Master Plan

Springville City Power Capital Facilities

2023-2028

Including Build-out to 2032

August 8, 2024

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CONTENTS

FIGURES AND TABLES

1. BACKGROUND

1.1 Introduction

This report was prepared to document the capital improvements that are required to continue to meet the requirements of the Springville City electrical power system during the period 2023-2032. The Springville City Power Department is responsible for distributing power to consumers within the city of Springville, Utah, in Utah County. The Springville City power service area includes all of the incorporated city of Springville, about 14.4 square miles in area, and the area in Hobble Creek Canyon. At the end of 2023, the city served 13,215 customers (meters). The coincident peak power demand of the Springville City power system was 70.1 megawatts (MW) in July 2023. This was the all-time peak power demand for the city.

This study analyzes the existing Springville City power system for its current capacity and analyzes the anticipated load growth to determine the improvements necessary to continue to provide service to consumers throughout the study period. The study was performed with the power system as it was configured in June 2023.

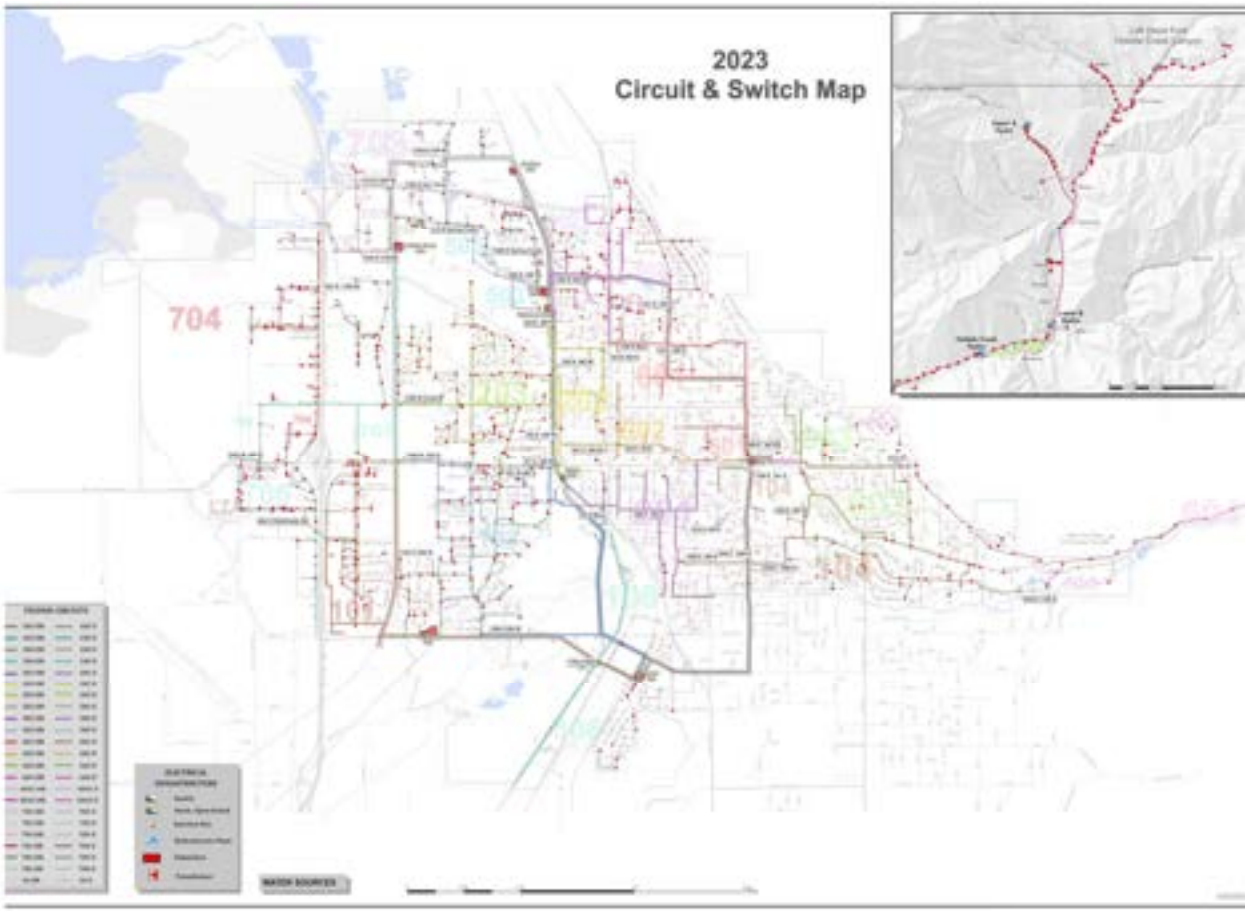

Figure 1. Springville City Power Distribution System Map

1.2 Population

The 2010 Census population of Springville City was 29,466. The 2020 Census population of Springville City was 35,268. The projected 2023 population is 37,696. The graph below shows the census population from 2020 and projected population 2020-2032 based on an average growth rate of 2.1% per year.

Development is moving west from Springville center, with large development planned west of Interstate 15. This trend is predicted to continue for several decades, and the community is projected to grow rapidly for at least two decades. According to this scenario, the city will have a projected population of 45,257 by 2032, as shown in Figure 2. Growth is expected to slow after that date, growing at a projected AAGR of 2.1% until reaching a build-out population.

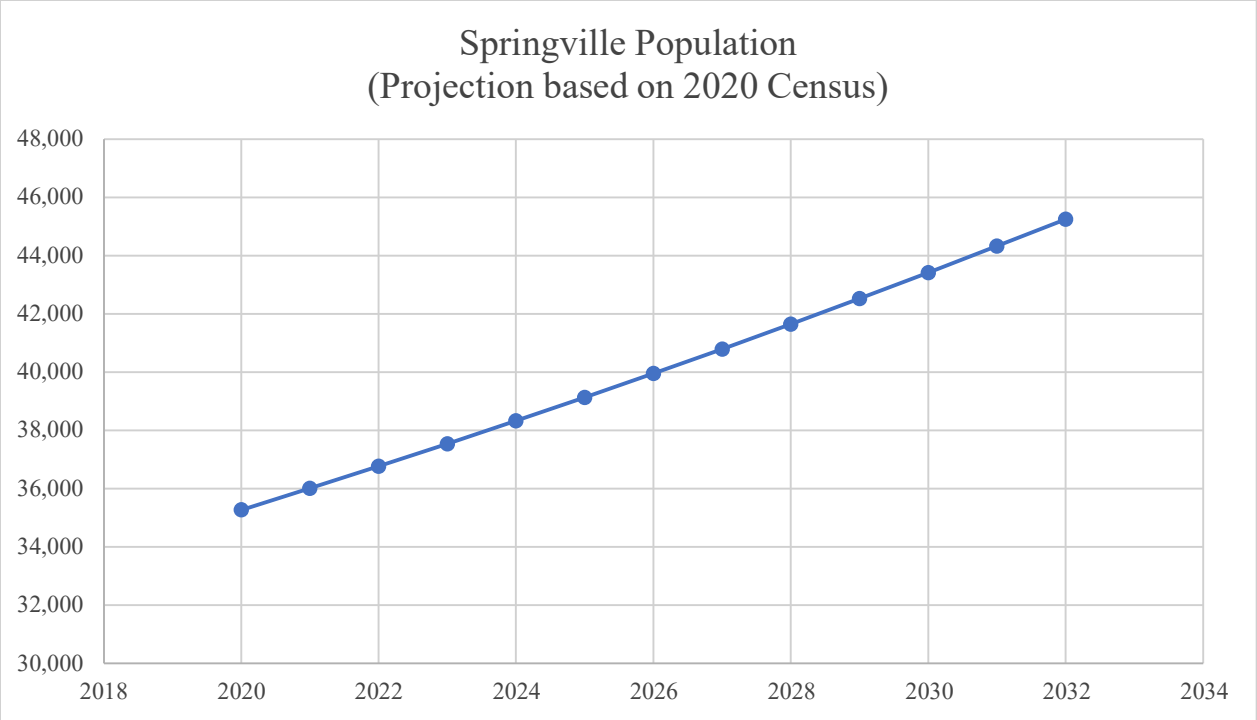

Figure 2. Springville City Population Chart

Source: Population Projection from projection based on 2020 census and 2.1% annual growth

The bulk of recent growth has taken place in the north and west portions of the city, with future growth anticipated to move to the west and further to the south, especially west of Interstate 15 where large mixed-density residential projects are anticipated. It is anticipated that similar patterns will continue into the future.

1.3 Land Use/Development/Growth

The Springville City population growth projections are directly linked to the residential and commercial development that is currently planned or anticipated to be built in the next 10 years. As of June 2023, there were multiple residential and commercial developments proposed and moving through the city's planning and approval process. These proposed developments are estimated to add substantial power demand to the Springville City power system. Figure 3 shows the current and planned city boundary. The current and future land use designations in various areas of the city from the Springville General Plan are shown on the zoning and land use maps in Figures 4, 5 and

