rebuilding areas of the electric system during normal maintenance.

2.2.9 System Load Factor

The load factor is a measure of the efficiency of the electric energy usage or utilization rate and is provided as a percentage on the wholesale power bills that Pardeeville receives from Alliant

Energy. The load factor is defined as the average load divided by the peak load in a specified period. A summary of historical load factor is shown in Figure 2-4 below.

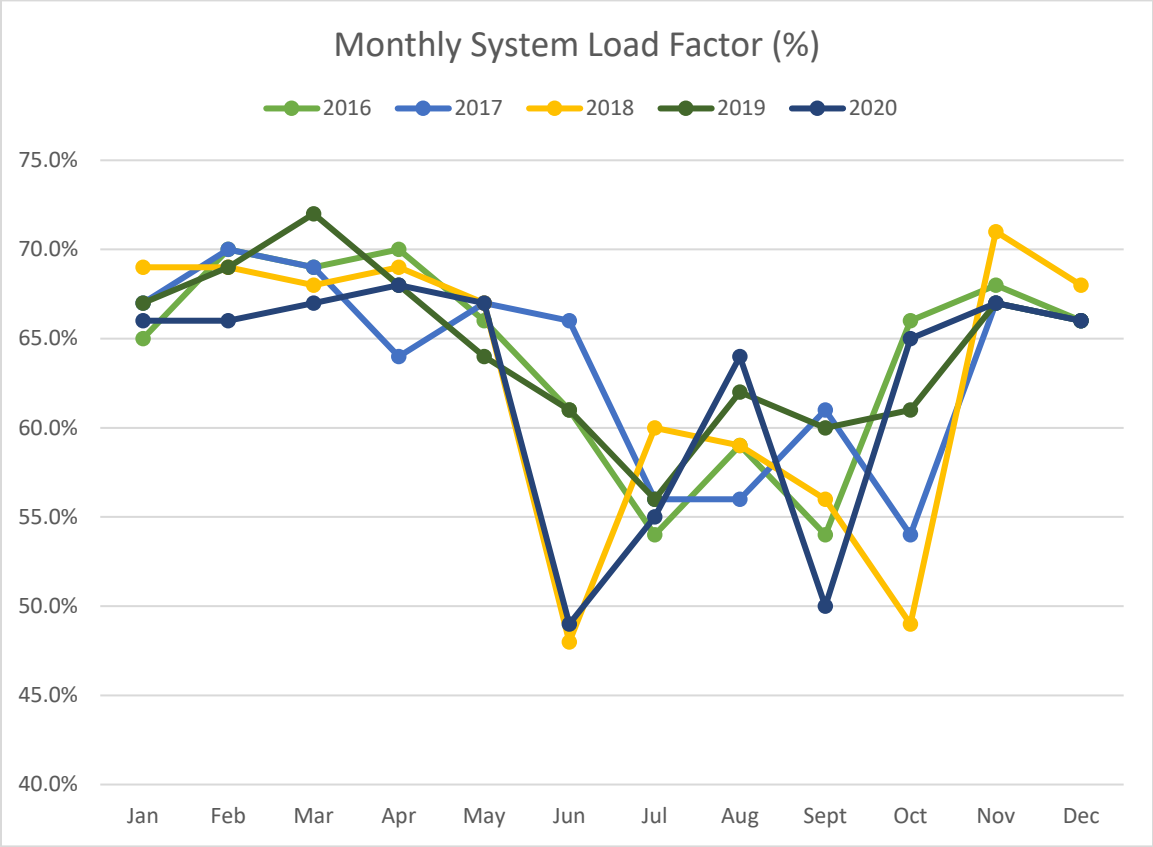


Figure 2-4 Historical Load Factor Summary

The Pardeeville load factor ranges from approximately 50 percent to around 70 percent, which is considered average. The load factor is typically outside the utility's direct control, and is customer driven based on energy usage during peak timeframes compared to other timeframes.

Ways in which the load factor can be improved include encouraging customers to conserve during peak timeframes, especially in the summer months, and to wait until off peak hours to run non-essential loads. The Utility can implement or expand a demand side management program which would help customers automatically reduce load during peak conditions. The Utility can also implement or expand a conservation program and offer incentives or rebates to encourage replacing aged appliances, lighting, inefficient motors, or other equipment contributing to peak loads.

Demand management programs and conservation programs are encouraged to reduce peak kW demand, which can reduce or defer the need for building additional substations, transmission lines, generation, or other facilities. Future planning and long-term technology trends will lead to additional opportunities to notify customers of peak conditions and implement demand management systems to reduce electric system peaks.

2.2.10 System Power Factor

Pardeeville's typical measured power factor ranges from approximately 95 percent to 99 percent. A summary of 2020 power factor is shown in Figure 2-5 below.

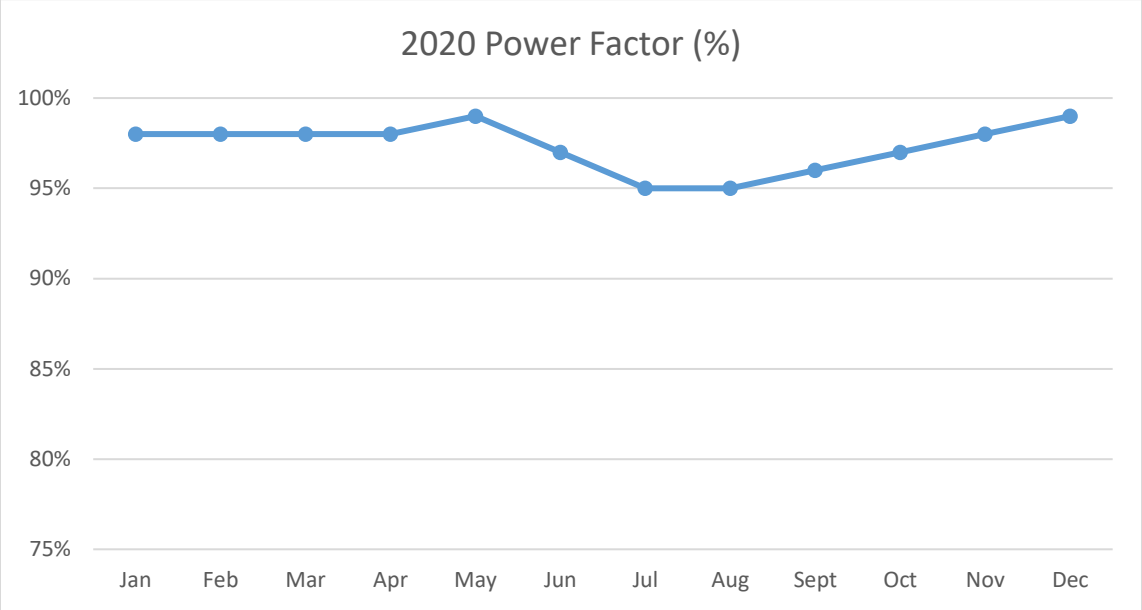


Figure 2-5 2015 Power Factor Summary

The power factor ratio is a measurement of the real power (kW) divided by the apparent power (kVA). Pardeeville does not incur a power factor penalty on purchased power, although typical power contracts and transmission service requirements still require improved power factor. In this case, the use of power factor correcting capacitor banks is driven to improve efficiency of the electric system to optimize system capacity. A power factor close to 98 percent without overcorrecting provides for an efficient use of the electric system and reduces the overall system losses. The capacitors are used to make the distribution system more efficient to comply with purchase power and transmission service power factor requirements.

Power factor correction, within reason, is an important element in the achievement of a high efficiency system. While power factor correction is commonly implemented on an engineering and operation basis, its application is a strategic component in the planning process of the distribution system. The Pardeeville power factor is considered reasonable, and no additional power factor correction appears necessary at this time. Improving the power factor without over correcting during lighter load periods would require switched capacitor banks for use during peak loading timeframes; however, they would provide little benefit at this time.

2.2.11 Review of the Existing System Capacity and Capacity Constraints

Good reliability continues to be a prime goal of electric utilities in today's rapidly changing environment which includes work from home considerations, home automation and computerization, the growth of electric vehicle home charging, and more. Maintaining or increasing reliability of the power system with minimal power interruptions and the ability to take electric equipment out of service for maintenance or repair is crucial for both customers and for the long-term planning of the electric system.

The table below illustrates how during normal system configurations, each substation can carry the load with no constraints.

Table 2-2 Substation Capacity in Normal Configuration

System Peak	kW	Power Factor	kVA	Primary Amps	Secondary Amps
Year 2020	5,104	94%	5430	45	754
Transformer/Regulators	Base Rating (kVA)	Extended Rating (kVA)	Calculated Peak Load (kVA)	Percent of Base Rating	Percent of Extended Rating
---	---	---	---	---	---
Southside Transformer	3,750	5,250	2,650	71%	50%
Southside Regulators	4,813	4,813			
Sanborn Transformer	5,000	7,000	2,779	56%	40%
Sanborn Regulators	7,205	8,070			
Alliant Energy Emergency Stepdown Transformer Southside	5,000	5,000	0	0%	0%

During normal system configurations, each feeder circuit can carry the load that is apportioned to it as shown in the table below. Overhead and underground ampacity tables for both 12.47 kV and 4.16 KV are included as Exhibits VIIA, VIIB and VIIC.

Table 2-3 Feeder Capacity in Normal Configuration

Feeder (Circuit)	A Phase Peak	B Phase Peak	C Phase Peak	Neutral		Wire size	Peak Load (Amperes)	Rating	% of Rating
---	---	---	---	---		---	---	---	---
Southside Substation									
Regulators (668 Amp)	301	291	295				368	668	55.1%
Circuit 2	114	109	118	30		4/0 Covered AL	118	370	31.9%
Circuit 4	166	158	167	10		4/0 ACSR	167	410	40.7%
Circuit 5	146	136	131	51		*4/0 Underground and 4/0 ACSR	146	285	51.2%
Sanborn Substation									
Regulators (1000/1120 Amp)	281	312	296				386	1000	38.6%
Circuit 6	211	221	200	23		4/0 ACSR	221	410	53.9%
Circuit 7	175	196	204	61		**2/0 Covered AL & 4/0 Underground	204	280	72.9%
Circuit 8	27	0	1	27		4/0 ACSR	27	410	6.6%

Back up capability or contingency analysis is used to determine the actions needed to minimize a power outage in the event that one of the substations or circuits is out of service. This is done by taking each substation out of service one by one to establish the load transfer capability provided by the other substation. This simulates maintenance timeframes or a failure of either a substation transformer, voltage regulators, or a distribution feeder outage with the outage located at the substation. In the event of major maintenance or equipment failure at a substation, it may take several days to restore normal service to that substation and load transfer between the substations is necessary to provide reliable power to the community.

Pardeeville's electric system peak in 2020 was 5,104 kW. When considering the system power factor at the time of the peak, this is approximately 5,430 kVA. The lower the power factor the higher the kVA. This is important because the electrical equipment, such as transformers, regulators, etc. are rated in kVA and Amps.

Typically, an 80 to 90 percent measure is used in the evaluation of the reliable feeder capacity because the loads cannot be evenly distributed on the system and feeder constraints typically limit the ability to use the full capacity of the transformer. Pardeeville's reliable capacity is approximately 4,815 kVA. This is based on the largest substation out of service (Sanborn Substation) and 90+ percent of the remaining 5,250 kVA transformer at the Southside Substation. The Southside Substation transformer has an extended rating to 5,250 kVA capacity but is limited to approximately 4,815 kV by the existing 668 Amp (167 kVA) regulators.

It should be noted that the age of the equipment at the Southside Substation is advanced. If possible, the Utility should limit having the Sanborn Substation out of service during summer months in order to avoid running the Southside Substation at full capacity. Loading old equipment at or above its full rating(s) could cause additional stress on the aged equipment.

As a result of a past ATC transmission project to rebuild the radial transmission tap to Pardeeville, there is some additional reliability that is in place in the event of an unplanned transmission outage. When ATC rebuilt the transmission line, they provided backup service to Pardeeville from Alliant Energy's distribution system with a 5,000 kVA, 13.2 kV to 4.16 kV stepdown transformer. That transformer was used for service to Pardeeville during non-peak months in order to keep the lights on at Pardeeville while the transmission line was rebuilt. That transformer still exists and is available during long term transmission outages or during planned transmission maintenance; however, it is not a full capacity backup for all times of the year. Should this transformer need to be used in the future, it requires manual connection and coordination with Alliant to verify adequate capacity is available on their distribution system at the time.

The need to use this backup during certain emergency situations could require some Pardeeville load shedding or call for the public to reduce load in order to keep most of the Pardeeville electric system functional. This backup transformer will continue to remain a manually connected resource when it is needed due to the configuration of the existing substation, the need to connect the backup

to the source side of the voltage regulators, and the needed coordination with Alliant for service.

When the system is in backup configurations, there are a number of constraints. Those constraints will be described in the next section.

2.2.12 Capacity Constraints of the Existing System

A summary of the substations and distribution circuits showing rated capacity and peak demands for existing and contingency configurations is shown in Exhibit VIII. This exhibit identifies a number of existing constraints. System constraints include:

1. The Southside Substation transformer and voltage regulators are loaded to 103% and 113% of their extended ratings respectively during peak conditions in a backup configuration.

2. There is a portion of Circuit 5 just north of the Southside Substation which contains 4/0 aluminum underground cable. This cable is rated for 285 amps and Circuit 5 becomes loaded to 123% of its rating during backup configurations at peak timeframes.

3. There is a portion of Circuit 7 near its tie with Circuit 5 that consists of 4/0 aluminum underground cable and 2/0 aluminum overhead that can limit load transfer during peak timeframes. This portion of the line could become loaded to approximately 125% of its rating during peak backup configurations. This is somewhat dependent on how much of the load is on Circuit 5 at peak as well as what is on the northwest and rural portions of Circuit 7 at peak.

4. The 4/0 covered aluminum conductor of Circuit 2 is near 92% of its rated capacity during peak backup of Circuit 6. While this is not a constraint at this time, it is worth monitoring over the long term. Should load increase, reconductoring may be beneficial for load transfer and reduced losses.

5. The remaining portion of Circuit 5 consists of 4/0 ACSR which becomes approximately 90% loaded during backup configurations. Reconductoring can provide additional capacity for growth on the west side of Pardeeville in the event additional residential or multifamily services are added to Circuit 5.

6. Circuit 8 is unbalanced with almost all load connected to one phase of the 3-phase circuit. Balancing the circuit is recommended and should reduce the amount of neutral current on this circuit.

Overall, the Pardeeville electric system can serve the existing loads when in it is in normal configuration. There are some constraints to service during backup/contingency situations during the summer months.

3 Projection of Future Loads

3.1 Future Loads

Pardeeville's electric system peak has been relatively flat for the past 22 years. Higher peaks in given years appear to be associated with warmer summers. A summary of annual electric system peak KVA with projected growth is shown in Figure 3-1 below.

