CITY OF FAIRMONT
PUBLIC UTILITIES COMMISSION
AGENDA

Tuesday, October 4th, 2022

1. CALL TO ORDER
   - 7:30 AM CITY HALL CONFERENCE ROOM (SECOND FLOOR)

2. ROLL CALL
   CHAIR SEGAR _____
   VICE-CHAIR MOLTZEN _____
   SECRETARY JOHNSON _____
   COMMISSIONER WERRE _____
   COMMISSIONER STRUSS _____

3 PRESENTATION OF 2022 ELECTRIC SYSTEM STUDY **(1)**

4 DATE AND TIME OF NEXT MEETINGS: **(2)**
   - REGULAR MEETING - TUESDAY, OCTOBER 18, 2022

5 ADJOURNMENT

6 ATTACHMENTS

FAIRMONT PUBLIC UTILITIES COMMISSION
AGENDA ITEM CONTROL SHEET

MEETING DATE: OCTOBER 4TH, 2022 SCHEDULED TIME: 7:30 AM

REVIEWED BY: TROY NEMMERS, PUBLIC WORKS DIR./CITY ENGINEER

SUBJECT: PRESENTATION OF 2022 ELECTRIC SYSTEM STUDY

SUBJECT INITIATION:

_____ BY COUNCIL _____ BY COMMISSION ____X____ BY STAFF

SUBJECT BACKGROUND BY: TROY NEMMERS

INTRODUCED BY: TROY NEMMERS

TYPE OF ACTION:

____ MOTION (VOICE VOTE)	____ DISCUSSION
____ RESOLUTION (ROLL CALL)	_X_ INFORMATION ONLY
____ HOLD PUBLIC HEARING (MOTION TO CLOSE)	____ SET PUBLIC HEARING (MOTION)

RECOMMENDED ACTION BY: __ COMMISSION ___ COMMITTEE _X_ PUC STAFF

__ ISSUANCE	___ APPROVAL	___ AUTHORIZATION
__ DENIAL	___ REJECTION	_X__ NO ACTION NECESSARY

STATEMENT:
DGR WILL BE PRESENTING THEIR FINDING ON THE 2022 ELECTRIC SYSTEM STUDY.

ATTACHMENTS:

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PUC ACTION: _____ AGENDA ITEM NO. __1____

DATE: _____ PAGE NO. ___1___

Table of Contents

Electric System Study & Capital Improvements Plan

City of Fairmont / Fairmont, Minnesota

Executive Summary

Tab 1 Introduction

Tab 2 Load Growth Projections

Tab 3 Design Criteria

Tab 4 Existing System Analysis

Tab 5 Capital Improvements Plan

Tab 6 Recommendations and Conclusions

Tab 7 Appendix A

- Figure 4: 10 Year Load Growth Projections
- Figure 5A: Existing Electric System Map – North Rural
- Figure 5B: Existing Electric System Map – South Rural
- Figure 5C: Existing Electric System Map – City
- Figure 6: Existing One-Line Diagram
- Figure 7: Proposed Phase 1 Electric System Map
- Figure 8: Proposed Phase 1 One-Line Diagram
- Figure 9A: Proposed Phase 2 Electric System Map – West Sub
- Figure 9B: Proposed Phase 2 Electric System Map – 10th St. Sub
- Figure 10: Proposed Phase 2 One-Line Diagram
- Figure 11: Proposed Phase 3 Electric System Map
- Figure 12: Proposed Phase 3 One-Line Diagram

Tab 8 Appendix B

Case Study Summaries

- Existing System & Existing Load
- Existing System & Proposed Load
- Proposed System & Proposed Load

Executive Summary

INTRODUCTION AND SCOPE

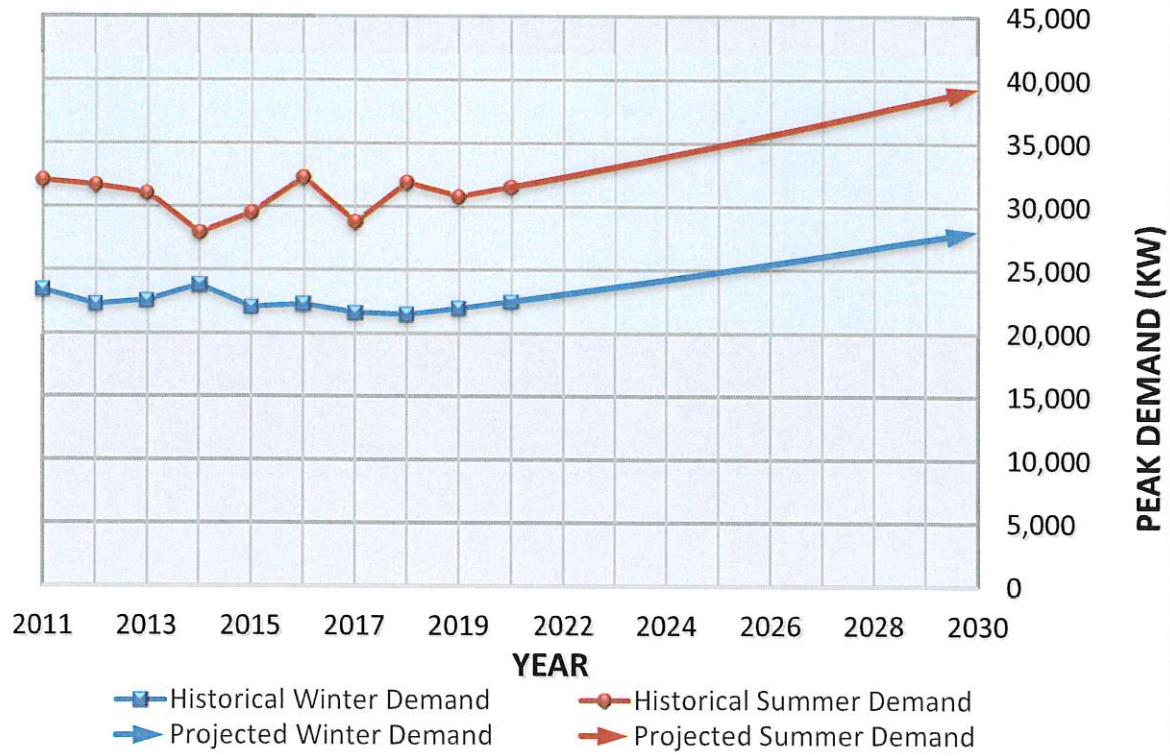
City of Fairmont, Minnesota owns and operates an electric system that provides electric service to the businesses and citizens of Fairmont. DGR Engineering (DGR) was commissioned to perform a system evaluation and planning study for the City of Fairmont.