6. The future growth potential for the city through annexation has been considered in this study.

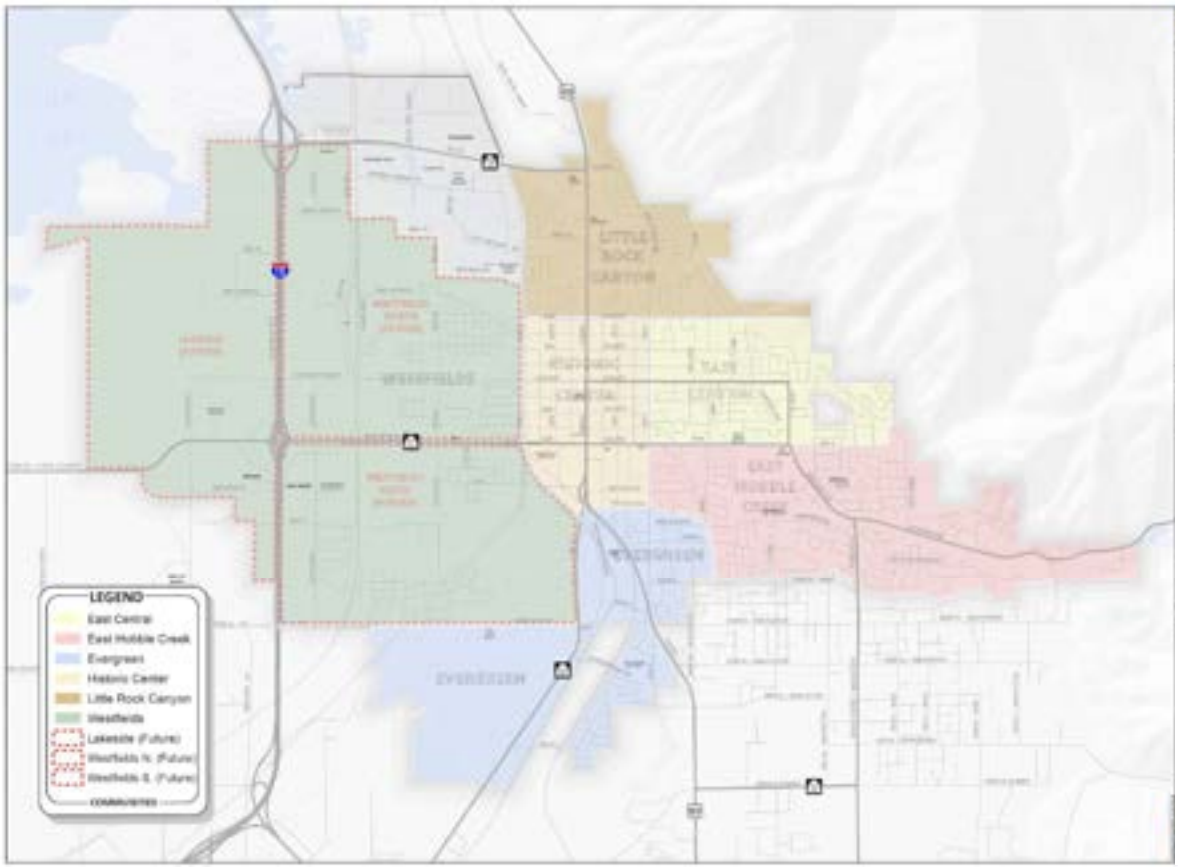

Figure 3. Current and Planned city Boundary and Communities Map

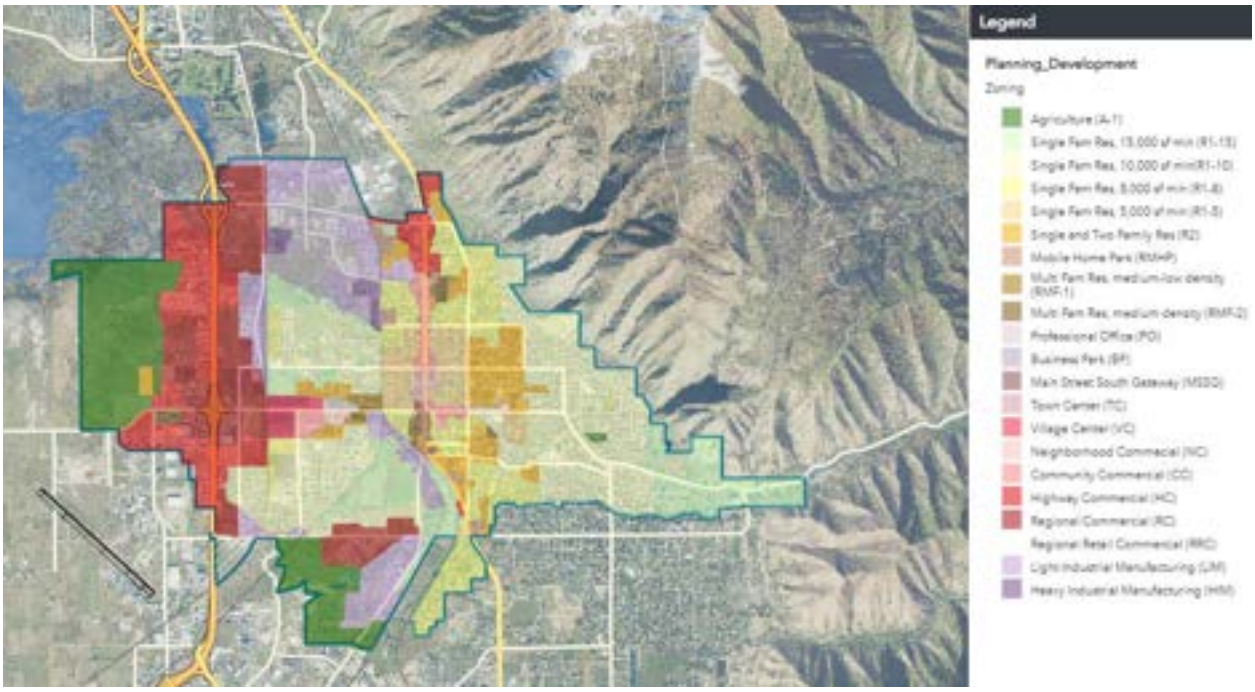

Figure 4. Springville City Zoning

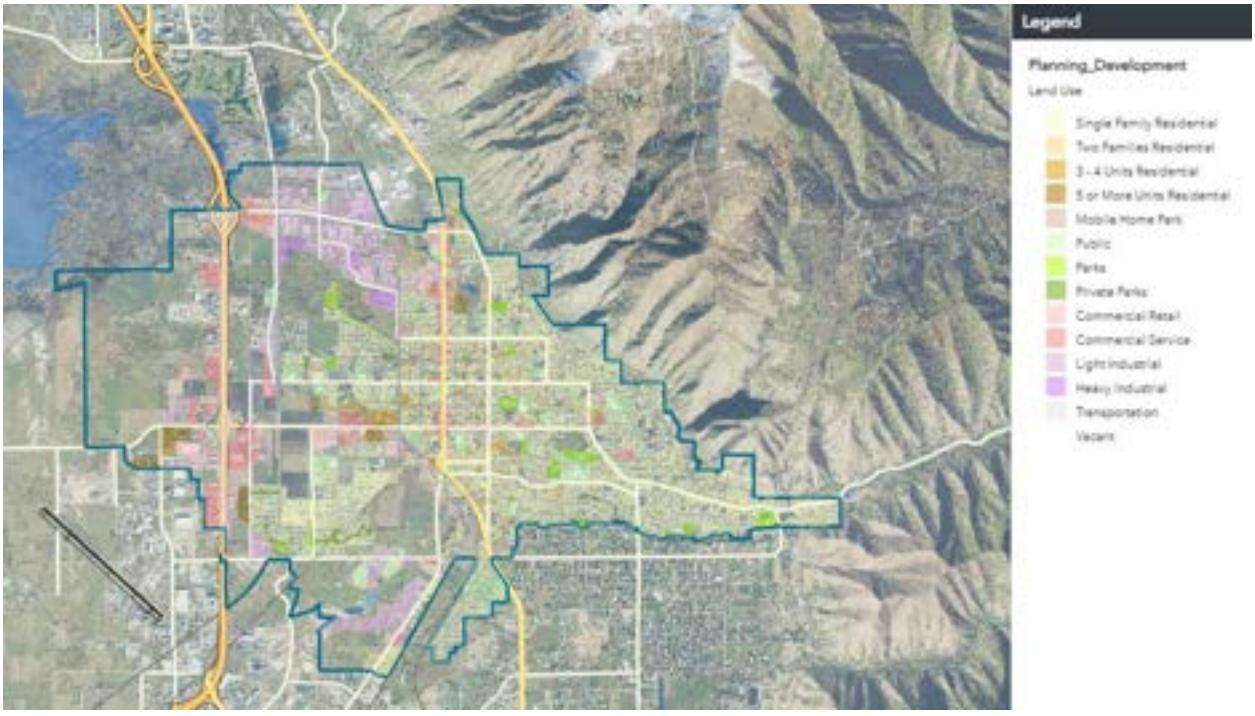

Figure 5. Springville City Zoning Land Use

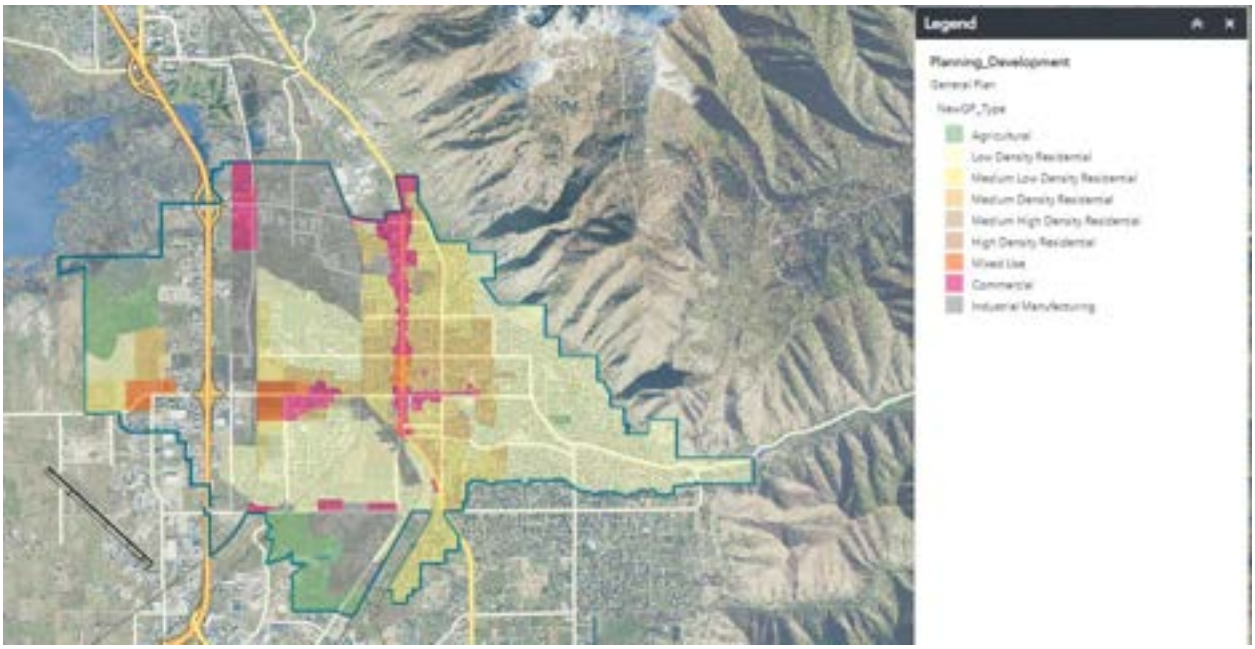

Figure 6. General Plan Land Use

1.4 Growth Map

Some areas within the city are built-out or slowly growing while others are projected to be developed and grow rapidly. The currently proposed major development areas and areas of potential developments are shown in Figure 7.

Figure 7. Development/Growth Areas Map

1.5 Development Area Load Estimate

In order to plan the capital expansion of the Springville City power system, a spatial, development area load forecast was performed. Spatial load forecast was performed using the annexation, zoning, and proposed development information provided by the city. The maps (Figures 4, 5 and 6) of Springville City show where and what types of future development is anticipated. Growth areas shown in Figure 7 were used to obtain a prediction of future electric demand in those specific areas. Figure 8 shows the major proposed development area and the electrical load estimated for each. Table 1 shows the data that was used in the spatial load estimate. Appendix C shows the calculation basis that was used for estimating the load of the proposed large developments.

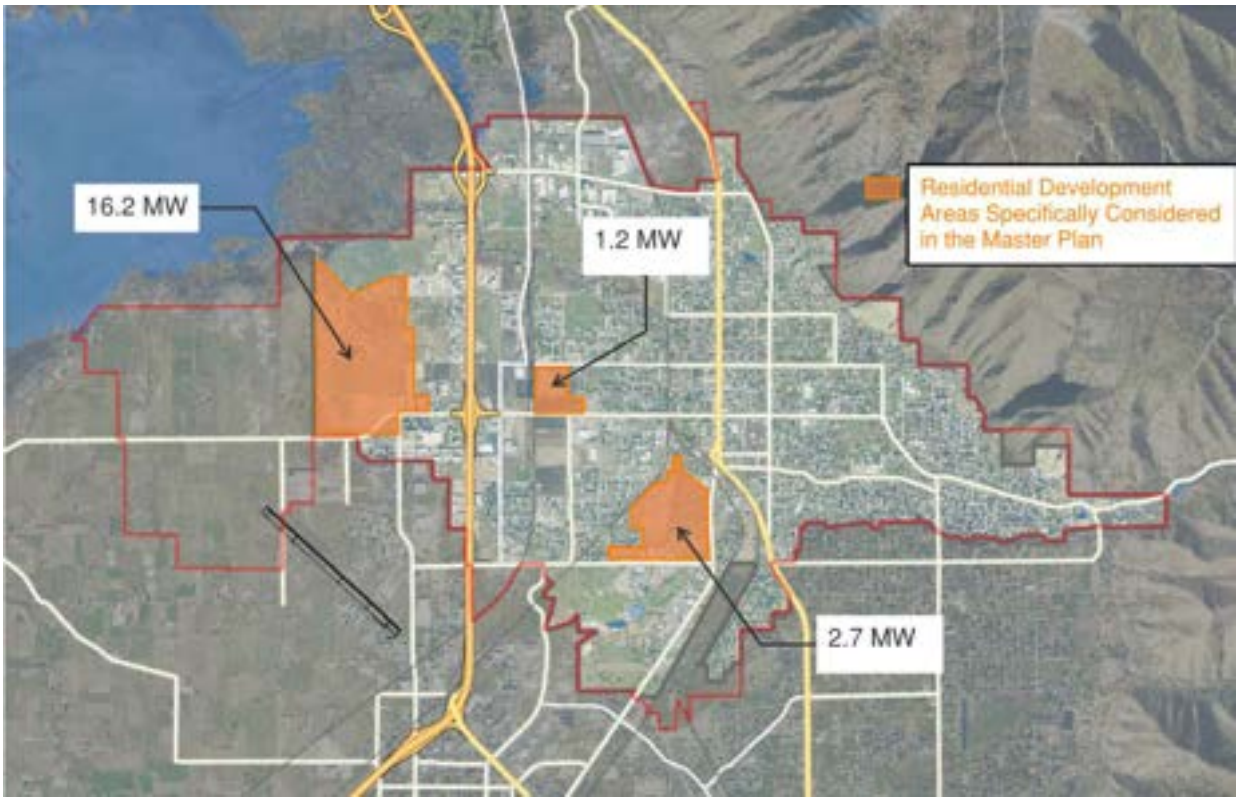

Figure 8. Major Development Areas with Estimated Load

Table 1. Development Area Load Forecast

New Load	2023-2027 Forecast Known/Proposed Additions Demand (MW)	2028-2032 Forecast Known/Proposed Additions Demand (MW)
West Springville	7.7	8.5
West Center St.	1.2	0
South	1.7	1.0
Total	10.6	9.5

About 10.6 MW of the total spatial forecast demand will be used as the 2023-2027 spatial forecast load. The 2027-2032 spatial forecast demand of an additional 9.5 MVA is for the eventual build-out of these areas that may take longer than the 5-year period considered in this study.

The overall power demand forecast that takes into account this spatial load forecast is developed in Section 2.3. The full power demand forecast by feeder is provided in the Appendix B.

2. SYSTEM OVERVIEW

2.1 Existing Infrastructure

2.1.1 Supply

Springville City is a member of the Utah Associated Municipal Power Systems (UAMPS), an organization that allows each member to invest collectively in projects which benefit each specific member. Through UAMPS the city is able to participate along with other Municipalities in projects including wind, natural gas, hydroelectric, solar and geothermal generation. The city has also purchased a percentage of the UAMPS Nebo Power station near Payson, Utah, and the Horse Butte wind farm near Idaho Falls, Idaho.

Electric power is supplied to Springville City through the transmission substations and lines owned and maintained by Southern Utah Valley Power Systems (SUVPS) at 46 kV transmission voltage. This transmission system delivers power at Springville's Baxter and Dry Creek substations.

Springville City's external energy sources or points of delivery are the SUVPS Dry Creek Substation and the city's Calvin J. Baxter Substation.

Dry Creek Substation is fed from several 138 kV transmission lines and contains two 138 kV-46 kV transformers. Springville uses two bays on the 46 kV bus attached to these transformers to feed Baxter Substation and Hobble Creek Substation. Dry Creek Substation feeds numerous SUVPS members in addition to the city of Springville. Baxter substation also has a second 46 kV feed from Rocky Mountain Power's Spanish Forks Substation.

A map of the SUVPS power system is included below. The city is located at the northern most edge of the SUVPS system, while the green lines feeding into the city represent the current 46 kV transmission lines owned by the city.

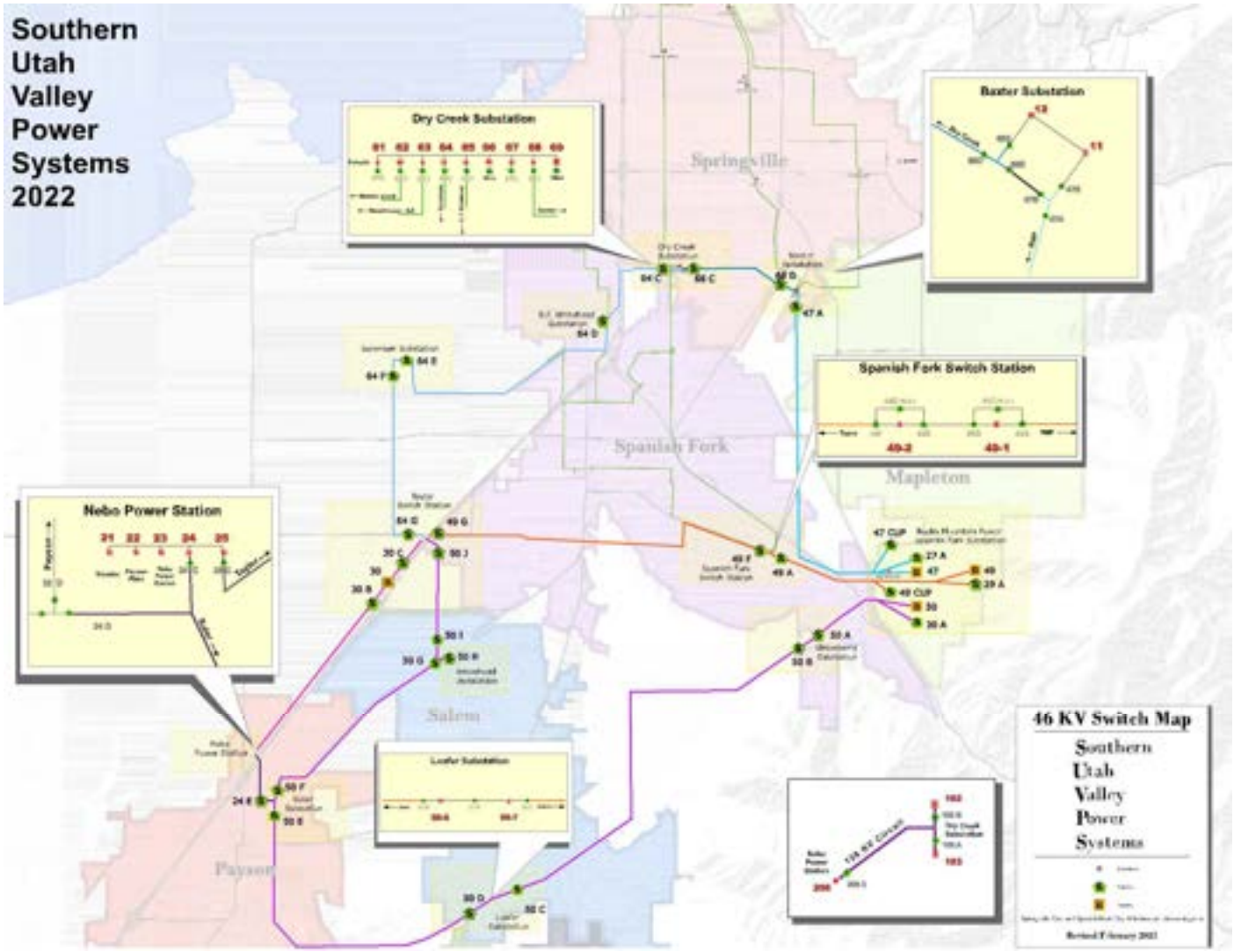

Figure 9. SUVPS System Map

Springville City owns six 46 kV-12.47 kV distribution substation transformers, two located at Baxter substation and one located in each other substation. The city also serves the Stouffers industrial load at 4.16 kV through two redundant 46 kV to 4.16 kV transformers.