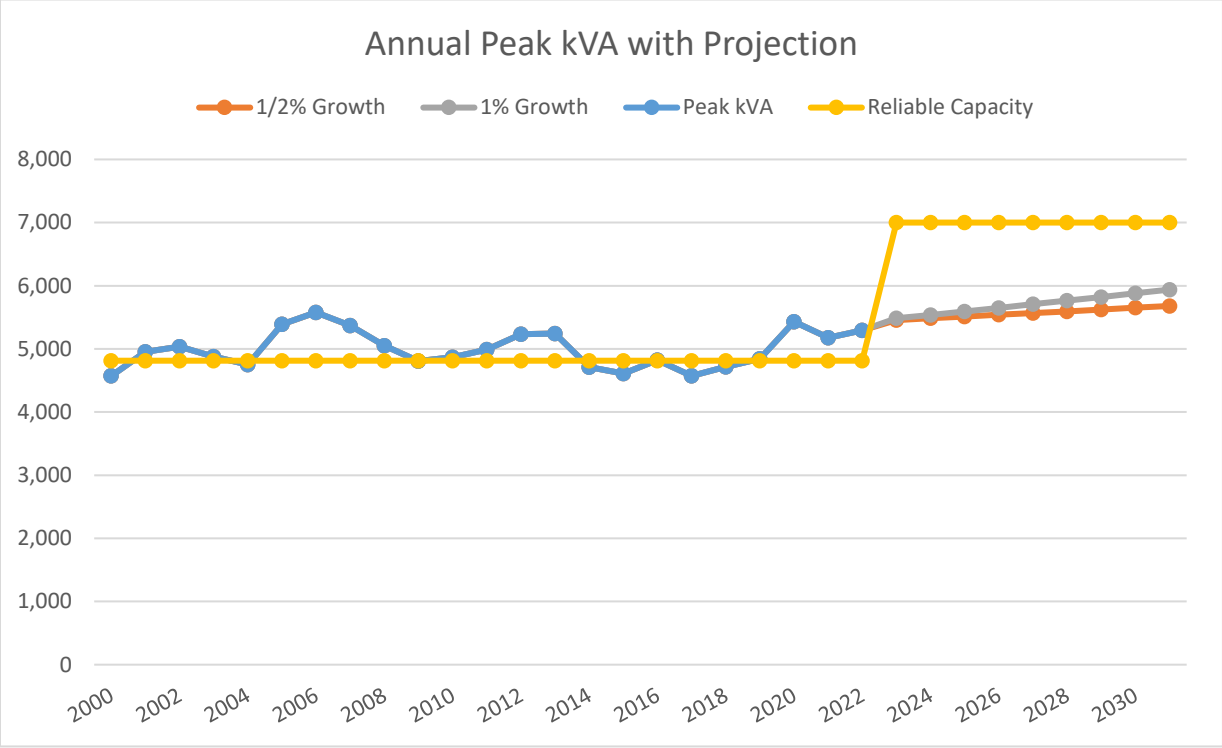


Figure 3-1 Annual kVA with 10 Year Projection

Substation and distribution circuit information is typically expressed in kVA (or MVA) and Amperes, and the above chart represents the peak kVA for the electric system. A growth rate of 1/2 percent and 1 percent is projected to allow for system improvement to account for the possibility of load growth, should it occur. There may be some growth in load over time when considering warmer or more severe weather events, some limited development occurring in Pardeeville, and continued interest by some segments of the population in electric vehicles. The existing peaks are already above the reliable system capacity when the Sanborn Substation is out of service and additional substation capacity is needed to provide full backup for the electric system.

3.2 Load Growth by Circuit or Location

Load growth by development can occur in several locations in Pardeeville. The Village owns property to the west of the Southside Substation which is zoned light commercial/business and is part of plans for business park expansion on the west side of Pardeeville. This could create some additional load growth on Circuit 4 and/or Circuit 5 which are fed from the Southside Substation. The amount of load addition will depend on what types of businesses develop. It can take many years to fill a business park, but it is reasonable to plan the system to accommodate some moderate growth in this area. If a large business decides to locate in Pardeeville, it would be possible to review the electric system at that time to determine what is needed to accommodate a large load in the business park.

Development of multifamily or residential property is planned near Vince Street which is anticipated to add to the electric load and population of Pardeeville and will be fed from Circuit 4 and/or Circuit 5. This is estimated to be approximately 20 units and add a total load of approximately 70 kW at peak.

Another area of possible growth is near Lafollette Street and Sanborn Street. This could add approximately 25 single family and 20 multifamily units. This is estimated to add a total load of approximately 300 kW at peak.

These developments have the potential to increase the system peak to approximately 370 kW or about 400 kVA. System upgrades will continue to allow the electric system to accommodate even limited growth.

A planning variable at this time is the continued popularity and mandate of electric vehicles and how they will add to peak loading of the electric system. It is anticipated that over the years as more electric vehicles and their associated charging stations are purchased and installed by some residents, there could be an increase in load on the electric system. Some of that load addition may be able to be managed to remain off peak with incentives or time of use (TOU) metering considerations. It is reasonable to plan for some additional load over the long term to accommodate growth throughout the electric system. Known developments may add approximately 7% to the system peak. Additional load growth is projected at 1/2 to 1% per year as shown Figure 3-1 above.

4 Electrical System Plan Development and Considered Options

4.1 General

This section of the report discusses the development of plans for the Pardeeville Electric Utility to address system constraints and to plan for the future. Several options for addressing system constraints were considered, including:

1. Converting the distribution system to 12.47 kV
2. Building a new third substation
3. Increasing the capacity of the Southside Substation
4. Rebuilding and reconductoring smaller conductor circuits to larger conductor
5. Minor phase balancing where practical

4.1.1 Voltage Conversion

The conversion of the primary system voltage from 4.16 kV to 12.47 kV would allow each feeder to serve approximately 3 times the amount of current (amps) that can be served at the present voltage with the same conductor. A voltage conversion would require the replacement of all existing service transformers, arrester, 5 kV underground cable, both substation transformers, all voltage regulators, and other ancillary equipment on the electric system.

Voltage conversion may be possible at some point in the future as loads continue to grow; however, it is considered cost prohibitive on its own at this time. With that in mind, all new construction should be completed with equipment capable of being converted to 12.47 kV in the future. This includes purchasing all new distribution transformers as dual voltage, using 15 kV insulators and underground cable, purchasing other equipment at the 15 kV rating, etc.

4.1.2 Build a New Third Substation

The existing load exceeds the ratings of the Southside Substation equipment and some of the feeders are at or above their capacity during backup situations. One way to address this would be

to build a third substation fed off the transmission line and connect it into the distribution system to provide additional reliable capacity. While this could be accomplished, it would still require some extensive distribution feeder work to connect a new substation into the system in a manner that provides good load transfer capability. The overall cost of a new substation with all associated distribution feeder work could exceed $3,000,000 and is considered cost prohibitive at this time when compared to other options that are available to Pardeeville.

4.1.3 Increase the Capacity of the Southside Substation

Peak electric system loads exceed the extended rating of the Southside Substation in 10 of the last 20 years; however, those peaks did not exceed the rating of the Sanborn Substation over the same 20-year period. This is because the Sanborn Substation transformer and regulators are larger in size than the Southside Substation. In order to accommodate full load transfer between the substation, a larger transformer, regulators, and other minor upgrades of the Southside Substation can increase the overall capacity of the system. It is possible to either install new equipment for upgrading the system or install used equipment if it is in reasonable condition. The cost could exceed $1,000,000 to accomplish the upgrade with new equipment.

During networking sessions and peer discussions, the Pardeeville Village Administrator located an acceptable used transformer that will fit the needs of Pardeeville for a significant period of time and this equipment was purchased for future installation at the Southside Substation. This increase in capacity can be accomplished with the used equipment for a significantly lower cost.

4.1.4 Rebuild and Reconductor Smaller Conductor Circuits to Larger Conductor

There are several load transfer constraints which can be addressed by rebuilding and/or reconductoring main circuits between the Sanborn Substation and the Southside Substation. This specifically applies to Circuits 5 and 7. Each of these circuits has some portion of the feeder that is near or above transfer capacity during backup situations.

Most of Circuit 7 consists of 336 ACSR overhead line, 500 MCM aluminum underground cable substation feeder exits, and 4/0 underground cable. The 4/0 underground cable in Circuit 7 may create a constraint when backing up Circuit 5. Circuit 5 consists of 336 ACSR as well as smaller conductor (4/0 aluminum underground and 4/0 ACSR overhead) which limits load transfer

capability during peak timeframes. Maintenance replacement of aged underground 4/0 cable with larger 500 mcm aluminum cable and future reconductoring of Circuit 5's 4/0 ACSR overhead 336 ACSR matching Circuit 7 will improve load transfer capability.

There is some additional load that is anticipated to be added to Circuit 2 which can lead to load transfer constraints between Circuit 2 and Circuit 6. While not a constraint at this time, these circuits can be monitored over the long term for possible reconductoring in the future. Reconductoring to a larger conductor in the future will address load transfer constraints between Circuit 2 and Circuit 6 if the load grows on these circuits. This type of maintenance can continue over the next several years or longer in order to replace aged infrastructure with the added benefit of improving the load transfer capability between substations.

4.1.5 Phase Balancing and Neutral Current

With the electric system, the expectation is that the three-phase circuits will have a similar amount of current (amps) on each phase, and then the neutral will have very little current on it. Balancing of phases can improve overall efficiencies, and the more balanced a system is, the less current there will be on the neutral circuit.

Phase balancing is recommended on Circuit 8 which has the most load connected to one of the three-phase conductors. Pardeeville personnel can transfer services to the other phases on this circuit to balance the load. This does require an outage to each service that is transferred.

The remainder of the system appears to be fairly balanced and additional phase balancing activities do not appear to be needed at this time. Phase balancing can be reviewed with Pardeeville personnel as new loads are added to the system.

4.2 Other Considerations

4.2.1 System Mapping

According to Wisconsin's Public Service Commission, PSC 113.0613 – Maps and Diagrams[1]: "Each utility shall have record systems (maps, records, diagrams, drawings, or computer display

[1] https://docs.legis.wisconsin.gov/code/admin_code/psc/113/vi/0613

systems) showing the location of its property in sufficient detail so that the adequacy of service to existing customers may be checked and facilities located."

Pardeeville Electric Utility has an overall electric distribution map and details which provide reasonable documentation of the electric system. This map is in a PDF at this time which has worked for keeping a visual record of the electric system; however, it does not include a significant amount of data for record purposes.

Pardeeville Electric Utility has access to Esri mapping software which can be used to link data to the mapping system and allow for the long-term documentation of detailed data. This type of mapping system can allow the utility to employ newer technology, include more relevant detail in the map for easy access, and provide a repository of data to assist in knowledge transfer between staff.

4.2.2 Modernization and Maintenance

Pardeeville has done a good job in maintaining the electric system over the years with replacement of distribution poles and other equipment. Construction proposed in this study is based on upgrading the present distribution system to provide full contingency backup service during peak load conditions for the near term and through 2030, or longer, for long-term reliability and future growth.

Modernization may include the addition of smart equipment and controls in the substations or on the distribution lines to provide more real time data and load management as well as other technology investments within the Utility. These controls may be able to contribute to a simplified supervisory control and data acquisition (SCADA) system to provide real time alerts to outages, recloser trips, peak loading conditions, or other items.

Additional maintenance items may include replacing older reclosers within the substations, replacing distribution transformers in select locations if electric vehicles create an impact on the system, replacing older open concentric underground cable that is from the 70s or early 80s due to the typical life span of 40 years, tree trimming, and other typical utility maintenance items. Annual substation oil testing and continued substation maintenance testing is recommended to track substation equipment condition for planning future maintenance and eventual replacement.

4.2.3 Inventory

The time it takes to obtain equipment and materials has grown significantly longer and has impacted many electric utilities in the United States and around the world. Therefore, it would be prudent for Pardeeville to develop a limited inventory of various items so the Utility can quickly respond to new service requests, new developments, repair of failed equipment, and other unknown situations. Building a reasonable inventory can be accomplished by ordering a volume of items at this time or by ordering a number of items each year in anticipation of building up stock over the long term to spread the cost over a greater period of time.

4.2.4 Efficiency and Sustainability

Pardeeville can continue to upgrade the electric system to improve efficiency by replacing old or very old distribution transformers and using reasonable large conductors to potentially reduce losses on the electric system. This also has a long term benefit of getting the system ready for conversion to a higher voltage which would reduce system losses even further.

Pardeeville can continue to provide incentives for residents and businesses to install more efficient equipment that may help reduce peak electric loads. Pardeeville also participates with Focus on Energy to delivery real, measurable energy and financial savings to customers of Pardeeville's electric system. Other sustainability initiatives can be reviewed for the long term benefit of all.

4.3 Recommended Plan

A good utility practice is to rebuild about as much of the system as is depreciated in value in a given year to maintain the value of the electric utility plant value while renewing the electric system over an approximately 30 to 50 year timeframe. The life span of the various electric facilities is generally 30 to 50 years and continual rejuvenation is done to reduce the need to replace all items at one time which would be cost prohibitive.

Recommended plans to address constraints have been identified by year on the Work Plan Map (Exhibit IX) and the list of Work Plan Items (Exhibit X).

Items are as follows:

1. **Year 2023 – Items 1A through 1C**

   a. Increase substation capacity at the Southside Substation.

      - This will help address capacity constraints.

   b. Balance the phases on Circuit 8.

      - This will help provide some efficiency of the electric system at a small cost.

   c. Distribution line maintenance to replace aged infrastructure.

      - This will continue the long term plan of system maintenance and rebuilding.

2. **Year 2024 – Items 2A through 2C**

   a. Replace the 4/0 aluminum underground cable in Circuit 5 out of the Southside Substation.

      - This will help address capacity constraints for load transfer between circuits 5 and 7 during peak conditions.

   b. Evaluate and upgrade the ground grid and fencing at the Southside Substation considering its age and need for maintenance.

      - This is recommended due to the age of the substation, the increased system capacity and for personnel safety.

   c. Distribution line maintenance to replace aged infrastructure.

3. **Year 2025 – Items 3A and 3B**

   a. Replace the 4/0 aluminum underground cable in Circuit 7 behind Village Hall.

      - This will help address capacity constraints for load transfer between circuits 5 and 7 during peak conditions.

   b. Distribution line maintenance to replace aged infrastructure.

4. **Year 2026 – Items 4A through 4C**

   a. Reconductor Roosevelt Street from 4/0 ACSR to 336 ACSR

      - This will help address capacity constraints for load transfer between circuits 5 and 7 during peak conditions

   b. Distribution line maintenance to replace aged infrastructure.

   c. Begin new system review to verify if there are any loading constraints, substation condition issues, or other new planned development loads which may impact the electric system.