Analysis of Fairmont's electric system in this study includes the 69 kV transmission, 12.47 kV distribution and substation facilities located within the city of Fairmont, which are owned and operated by the City of Fairmont. A high-level assessment of the interconnected 69 kV transmission facilities immediately surrounding Fairmont is also included in this study as it relates to the supply of 69 kV transmission to the city of Fairmont. This report outlines analysis of the City of Fairmont's system and presents capital improvements projects recommended to eliminate deficiencies identified under existing and future system conditions. The Capital Improvements Plan (CIP) covers a ten-year period and provides cost estimates for fiscal planning.

LOAD GROWTH AND EXISTING SYSTEM

Historical load data was obtained from the City of Fairmont staff for the ten-year period from 2011 through 2020. Based on the demand and energy data received along with up-to-date discussions with City staff to verify data efficacy afterwards, the peak demand generally remained steady with an average peak of 30.64 MW. Fairmont usually reaches its peak demand during the summer months of July or August. The annual load growth has remained relatively flat over the past decade. However, to account for potential future loads, a load growth rate of 0.50% was utilized in forecasting load across the 10-year period of this study. The City staff identified several areas on the system as probable load growth areas, and estimated the potential growth in these areas to be approximately 7.0 MW over the next 10 years. Based on an annual growth rate of 0.5% and the potential load growth areas, the peak system demand is estimated to add approximately 8.57 MW over the next 10 years, from a 2020 peak of 30.74 MW to a peak of 39.31 MW in 2030. The historical and projected system demand requirements based on the load growth are shown in Figure 1.

FIGURE 1
SYSTEM DEMAND REQUIREMENTS
City of Fairmont



The City of Fairmont electric system consists of 69 kV transmission lines, three (3) load-serving substations, and seventeen (17) 12.47 kV distribution feeders. The transmission system is comprised of a radial 69 kV network. The existing distribution system provides electric service throughout Fairmont at 12.47 kV. The primary 12.47 kV system consists of 150 miles of lines, with approximately 51% consisting of overhead line and 49% of underground cable.

DESIGN CRITERIA

The following design criteria was used in evaluation of the performance of the electric system.

Criterion #1 Provide "N-1" (single contingency) level of reliability for all transmission, substation, and distribution facilities.

Criterion #2 Provide ANSI "Class A" voltage service to all customers, under normal or emergency conditions.

Criterion #3 Do not exceed thermal limitations of facilities on the electric system, under normal or emergency conditions.

EXISTING SYSTEM DEFICIENCIES

Due to continued system growth and aging infrastructure, the following deficiencies have been identified:

- Existing Power Plant substation transformer is not adequately sized for all SMMPA generators to run at the same time.
- With the loss of any of the substation transformers or switchgear buses, low voltage and circuit overload conditions exist on distribution circuits throughout the system.
- Heavy and unbalanced distribution loading produces adverse effects on the system.
- With the loss of one of the substation transformers, the remaining transformers are nearing their maximum capacity.
- With projected load growth, voltage and overload deficiencies identified under N-1 contingencies become worse.
- Under future load conditions and with the loss of one of the transformers, the remaining available transformer capacity is insufficient to handle system load.

- Aging overhead distribution arrestors and fuse cutouts have started failing and reduced the reliability of the distribution system.

CAPITAL IMPROVEMENTS PLAN SUMMARY

The following is a summary of the recommended improvement projects necessary, and the associated estimate of costs to resolve system deficiencies. The estimates do not include ongoing operations, repairs and replacements to the primary and secondary distribution system. The estimates are based on 2nd quarter 2022 contractor and materials pricing and include costs for contingencies and engineering.

SUMMARY OF 10 YEAR CAPITAL IMPROVEMENTS PLAN COST ESTIMATE

Phase	Part	Description		Est. Cost
1	A	Power Plant Transformer Replacement		$3,525,000
	B	Power Plant West Industrial Express Feeder		$1,121,000
	C	10th St. Breaker Replacements		$630,000
			PHASE 1 SUBTOTAL	**$ 5,276,000**
2	A	West Substation		$3,590,000
	B	West Substation Transmission Line		$629,000
	C	West Substation Feeders		$449,000
	D	10th St. Substation T2 Addition		$1,865,000
	E	10th St. Feeders & Distribution Improvements		$376,000
			PHASE 2 SUBTOTAL	**$ 6,909,000**
3	A	Distribution Improvements		$235,000
	B	Power Plant Switchgear Replacement		$2,000,000
			PHASE 3 SUBTOTAL	**$ 2,235,000**
			TOTAL ESTIMATED COST – 10 YEAR CIP	**$ 14,420,000**