Whitehead Power Plant steps the 6.9 kV Generator voltage up to the city's sub-transmission voltage of 46 kV for distribution throughout the city. The city's hydroelectric plants are connected to the distribution system at 12.47 kV and, due to their small size, are "consumed" on the distribution network without feeding any power to the 46 kV system.

The present total system substation transformer capacity is 85 MVA (80.75 MW at 0.95 power factor) in normal operation. The distribution substations and their associated transformers, ratings, loading, and remaining capacities are listed in Table 2.

Due to the difference in low-side voltages of the 4.16 kV transformers serving the Stouffers industrial load they cannot be utilized to serve other city loads and are therefore not considered in the overall city transformer capacity.

Table 2. Existing Distribution Substation Transformers

Substation	Transformer	Base Rating--Capacity used for normal load (MVA)	Top Rating—Maximum Capacity used for "N-1" Contingency (MVA)	July 2022 Recorded Loading (MVA)	Remaining Transformer Capacity Available (MVA)	Remaining Transformer Capacity Available (MW) 0.95 power factor
Baxter	T1	12	20	10.19	1.81	1.72
Baxter	T2	12	22.4	6.71	5.29	5.03
Compound	T1	12	22.4	12.76	-0.76	-0.72
Hobble Creek	T1	25	41.7	9.21	15.79	15.00
Knight	T1	12	20	11.07	0.93	0.88
North	T1	12	22.4	8.10	3.90	3.71
Total		85*		58.04	26.96	25.62

*Total substation transformer base rating capacity is 80.75 MW at a system power factor of 0.95

The city operates and maintains Stouffers Substation, Whitehead Power Plant Substation and a portion of Dry Creek Substation. Stouffers substation represents the city's only dedicated industrial substation; this substation feeds power exclusively to the Stouffers plant at 4.16 kV. The Stouffers plant load is evaluated in the system as a "point load" which affects the city's 46 kV transmission load. The Stouffers substation is at the northern end of three of Springville Power's 46 kV transmission system lines, making the 46 kV switch yard at the Stouffers substation critical to the Springville 46 kV transmission system.

2.1.2 Distribution System

From the five existing Springville distribution substations there are eighteen (18) 12.47/7.2 kV distribution feeders. Table 3 shows the recorded load on each of the active feeders in July 2022 and the remaining capacity available on each feeder.

These distribution feeders leaving the substations are generally constructed with 1000 or 1100 MCM aluminum (Al) underground cable, feeding 477 kcmil ACSR overhead conductor. These are the feeders that are rated at 600 amps (12.96 MVA). Some distribution feeders are constructed with smaller conductor, that have lower rated capacity—220 to 530 amps (4.75 to 11.45 MVA). The ratings of the feeders are determined based on the limiting ratings of the conductor and the other equipment (e.g., reclosers, switchgear, elbows, bushings, connectors, etc.) in the main line of the system.

Table 3. Springville Feeder Loads

Springville Feeder Loads July 2022					*Design Criteria*	*Design Criteria*			*Remaining*
		Rated Feeder	*Rated Feeder*	*Rated Feeder*	*90% Feeder*	*90% Feeder*	*Phase*	*Recorded*	*Capacity Available*
Sub	Feeder	*MVA*	*MW at 0.95 power factor*	*Amps*	*MW at 0.95 power factor*	*Amps*	*Amps (July 2022)*	*MW (July 2022)*	*(Design Criteria 90% Feeder MW minus Recorded MW) MW*
Baxter	101	12.96	12.31	600	11.08	540	233	4.92	6.16
Baxter	103	12.96	12.31	600	11.08	540	239	5.04	6.04
Baxter	104	7.47	7.10	345	6.37	310.5	234	4.95	1.42
Baxter	106	12.96	12.31	600	11.08	540	76	1.61	9.47
Compound	601	12.96	12.31	600	11.08	540	217	4.59	6.49
Compound	602	6.48	6.16	300	5.54	270	73	1.55	3.99
Compound	603	11.45	10.88	530	9.79	477	243	5.13	4.66
Compound	604	4.75	4.51	220	4.07	198	57	1.21	2.86
Hobble Creek	703	12.96	12.31	600	11.08	540	186	3.92	7.16
Hobble Creek	704	12.96	12.31	600	11.08	540	50	1.05	10.03
Hobble Creek	705	12.96	12.31	600	11.08	540	210	4.54	6.54
Hobble Creek	706	12.96	12.31	600	11.08	540	171	3.61	7.47
Knight	201	11.45	10.88	530	9.79	477	195	4.11	5.68
Knight	202	12.96	12.31	600	11.08	540	108	2.28	8.80
Knight	203	12.96	12.31	600	11.08	540	210	4.44	6.64
North	501	12.96	12.31	600	11.08	540	65	1.38	9.70
North	502	12.96	12.31	600	11.08	540	236	4.99	6.09
North	503	12.96	12.31	600	11.08	540	73	1.55	9.53
Total Feeder Rated Capacity:			**199.58**				**Total Remaining Capacity:**		**118.73**

Conductors for the distribution delivery system are either located overhead on utility poles or buried underground. Distribution is normally three-phase in order to serve all types of customers; residential, commercial, and industrial. The city currently owns approximately 275 miles of distribution lines throughout the city.

2.2 Design Criteria (Level of Service Standards)

The city plans, designs and operates its system based on the following criteria:

- Transformer ratings under varying load levels and loading conditions must remain below their base rating;
- The system must be able to adequately serve load under single contingency (N-1) situations, where "N" is power system elements such as a transformer or line;
- The system switching required under an N-1 contingency should remain as simplified as possible to ensure that switching orders not become unnecessarily complex;
- Distribution circuit loading criteria must remain below 90% of its maximum current rating;
- Primary circuit voltage must remain between 95% and 105% of its nominal value; and
- Distribution circuit main lines must be able to serve additional load under N-1 contingencies.

The above criteria were used to determine Springville's future facility needs based on the amount of load (i.e., demand) placed on the existing system over a pre-determined CFP/IFFP planning horizon (e.g., one, three, six and ten years). This ensures that there is sufficient reserve capacity built in the system to maintain service during the loss of a substation transformer or feeder during the peak load season. These are the same criteria as used in the prior CFP/IFFP analysis.

The system voltage design criteria of the Springville City Power Department are to maintain voltage within a range of +/- 5% of nominal value in normal operation, and within a range of -8.3% to +5% of nominal value during short-term emergency operation. Table 4 lists these loading and voltage design criteria.

Table 4. System Design Criteria (Level of Service)

Element	Normal System	During Emergency ("N-1" Contingency)
Substations transformer loading	100% of Base Rating (12 MVA, and 25 MVA on Hobble Creek T1)	100% of Highest Nameplate Rating (for example, 20 MVA, or 41.75 MVA about 167% of Base Rating)
Main line feeder Loading	90% of the conductor rating, 540 amps (11.7 MVA each feeder) for 1000 or 1100 MCM Al underground conductor & 477 ACSR overhead conductor	100% of the conductor rating, 600 amps max.—rating of 1000 or 1100 MCM Al underground conductor & 477 ACSR overhead conductor
Voltage	+/- 5% of nominal (0.95 p.u. to 1.05 p.u.)	+ 5% to -8.3% of nominal (0.917 p.u. to 1.05 p.u.)

Table 5. Conductor Design Criteria Ratings

Conductor	Use	Design Criteria Rating, 90% (amps)	100% Full Rating (amps)
1000 or 1100 kcmil Aluminum	Underground mainline	540 amps	600 amps
477 kcmil ACSR	Overhead mainline	540 amps	600 amps
336 ACSR	Overhead mainline	477 amps	530 amps
4/0 ACSR	Overhead mainline	310 amps	345 amps

Being able to continuously operate at an acceptable N-1 contingency level means that the system can withstand the loss of any single system component (equipment, transmission line, source, etc.) while still providing service to its customers at an acceptable standard of service as defined in Table 4. In order to verify that the city maintains N-1 contingency for its

current system as well as for the future growth, the system model was modified to remove electrical components from service. Single contingency (N-1) analysis was conducted for individual substation transformers, and certain critical main lines.

As an example, if one of the substation transformers fails, the load being fed from that transformer must be fed from any of a combination of the remaining substation transformers. This load is transferred over to neighboring substation transformers by use of substation bus ties or distribution switches at the 12.47kV level. The transfer of this load from one transformer to its neighbors necessitates that both the neighboring transformers have enough available capacity to serve this additional load and that the distribution system is robust enough to support the transfer of the additional demand through the 12.47kV distribution system.

2.3 Peak Power Demand and Forecast

The coincident peak power demand of the Springville City power system was 70.1 megawatts (MW) in July 2023. This was the all-time peak power demand for the city.

The Springville City historic peak power average growth rate is 2.7% per year over the seven-year period 2016 to 2022. Average typical load addition to the power system has historically been about 1.7 MW annually. The historic 2013-2022 peak power demand for Springville City—obtained from UAMPS annual reports—is shown on Figure 10, along with the projected peak power demand developed in this study for 2024-2032.

The projected demand line shown on Figure 10 is generated starting with the 2023 measured peak demand then applying a peak power demand growth rate of 2.7% annually, plus the addition of estimated proposed loads of development through 2032. The addition of development load was evaluated and was projected to vary year-to-year based on the size and schedule of each development, so the projected demand line (orange line) is not linear (i.e., it does not match the linear projected demand trendline—dotted blue line.) The orange projected demand line reflects a higher rate of power demand increase in the years 2024 to 2029 than has been seen historically and comes from predicting the size and schedule of new developments' load.

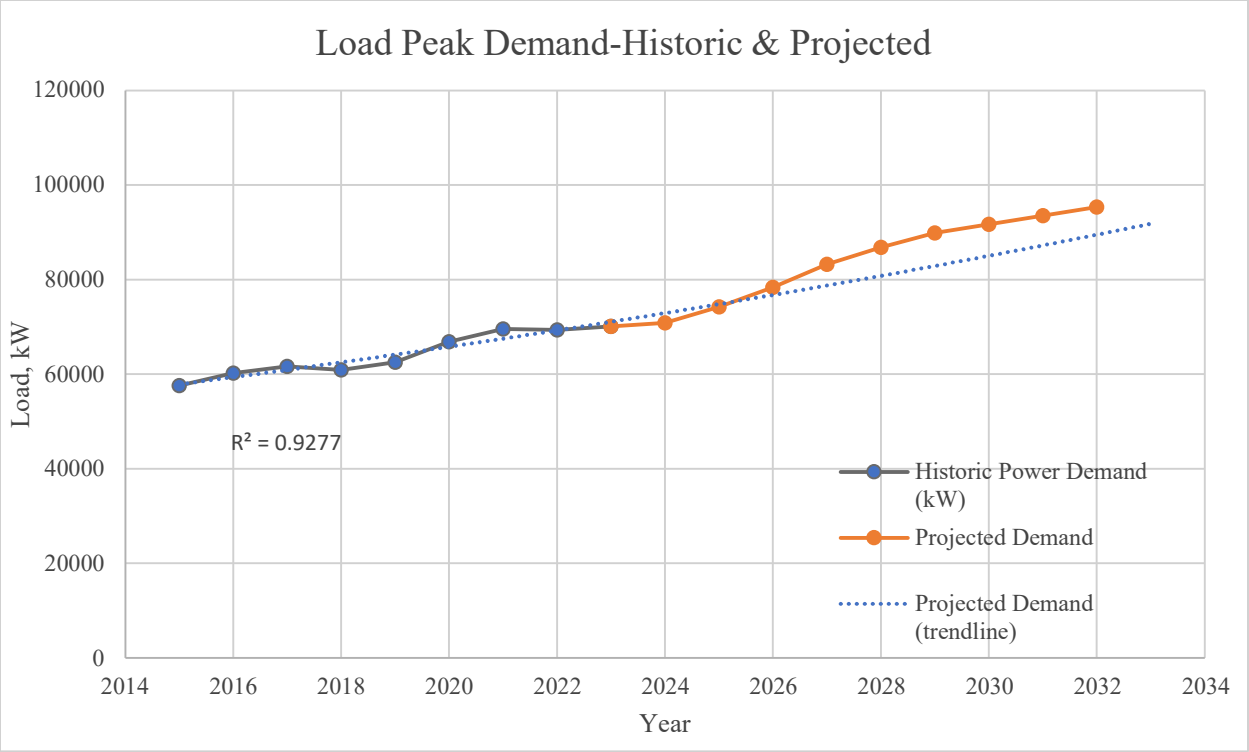

Figure 10. Power Peak Demand Chart

NOTE: Historic loads were obtained from UAMPS annual reports

Plans from developers that were mentioned in Sections 1.3 to 1.5 total an estimated load of about 20.1 MW. It is expected that the full build-out of the developer proposed new load will take 10 or more years before this full additional load will be seen on the system.

The known/proposed additions are combined with the normal demand growth forecast to estimate the total demand that could be expected. The results predict that about 8.8 to 14.3 MW will be added to the Springville Power system in the next 5 years.

The load forecast which was developed in cooperation with the Springville City Power Department for 2023 to 2032 at the substation level as shown in Table 6 was the load growth used in the study. The chart in Figure 10 and the load forecast in Table 6 reflect the estimates determined with the city power department. Table 6 shows the actual July 2022 and estimated 2023-2032 loading on the Springville substation transformers. A load forecast by feeder is in Appendix B.