The Work Plan Map in Exhibit IX corresponds to the description work plan items listed and described in Exhibit X. These exhibits provide a list of the recommended construction work plan items and budget estimates for Pardeeville electric system financial planning over the 2023-2026 period. The distribution line maintenance locations listed in Exhibit X are at the discretion of the Pardeeville line crew personnel to address aged infrastructure needs. Proposed maintenance locations can be reviewed each year with the line crew to determine any budget adjustments that may be needed.

The budget items listed in the work plan are not all inclusive of all electric system budget items. That budget will be developed by the Utility during normal budget planning. These items are in addition to any other work items the Utility may plan on a regular basis.

The next steps include a Pardeeville Electric Utility budget review and financial planning for the proposed work.

The year of construction for the recommended work can be adjusted within reason to accommodate Pardeeville's financial planning requirements with the understanding that there are currently some load transfer constraints during summer months. Should an issue occur that coincides with a contingency situation, Pardeeville could ask residents to voluntarily reduce load if needed. The long-term plan is to complete the recommended work to maintain or improve reliability, load transfer capabilities, and allow for electric system growth over the long-term for the benefit of the Village of Pardeeville, the residents of Pardeeville, and the customers of Pardeeville Electric Utility all while maintaining a reasonable cost of service.

4.4 Conclusion

The electric utility industry has seen a dramatic amount of change over the last 10 years with an increase in electric vehicle adoption, distributed energy resources such as rooftop solar, smarter infrastructure offerings in distribution and substation equipment, design advances by manufacturers to reduce oil and greenhouse gases in equipment, system automation and monitoring equipment, and so much more. As such, system planning is a continuing effort in an

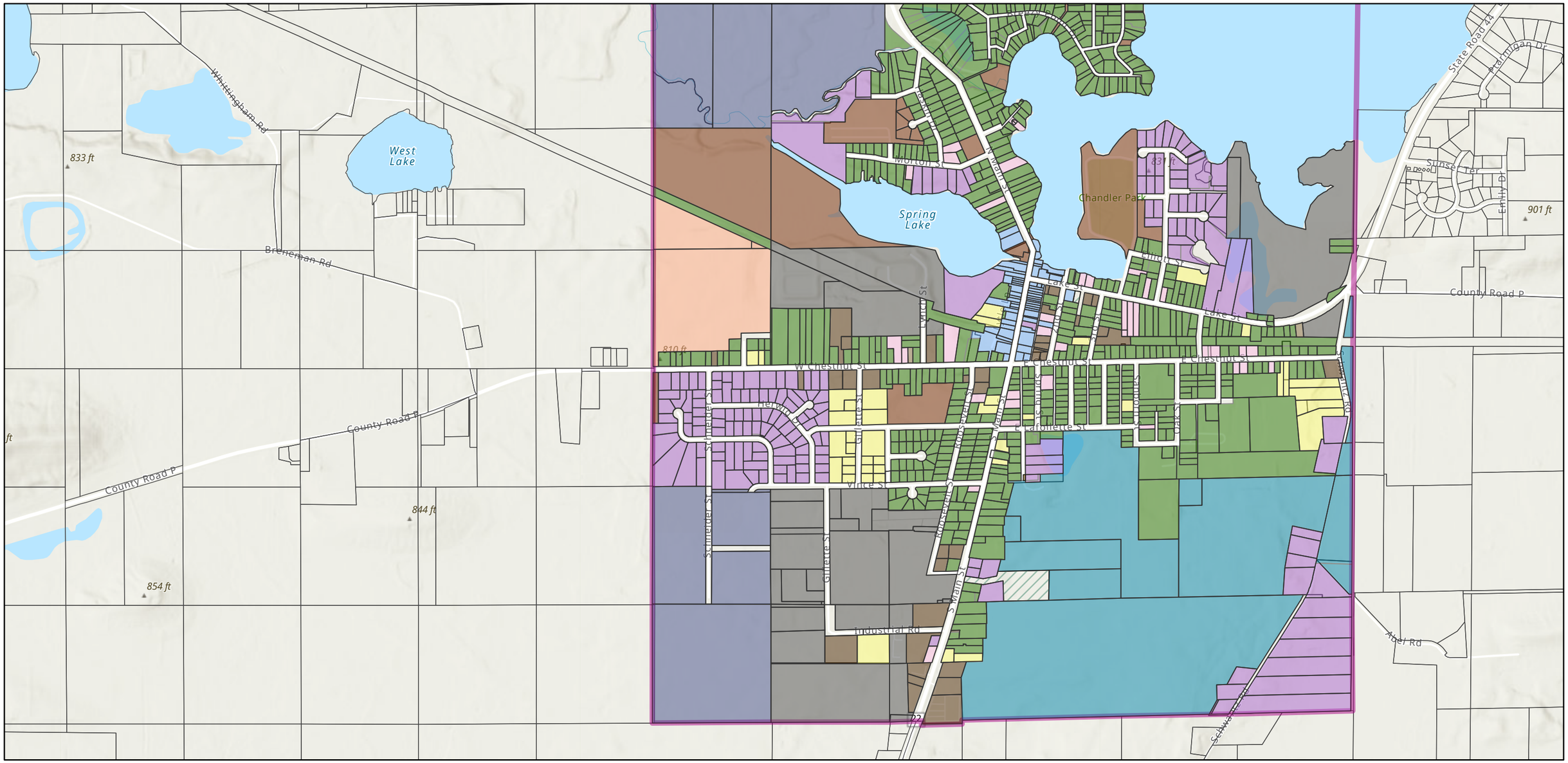
attempt to maintain a reliable electric system. To serve its intended purpose, a utility must change dynamically as governing conditions change.

This plan provides Pardeeville Electric Utility's and the Engineering Firm's philosophies on those specific improvements that will best meet the present needs of the system. It is recommended that the study data be reviewed periodically to compare the actual system load growth to the projections made before committing to a specific project beyond the planning timeframe.

Unknown load growth can occur in many areas of Pardeeville's system considering the possible addition of electric vehicles as well as planned development. The recommended Work Plan provides for continued or improved system reliability with room for system growth should it occur.

Exhibit I – Pardeeville Zoning Map

Zoning Map



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Zoning

- A-H
- A-P
- A-T
- B-1
- B-2
- B-3
- C-1
- M-1
- MULT
- PUB
- R-1
- R-2
- R-3
- R-4
- Village Boundary

- Parcel Boundaries
- Parcels (Outside Village)

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, Esri Canada, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Village of Pardeeville

Exhibit II – Pardeeville Electric Utility Existing System Map

VILLAGE OF PARDEEVILLE

UTILITY CIRCUIT MAP

COLUMBIA COUNTY, WI

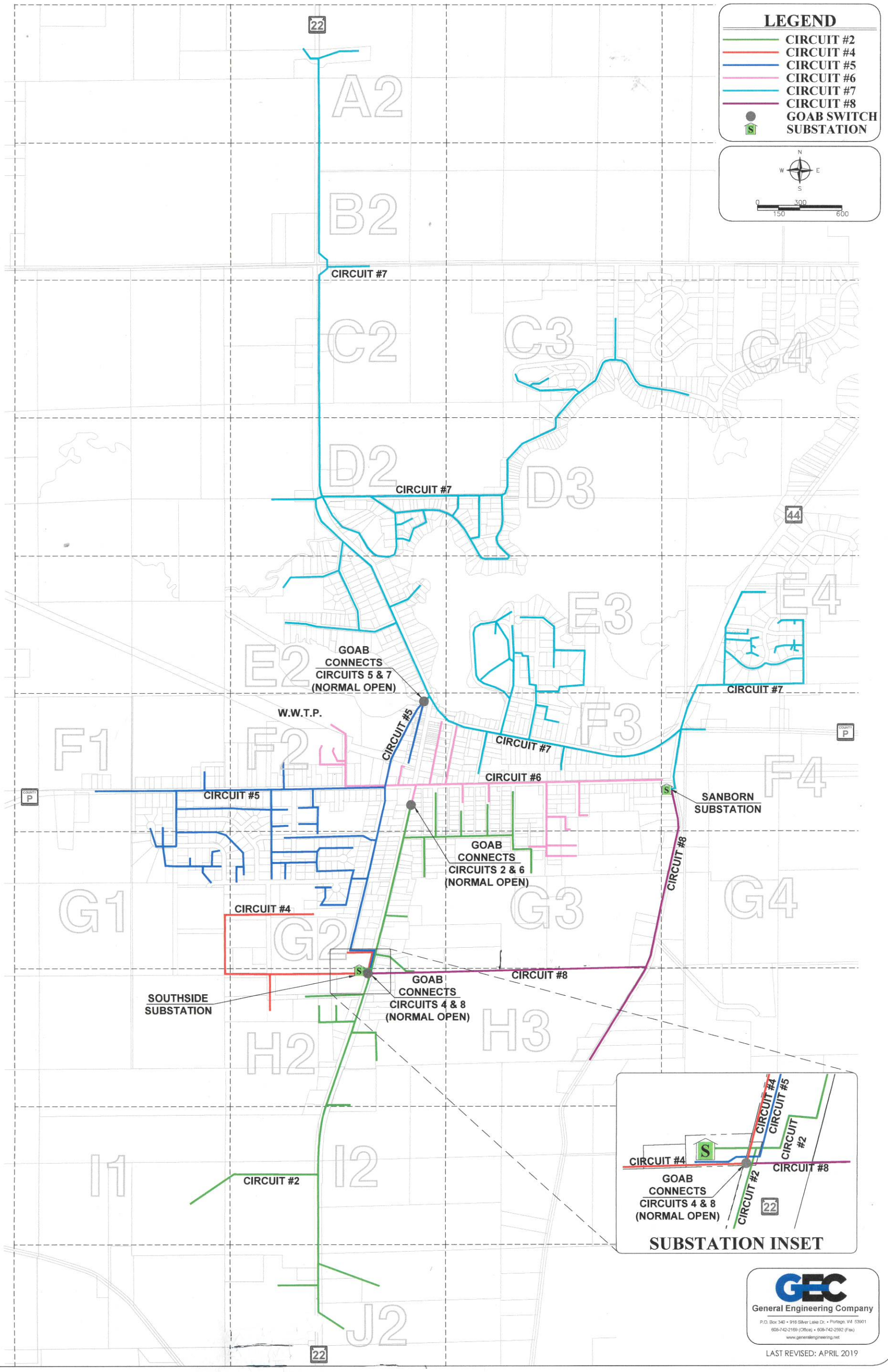

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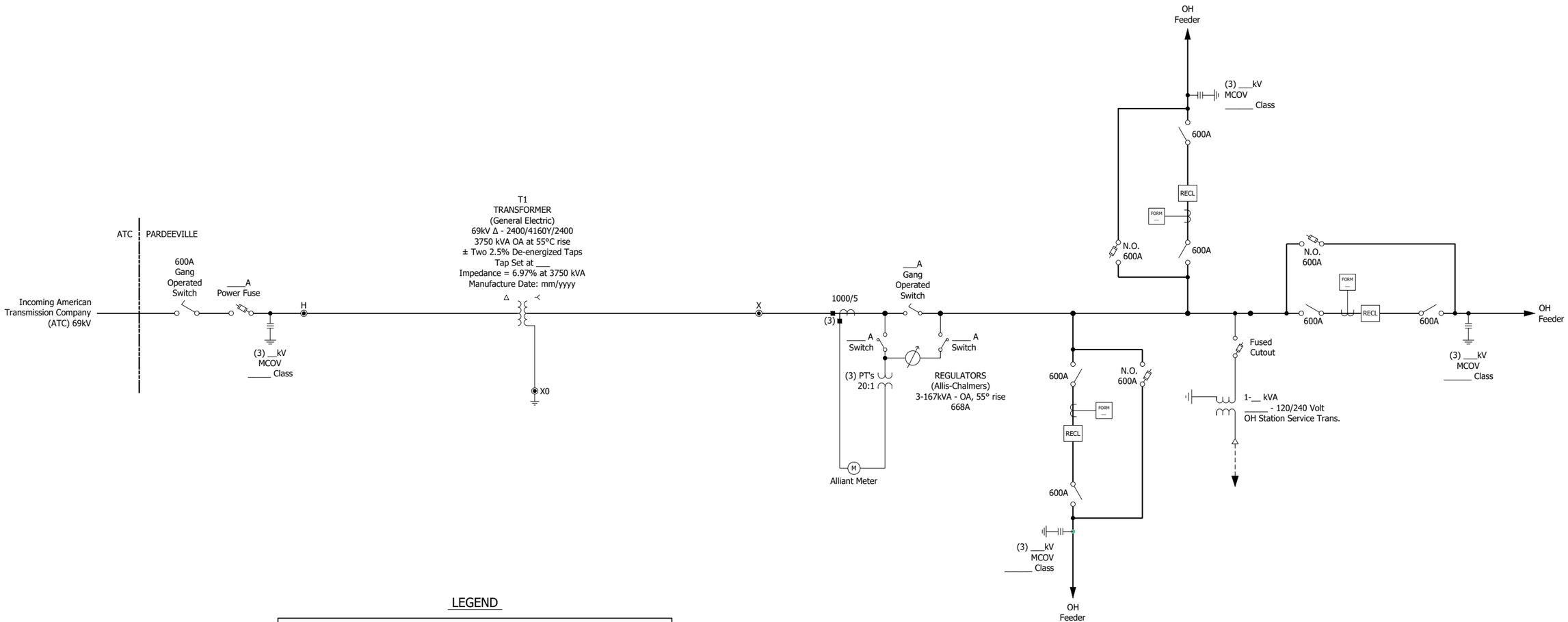
Exhibit III – One-line Diagram of Southside Substation



LEGEND

- Bushing Current Transformer
- Current Transformer
- Potential Transformer, Single Ratio (PT)
- Lightning Arrester
- Fuse (size shown)
- Recloser NOVA Form 6
- Transrupter
- Voltage Regulator
- URD Cable Terminator
- ATC/Alliant Metering
- N.O. Normally Open
- Fused Disconnect Switch
- Fused Cutout
- Disconnect Switch
- Disconnect Switch - Hookstick
- 3-PH Gang Operated Air Break Switch
- 3-PH Gang Operated Load Break Switch
- Metering Test Switch (Potential Ckt.)
- Metering Test Switch (Shorting Type, Current Ckt.)
- 15kV Circuit
- SCADA Wiring
- Trip Circuit
- URD Pad Mounted or Overhead Station Service Transformer

N
W E
S

Design Notes:

A. Transformer primary (69,000 volts)
at 3.75MVA = 32 amps
at 5.25MVA = 44 amps

B. Transformer secondary (4,160 volts)
at 3.75MVA = 521 amps
at 5.25MVA = 729 amps

NOTES

1. All ratings are to be field verified.

PRELIMINARY

NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE
0	ISSUED FOR STUDY	GB	JJS	9/26/2022

Power System Engineering, Inc.
www.powersystem.org
1532 W Broadway, Suite 103
Madison, WI 53713
Tel: 866.825.8895

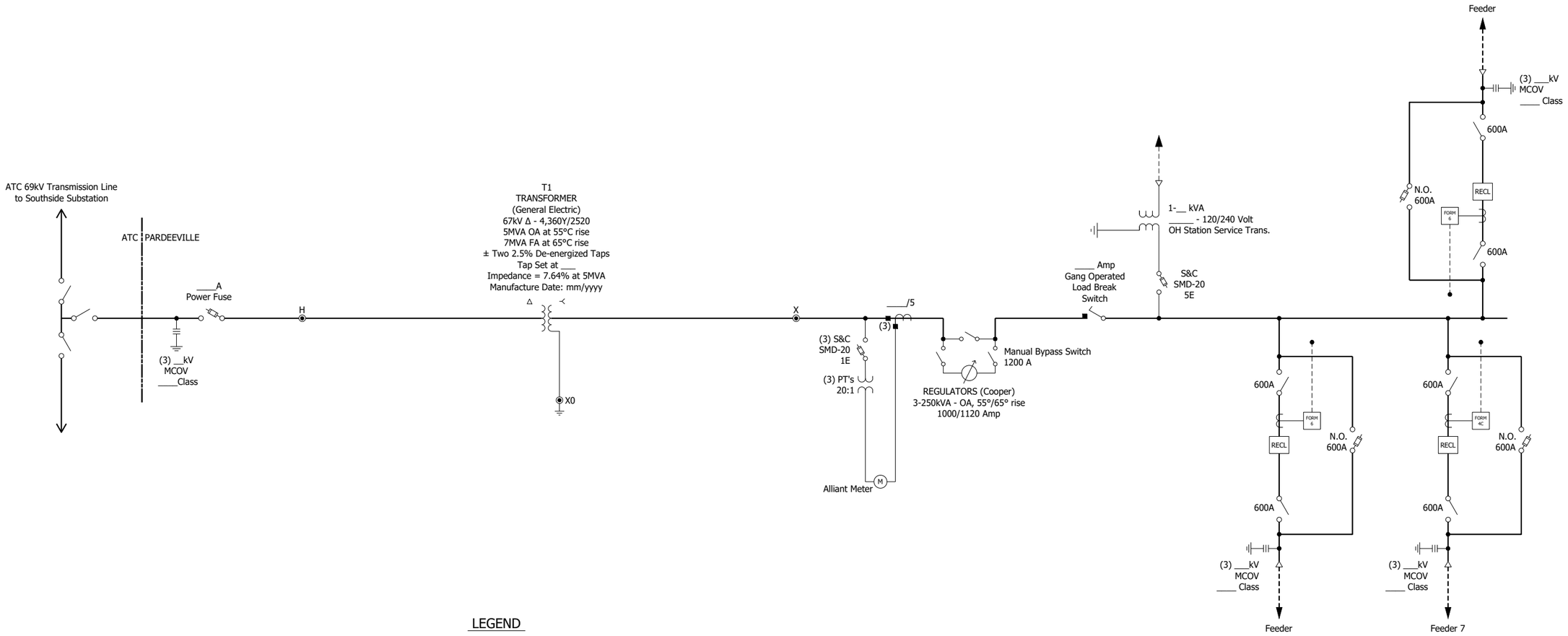
ENGR J.J. SIEREN | CHK'D/APP'D ---
DWN BY K. INDERRIEDEN | DATE mm/dd/2021

1-Line Diagram

Southside Substation
Village of Pardeeville, WI

SCALE None | PROJECT NO. WI0232006 | DRAWING NO. 10-01
FILE NAME PVSS_10-01

Exhibit IV – One-line Diagram of Sanborn Substation



LEGEND

- Bushing Current Transformer
- Current Transformer
- Potential Transformer, Single Ratio (PT)
- Lightning Arrester
- Fuse (size shown)
- Recloser NOVA Form 6
- Transrupter
- Voltage Regulator
- URD Cable Terminator
- ATC/Alliant Metering
- N.O. Normally Open
- Fused Disconnect Switch
- Fused Cutout
- Disconnect Switch
- Disconnect Switch - Hookstick
- 3-PH Gang Operated Air Break Switch
- 3-PH Gang Operated Load Break Switch
- Metering Test Switch (Potential Ckt.)
- Metering Test Switch (Shorting Type, Current Ckt.)
- 15kV Circuit
- SCADA Wiring
- Trip Circuit
- URD Pad Mounted or Overhead Station Service Transformer

N
W E
S

Design Notes:

A. Transformer primary (67,000 volts)
at 5MVA = 42 amps
at 7MVA = 59 amps

B. Transformer secondary (4,360 volts)
at 5MVA = 663 amps
at 7MVA = 927 amps

NOTES

1. All ratings are to be field verified.

PRELIMINARY

NO.	REVISION AND RECORD OF ISSUE	BY	ENGR.	DATE
0	ISSUED FOR STUDY	GB	JJS	9/26/2022

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Madison, WI 53713
Tel: 866.825.8895

ENGR J.J. SIEREN | CHK'D/APP'D ---
DWN BY K. INDERRIEDEN | DATE mm/dd/2021

1-Line Diagram

Sanborn Substation
Village of Pardeeville, WI

SCALE None | FILE NAME PVSB_10-01 | PROJECT NO. WI0232006 | DRAWING NO. 10-01

Exhibit V – ATC Planning Zone 3

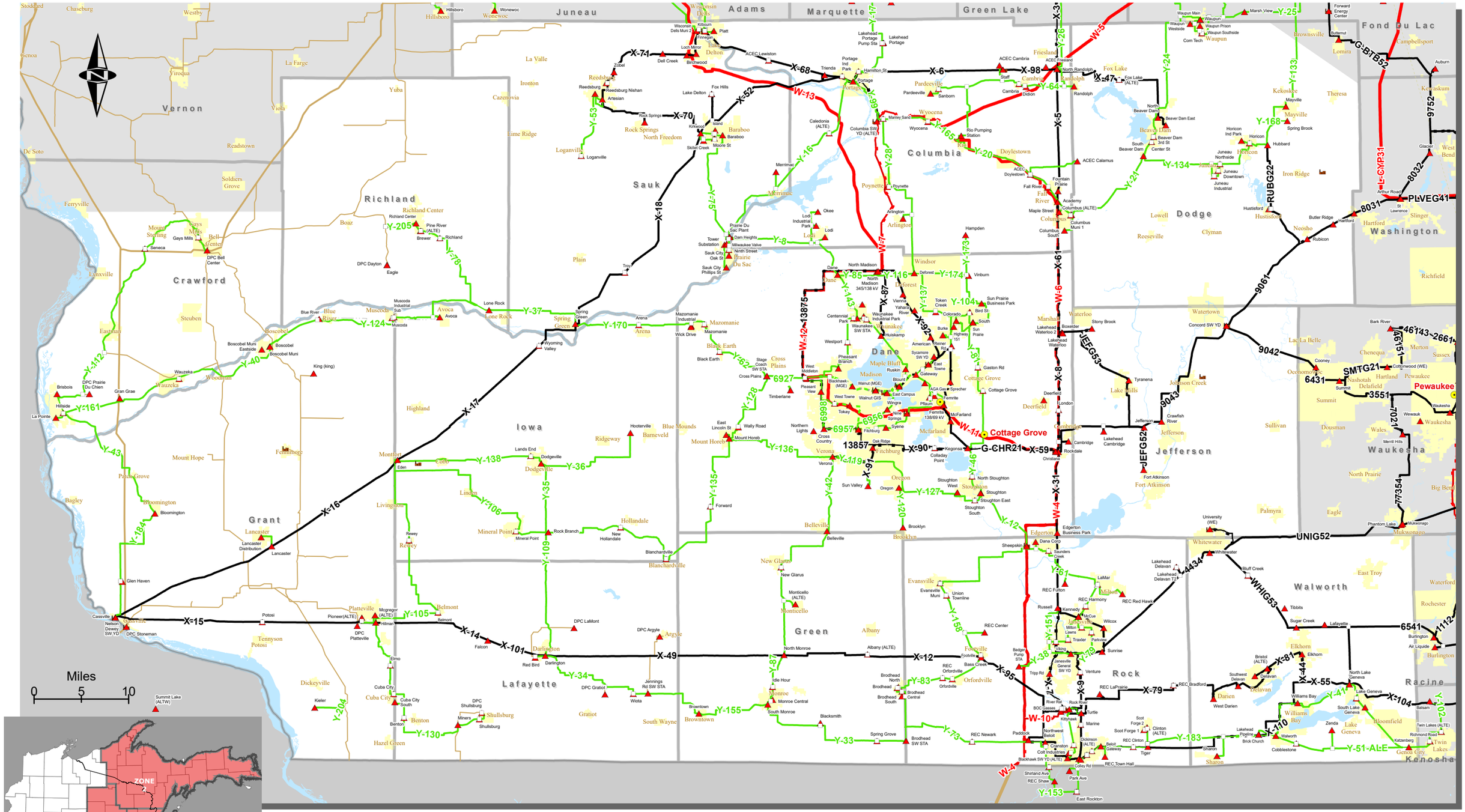
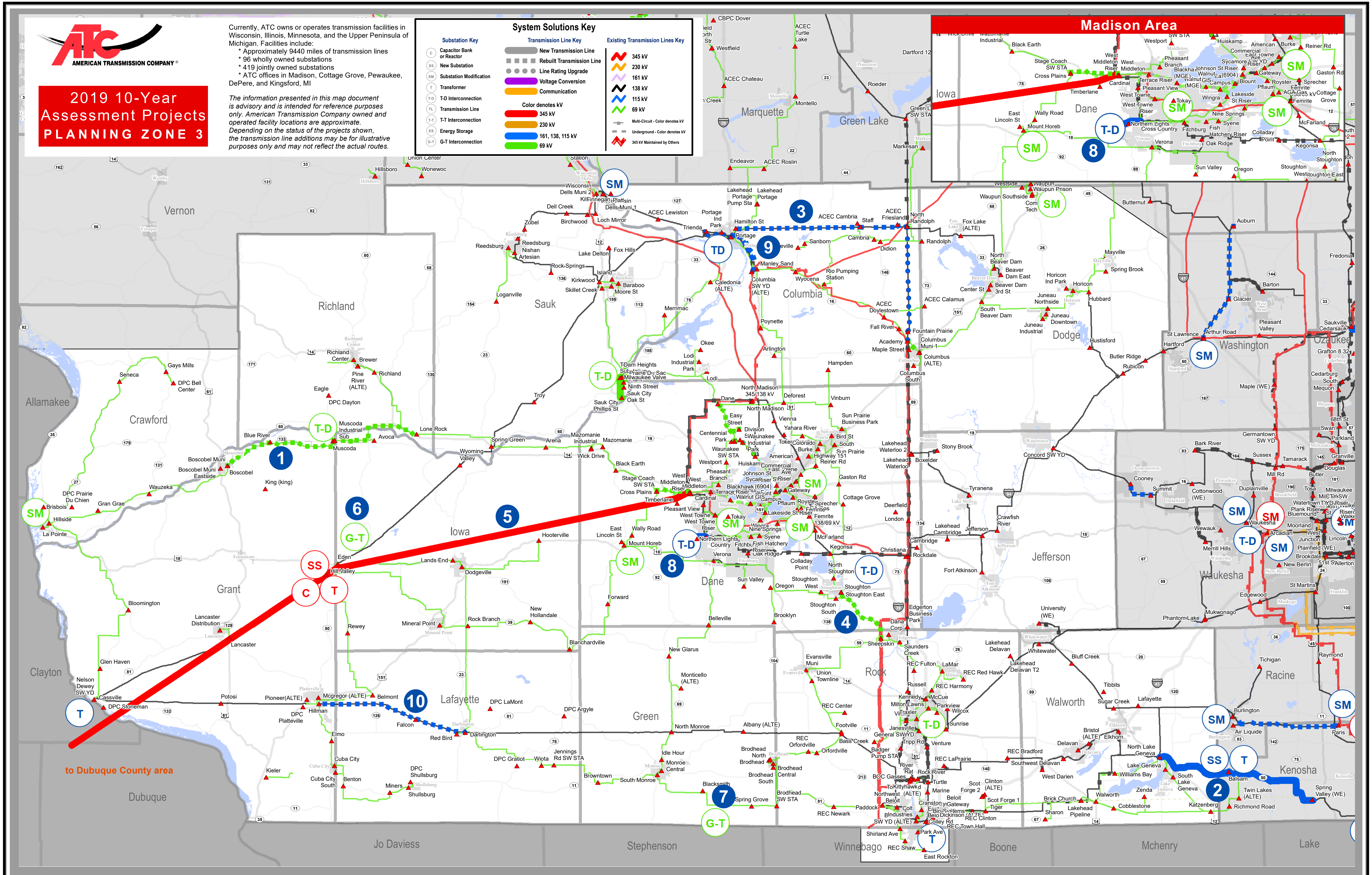

Juneau
Adams
Marquette
Green Lake
Fond Du Lac
Vernon
Richland
Crawford
Sauk
Columbia
Dodge
Washington
Grant
Iowa
Lafayette
Green
Rock
Dane
Jefferson
Waukesha
Walworth
Racine
Kenosha
Pewaukee
Cottage Grove
Miles
0 5 10
ZONE 1
ZONE 4
ZONE 5
AMERICAN TRANSMISSION COMPANY ®
Electric Transmission Network & Substations
PLANNING ZONE 3
Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota,and the Upper Peninsula of Michigan. Facilities include:
* ATC has offices in Madison, Cottage Grove, Pewaukee, De Pere, and Kingsford, MI
Transmission Line Voltage
69 kV
115 kV
138 kV
161 kV
230 kV
345 kV
69 kV Double Circuit
115 kV Double Circuit
138 kV Double Circuit
161 kV Double Circuit
230 kV Double Circuit
345 kV Double Circuit
69 kV Underground
115 kV Underground
138 kV Underground
161 kV Underground
Non-Op Underground
Non-ATC Line
Maintained By Others
Revised October 2019
Transmission Related Facilities
Substation or Switchyard
ATC Office Location
Generation
The information presented in this map document represent the most current and accurate georeferenced compilation of ATC owned and operated transmission facilities available - some facility locations may be approximate. This map is advisory and intended for reference purposes only. Please direct any revisions or corrections to ATC Asset Applications and GIS Group.
Base Map Information: ATC, PSCW, MiDNR, WDNR
October 02, 2019