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Table 6. Springville City Load Forecast

Springville Power
Load Forecast 2023 to 2032

Transformer Summary

Substation/Transformer		Growth Rate	Transformer Rating (MVA)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Utilization
Baxter			24 MVA												
Baxter-T1			12 MVA	10.42	10.28	8.10	8.79	9.65	10.30	10.84	10.93	11.02	11.11	11.20	93%
Baxter-T2			12 MVA	6.87	9.32	9.38	9.43	9.49	9.55	9.61	9.66	9.72	9.78	9.84	82%
Baxter Sub Total			MVA	17.29	19.60	17.47	18.22	19.14	19.85	20.45	20.60	20.74	20.89	21.04	
Compound			12 MVA												
Compound-T1			12 MVA	13.05	11.46	11.69	11.92	12.16	12.40	12.65	12.90	13.15	13.41	13.68	114%
Compound Sub Total			MVA	13.05	11.46	11.69	11.92	12.16	12.40	12.65	12.90	13.15	13.41	13.68	
Hobble Creek			25 MVA												
Hobble Creek T1			25 MVA	9.42	14.24	16.39	17.03	20.39	20.51	20.63	20.76	20.88	21.00	21.13	85%
Hobble Creek Sub Total			MVA	9.42	14.24	16.39	17.03	20.39	20.51	20.63	20.76	20.88	21.00	21.13	
Knight			12 MVA												
Knight-T1			12 MVA	11.32	10.11	7.55	7.64	7.74	7.83	7.93	8.02	8.12	8.22	8.32	69%
Knight Sub Total			MVA	11.32	10.11	7.55	7.64	7.74	7.83	7.93	8.02	8.12	8.22	8.32	
900 North			12 MVA												
900 North-T1			12 MVA	8.28	8.15	8.21	8.28	8.35	8.42	8.49	8.56	8.63	8.70	8.77	73%
900 North Sub Total			MVA	8.28	8.15	8.21	8.28	8.35	8.42	8.49	8.56	8.63	8.70	8.77	
New Springville			25 MVA												
New Springville-T1			25 MVA	0.00	0.00	5.66	8.08	8.36	10.78	12.81	14.02	15.23	16.44	16.44	66%
New Springville Sub Total			MVA	0.00	0.00	5.66	8.08	8.36	10.78	12.81	14.02	15.23	16.44	16.44	
Stouffer			24 MVA												
Stouffer-T1			12 MVA	7.23	7.27	7.32	7.38	7.43	7.48	7.53	7.59	7.64	7.69	7.75	65%
Stouffer-T2			12 MVA	7.23	7.28	7.33	7.38	7.43	7.49	7.54	7.59	7.65	7.70	7.75	65%
Stouffer Sub Total			MVA	14.46	14.55	14.65	14.76	14.86	14.97	15.07	15.18	15.29	15.39	15.50	
Grand Total	Forecast (Calculated, MVA)			73.8	78.1	81.6	85.9	91.0	94.8	98.0	100.0	102.0	104.1	104.9 MVA	
	Forecast (Calculated, MW @ 0.95 pf)			70.1	74.2	77.5	81.6	86.4	90.0	93.1	95.0	96.9	98.9	99.6 MW	

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3. STUDY SUMMARY

3.1 System Modeling

The Springville City power system modeling was performed using the ASPEN Power Flow V15.7 software application for electrical power system analysis. The model of the Springville power system was created in ASPEN Power Flow and used in the previous capital facilities plans and impact fee studies. It was developed using power system maps and field information.

The 2023 system peak of 70.1 MW was recorded in July 2023 for the Springville Power system. This load was used as the base in the system model at the beginning of the study period. The July 2023 peak load, system load measurements, and major customer connection points established in the model were used to allocate the load in the model on the system feeders. The power flow analysis was performed to evaluate the system compliance with the design criteria for the base year to identify any existing current (conductor overload) and voltage (bus low voltage) deficiencies. Known upcoming load additions and load growth corresponding to the map in Section 1.5 were then added to the system over the study period until known build-out assumed in 2032. The power flow analysis was then run on the system model. The system voltage and current (transformer or conductor) deficiencies were identified each year for various periods of load growth at multi-year intervals until 2032.

The system model was studied in both normal operation and multiple “N-1” scenarios. Analysis of the system was performed under the “N-1” scenarios of the loss of each substation transformer to determine what system improvements were needed in order to restore and serve the customers while maintaining the emergency design criteria limits in Table 4. In a substation with two transformers, loss of one transformer or loss of one feeder at a time was studied in the analysis as the worst case. As various system components are removed from service in the system model the areas of deficiency caused by “N-1” contingencies can be identified. These are instances where the substation transformer or feeder loading exceeds the “emergency” design criteria of 100% rated capacity, or when voltage drops below 90% of nominal voltage. The top transformer rating, and 100% of the conductor rating are the design criteria limits used for “N-1” scenarios.

Projects were identified for accommodating the load growth and fixing the deficiencies that were identified. Tables 7 through 10 list the deficiencies identified in normal operation and in "N-1" contingencies.

3.2 Existing Deficiencies

The July 2022 recorded load on the Compound substation transformer appears to have been over the 12 MVA base rated loading design criteria. The system model also indicated the Baxter to WHPP 46 kV transmission line overloads during restoration of the N-1 contingency Dry Creek to Hobble Creek 46 kV line outage.

The loading of the Compound substation transformer can be resolved by switching to transfer load off the Compound feeders.

Project 1 was developed to address the N-1 deficiency on the Baxter to WHPP 46 kV transmission line.

No distribution feeders or other substation transformers were loaded over their design criteria as determined by and confirmed by recorded readings and power system model analysis.

Table 7. Existing Deficiencies

Project #	Element Over Design Criteria	Year	Loading (MVA or amps)	Percent of Rating (Design criteria is 90% for normal, 100% for "N-1")	Proposed Solution
1	Baxter to WHPP 46 kV Line	2023 "N-1"	634 Amps	108%	Reconductor/rebuild the Baxter to WHPP 46 kV transmission line, about 15,000 ft with 795 ACSR.

3.3 Growth Caused Deficiencies

When the proposed load from the planned commercial and residential developments, and the anticipated load growth are added to the system model the deficiencies caused by growth can be identified. Each time a system deficiency was identified a project was assigned and assumed to be implemented before the next analysis was run. The criteria given in Table 4

and Table 5 were used to determine deficiencies caused by load growth. The following tables list the deficiencies identified as system load is increased. The tables are divided into the projected years the deficiencies are predicted.

3.3.1 2024 Deficiencies

There is one deficiency during normal operating conditions in 2024.

Table 8. Deficiencies in 2024

Project #	Element Over Design Criteria	Year	Loading (MVA or amps)	Percent of Rating (Design criteria is 90% normal, 100% for "N-1")	Proposed Solution
2	Baxter feeder 104	2024	347 Amps	101% (112% of design value)	Reconductor/rebuild about 7,426 ft. 4/0 ACSR with 477 ACSR tie between Baxter substation and Compound substation along 1200 N (Mapleton) and 900 E.

3.3.2 2026 Deficiencies

There is one deficiency during normal operating conditions in 2026.

Table 9. Deficiencies in 2026

Project #	Element Over Design Criteria	Year	Loading (MVA or amps)	Percent of Rating (Design criteria for sub transformer is 100% normal, 167% for "N-1")	Proposed Solution

3	Compound Substation Transformer	2026	12.2 MVA	101%	Replace the Compound substation transformer with a 25 MVA transformer, and rebuild feeders to 600-amp capacity

3.3.3 2028 Deficiencies

There is one deficiency in 2028 during the restoration of the "N-1" loss of the Hobble Creek substation transformer.

Table 10. Deficiencies in 2028

Project #	Element Over Design Criteria	Year	Loading (MVA or amps)	Percent of Rating (Design criteria is 90% normal, 100% for "N-1")	Proposed Solution
4	West feeder from New Springville substation	2028 "N-1"	705 Amps	118%	Build about 3,500 ft., 600-amp feeder (underground, overhead) from the new Springville substation west to the development area west of I-15.

3.3.4 2032 Deficiencies

There were no deficiencies identified in the 10-year-out interval.

4. OTHER CAPITAL PLAN PROJECTS

This section lists all the capital projects included in the Springville City Capital Projects Plan. In addition to the projects identified above in Tables 7 through 10 the projects are listed here that have been identified in the prior Impact Fee Facilities Plan (IFFP) required to serve new growth or by Springville City as projects required to serve new proposed developments and improve power system operation. Also, SUVPS transmission system capital projects for which Springville City is required to participate financially are listed in this section.

4.1 Projects in Prior IFFP to Serve New Growth

In the prior capital facilities study and IFFP Springville City Power Department identified projects required to serve new growth. These are projects that were specifically included in the system model analysis and in this report for completeness though they came about through the prior study. These projects are assumed to be built in 2024 and 2025. The opinion of probable cost has been adjusted for inflation from the prior study and is estimated in 2023 dollars.

Table 11. Prior IFFP Project List

Project #	Project Title	Project Description	Opinion of probable Cost*	Portion Related to New Development
Springville-P-1	Upgrades to 46 kV Switchyard at Stouffers Substation	Add 46 kV circuit switchers on the existing transformers, and 46 kV transmission breakers	$ 511,840	35%
Springville-P-2	New Substation near Center Street	Build a new substation with a 25 MVA transformer and four feeders on land near Center Street and 1500 West	$ 3,213,100	100%
Springville-P-3	Upgrade Feeder 103 Overhead	Reconductor/rebuild about 6,110 ft to 600-amp capacity from Baxter substation along 1600 South from SR51 to 950 West	$ 417,630	41%
Springville-P-4	Add new Feeder to North Sub	Build about 1,500 ft. 600-amp capacity feeder	$ 148,330	15%
Springville-P-5	Capacitor Additions to the System	Conduct engineering study, specify, design, and install 150 kVAR capacitor capacity per 1,000 kW of increase in load	$ 50,000	100%
		Springville Prior IFFP Projects List Total	$ 4,341,000	$ 3,630,300

*These come from the prior capital plan and impact fee and have been escalated to cost in 2023 dollars

4.2 Springville City Identified Capital Projects

The Springville City Power Department identified the capital projects listed in Table 12. The Power Department is foreseeing and planning for system capacity that may be required for load growth in established areas of the city, such as for electric vehicle charging. These projects were specifically included in this report for completeness though they did not arise from the system modeling and analysis like the projects identified in Section 3. These projects install excess

capacity that is available for meeting the future growth power demand. The appropriate portion of the project's cost--proportional to the excess capacity provided--is included in the IFFP.

Table 12. Springville City Power Project List

Project #	Project Title	Project Description	Operation Improvement Result
Springville-1	Reconductor/rebuild the Baxter to Compound 46kV transmission line	Reconductor/rebuild the Baxter to Compound 46 kV transmission line, about 11,800 ft with 795 ACSR.	Issue: Existing conductor is 4/0 ACSR. Benefit: Increased transmission reliability and capacity. Operational flexible for normal and N-1 conditions.
Springville-2	Replace/Upgrade North Substation Transformer	Replace the North substation transformer with a 25 MVA transformer.	Issue: Expected loads in the area will exceed the capacity of existing North substation transformer Benefit: Transformer capacity to serve existing and new load. Operational flexibility for normal and N-1 conditions.
Springville-3	Build New Center Street Substation Feeders	Install new feeder connections from the new substation on Center St. to ties on the power system—2,200' tie to feeder 704 NW of new sub; 1,000' tie to feeder 203 east of new sub; and 3,200' tie to feeder 101 on 400 South	Issue: The new substation needs feeders built out to connections on the existing power system. Benefit: Several 600-amp feeders with capacity to serve existing and new loads will be built. Operational flexibility for normal and N-1 conditions.
Springville-4	Peaking Generation Capacity--15 MW total	Install new peaking generation capacity—six 2.5MW gensets with generation building and substation.	Issue: Forecast loads will increase the amount of energy Springville will need to supply, by purchase or generation, during peak use periods. Benefit: New generation capacity to serve existing and new load provides operational flexibility for normal and peak use periods.
Springville-5	Rebuild/reconductor Feeder 602 Tie to Feeder 201	Reconductor/rebuild the Compound feeder 602 tie to feeder 201 about 2,000 ft with 600-amp capacity conductor.	Issue: Existing conductor is 1/0 copper that limits the ability to tie the feeders in normal or N-1 conditions. Benefit: A 600-amp tie with capacity to serve existing and new loads will be built. Operational flexibility for normal and N-1 conditions.
Springville-6	System Model, with linked OMS and Dispatch	Develop a Power System Model (such as using Mil Soft software) and link to a software system for OMS, and Dispatch.	Issue: Growth of the power system in size and complexity decreases system awareness, increases outage response time. Benefit: Increased system awareness for management and operations. Speeds outage response time. Provides means for rapid switching orders.

4.3 SUVPS Identified Capital Transmission Projects

Springville City relies upon SUVPS to serve the Springville substations through the SUVPS 46 kV transmission system. SUVPS owns, maintains, and upgrades portions of the 46 kV system. Capital projects on the SUVPS system are identified by SUVPS with its customers (e.g., Springville City Power, and other customer cities) and through system modeling and analysis. These projects are primarily driven by growth in demand of cities, like Springville, that are served by the SUVPS 46 kV transmission system. The projects listed in Appendix E are the SUVPS Capital Transmission Projects that Springville City, as a member city, is obligated to financially participate in. The SUVPS transmission system projects ensure that there is capacity to serve Springville power demand in normal and "N-1" conditions.

SUVPS has bonded to obtain the funds for constructing the transmission system projects. The bond obligation and Springville City's portion for these forecast SUVPS projects is shown on Table 13.

Table 13. SUVPS Capital Projects

Project #	Project Title	Project Location—Approx. Address	Project Description	Operation Improvement Result
SUVPS-1	SUVPS 46 kV Transmission System Capital Projects	Various	$50,000,000 Bond Obligation, 25-year term Springville portion: $1,090,000 per year.	46 kV transmission capacity to serve growing load in member cities. Capability to continue 46 kV service in normal conditions and in "N-1" contingency recovery conditions.

The proposed bond period is 25 years, each SUPVS member's payment per year will be based on their usage of the system. Springville's portion of the debt service for 2024 through 2028 is expected to be $1,090,000 per year.

For 2028 to 2032 this plan considered that the projected annual payment obligation will be $1,090,000.

5. CAPITAL PROJECTS SUMMARY

This section lists projects that were identified by analysis as being necessary over the planning window. It also lists the projects identified by the prior IFFP, by Springville City and SUVPS. These projects were broken down into five priority levels; High Priority, Moderately High Priority, Medium Priority and Low Priority, each level corresponds to a different implementation schedule. The physical location of future development was modeled as realistically as possible, however due to unpredictability of load growth in both scale and the location some projects may need to be implemented prior to the scheduled dates below and some can be postponed.

Project Priority Levels:

High Priority – Recommended to be completed within one year

Moderately High Priority- Recommended to be completed within three years

Medium Priority- Recommended to be completed within five years

Low Priority- Recommended to be completed within ten years

Projects to resolve the deficiencies identified in the study of the system model were identified and developed. The system improvement projects necessary due to growth were determined in this study are listed in Tables 7 through 10 and details are provided in Appendix A of this report. The system improvement projects that were determined in the previous study—Table 11—are included in Table 14. Springville City Power projects and SUVPS system projects from Tables 12 and 13 are also included in Table 14.