Exhibit VI – ATC 10-Year Assessment



ATC
AMERICAN TRANSMISSION COMPANY®
2019 10-Year Assessment Projects
PLANNING ZONE 3
Currently, ATC owns or operates transmission facilities in Wisconsin, Illinois, Minnesota, and the Upper Peninsula of Michigan. Facilities include:
* Approximately 9440 miles of transmission lines
* 96 wholly owned substations
* 419 jointly owned substations
* ATC offices in Madison, Cottage Grove, Pewaukee, DePere, and Kingsford, MI
The information presented in this map document is advisory and is intended for reference purposes only. American Transmission Company owned and operated facility locations are approximate. Depending on the status of the projects shown, the transmission line additions may be for illustrative purposes only and may not reflect the actual routes.
System Solutions Key
Substation Key
Capacitor Bank or Reactor
New Substation
Substation Modification
Transformer
T-D Interconnection
Transmission Line
T-T Interconnection
Energy Storage
G-T Interconnection
Transmission Line Key
New Transmission Line
Rebuilt Transmission Line
Line Rating Upgrade
Voltage Conversion
Communication
Color denotes kV
345 kV
230 kV
161, 138, 115 kV
69 kV
Existing Transmission Lines Key
345 kV
230 kV
161 kV
138 kV
115 kV
69 kV
Multi-Circuit - Color denotes kV
Underground - Color denotes kV
345 kV Maintained by Others
Madison Area
to Dubuque County area
Vernon
Richland
Sauk
Columbia
Marquette
Green Lake
Dodge
Washington
Ozaukee
Crawford
Allamakee
Clayton
Grant
Iowa
Lafayette
Green
Dane
Rock
Jefferson
Waukesha
Walworth
Racine
Kenosha
Dubuque
Jo Daviess
Stephenson
Winnebago
Boone
Mchenry
Lake

Exhibit VII – Pardeeville System Load Data

Exhibit VII

Pardeeville Electric System

Substation and Circuit Load Data — System Voltage (kV) 4.16

Latest Revision: Sept-2022

System Peak	kW	Power Factor	kVA	Primary Amps	Secondary Amps
Year 2020	5,104	94%	5430	45	754

Transformer/Regulators	Base Rating (kVA)	Extended Rating (kVA)	Calculated Peak Load (kVA)	Percent of Base Rating	Percent of Extended Rating
Southside Transformer	3,750	5,250	2,650	71%	50%
Southside Regulators	4,813	4,813			
Sanborn Transformer	5,000	7,000	2,779	56%	40%
Sanborn Regulators	7,205	8,070			
Alliant Energy Emergency Stepdown Transformer Southside	5,000	5,000	0	0%	0%

Load transfer analysis

Southside Sub out of service	Calculated Peak Load (kVA)	Percent of Extended Rating
Southside Transformer	0	0%
Southside Regulators	0	0%
Sanborn Transformer	5,430	78%
Sanborn Regulators	5,430	
Alliant Stepdown Transformer	0	0%

Load transfer analysis

Sanborn Sub out of service	Calculated Peak Load (kVA)	Percent of Extended Rating
Southside Transformer	5,430	103%
Southside Regulators	5,430	113%
Sanborn Transformer	0	0%
Sanborn Regulators	0	0%
Alliant Stepdown Transformer	0	0%

Load transfer analysis

Transmission outage (Service from Alliant stepdown)	Calculated Peak Load (kVA)	Percent of Extended Rating
Southside Transformer	0	0%
Southside Regulators	0	0%
Sanborn Transformer	0	0%
Sanborn Regulators	0	0%
Alliant Stepdown Transformer	5,430	109%

Feeder (Circuit)	A Phase Peak	B Phase Peak	C Phase Peak	Neutral	Wire size	Peak Load (Amperes)	Rating	% of Rating
Southside Substation								
Regulators (668 Amp)	301	291	295			368	668	55.1%
Circuit 2	114	109	118	30	4/0 Covered AL	118	370	31.9%
Circuit 4	166	158	167	10	4/0 ACSR	167	410	40.7%
Circuit 5	146	136	131	51	*4/0 Underground and 4/0 ACSR	146	285	51.2%
Sanborn Substation								
Regulators (1000/1120 Amp)	281	312	296			386	1000	38.6%
Circuit 6	211	221	200	23	4/0 ACSR	221	410	53.9%
Circuit 7	175	196	204	61	**2/0 Covered AL & 4/0 Underground	204	280	72.9%
Circuit 8	27	0	1	27	4/0 ACSR	27	410	6.6%

	Peak Load (Amperes)	% of Base Rating
Ckts 2, 4, 5, 6, 7, & 8	755	113%
Ckt 6 carries Ckt 2	339	92%
Ckt 8 carries Ckt 4	194	47%
Ckt 7 carries Ckt 5	350	123%
*Note - if the 4/0 AL underground has 200A elbows the percent of overload is greater that 123%		
Ckts 2, 4, 5, 6, 7, & 8	755	75%
Ckt 6 carries Ckt 2	339	83%
Ckt 7 carries Ckt 5	350	125%
Ckt 8 carries Ckt 4	194	47%
*Note - if the 4/0 AL underground has 200A elbows the percent of overload is greater that 123%		

	Peak Load (Amperes)	% of Base Rating
	0	0%
	0	0%
	0	0%
	0	0%
	0	0%
	0	0%
	0	0%

*Estimated peak ampacity

*Estimated peak ampacity

Load data provided by Pardeeville personnel per substation inspection reports

NOTES:

Maximum circuit peak amps do not occur at the same time and all feeder peaks do not add up to the system peak

* 4/0 underground in duct is rated 230A per table 310.78 of the NEC, however the rating shall be reduced to 200A due to the 200A elbows used in the installation. A conservative rating in order to reduce elbow damage would be 160A or 80% of installed 200A elbows.

** Ckt 5 and 7 has a choke point limiting the tie between circuits to 200A with 4/0 underground and 2/0 covered aluminum.

Capacity concern

Approaching capacity

Exhibit VIIA/B/C - Overhead and Underground Ampacity Tables

Exhibit VIIA Overhead Conductor Thermal Limits

	Normal Demand - Winter				Emergency Demand - Winter			
	12.5 kV		4.16 kV		12.5 kV		4.16 kV	
Conductor	Current (amps)	Power (kW)	Current (amps)	Power (kW)	Current (amps)	Power (kW)	Current (amps)	Power (kW)
#4 ACSR (#6 Cu.)	160	3,100	160	1,000	200	3,900	200	1,300
#2 ACSR (#4 Cu.)	215	4,200	215	1,400	270	5,300	270	1,700
1/0 ACSR (#2 Cu.)	280	5,500	280	1,800	350	6,800	350	2,200
3/0 ACSR	375	7,300	375	2,400	475	9,300	475	3,000
4/0 ACSR	430	8,400	430	2,800	535	10,400	535	3,400
336.4 MCM ACSR	665	13,000	665	4,300	830	16,200	830	5,400
397.5 MCM ACSR	740	14,400	740	4,800	925	18,000	925	6,000
477 MCM ACSR	825	16,000	825	5,300	1,025	19,900	1,025	6,600
	Normal Demand - Summer				Emergency Demand - Summer			
	12.5 kV		4.16 kV		12.5 kV		4.16 kV	
Conductor	Current (amps)	Power (kW)	Current (amps)	Power (kW)	Current (amps)	Power (kW)	Current (amps)	Power (kW)
#4 ACSR (#6 Cu.)	125	2,400	125	800	155	3,000	155	1,000
#2 ACSR (#4 Cu.)	165	3,200	165	1,000	210	4,100	210	1,300
1/0 ACSR (#2 Cu.)	215	4,200	215	1,400	270	5,300	270	1,700
3/0 ACSR	290	5,700	290	1,900	365	7,100	365	2,300
4/0 ACSR	330	6,400	330	2,100	410	8,000	410	2,600
336.4 MCM ACSR	510	9,900	510	3,300	640	12,500	640	4,100
397.5 MCM ACSR	570	11,100	570	3,700	710	13,800	710	4,600
477 MCM ACSR	630	12,200	630	4,100	790	15,400	790	5,100

NOTE: Assumed conditions are as follows:

1. Ambient air temperature: 40°C summer and 0°C winter.
2. Wind velocity: 2 feet/second (1.36 mi./hr.).
3. Emissivity at 0.5.
4. Normal and emergency limits are based on maximum allowable conductor temperatures of 75°C and 100°C, respectively.
5. Assume balanced three-phase load at 90% power factor.

Exhibit VIIB Underground Conductor Thermal Limits

	Normal Demand - Summer		Emergency Demand - Summer	
	Current (amps)	**Power @ 12.47 kV (kW)**	**Current (amps)**	**Power @ 12.47 kV (kW)**
Direct Buried Conductor				
#2 AL	170	3,300	200	3,900
1/0 AL	205	4,000	270	5,200
4/0 AL	335	6,500	395	7,700
350 MCM AL	405	7,900	480	9,300
500 MCM AL	460	8,900	540	10,500
750 MCM AL	525	10,200	620	12,100
1000 MCM AL	570	11,100	670	13,000
Triplexed Conductor in Single Duct				
#2 AL	115	2,200	135	2,600
1/0 AL	155	3,000	185	3,600
4/0 AL	240	4,700	285	5,500
500 MCM AL	380	7,400	450	8,700
750 MCM AL	470	9,100	555	10,800
1000 MCM AL	540	10,500	640	12,400
Triplexed Conductor in Multiple Duct Bank				
500 MCM AL	355	6,900	420	8,200
750 MCM AL	440	8,600	520	10,100
1000 MCM AL	505	9,800	600	11,700

NOTE: Assumed conditions are as follows:

1. Assume cross-linked polyethylene (XLPE) cable with full size concentric neutral and jacket for sizes 4/0 and smaller and one-half size neutral for sizes larger than 4/0.
2. Ambient earth temperatures of 20°C for summer conditions.
3. Thermal resistivity of earth of 90 OHM-M.
4. Normal and emergency limits based on IPCEA recommended maximum conductor temperatures of 90°C and 130°C, respectively.
5. Assume balanced three phase load at 90 percent power factor and 100 percent daily load factor.
6. Cable ampacity is reduced when installed in duct.

Exhibit VIIC Underground Conductor Thermal Limits

	Normal Demand - Summer		Emergency Demand - Summer	
	Current (amps)	**Power @ 4.16 kV (kW)**	**Current (amps)**	**Power @ 4.16 kV (kW)**
Direct Buried Conductor				
#2 AL	170	1,100	200	1,300
1/0 AL	205	1,300	270	1,700
4/0 AL	335	2,100	395	2,500
350 MCM AL	405	2,600	480	3,100
500 MCM AL	460	3,000	540	3,500
750 MCM AL	525	3,400	620	4,000
1000 MCM AL	570	3,700	670	4,300
Triplexed Conductor in Single Duct				
#2 AL	115	700	135	850
1/0 AL	155	1,000	185	1,200
4/0 AL	240	1,500	285	1,800
500 MCM AL	380	2,400	450	2,900
750 MCM AL	470	3,000	555	3,600
1000 MCM AL	540	3,500	640	4,100
Triplexed Conductor in Multiple Duct Bank				
500 MCM AL	355	2,300	420	2,700
750 MCM AL	440	2,800	520	3,400
1000 MCM AL	505	3,300	600	3,900

NOTE: Assumed conditions are as follows:

1. Assume cross-linked polyethylene (XLPE) cable with full size concentric neutral and jacket for sizes 4/0 and smaller and one-half size neutral for sizes larger than 4/0.
2. Ambient earth temperatures of 20°C for summer conditions.
3. Thermal resistivity of earth of 90 OHM-M.
4. Normal and emergency limits based on IPCEA recommended maximum conductor temperatures of 90°C and 130°C, respectively.
5. Assume balanced three phase load at 90 percent power factor and 100 percent daily load factor.
6. Cable ampacity is reduced when installed in duct.

Exhibit VIII – Pardeeville System Load Constraints

Exhibit VIII

Pardeeville Electric System

Substation and Circuit Load Data — System Voltage (kV) 4.16

Latest Revision: Sept-2022

System Peak	kW	Power Factor	kVA	Primary Amps	Secondary Amps
Year 2020	5,104	94%	5430	45	754

Transformer/Regulators	Base Rating (kVA)	Extended Rating (kVA)	Calculated Peak Load (kVA)	Percent of Base Rating	Percent of Extended Rating
Southside Transformer	3,750	5,250	2,650	71%	50%
Southside Regulators	4,813	4,813			
Sanborn Transformer	5,000	7,000	2,779	56%	40%
Sanborn Regulators	7,205	8,070			
Alliant Energy Emergency Stepdown Transformer Southside	5,000	5,000	0	0%	0%

Load transfer analysis

Southside Sub out of service	Calculated Peak Load (kVA)	Percent of Extended Rating
Southside Transformer	0	0%
Southside Regulators	0	0%
Sanborn Transformer	5,430	78%
Sanborn Regulators	5,430	
Alliant Stepdown Transformer	0	0%

Load transfer analysis

Sanborn Sub out of service	Calculated Peak Load (kVA)	Percent of Extended Rating
Southside Transformer	5,430	103%
Southside Regulators	5,430	113%
Sanborn Transformer	0	0%
Sanborn Regulators	0	0%
Alliant Stepdown Transformer	0	0%

Load transfer analysis

Transmission outage (Service from Alliant stepdown)	Calculated Peak Load (kVA)	Percent of Extended Rating
Southside Transformer	0	0%
Southside Regulators	0	0%
Sanborn Transformer	0	0%
Sanborn Regulators	0	0%
Alliant Stepdown Transformer	5,430	109%

Feeder (Circuit)	A Phase Peak	B Phase Peak	C Phase Peak	Neutral	Wire size	Peak Load (Amperes)	Rating	% of Rating
Southside Substation								
Regulators (668 Amp)	301	291	295			368	668	55.1%
Circuit 2	114	109	118	30	4/0 Covered AL	118	370	31.9%
Circuit 4	166	158	167	10	4/0 ACSR	167	410	40.7%
Circuit 5	146	136	131	51	*4/0 Underground and 4/0 ACSR	146	285	51.2%
Sanborn Substation								
Regulators (1000/1120 Amp)	281	312	296			386	1000	38.6%
Circuit 6	211	221	200	23	4/0 ACSR	221	410	53.9%
Circuit 7	175	196	204	61	**2/0 Covered AL & 4/0 Underground	204	280	72.9%
Circuit 8	27	0	1	27	4/0 ACSR	27	410	6.6%

	Peak Load (Amperes)	% of Base Rating
Ckts 2, 4, 5, 6, 7, & 8	755	113%
Ckt 6 carries Ckt 2	339	92%
Ckt 8 carries Ckt 4	194	47%
Ckt 7 carries Ckt 5	350	123%
Ckts 2, 4, 5, 6, 7, & 8	755	75%
Ckt2 carries Ckt 6	339	83%
Ckt 5 carries Ckt 7	350	125%
Ckt 4 carries Ckt 8	194	47%

	Peak Load (Amperes)	% of Base Rating
	0	0%
	0	0%
	0	0%
	0	0%
	0	0%
	0	0%
	0	0%

*Note - if the 4/0 AL underground has 200A elbows the percent of overload is greater that 123%

*Note - if the 4/0 AL underground has 200A elbows the percent of overload is greater that 123%

*Estimated peak ampacity

*Estimated peak ampacity

Load data provided by Pardeeville personnel per substation inspection reports

NOTES:

Maximum circuit peak amps do not occur at the same time and all feeder peaks do not add up to the system peak

* 4/0 underground in duct is rated 230A per table 310.78 of the NEC, however the rating shall be reduced to 200A due to the 200A elbows used in the installation. A conservative rating in order to reduce elbow damage would be 160A or 80% of installed 200A elbows.

** Ckt 5 and 7 has a choke point limiting the tie between circuits to 200A with 4/0 underground and 2/0 covered aluminum.

Capacity concern

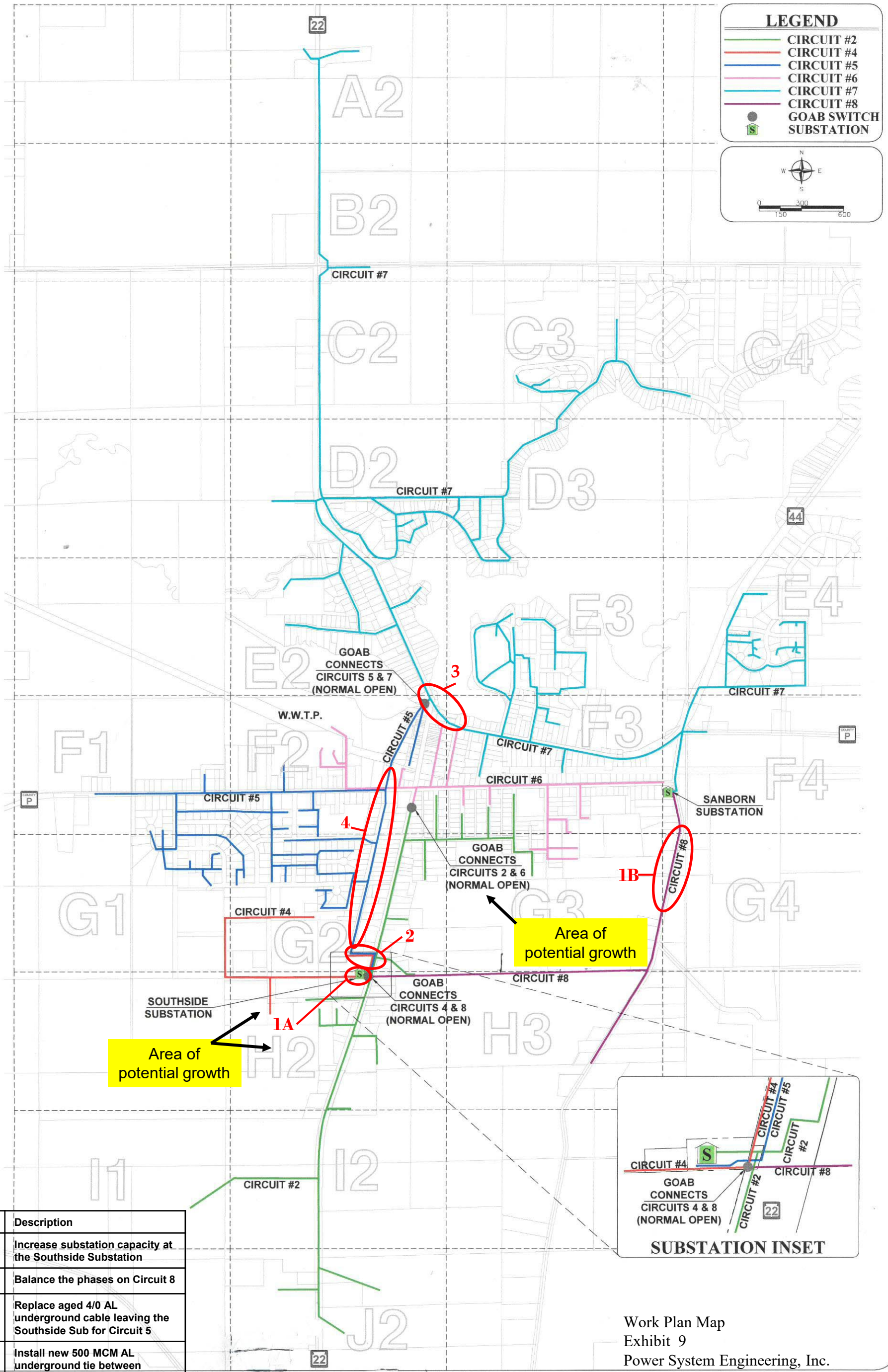
Approaching capacity

Exhibit IX – Work Plan Map

VILLAGE OF PARDEEVILLE

UTILITY CIRCUIT MAP

COLUMBIA COUNTY, WI



Year	#	Description
2023	1A	Increase substation capacity at the Southside Substation
2023	1B	Balance the phases on Circuit 8
2024	2	Replace aged 4/0 AL underground cable leaving the Southside Sub for Circuit 5
2025	3	Install new 500 MCM AL underground tie between Circuit 5 and Circuit 7
2026	4	Reconductor Circuit 5 on Roosevelt St.

Work Plan Map
Exhibit 9
Power System Engineering, Inc.

PSE

Exhibit X – Work Plan Description and Budget Estimates

Exhibit X

Pardeeville Public Utilities

Work Plan Descriptions and Budget Estimates

Latest Revision: 09-26-2022

Year	Item #	Work item	Description	Qty		Unit price	Estimated Cost
2023	1A	Increase substation capacity at the Southside Substation	Replace the existing transformer and regulators with the new transformer and regulators stored adjacent to the substation. Store the existing transformer and regulators in the adjacent storage area for future emergency use.	1	Lot	$180,000	$180,000
2023	1B	Balance the phases on Circuit 8	Pardeeville Line Crew - Balance the current (Amps) by moving some of the single phase services that are connected on A phase to B and C phase. This may create some system efficiencies and reduce neutral current due to the imbalance.	1	Lot	$10,000	$10,000
2023	1C	Distribution line maintenance replacement	Budget amount for yearly maintenance replacement of existing distribution facilities.	0.45	mile	$250,000	$113,000
						Year 2023 Total	**$303,000**
2024	2A	Replace the aged 4/0 aluminum underground cable leaving Southside Substation Circuit 5 for load transfer capability	Install new 500 MCM aluminum underground cable in place of the 4/0 cable	1	Lot	$100,000	$100,000
2024	2B	Southside Substation Maintenance of grounding system	Evaluate the Southside Substation ground grid and fencing. Maintenance replacement of the fencing and ground grid as needed	1	Lot	$120,000	$120,000
2024	2C	Distribution line maintenance replacement	Budget amount for yearly maintenance replacement of existing distribution facilities.	0.45	mile	$265,000	$119,000
						Year 2024 Total	**$339,000**

2025	3A	Replace the 4/0 aluminum underground behind Village Hall in Circuit 7	Install new 500 MCM aluminum cable for increased load transfer capacity and to replace aged cable	1	Lot	$150,000	$150,000
2025	3B	Distribution line maintenance replacement	Budget amount for yearly maintenance replacement of existing distribution facilities.	0.45	mile	$280,000	$126,000
						---	---
						Year 2025 Total	**$276,000**
2026	4A	Re-conductor Roosevelt street	Build as 336 ACSR for long term tie for load transfer and growth considerations	0.50	mile	$280,000	$140,000
2026	4B	Distribution line maintenance replacement	Budget amount for yearly maintenance replacement of existing distribution facilities.	0.45	mile	$280,000	$126,000
						---	---
						Year 2026 Total	**$266,000**

1361 Glory Road
Green Bay, WI 54304
Office 920 632 7929
Fax 920 632 7928
epsii.com

September 1, 2022

Erin Salmon
Pardeeville Public Utility
114 Lake Street
Pardeeville, WI 53954

Subject: **PROJECT REPORT**
Pardeeville Substations and Local Distribution Infrastructure
2022 IR Scanning
Project No. GRB22137-360

Dear Erin,

On July 21, 2022, Electric Power Systems (EPS) provided the following service:

Project Summary:

Performed IR Scanning of two (2) substations and local distribution infrastructure in Pardeeville, WI and the following issues were found.

- **Pole feed to grocery store and Mobil, center phase split bolt:** Heated connection on split bolt.
  Severity Level: Severe
  Recommendation: Clean and torque connection.

- **Pole behind curling club in alley, north cutout:** Heated upper connection.
  Severity Level: Severe
  Recommendation: Clean connection and measure resistance of connection compared to other phases. Torque or adjust jaw if possible in any way.

- **NM-38 Pole Transformer, secondary connection:** Heated secondary connection.
  Severity Level: Critical
  Recommendation: Clean and torque connection on secondary. Corrective action on secondary connection may correct issue at the line. Replace splices or connections at line and clean line at those points if reasonable for reassurance.

- **LR1/2 Pole, capacitor connection:** Heated connection on capacitor.
  Severity Level: Intermediate
  Recommendation: Clean and torque connection.

- **LR-8 Pole Transformer, transformer tank:** Tank of transformer 11-20C degrees hotter than similar equipment on same street.
  Severity Level: Intermediate

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Recommendation: Continue to monitor. Consider what loading is in the area and if it is cause for concern.

- **RNE-26 Pole, arrestor:** Heated connection on arrestor.
  Severity Level: Severe
  Recommendation: Clean and torque connection.

- **NM-48 Pole, arrestor:** Heated connection on arrestor.
  Severity Level: Severe
  Recommendation: Clean and torque connection.

- **EC-40 Pole Transformer, transformer tank:** Transformer tank 11-20C degrees hotter than similar equipment on same street.
  Severity Level: Intermediate
  Recommendation: Continue to monitor. Consider what loading is in the area and if it is cause for concern.

- **EC-58 Pole Transformer, transformer tank:** Transformer tank 11-20C degrees hotter than similar equipment on same street.
  Severity Level: Intermediate
  Recommendation: Continue to monitor. Consider what loading is in the area and if it is cause for concern.

- **WC-6 Pole, jumper:** Heated jumper connection.
  Severity Level: Severe
  Recommendation: Clean and torque connection.

- **Cabinet outside South Main Substation towards road, far left elbow:** Heated connection inside elbow.
  Severity Level: Intermediate
  Recommendation: Ensure the connection is tight and that nothing is compromised from the elbow to the cabinet.

- **SM-34 Pole, line splice:** Heated connection on line.
  Severity Level: Severe
  Recommendation: Replace splice or connection and clean line at that point.

- **SM-26 Pole Transformer, transformer tank:** Transformer tank 21-40C degrees hotter than similar equipment on same street.
  Severity Level: Severe
  Recommendation: Continue to monitor. Consider what loading is in the area and if it is cause for concern.

- **SM-26 Pole, secondary splices:** Heated connection at splices.
  Severity Level: Intermediate

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Recommendation: Replace splices or connections and clean lines at those points.

Attached is the IR report for your review. Please feel free to contact EPS for further discussion or to receive a proposal to implement any of the recommendations made. Thank you for the opportunity to be of service.

Sincerely,

Mark Stauber
Project Manager

Ben Swanson
Technical Reviewer

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Report Prepared For:
Pardeeville Public Utilities

SITE:
Pardeeville, WI
South Main & Sanborn Sub, Line Equipment, Padmount Transformers, Cabinet Junctions

Thermographer:
Ron Domke
920-309-4536/
r.domke@epsii.com

Inspection Performed On:
7/21/2022

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Information

All attempts were made to scan equipment under normal loaded conditions. Heating is generally related to the square of the current; therefore, the load current will have a major impact on DeltaT.

Temperature specifications vary depending on the exact type of equipment. Even if the same class of equipment (i.e. cables) there are various temperature ratings.

The values in the table below provide a general guideline that is used in classifying problems.

Temperature different (DeltaT) based on comparisons between similar components under similar loading	Severity - Recommended Action
1*C-10*C	Minor - Possible deficiency; warrants investigation
11*C-20*C	Intermediate - Probable deficiency; repair as time permits
21*C-40*C	Severe - Deficiency; monitor until corrective measures can be accomplished
>40*C	Critical - Major deficiency; repair immediatley

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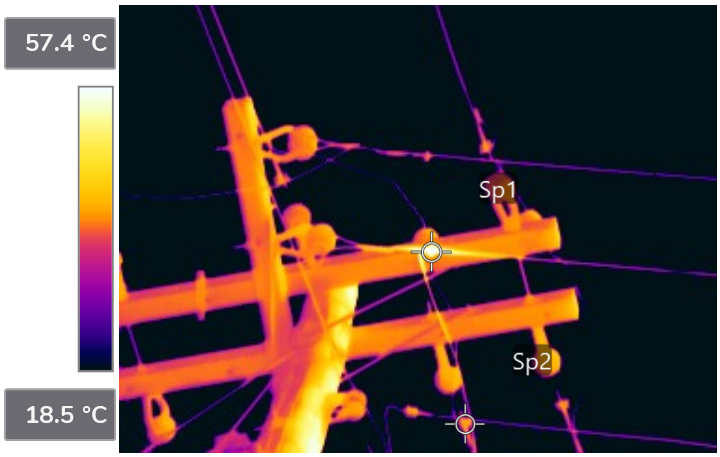

Equipment Details

Equipment ID:	*Pole feed to grocery store and Mobil*
Fault Location:	Center Phase split bolt
Fault Severity:	Severe
Analysis:	Heated connection on split bolt
Recommendation:	Clean and torque connection

Measurements

Dt1	
Sp1-Sp2	33.0 °C
Sp1	75.1 °C
Sp2	42.1 °C

File information

Created	7/21/2022 4:29:58 AM
File name	IR_3743.jpg
File size	? KB
Width	320
Height	240
Minimum temp.	-6.3 °C
Maximum temp.	75.2 °C
Page number	3
Thermogram index	1

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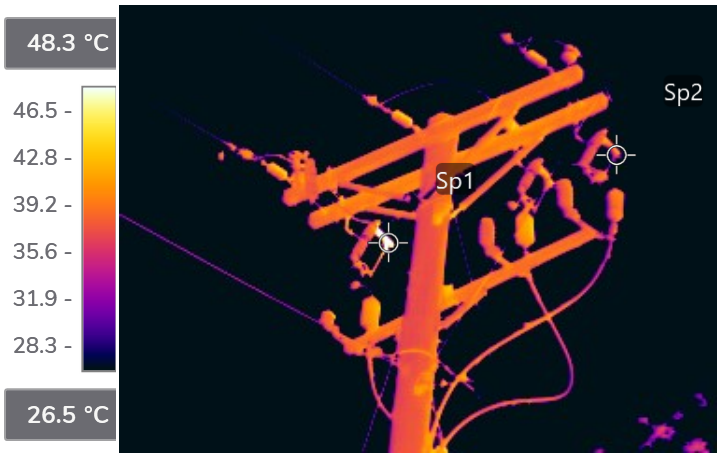

Equipment Details

Equipment ID:	*Pole behind curling club in alley*
Fault Location:	North cutout
Fault Severity:	Severe
Analysis:	Heated upper connection
Recommendation:	Clean connection and measure resistance of connection compared to other phases. Torque or adjust jaw if possible in any way.