Table 14. Capital Projects List

Project # & Title	Implementation Year(s)	Opinion of probable Cost
High Priority		
1. Reconductor/rebuild the Baxter to WHPP 46 kV transmission line	2024	$2,672,900
2. Rebuild/reconductor Baxter Feeder 104	2024	$668,900
Springville-1. Reconductor/rebuild the Baxter to Compound 46kV transmission line	2024	$1,853,000
Springville-2, Replace/Upgrade North Substation Transformer	2024	$1,548,300
Springville-P-1, Upgrades to 46 kV Switchyard at Stouffers Substation	2024	$511,840
Springville-P-2, New Substation Near Center Street	2024	$3,213,100
Springville-3, Build New Center Street Substation Feeders	2024	$1,205,700
Springville-P-3, Upgrade Feeder 103 Overhead	2024	$417,630
Springville-P-4, Add New Feeder to North Sub	2024	$148,320
Springville-P-5, Capacitor Additions to System	2024	$50,000
Moderately High Priority		
Springville-4. Peaking Generation Capacity--15 MW total	2025	$25,500,000
3. Replace/Upgrade Compound Substation Transformer & Feeders	2026	$4,353,400
Springville-5. Rebuild/reconductor Feeder 602 Tie to 201	2026	$290,700
Medium Priority		
4. New West Feeder from New Springville Substation (Center St.)	2028	$529,800
Springville-6. System Model, with linked OMS and Dispatch	2028	$433,000
SUVPS Projects		
SUVPS-1. Transmission System Capital Projects—Springville's Portion of Bond Obligation (five yrs.)	2024-2029	$5,450,000
Total		$48,846,590

The opinion of probable cost for these projects is in 2023 dollars. As with most capital facilities plans, most of these projects are scheduled to occur in the earlier planning windows. However, growth in demand on the system generally happens in “groups” or “lumps” according to actual commercial and residential development. Some of the projects which were identified could be delayed until required by localized growth.

6. CONCLUSION

This study identifies 15 capital improvement projects and the SUVPS 46 kV system projects that are recommended to continue to meet the needs of the Springville City electrical power system during the period 2024-2028. The projects are the result of analyzing the existing Springville City power system for its current capacity and analyzing the system under anticipated load growth and identifying deficiencies and solutions. The power flow analysis was performed on the Springville City power system model to evaluate the system compliance with the design criteria and to identify system capacity deficiencies at periods of 1 year, 3 years, 5 years, then at 10 years out. Projects included in this 2023-2028 5-Year Capital Plan are solutions that provide the system capacity needed for Springville City to serve its customers, that prevent system voltage and loading problems, and that provide for contingency operation.

7. APPENDIX A: PROJECT DETAIL SHEETS

(Project detail sheets are included for the projects from Section 3, and Section 4.2. Project detail sheets are not included for the projects that were identified in the prior capital plan study (Section 4.1), or for the SUVPS listed projects (Section 4.3))

Project # : 1	**Project Title:** Baxter to WHPP 46 kV	**Priority:** High – 1 Year

Project Description: Reconductor/rebuild the Baxter to WHPP 46 kV transmission line along its current route, about 15,000 feet, with 795 ACSR overhead conductor, and new poles as needed.

Issue(s): 1) Existing 477 ACSR conductor in the Baxter to WHPP 46 kV transmission line is loaded over 100% with present load, when it is used for recovery from the N-1 loss of the Dry Creek to Hobble Creek 46 kV transmission line during peak demand periods.

Design Criteria Violation:

Element	Normal or "N-1"	Measured or Modeled Value	Design Criteria Value
Baxter to WHHP 46 kV transmission line 477 ACSR	"N-1"	634 amps (50 MVA) (modeled) 108% of rated capacity	588 amps (47 MVA) 100% rated capacity

Benefit(s) of Project: Increased capacity of the Baxter to WHPP 46 kV transmission line would be available for N-1 contingency outage restoration and for growth. Improved reliability with a rebuilt line and new, larger conductor.

Element	Normal or "N-1"	Modeled Value	Design Criteria Value
Baxter to WHHP 46 kV transmission line 795 ACSR	"N-1"	610 amps (49 MVA) 72% of rated capacity	853 amps (68 MVA) 100% rated capacity

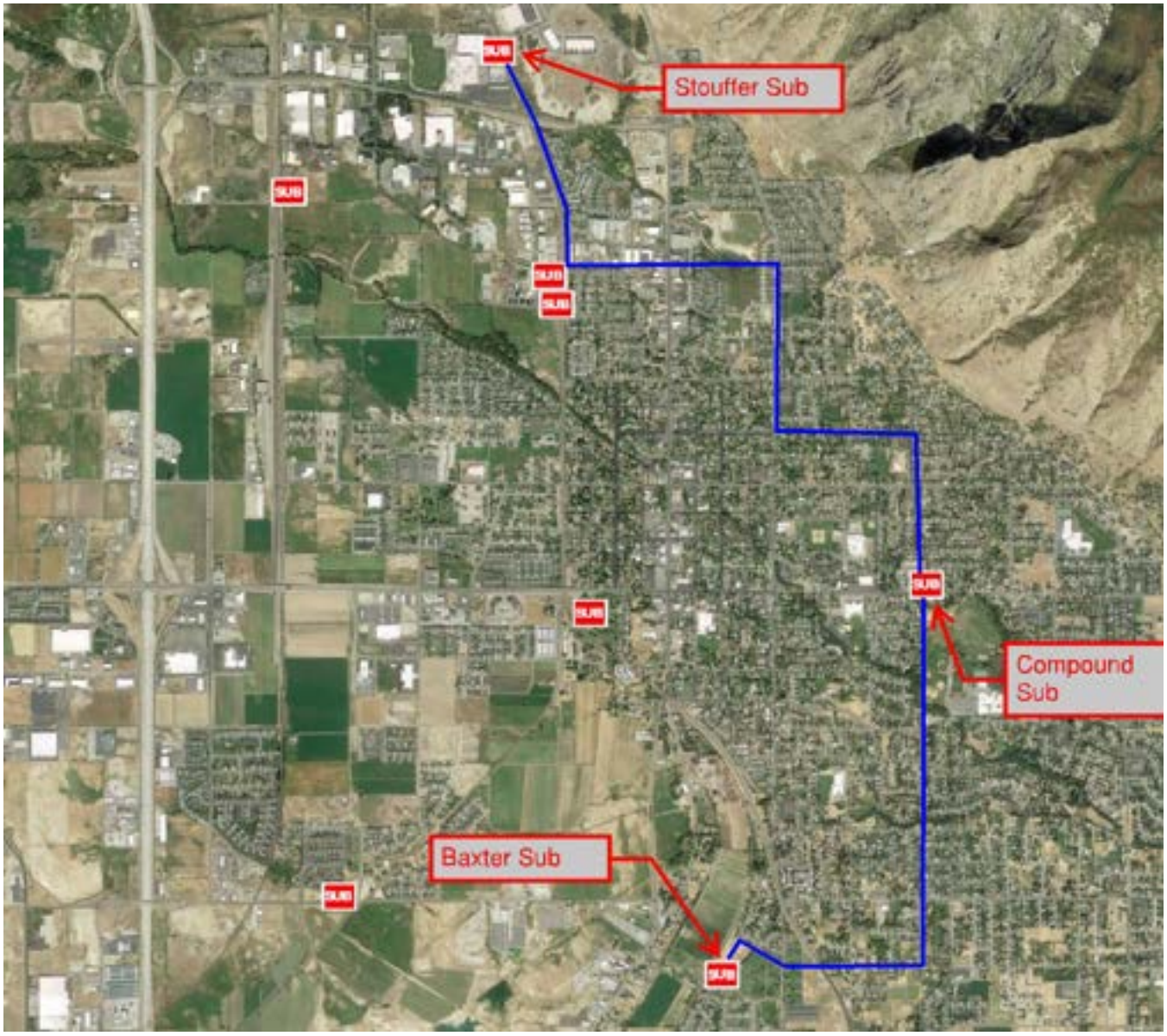
Opinion of Probable Cost: $2,672,900

Risk Assessment: High N-1 loading on this 46 kV transmission line during peak periods leads to limitations serving the growing load and restoring outages on the system. Higher customer outage time and lower system resiliency are at risk.

Alternatives Considered: 1.) Build/rebuild the Baxter to Compound and Compound to Stouffers 46 kV transmission lines. The circuit distance for the alternative is longer than the proposed project.

Project #1 Map

Alternative Project #1 Map



Project # : 2	**Project Title:** Upgrade Baxter Feeder 104	**Priority:** High – 1 Year

Project Description: Reconductor/rebuild Baxter Feeder 104 with 477 ACSR overhead conductor, from Baxter substation to about 1000 South 900 East, about 8,000 ft., and install 1100 MCM underground cable through the 6-inch conduit placed through the new high school area, about 2,100 ft.

Issue(s): 1) 4/0 ACSR overhead mainline is loaded over 90% in 2023 (when load is transferred from feeder 201 to 104, to offload the Knight substation transformer.)

2) In N-1 contingency outage restoration of feeders 603 and 604 during peak demand periods, feeder 104 is loaded over 100%, and voltage on circuit 604 drops to 0.885 p.u. (below the 0.90 design criteria value for N-1.)

Design Criteria Violation:

Element	Normal or "N-1"	Measured or Modeled Value	Design Criteria Value
Baxter Feeder 104 4/0 ACSR Overhead	Normal	347 amps (modeled) 112% of design value	311 amps 90% of rated capacity
Baxter Feeder 104 4/0 ACSR Overhead	"N-1"	398 amps (modeled) 115% of rated capacity	346 amps 100% of rated capacity
Voltage on Feeder 604, when fed from 104 for N-1 restoration	"N-1"	0.885 p.u. Voltage	0.90 p.u. or higher Voltage

Benefit(s) of Project: Increased capacity on Baxter feeder 104 mainline would be available for N-1 contingency outage restoration, for load transfer, and for growth. Improved reliability with a rebuilt line and new, larger conductor. This project also provides opportunity to change out poles shared by feeder 104 distribution and the Baxter to Compound 46 kV transmission line. The 4/0 ACSR 46 kV transmission conductor could be changed out while the distribution project is being done. The cost of changing out the 46 kV transmission conductor and poles is not included in the cost of this project.

Element	Normal or "N-1"	Modeled Value	Design Criteria Value
Baxter Feeder 104 477 ACSR Overhead	Normal	347 amps (modeled) 66% of design value	529 amps 90% of rated capacity
Baxter Feeder 104 477 ACSR Overhead	"N-1"	398 amps (modeled) 68% of rated capacity	588 amps 100% of rated capacity
Voltage on Feeder 604, when fed from 104 for N-1 restoration	"N-1"	0.906 p.u. Voltage	0.90 p.u. or higher Voltage

Opinion of Probable Cost: $668,900

Risk Assessment: High normal loading on this existing mainline of circuit 104 leads to limitations serving the growing load, and restoration in the case of outages of Compound substation circuits.

Alternatives Considered: Switch load from Knight feeder 202 to Compound feeder 601 to reduce load on the Knight substation transformer, instead of the proposed transfer of 201 to feeder 104. This causes the Compound substation transformer to be loaded over 100%. The Compound substation transformer would need to be replaced in 2024 instead of in 2026.

Project #2 Map

Project # : 3	**Project Title:** Replace Compound Sub Transformer	**Priority:** Moderate High – 3 Year

Project Description: Replace the 12 MVA Compound substation transformer with a 25 MVA transformer and upgrade the feeder circuit getaways to 600 amp capacity.

Issue(s): 1) Compound substation transformer is loaded over 100% during peak demand period normal operation in 2026. Transfer of load by switching to Knight feeder 202 or other substations is what keeps this substation transformer from being overloaded in earlier years.

2) The transformer gas sample testing has shown high hydrogen, indicating potential degradation of the transformer

Design Criteria Violation:

Element	Normal or "N-1"	Measured or Modeled Value	Design Criteria Value
Compound substation 12 MVA transformer	Normal	12.16 MVA (modeled) 101% of rated capacity	12 MVA

Benefit(s) of Project: A new higher capacity substation transformer provides for growth and allows for switching and load transfer in normal operation and N-1 recovery.

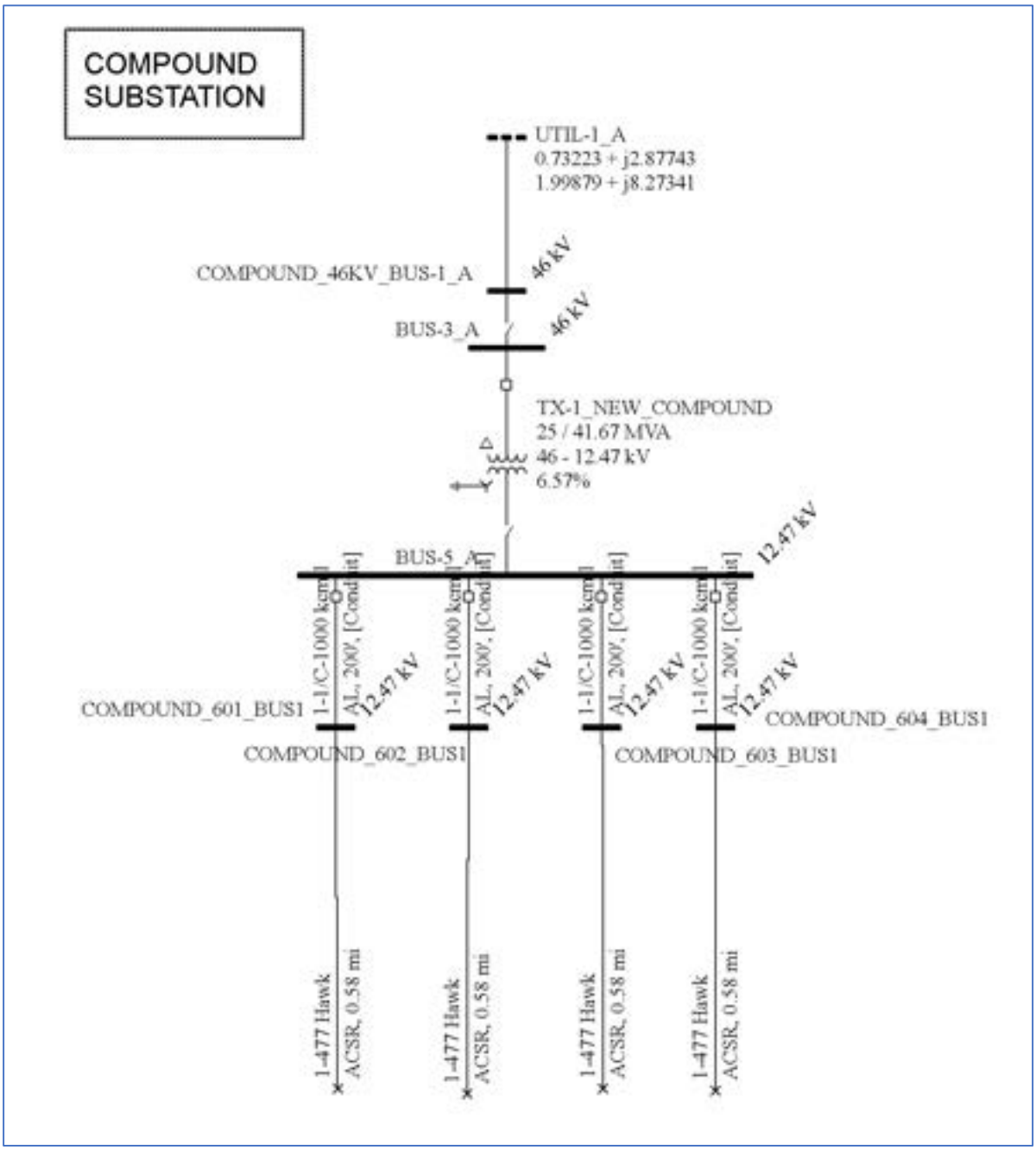
Element	Normal or "N-1"	Modeled Value	Design Criteria Value
Compound substation 25 MVA transformer	Normal	12.16 MVA (modeled) 49% of rated capacity	25 MVA

Opinion of Probable Cost: $4,353,400

Risk Assessment: Without this transformer replacement/upgrade, the existing transformer loading could exceed the transformer normal rating leading to increased transformer heating, stress and potential life reduction or failure of the transformer and a long-term outage.