Measurements

Dt1	
Sp1-Sp2	25.6 °C
Sp1	64.0 °C
Sp2	38.3 °C

File information

Created	7/21/2022 6:03:36 AM
File name	IR_3749.jpg
File size	175 KB
Width	320
Height	240
Minimum temp.	1.2 °C
Maximum temp.	64.0 °C
Page number	4
Thermogram index	2

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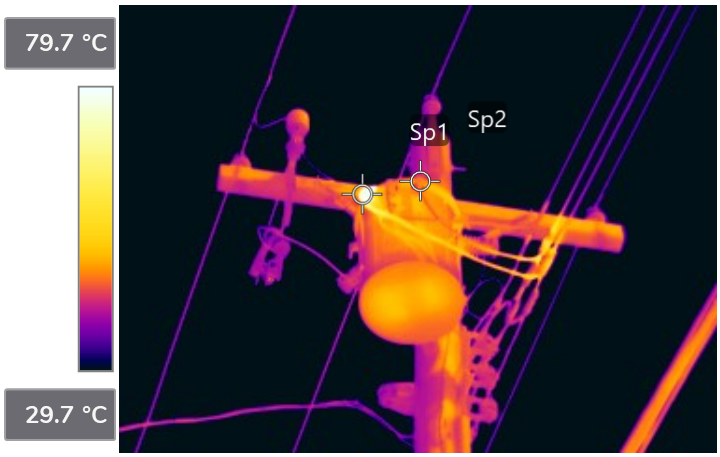

Equipment Details

Equipment ID:	*NM-38 Pole Transformer*
Fault Location:	Secondary connection
Fault Severity:	Critical
Analysis:	Heated secondary connection
Recommendation:	Clean and torque connection on secondary. Corrective action on secondary connection may correct issue at the line. Replace splices or connections at line and clean line at those points if reasonable for reassurance.

Measurements

Dt1	
Sp1-Sp2	50.2 °C
Sp1	99.0 °C
Sp2	48.8 °C

File information

Created	7/21/2022 6:44:00 AM
File name	IR_3757.jpg
File size	171 KB
Width	320
Height	240
Minimum temp.	-0.5 °C
Maximum temp.	123.6 °C
Page number	5
Thermogram index	3

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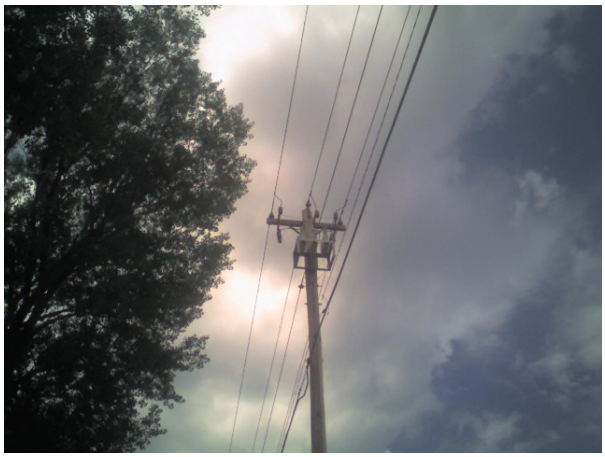
Equipment Details

Equipment ID:	*LR1/2 Pole*
Fault Location:	Capacitor Connection
Fault Severity:	Intermediate
Analysis:	Heated connection on capacitor
Recommendation:	Clean and torque connection



Measurements

Dt1	
Sp1-Sp2	13.5 °C
Sp1	57.9 °C
Sp2	44.4 °C

File information

Created	7/21/2022 6:50:51 AM
File name	IR_3761.jpg
File size	173 KB
Width	320
Height	240
Minimum temp.	21.6 °C
Maximum temp.	59.4 °C
Page number	6
Thermogram index	4

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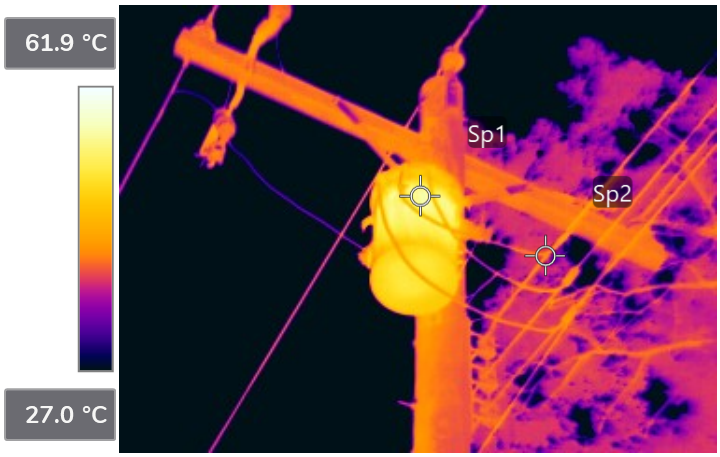

Equipment Details

Equipment ID:	*LR-8 Pole Transformer*
Fault Location:	Transformer tank
Fault Severity:	Intermediate
Analysis:	Tank of transformer 11-20C degrees hotter than similar equipment on same street
Recommendation:	Continue to monitor. Consider what loading is in the area and if it is cause for concern.

Measurements

Dt1	
Sp1-Sp2	13.4 °C
Sp1	56.8 °C
Sp2	43.3 °C

File information

Created	7/21/2022 6:53:58 AM
File name	IR_3763.jpg
File size	173 KB
Width	320
Height	240
Minimum temp.	7.9 °C
Maximum temp.	57.3 °C
Page number	7
Thermogram index	5

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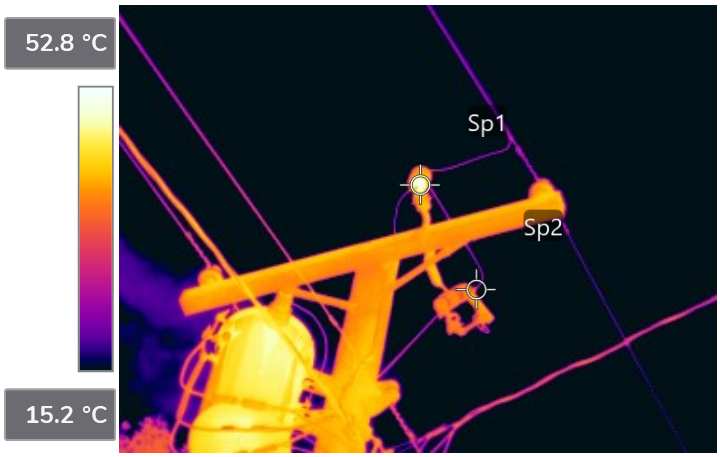

Equipment Details

Equipment ID:	*RNE-26 Pole*
Fault Location:	Arrestor
Fault Severity:	Severe
Analysis:	Heated connection on arrestor
Recommendation:	Clean and torque connection

Measurements

Dt1	
Sp1-Sp2	32.3 °C
Sp1	54.7 °C
Sp2	22.3 °C

File information

Created	7/21/2022 7:16:52 AM
File name	IR_3765.jpg
File size	173 KB
Width	320
Height	240
Minimum temp.	0.6 °C
Maximum temp.	55.4 °C
Page number	8
Thermogram index	6

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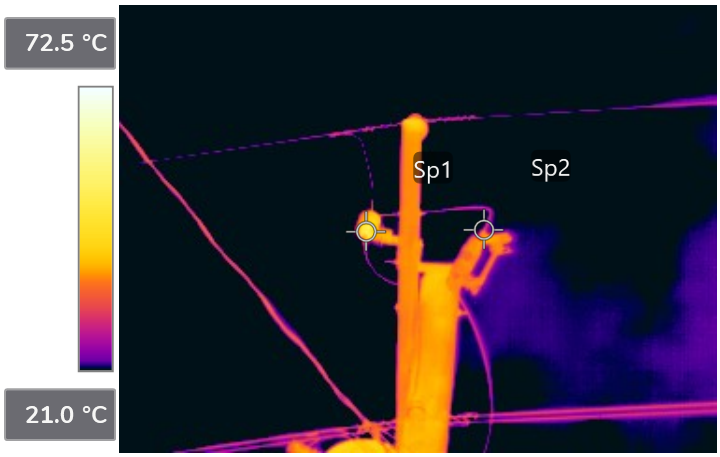

Equipment Details

Equipment ID:	*NM-48 Pole*
Fault Location:	Arrestor
Fault Severity:	Severe
Analysis:	Heated connection on arrestor
Recommendation:	Clean and torque connection

Measurements

Dt1	
Sp1-Sp2	21.5 °C
Sp1	56.6 °C
Sp2	35.1 °C

File information

Created	7/21/2022 7:17:16 AM
File name	IR_3767.jpg
File size	172 KB
Width	320
Height	240
Minimum temp.	-3.2 °C
Maximum temp.	56.6 °C
Page number	9
Thermogram index	7

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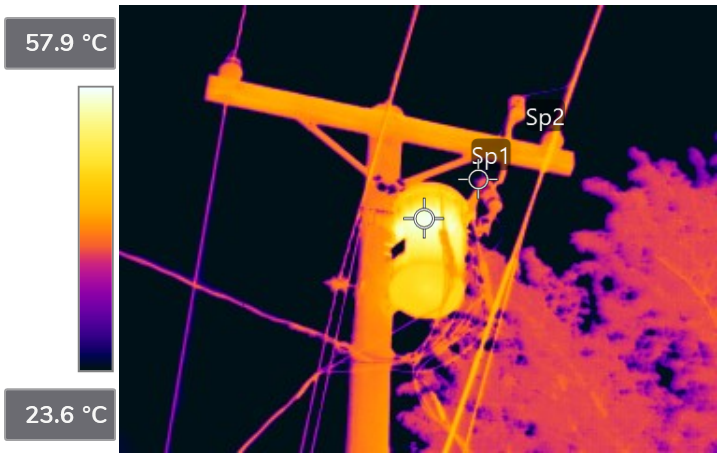

Equipment Details

Equipment ID:	*EC-40 Pole Transformer*
Fault Location:	Transformer tank
Fault Severity:	Intermediate
Analysis:	Transformer tank 11-20C degrees hotter than similar equipment on same street
Recommendation:	Continue to monitor. Consider what loading is in the area and if it is cause for concern.

Measurements

Dt1	
Sp1-Sp2	24.9 °C
Sp1	57.2 °C
Sp2	32.3 °C

File information

Created	7/21/2022 8:04:14 AM
File name	IR_3771.jpg
File size	175 KB
Width	320
Height	240
Minimum temp.	3.9 °C
Maximum temp.	57.8 °C
Page number	10
Thermogram index	8

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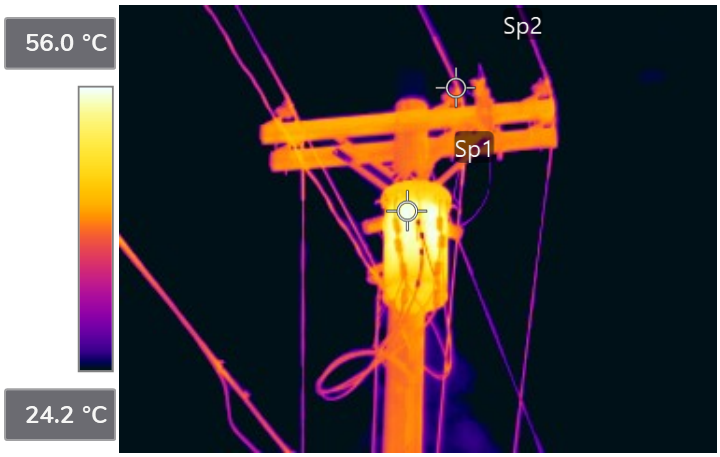

Equipment Details

Equipment ID:	*EC-58 Pole Transformer*
Fault Location:	Transformer Tank
Fault Severity:	Intermediate
Analysis:	Transformer tank 11-20C deg. hotter than similar equipment on same street
Recommendation:	Continue to monitor. Consider what loading is in the area and if it is cause for concern.

Measurements

Dt1	
Sp1-Sp2	14.8 °C
Sp1	55.6 °C
Sp2	40.8 °C

File information

Created	7/21/2022 8:06:53 AM
File name	IR_3773.jpg
File size	175 KB
Width	320
Height	240
Minimum temp.	9.6 °C
Maximum temp.	56.0 °C
Page number	11
Thermogram index	9

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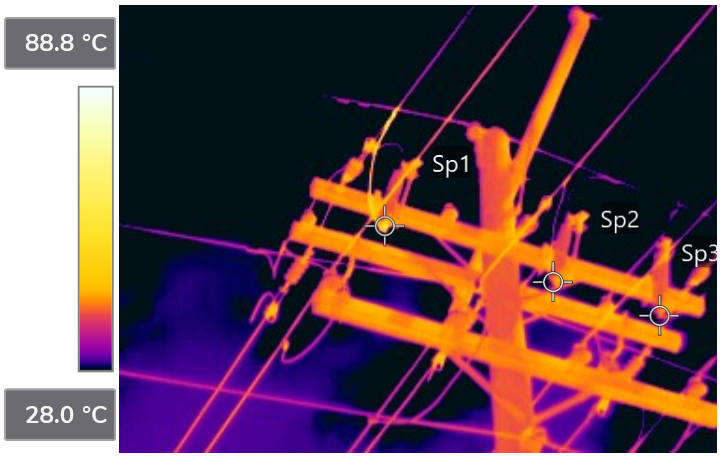

Equipment Details

Equipment ID:	*WC-6 Pole*
Fault Location:	Jumper
Fault Severity:	Severe
Analysis:	Heated jumper connection
Recommendation:	Clean and torque connection

Measurements

Dt1	
Sp1-Sp2	22.2 °C
Sp1	65.8 °C
Sp2	43.6 °C
Sp3	43.4 °C

File information

Created	7/21/2022 8:22:52 AM
File name	IR_3775.jpg
File size	175 KB
Width	320
Height	240
Minimum temp.	3.2 °C
Maximum temp.	76.7 °C
Page number	12
Thermogram index	10

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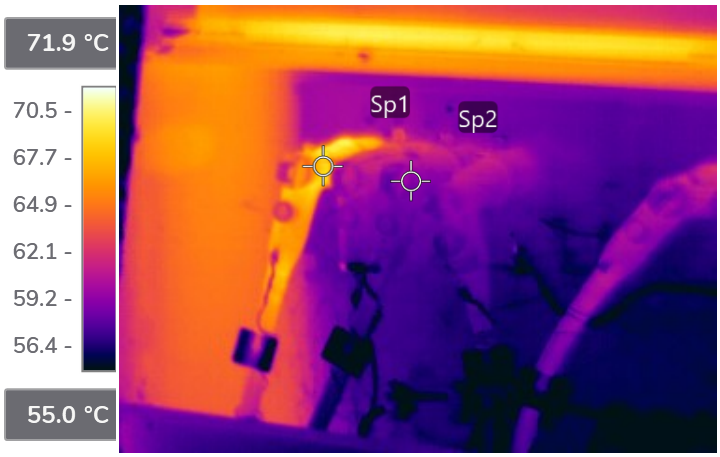

Equipment Details

Equipment ID:	*Cabinet outside South Main Substation towards road*
Fault Location:	Far left elbow
Fault Severity:	Intermediate
Analysis:	Heated connection inside elbow
Recommendation:	Ensure the connection is tight and that nothing is compromised from the elbow to the cabinet.

Measurements

Dt1	
Sp1-Sp2	10.2 °C
Sp1	69.0 °C
Sp2	58.7 °C

File information

Created	7/21/2022 8:39:20 AM
File name	IR_3777.jpg
File size	170 KB
Width	320
Height	240
Minimum temp.	51.3 °C
Maximum temp.	70.5 °C
Page number	13
Thermogram index	11

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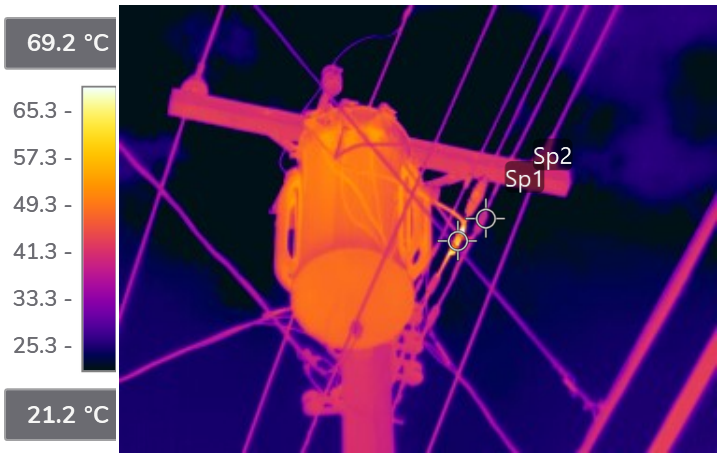
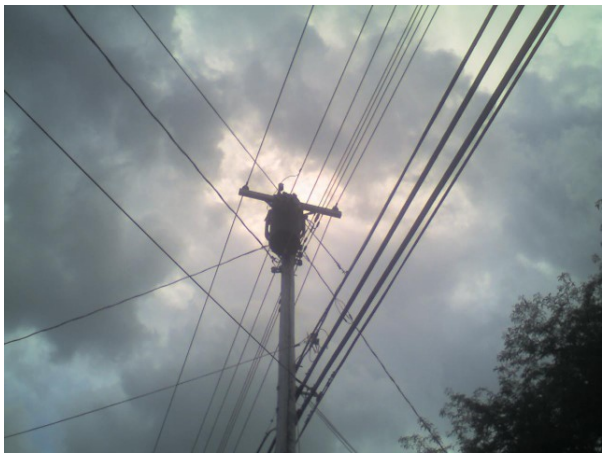


Equipment Details

Equipment ID:	*SM-34 Pole*
Fault Location:	Line splice
Fault Severity:	Severe
Analysis:	Heated connection on line
Recommendation:	Replace splice or connection and clean line at that point.



Measurements

Dt1	
Sp1-Sp2	22.5 °C
Sp1	60.5 °C
Sp2	38.0 °C

File information

Created	7/21/2022 9:16:22 AM
File name	IR_3779.jpg
File size	173 KB
Width	320
Height	240
Minimum temp.	12.8 °C
Maximum temp.	77.5 °C
Page number	14
Thermogram index	12

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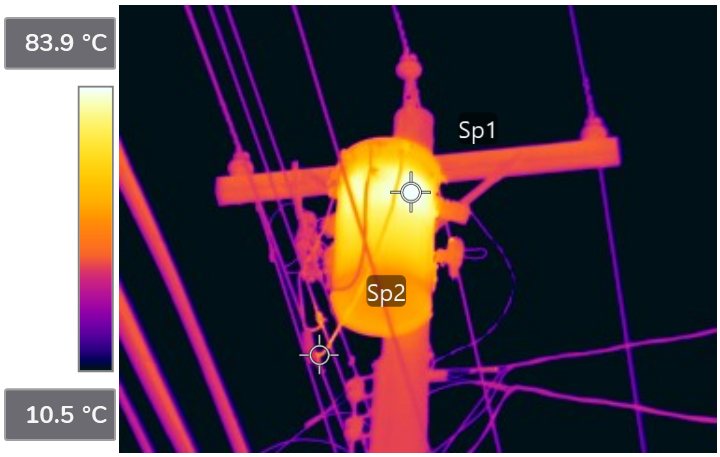

Equipment Details

Equipment ID:	*SM-26 Pole Transformer*
Fault Location:	Transformer Tank
Fault Severity:	Severe
Analysis:	Transformer tank 21-40C degrees hotter than similar equipment on same street
Recommendation:	Continue to monitor. Consider what loading is in the area and if it is cause for concern.

Measurements

Dt1	
Sp1-Sp2	30.5 °C
Sp1	83.7 °C
Sp2	53.2 °C

File information

Created	7/21/2022 9:18:54 AM
File name	IR_3781.jpg
File size	173 KB
Width	320
Height	240
Minimum temp.	1.2 °C
Maximum temp.	83.9 °C
Page number	15
Thermogram index	13

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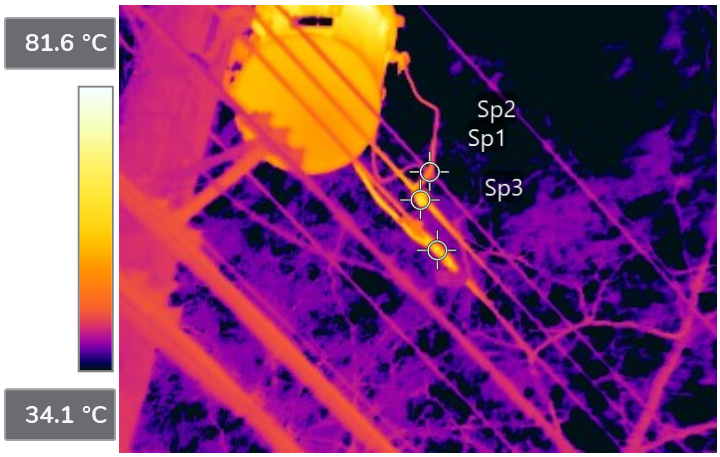

Equipment Details

Equipment ID:	*SM-26 Pole*
Fault Location:	Secondary splices
Fault Severity:	Intermediate
Analysis:	Heated connection at splices
Recommendation:	Replace splices or connections and clean lines at those points.

Measurements

Dt1	
Sp1-Sp2	15.2 °C
Sp1	65.6 °C
Sp2	50.4 °C
Sp3	62.1 °C

File information

Created	7/21/2022 9:19:48 AM
File name	IR_3783.jpg
File size	177 KB
Width	320
Height	240
Minimum temp.	17.2 °C
Maximum temp.	78.6 °C
Page number	16
Thermogram index	14

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File name	Created	Maximum temp.	Minimum temp.	Severity	Page number
Pole feed to grocery store & Mobil	7/21/2022 4:29:58 AM	75.2 °C	-6.3 °C	Severe	3
Pole behind curling club in alley	7/21/2022 6:03:36 AM	64.0 °C	1.2 °C	Severe	4
NM-38 Pole Transformer	7/21/2022 6:44:00 AM	123.6 °C	-0.5 °C	Critical	5
LR1/2 Pole	7/21/2022 6:50:51 AM	59.4 °C	21.6 °C	Intermediate	6
LR-8 Pole Transformer	7/21/2022 6:53:58 AM	57.3 °C	7.9 °C	Intermediate	7
RNE-26 Pole	7/21/2022 7:16:52 AM	55.4 °C	0.6 °C	Severe	8
NM-48 Pole	7/21/2022 7:17:16 AM	56.6 °C	-3.2 °C	Severe	9
EC-40 Pole Transformer	7/21/2022 8:04:14 AM	57.8 °C	3.9 °C	Intermediate	10
EC-58 Pole Transformer	7/21/2022 8:06:53 AM	56.0 °C	9.6 °C	Intermediate	11
WC-6 Pole	7/21/2022 8:22:52 AM	76.7 °C	3.2 °C	Severe	12
Cabinet outside South Main Sub near road	7/21/2022 8:39:20 AM	70.5 °C	51.3 °C	Intermediate	13
SM-34 Pole	7/21/2022 9:16:22 AM	77.5 °C	12.8 °C	Severe	14
SM-26 Pole Transformer	7/21/2022 9:18:54 AM	83.9 °C	1.2 °C	Severe	15
SM-26 Pole	7/21/2022 9:19:48 AM	78.6 °C	17.2 °C	Intermediate	16

2022 Rate Increase Impact

9/26/2022

Water:

	Current Rate	Proposed 4.5% increase	(simplified rate case is 4.5% per the PSC, not 3.0% due to pandemic, etc.)
Water Base 5/8" or 3/4" meter	$ 7.65	$ 7.99	
Volume Charge up to 8,333 gallons	$ 3.83	$ 4.00	
Ex: Residential customer using 8,000 gallons per month, monthly charges would be:			
	$ 38.29	$ 39.99	
Amount of increase over current per month		**$ 1.70**	

Sewer:

	Current Rate	Proposed 4.5% increase	OR	Proposed 3.5% increase
Sewer Base 5/8" or 3/4" meter	$ 13.59	$ 14.20	$	14.07
Volume Charge per 1000 gallons	$ 7.21	$ 7.53	$	7.46
Ex: Residential customer using 8,000 gallons per month, the monthly charges would be:				
5/8" or 3/4" Meter	$ 71.27	$ 74.44	$	73.75
Amount of increase over current per month		**$ 3.17**	**$**	**2.48**

Erin Salmon

From: Brent Nelson <BNelson@johnsonblock.com>
Sent: Friday, September 23, 2022 12:58 PM
To: Kelsea Dushack; Erin Salmon; Kayla Lindert
Subject: RE: Village Board Meeting Packet 06.07.22 at 6:30 PM
Attachments: Simplified rate increase factor.pdf

Good afternoon,

The simplified rate case factor is approved annually by the PSC. You are correct that the factor had been 3% for as long as I can remember. However, for simplified rate cases applied for during the date range of 3/1/22 through 2/28/23, the PSC increased it to 4.5%. The decision must have factored in the inflation issues, etc.

Attached is the PSC's 2/2/22 letter. In February 2023, the PSC will again announce its factor for 3/1/23-2/28/24. Given the CPI % for August 2022 just came out at 7.7%, I would think next year's factor would be at least 4.5% again.

From now through 2/28/23, the simplified rate case must be done for 4.5%. (the Village can't do the water increase for 3% as in prior years).

Brent

JBC JOHNSON BLOCK CPAs

Brent Nelson, CPA | Audit Partner
2500 Business Park Road
Mineral Point, WI 53565

office 608.987.2206 | direct 608.424.2658
e-mail bnelson@johnsonblock.com
Click here for secure file transfer

From: Kelsea Dushack [mailto:utilities@villageofpardeeville.net]
Sent: Friday, September 23, 2022 12:28 PM
To: Erin Salmon <dpw@villageofpardeeville.net>; Brent Nelson <BNelson@johnsonblock.com>; Kayla Lindert <clerk-treasurer@villageofpardeeville.net>
Subject: RE: Village Board Meeting Packet 06.07.22 at 6:30 PM

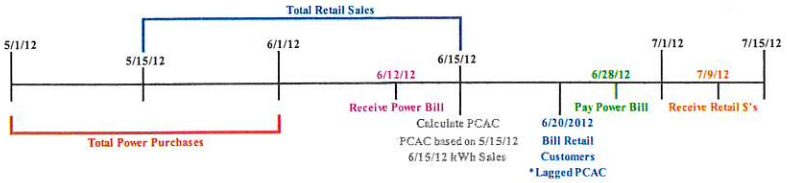
Brent,

Our Alliant Bills are Due on the 15th each month their "meter reads" + billings are based on actual interval usage through midnight on the read date.

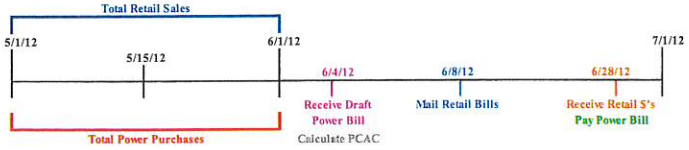
PCAC Alignment

- * Gap in revenue (lag in retail)

Typical PCAC Timeline



Aligned PCAC Timeline



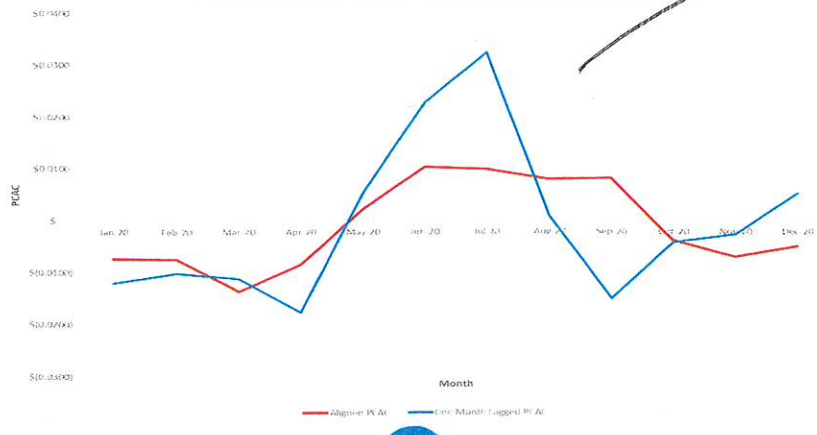
AMI Meters can do this

27

PCAC Alignment

Due to lag in retail sales & purchase power bill

PCAC Based on Aligned Purchased Power and Retail Sales vs. PCAC based on One Month Lag of Retail Sales



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