Alternatives Considered: Rebuild the mainlines on feeders 601 and 502 and transfer load to the North substation transformer. The alternative does not place transformer capacity on the east side of Springville where load is projected to increase as electric vehicle penetration increases. Longer, high-capacity lines into the area from substations outside of the area will need to be built.

Project #3 Substation One-Line



Project # : 4	**Project Title:** West Feeder from New (Center St.) Springville Substation	**Priority:** Medium Priority – 6 Year

Project Description: Build about 3,500 feet of three phase main underground or overhead line with 1100 MCM underground and 477 ACSR from 1500 West to the west side of I-15 along Center Street.

Issue(s): 1) In the N-1 loss of the Hobble Creek substation and/or its feeders into the new development area west of I-15, the remaining circuits into the new development area load over 100% as they serve the new load.

Design Criteria Violation:

Element	Normal or "N-1"	Measured or Modeled Value	Design Criteria Value
New Springville substation 801 feeder	"N-1"	705 amps (modeled) 118% rated capacity	600 amps 100% rated capacity

Benefit(s) of Project: This proposed feeder would share some of the new development load west of I-15 in normal operation and in N-1 recovery thereby keeping the area feeders from overloading. New feeder capacity would be available for growth and outage restoration.

Element	Normal or "N-1"	Modeled Value	Design Criteria Value
New Springville substation 801 feeder	"N-1"	425 amps (modeled) 71% rated capacity	600 amps 100% rated capacity
New Springville substation 803 feeder	"N-1"	233 amps (modeled) 39% rated capacity	600 amps 100% rated capacity

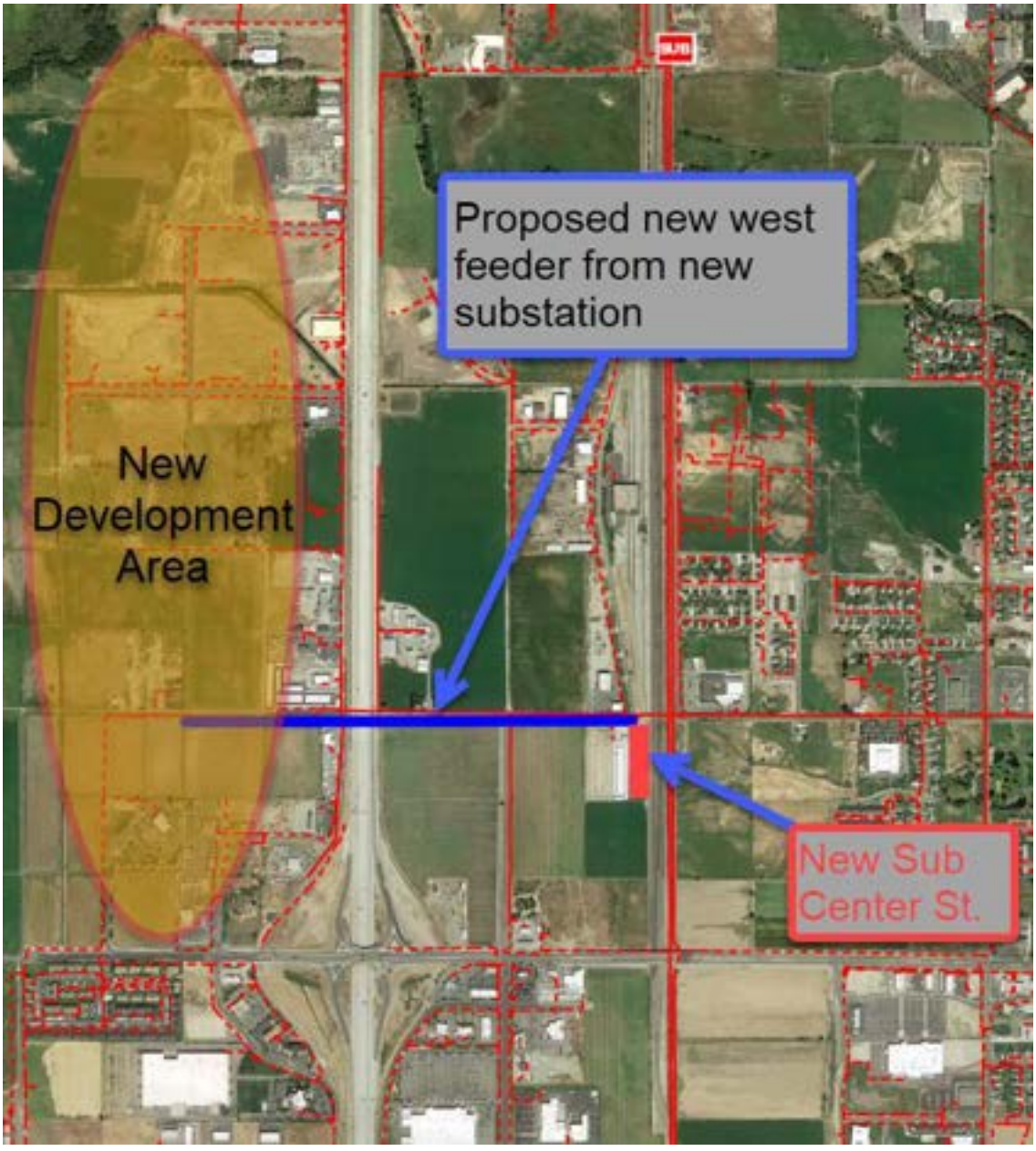
Opinion of Probable Cost: $529,800

Risk Assessment: The capacity of one feeder going west from the new substation on center street will not be enough to serve the load placed on it for N-1 restoration during period demand periods. Some

customer's load in the area would not be able to be restored without causing potential damage to the feeder by overloading it. Not completing this project leads to potential limitations serving the growing load and limitations with outage restoration.

Alternatives Considered: Provide a distributed energy resource with energy storage west of I-15 to serve the load of the new development and for N-1 restoration.

Project #5 Map



Project # : Springville-1	**Project Title:** Baxter to Compound 46 kV	**Priority:** High – 1 Year

Project Description: Reconductor/rebuild the Baxter to Compound 46 kV transmission line along its current route, about 11,800 feet, with 795 ACSR overhead conductor, and new poles as needed.

Issue(s): 1) Existing conductor in the Baxter to Compound 46 kV transmission line is 4/0 ACSR.

Design Criteria Violation: n/a

Benefit(s) of Project: Increased transmission system reliability and capacity of the Baxter to Compound 46 kV transmission line would be available for normal operation, for N-1 contingency outage restoration and for growth. Improved reliability with a rebuilt line and new, larger conductor.

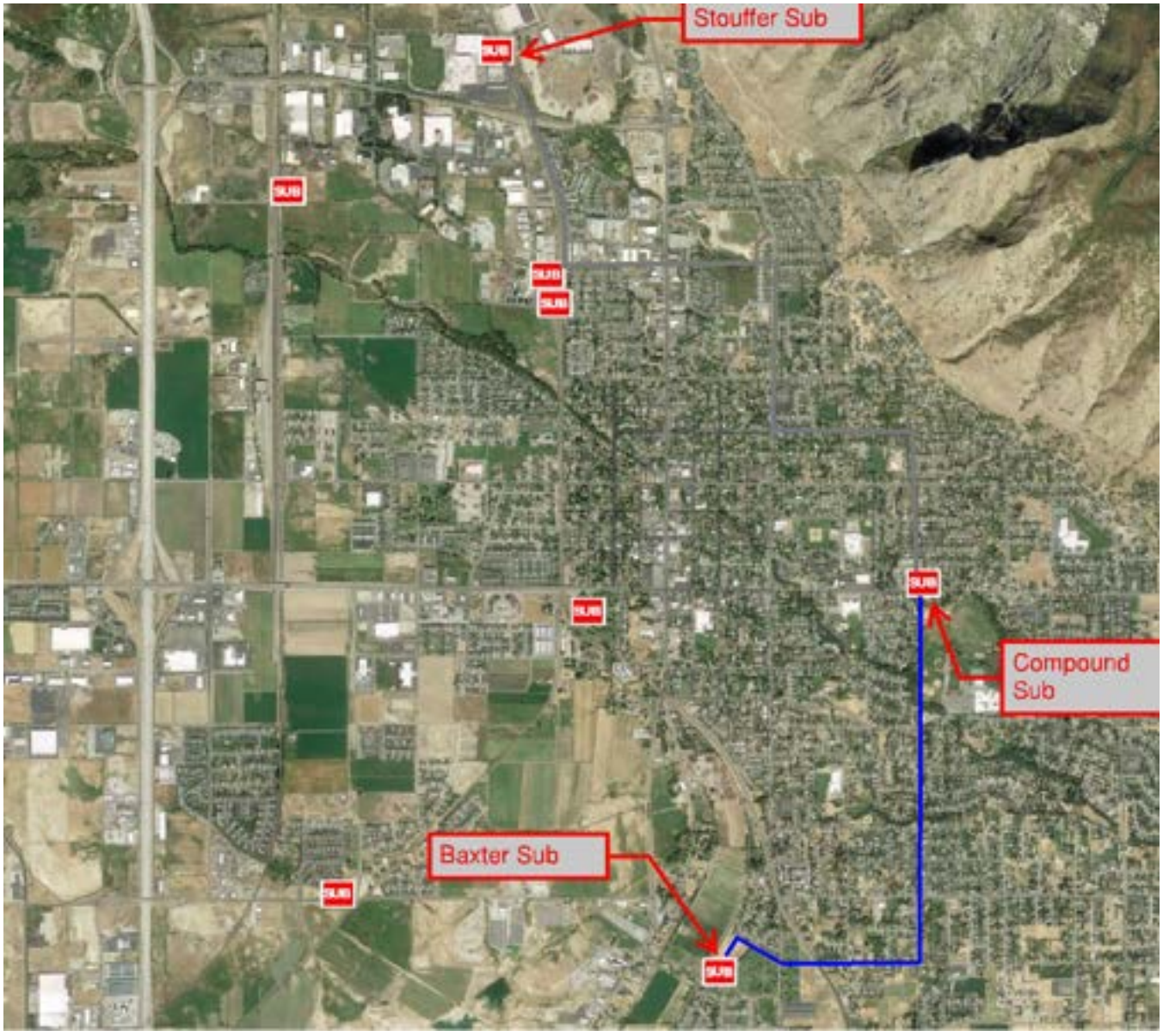
Element	Normal or "N-1"	Modeled Value	Design Criteria Value
Baxter to Compound 46 kV transmission line 795 ACSR	Normal	163 amps (13 MVA) 19% of rated capacity	768 amps (61 MVA) 90% rated capacity

Opinion of Probable Cost: $1,853,000

Risk Assessment: High loading on this 46 kV transmission line during peak periods leads to limitations serving the growing load and restoring outages on the system. Higher customer outage time and lower system resiliency are at risk.

Alternatives Considered: n/a

Project Springville-1 Map



Project # : Springville-2	**Project Title:** Replace North Sub Transformer	**Priority:** High – 1 Year

Project Description: Replace the 12 MVA North substation transformer with a 25 MVA transformer.

Issue(s): 1) North substation transformer is rated 12 MVA. Expected loads in the area will exceed the capacity of the existing North substation transformer.

Design Criteria Violation: n/a

Benefit(s) of Project: A new higher capacity substation transformer provides for growth and allows for switching and load transfer in normal operation and N-1 recovery.

Element	Normal or "N-1"	Modeled Value	Design Criteria Value
North substation 25 MVA transformer	Normal	8.28 MVA (modeled) 33% of rated capacity	25 MVA

Opinion of Probable Cost: $1,548,300

Risk Assessment: Without this transformer replacement/upgrade, the existing transformer loading could exceed the transformer normal rating leading to increased transformer heating, stress and potential life reduction or failure of the transformer and a long-term outage.

Alternatives Considered: n/a

Project # : Springville-3	**Project Title:** New Feeders from New (Center St.) Springville Substation	**Priority:** High Priority – 1 Year

Project Description: Build about 6,400 feet of three phase main underground or overhead line with 600-amp capacity (1100 MCM underground and 477 ACSR) from the new substation location to connections on the power system:

- 2,200’ tie to feeder 704 northwest of the new substation;
- 1,000’ tie to feeder 203 east of the new substation on the east side of the railroad tracks;
- 3,200’ tie to feeder 101 on 400 South side of I-15 along Center Street.

Issue(s): 1) New feeder ties were not included in the substation project scope and costs. The new substation needs feeders built out to connections on the existing power system.

Design Criteria Violation: n/a

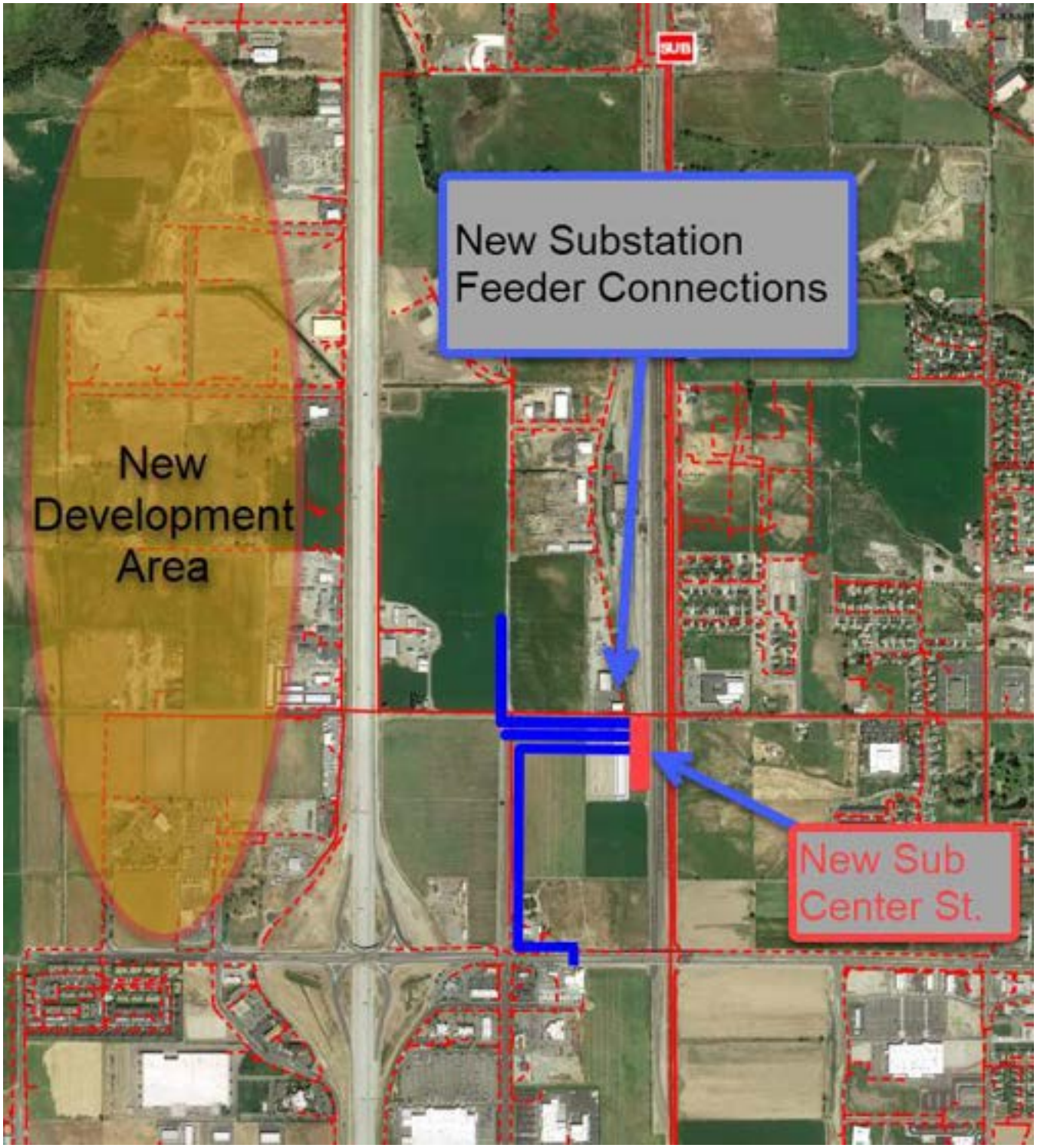
Benefit(s) of Project: Several 600-amp feeders with capacity to serve and existing and new loads will be built. New feeder capacity would be available for growth and outage restoration.

Opinion of Probable Cost: $1,205,700

Risk Assessment: n/a

Alternatives Considered: n/a

Project # Springville-3 Map



Project # : Springville-4	**Project Title:** Peaking Generation Capacity—15 MW	**Priority:** Moderate High – 3 Year

Project Description: Install new peaking generation capacity—six 2.5 MW gensets with generation building and substation.

Issue(s): 1) Forecast loads will increase the amount of energy Springville will need to supply, by purchase or generation, during peak use periods.

Design Criteria Violation: n/a

Benefit(s) of Project: New generation capacity to serve existing and new load provides operational flexibility for normal and peak use periods.

Opinion of Probable Cost: $25,500,000

Risk Assessment: Without this new peaking generation capacity the city will need to purchase more energy to meet increasing demand. The uncertainty of the energy price on the market can be avoided by having peaking generation capacity.

Alternatives Considered: n/a

Project # : Springville-5	**Project Title:** Rebuild/reconductor Feeder 602 Tie to 201	**Priority:** Moderate High– 3 Year

Project Description: Reconductor/rebuild the Compound feeder 602 tie to feeder 201 about 2,000' with 600-amp capacity circuit.

Issue(s): 1) Existing conductor on feeder 602 is 1/0 copper that limits the ability to tie the feeders in normal or N-1 conditions.

Design Criteria Violation: n/a

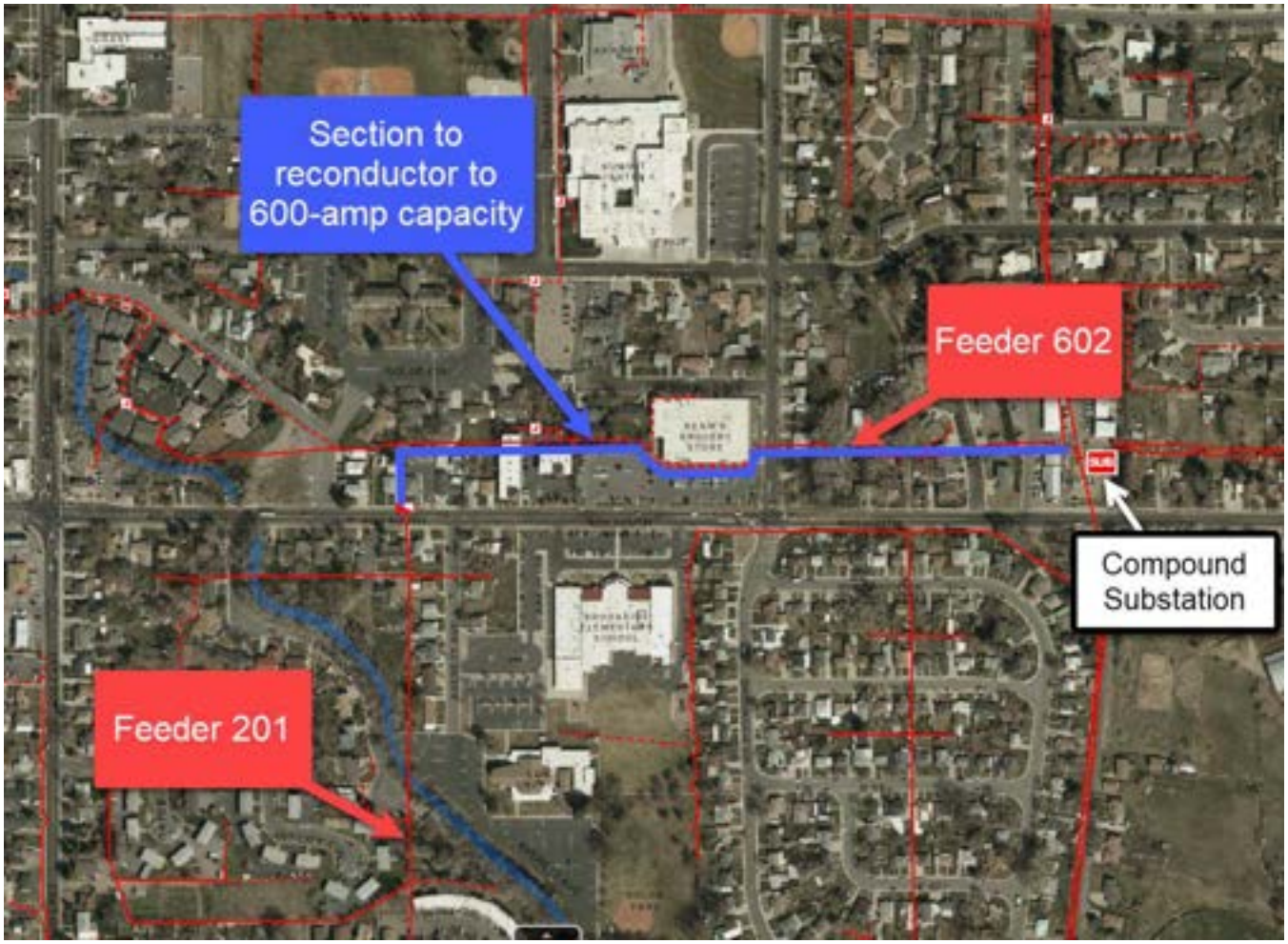
Benefit(s) of Project: A 600-amp tie with capacity to serve existing and new loads will be built. Operational flexibility for normal and N-1 conditions.

Opinion of Probable Cost: $290,700

Risk Assessment: n/a

Alternatives Considered: n/a

Project # Springville-5 Map



Project # : Springville-6	**Project Title:** System Model, with linked OMS and Dispatch	**Priority:** Medium Priority – 5 Year

Project Description: Develop a Power System Model (such as using Mil Soft software) and link to a software system for OMS, and Dispatch.

Issue(s): 1) Growth of the power system in size and complexity decreases system awareness, and increases outage response time.

Design Criteria Violation: n/a

Benefit(s) of Project: Increased system awareness for management and operations. Speeds outage response time. Provides means for rapid switching orders.

Opinion of Probable Cost: $433,000

Risk Assessment: n/a

Alternatives Considered: n/a

8. PROJECT TABLE ("EXHIBIT 2")

Springville City Power
2024 Impact Fee Study
Impact Fee Facility Plan (IFFP)
Projects 2024-2028

PRIORITY ONE - HIGH PRIORITY													
Number	Projects	Note 1	Underbuilt	Current Conductor	Proposed Conductor	Current Capacity (MVA)	Upgrade Capacity (MVA)	Additional Capacity (MVA)	Reason	Percent to Growth	Estimated Cost (Construction Year)	To Impact Fee	Implementation Schedule
1	Reconductor/rebuild the Baxter to WHPP 46 kV transmission line	about 15,000 ft with 795 ACSR	yes	477 ACSR	795 ACSR	47	68	21	N-1 overload on loss of Dry Crk to Hobble Crk line	27.90%	$2,779,016	$775,569	1 year
2	Rebuild/reconductor Baxter Feeder 104	about 7,426 ft. 4/0 ACSR with 477 ACSR tie between Baxter substation and Compound substation along 1200 N (Mapleton) and 900 E		4/0 ACSR	477 ACSR	7.47	12.7	5.23	Overload at normal condition	23.80%	$695,656	$165,566	1 year
Springville-1	Reconductor/rebuild the Baxter to Compound 46kV transmission line	About 11,800 ft with 795 ACSR	yes	4/0 ACSR	795 ACSR	26	68	42	Increased transmission reliability and capacity. Operational flexible for normal and N-1 conditions.	56.00%	$1,927,120	$1,079,187	1 year
Springville-2	Replace/Upgrade North Substation Transformer	with a 25 MVA transformer				12	25	13	Expected loads in the area will exceed the capacity of existing North substation transformer	36.40%	$1,610,232	$586,124	1 year
Springville-P-1	Upgrades to Stouffers Substation	Prior Impact Fee Project. Add 46 kV circuit switchers on the existing transformers, and 46 kV transmission breakers							Allowing for system to be looped	35.00%	$532,314	$186,310	1 year
Springville-P-2	New Substation Near Center Street	Prior Impact Fee Project. New substation with a 25 MVA transformer and four feeders on land near Center Street and 1500 West				0	25	25	New load, Baxter and North overload	37.60%	$3,341,624	$1,263,134	1 year
Springville-3	Build New Center Street Substation Feeders	Install new feeder connections from the new substation on Center St. to ties on the power system—2,200' tie to feeder 704 NW of new sub; 1,000' tie to feeder 203 east of new sub; and 3,200' tie to feeder 101 on 400 South			477 ACSR	0	12.7	12.7	new substation needs feeders built out to connections on the existing power system.	32.10%	$1,253,928	$402,511	1 year
Springville-P-3	Upgrade Feeder 103 Overhead	Prior Impact Fee Project. About 6,110 ft to 600-amp capacity from Baxter substation along 1600 South from SR51 to 950 West	yes	4/0 ACSR	477 ACSR	7.47	12.7	5.23	Overload at normal condition	21.20%	$434,335	$92,079	1 year
Springville-P-4	Add New Feeder to North Sub	Prior Impact Fee Project. About 1,500 ft. 600-amp capacity feeder	yes		477 ACSR	0	12.7	12.7	Load Growth in 503, 203, 706 feeders	9.40%	$154,253	$14,500	1 year
Springville-P-5	Capacitor Additions to System	Prior Impact Fee Project. Conduct engineering study, specify, design, and install 150 kVAR capacitor capacity per 1,000 kW of increase in load						750 kVAR	kVAR Support	100.00%	$52,000	$52,000	1 year

PRIORITY TWO - MODERATELY HIGH PRIORITY													
Number	Projects	Note 1	Underbuilt	Current Conductor	Proposed Conductor	Current Capacity (MVA)	Upgrade Capacity (MVA)	Additional Capacity (MVA)	Reason	Percent to Growth	Estimated Cost (Construction Year)	To Impact Fee	Implementation Schedule
Springville 4	Peaking Generation Capacity--15 MW total	six 2.5MW gensets with generation building and substation.							New generation capacity to serve existing and new load	0.00%	$27,580,800	$0	3 years
3	Replace/Upgrade Compound Substation Transformer & Feeders	with a 25 MVA transformer, and rebuild feeders to 600 amp capacity				12	25	13	Transformer overloads with 2026 loading	27.90%	$4,096,983	$1,366,258	3 years
Springville 5	Rebuild/reconductor Feeder 602 Tie to 201	about 2,000 ft with 600-amp capacity conductor.		1/0 Cu	477 ACSR	6.5	12.7	6.2	A 600-amp tie with capacity to serve existing and new loads will be built	63.40%	$326,990	$207,317	3 years

PRIORITY THREE - MEDIUM PRIORITY													
Number	Projects	Note 1	Underbuilt	Current Conductor	Proposed Conductor	Current Capacity (MVA)	Upgrade Capacity (MVA)	Additional Capacity (MVA)	Reason	Percent to Growth	Estimated Cost (Construction Year)	To Impact Fee	Implementation Schedule
4	New West Feeder from New Springville Substation (Center St.)	Build about 3,500 ft., 600 amp feeder (underground, overhead) from the new Springville substation west to the development area west of I-15.			1100 MCM & 477 ACSR	0	12.7	12.7	2026 N-1 overloads remaining feeders to area	30.40%	$644,583	$195,953	5 years
Springville 6	System Model with linked OMS and Dispatch	Develop a Power System Model (such as using MI Soft software) and link to a software system for OMS, and Dispatch.							Increased system awareness for management and operations. Speeds outage response time.	30.80%	$526,911	$162,258	5 years

SUVPS PROJECTS													
Number	Projects	Note 1	Underbuilt	Current Conductor	Proposed Conductor	Current Capacity (MVA)	Upgrade Capacity (MVA)	Additional Capacity (MVA)	Reason	Percent to Growth	Estimated Cost	To Impact Fee	Implementation Schedule
SUVPS-1	Transmission System Capital Projects for 16 MVA new capacity for Springville	Add 50 MVA transformer capacity at Dry Creek substation to serve Springville and other SUVPS member city customers. Other transmission system projects.				88.9	104.9	16	46 kV transformer and transmission capacity to serve growing load in member cities.	100.00%	$2,400,000	$2,400,000	1 year to 10 years

9. APPENDIX B: LOAD FORECAST BY FEEDER

Springville Power
Load Forecast
2023 to **2032**

Substation/Circuit	New Load or Transfer	Growth Rate	Transformer/Circuit Rating (MVA/Amps)		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Utilization
Baxter			24	MVA												
Baxter-T1			12	MVA	10.42	10.28	8.10	8.79	9.65	10.50	10.84	10.93	11.02	11.11	11.20	93%
101	base yr. peak	0.83%	600	Amps	233	235	237	239	241	243	245	247	249	251	253	
	Transfer to 802						-120									
	Adjusted load			Amps	233	235	117	119	121	123	125	127	129	131	133	22%
103	base yr. peak	0.83%	346	Amps	239	241	243	245	247	249	251	253	255	257	260	
	South Central 336 Units						15									
	South Central 336 Units							28								
	South Central 336 Units								36							
	South Central 336 Units									26						
	South Central 336 Units										21					
	Adjusted load			Amps	239	241	258	288	326	354	377	379	381	383	386	111%
Baxter-T2			12	MVA	6.87	9.32	9.38	9.43	9.49	9.55	9.61	9.66	9.72	9.78	9.84	82%
104	base yr. peak	0.83%	346	Amps	234	236	238	240	242	244	246	248	250	252	254	
	Transfer from 201					119										
	Adjusted load			Amps	234	355	357	359	361	363	365	367	369	371	373	108%
106	base yr. peak	0.83%	600	Amps	76	77	77	78	79	79	80	81	81	82	83	
	Adjusted load			Amps	76	77	77	78	79	79	80	81	81	82	83	14%
Baxter Sub Total				MVA	17.29	19.60	17.47	18.22	19.14	19.85	20.45	20.60	20.74	20.89	21.04	
Compound			12	MVA												
Compound-T1			12	MVA	13.05	11.46	11.69	11.92	12.16	12.40	12.65	12.90	13.15	13.41	13.68	114%
601	base yr. peak	1.90%	600	Amps	217	221	225	230	234	238	243	248	252	257	262	
	Transfer to 202					-70										
	Adjusted load			Amps	217	151	155	160	164	168	173	178	182	187	192	32%
602	base yr. peak	0.83%	300	Amps	73	74	74	75	75	76	77	77	78	79	79	
	Adjusted load			Amps	73	74	74	75	75	76	77	77	78	79	79	26%
603	base yr. peak	1.90%	530	Amps	243	248	252	257	262	267	272	277	282	288	293	
	Adjusted load			Amps	243	248	252	257	262	267	272	277	282	288	293	55%
604	base yr. peak	1.90%	220	Amps	57	58	59	60	61	63	64	65	66	68	69	
	Adjusted load			Amps	57	58	59	60	61	63	64	65	66	68	69	31%
Compound Sub Total				MVA	13.05	11.46	11.69	11.92	12.16	12.40	12.65	12.90	13.15	13.41	13.68	

Springville Power
Load Forecast

2023 to 2032

Substation/Circuit	New Load or Transfer	Growth Rate	Transformer/Circuit Rating (MVA/Amps)		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Utilization
Hobble Creek			25	MVA												
Hobble Creek T1			25	MVA	9.42	14.24	16.39	17.03	20.39	20.51	20.63	20.76	20.88	21.00	21.13	85%
701	base yr. peak	0.83%	400	Amps	0	0	0	0	0	0	0	0	0	0	0	
	Adjusted load			Amps	0	0	0	0	0	0	0	0	0	0	0	0%
702	base yr. peak	0.83%	400	Amps	0	0	0	0	0	0	0	0	0	0	0	
	Adjusted load			Amps	0	0	0	0	0	0	0	0	0	0	0	0%
703	base yr. peak	0.83%	600	Amps	186	188	189	191	192	194	195	197	199	200	202	
	Adjusted load			Amps	186	188	189	191	192	194	195	197	199	200	202	34%
704	base yr. peak	0.83%	600	Amps	50	50	51	51	52	52	53	53	53	54	54	
	West of I-15 250 Units						94									
	West of I-15 300 Units							112								
	West of I-15 400 Units								150							
	Adjusted load			Amps	50	50	145	257	408	408	409	409	409	410	410	68%
705	base yr. peak	0.83%	600	Amps	247	249	251	253	255	257	260	262	264	266	268	
	Adjusted load			Amps	247	249	251	253	255	257	260	262	264	266	268	45%
706	base yr. peak	0.83%	600	Amps	171	172	174	175	177	178	180	181	183	184	186	
	Transfer to 802							-88								
	Adjusted load			Amps	171	172	174	87	89	90	92	93	95	96	98	16%
Hobble Creek Sub Total				MVA	9.42	14.24	16.39	17.03	20.39	20.51	20.63	20.76	20.88	21.00	21.13	
Knight			12	MVA												
Knight-T1			12	MVA	11.32	10.11	7.55	7.64	7.74	7.83	7.93	8.02	8.12	8.22	8.32	69%
201	base yr. peak	0.83%	560	Amps	195	197	198	200	202	203	205	207	208	210	212	
	Transfer to 104					-119										
	Adjusted load			Amps	195	78	79	81	83	84	86	88	89	91	93	17%
202	base yr. peak	0.83%	600	Amps	108	109	110	111	112	113	113	114	115	116	117	
	Transfer from 601					70										
	Adjusted load			Amps	108	179	180	181	182	183	183	184	185	186	187	31%
203	base yr. peak	0.83%	600	Amps	210	212	213	215	217	219	221	222	224	226	228	
	Transfer to 803						-123									
	Adjusted load			Amps	210	212	90	92	94	96	98	99	101	103	105	18%
Knight Sub Total				MVA	11.32	10.11	7.55	7.64	7.74	7.83	7.93	8.02	8.12	8.22	8.32	

Springville Power
Load Forecast

2023 to 2032

Substation/Circuit	New Load or Transfer	Growth Rate	Transformer/Circuit Rating (MVA/Amps)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Utilization
900 North			12 MVA												
900 North-T1			12 MVA	8.28	8.15	8.21	8.28	8.35	8.42	8.49	8.56	8.63	8.70	8.77	73%
501	base yr. peak	0.83%	600 Amps	65	66	66	67	67	68	68	69	69	70	71	
	Adjusted load		Amps	65	66	66	67	67	68	68	69	69	70	71	12%
502	base yr. peak	0.83%	600 Amps	236	238	240	242	244	246	248	250	252	254	256	
	Adjusted load		Amps	236	238	240	242	244	246	248	250	252	254	256	43%
503	base yr. peak	0.83%	600 Amps	73	74	74	75	75	76	77	77	78	79	79	
	Adjusted load		Amps	73	74	74	75	75	76	77	77	78	79	79	13%
900 North Sub Total			MVA	8.28	8.15	8.21	8.28	8.35	8.42	8.49	8.56	8.63	8.70	8.77	
New Springville			25 MVA												
New Springville-T1			25 MVA	0.00	0.00	5.66	8.08	8.36	10.78	12.81	14.02	15.23	16.44	16.44	66%
801	base yr. peak	0.83%	600 Amps	0	0	0	0	0	0	0	0	0	0	0	
	Adjusted load		Amps	0	0	0	0	0	0	0	0	0	0	0	0%
802	base yr. peak	0.83%	600 Amps	0	0	0	0	0	0	0	0	0	0	0	
	Transfer from 101					120									
	Transfer from 706						88								
	Adjusted load		Amps	0	0	120	208	208	208	208	208	208	208	208	35%
803	base yr. peak	0.83%	600 Amps	0	0	0	0	0	0	0	0	0	0	0	
	Transfer from 203					123									
	Center-400 S 50 Units					19									
	Center-400 S 50 Units						24								
	Center-400 S 50 Units							13							
	Adjusted load		Amps	0	0	142	166	179	179	179	179	179	179	179	30%
804	base yr. peak	0.83%	400 Amps	0	0	0	0	0	0	0	0	0	0	0	
	West of I-15 300 Units								112						
	West of I-15 250 Units									94					
	West of I-15 150 Units										56				
	West of I-15 150 Units											56			
	West of I-15 150 Units												56		
	Adjusted load		Amps	0	0	0	0	0	112	206	262	318	374	374	94%
New Springville Sub Total			MVA	0.00	0.00	5.66	8.08	8.36	10.78	12.81	14.02	15.23	16.44	16.44	
Stouffer			24 MVA												
Stouffer-T1			12 MVA	7.23	7.27	7.32	7.38	7.43	7.48	7.53	7.59	7.64	7.69	7.75	65%
4015	base yr. peak	0.70%	1667 Amps	1003	1010	1017	1024	1032	1039	1046	1054	1061	1068	1076	
	Adjusted load		Amps	1003	1010	1017	1024	1032	1039	1046	1054	1061	1068	1076	65%
Stouffer-T2			12 MVA	7.23	7.28	7.33	7.38	7.43	7.49	7.54	7.59	7.65	7.70	7.75	65%
4035	base yr. peak	0.70%	1667 Amps	1004	1011	1018	1025	1033	1040	1047	1055	1062	1070	1077	
	Adjusted load		Amps	1004	1011	1018	1025	1033	1040	1047	1055	1062	1070	1077	65%
Stouffer Sub Total			MVA	14.46	14.55	14.65	14.76	14.86	14.97	15.07	15.18	15.28	15.39	15.50	

10. APPENDIX C: LOAD ESTIMATE BASIS FOR MAJOR DEVELOPMENTS

Development Area		Year										
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
W. I-15 Res	Units/yr	0	250	300	400	300	250	150	150	150	50	
	Accum Units	0	250	550	950	1250	1500	1650	1800	1950	2000	2000 Total Units
	Load Inc/Yr kVA	0	2017	2420	3227	2420	2017	1210	1210	1210	403	16134 Total kVA estimated
150 Units	Units/yr	0	50	65	35	0	0	0	0	0	0	
center-400 S	Accum Units	0	50	115	150	150	150	150	150	150	150	150 Total Units
	Load Inc/Yr kVA	0	403	524	282	0	0	0	0	0	0	1210 Total kVA estimated
So. Central	Units/yr	0	40	75	95	70	56	0	0	0	0	
336 Units	Accum Units	0	40	115	210	280	336	336	336	336	336	336 Total Units
	Load Inc/Yr kVA	0	323	605	767	565	452	0	0	0	0	2712 Total kVA estimated
All Developments	Units/yr	0	340	440	530	370	306	150	150	150	50	
Yearly	Accum Units	0	340	780	1310	1680	1986	2136	2286	2436	2486	2486 Grand Total Units
Impact/Increase	Load Inc/Yr kVA	0	2743	3550	4276	2985	2469	1210	1210	1210	403	20055 Gand Total kVA estimated

11. APPENDIX D: PROJECT COST ESTIMATE TABLES

Project 1:

46 kV Transmission Reconductor/Rebuild	Quantity		Labor Cost			Material Cost		Total
Baxter to WHPP	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	0	CKT FT	0.040	0	$ -	$ 50.00	$ -	$ -
Trenching								
Utility Trench for Single Conduit - Good Soil	0	LF	0.070	0	$ -	$ -	$ -	$ -
Conduit Installation								
New 6" PVC Conduit Installation	0	LF	0.040	0	$ -	$ 16.00	$ -	$ -
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	0	EA	5.000	0	$ -	$ 1,750.00	$ -	$ -
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	0	EA	32.000	0	$ -	$ 18,000.00	$ -	$ -
Overhead								
Steel Transmission Pole incl. Eng. & Foundation	6	EA	34.000	204	$ 14,551.32	$ 175,000.00	$ 1,050,000.00	$ 1,064,551.32
70' CL H1 Pole	61	EA	17.000	1037	$ 73,969.21	$ 5,000.00	$ 305,000.00	$ 378,969.21
46 kV insulators	183	EA	2.000	366	$ 26,106.78	$ 200.00	$ 36,600.00	$ 62,706.78
Guy & Anchor	14	EA	4.250	59.5	$ 4,244.14	$ 275.00	$ 3,850.00	$ 8,094.14
Three Phase Primary Tangent Pole Top Assembly	47	EA	5.500	258.5	$ 18,438.81	$ 475.00	$ 22,325.00	$ 40,763.81
Three Phase Primary Single Deadend Pole Top Assembly	28	EA	6.000	168	$ 11,983.44	$ 775.00	$ 21,700.00	$ 33,683.44
Three Phase Primary Conductor (795 kcmil ACSR)	15000	CKT FT	0.044	660	$ 47,077.80	$ 28.95	$ 434,250.00	$ 481,327.80
Three Phase - Primary Riser	0	EA	12.500	0	$ -	$ 1,375.00	$ -	$ -
							Total	**$ 2,070,096.49**

		Subtotals			
		Total Hours	2753	Subtotal Material	$ 1,873,725.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$ 196,371.49		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 2,070,096.49
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 110,120.00
Contingency	15.00%			Subtotal Contingency	$ 327,032.47
Engineering	8.00%			Subtotal Engineering	$ 165,607.72
				Total Budgetary Estimate	$ 2,672,856.68

Project 2:

Upgrade Baxter Feeder 104--600-amp Tie to 603/604	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	2,100	CKT FT	0.040	84	$ 5,991.72	$ 50.00	$ 105,000.00	$ 110,991.72
Trenching								
Utility Trench for Single Conduit - Good Soil	0	LF	0.070	0	$ -	$ -	$ -	$ -
Conduit Installation								
New 6" PVC Conduit Installation	0	LF	0.040	0	$ -	$ 16.00	$ -	$ -
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	4	EA	5.000	20	$ 1,426.60	$ 1,750.00	$ 7,000.00	$ 8,426.60
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	4	EA	32.000	128	$ 9,130.24	$ 18,000.00	$ 72,000.00	$ 81,130.24
Overhead								
45' CL 2 Pole	44	EA	8.500	374	$ 26,677.42	$ 1,800.00	$ 79,200.00	$ 105,877.42
Guy & Anchor	7	EA	4.250	29.75	$ 2,122.07	$ 275.00	$ 1,925.00	$ 4,047.07
Three Phase Primary Tangent Pole Top Assembly	37	EA	5.500	203.5	$ 14,515.66	$ 475.00	$ 17,575.00	$ 32,090.66
Three Phase Primary Single Deadend Pole Top Assembly	7	EA	6.000	42	$ 2,995.86	$ 775.00	$ 5,425.00	$ 8,420.86
Three Phase Primary Conductor (477 kcmil ACSR)	7426	CKT FT	0.044	326.744	$ 23,306.65	$ 16.00	$ 118,816.00	$ 142,122.65
Three Phase - Primary Riser	2	EA	12.500	25	$ 1,783.25	$ 1,375.00	$ 2,750.00	$ 4,533.25
							Total	**$ 497,640.46**
Subtotals								
			Total Hours	1232.994		Subtotal Material	$ 409,691.00	
Avg. Labor Rate	$ 71.33							
			Subtotal Labor		$ 87,949.46			
Sales Tax Material	0.00%					Subtotal Tax	$ -	
						Subtotal Labor, Material & Tax		$ 497,640.46
Equipment & Trucks	$ 40.00					Subtotal Equipment & Trucks		$ 49,319.76
Contingency	15.00%					Subtotal Contingency		$ 82,044.03
Engineering	8.00%					Subtotal Engineering		$ 39,811.24
						Total Budgetary Estimate		$ 668,815.49

Project 3:

Upgrade Compound Sub Transformer & Feeeders	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Substation Equipment and Installation								
46 kV -12.47 kV 25 MVA Tansformer w/ LTC	1	EA	100.000	100	$ 7,133.00	$ 1,357,630.00	$ 1,357,630.00	$ 1,364,763.00
138 kV Breaker (operate 46 kV)	1	EA	20.000	22	$ 1,569.26	$ 67,600.00	$ 67,600.00	$ 69,169.26
138 kV GOAB Switch	1	EA	24.000	24	$ 1,711.92	$ 14,560.00	$ 14,560.00	$ 16,271.92
46 kV Relaying VT	3	EA	6.000	18	$ 1,283.94	$ 9,880.00	$ 29,640.00	$ 30,923.94
15 kV GOAB Switch	1	EA	16.000	16	$ 1,141.28	$ 5,620.00	$ 5,620.00	$ 6,761.28
15 kV Recloser	3	EA	16.000	48	$ 3,423.84	$ 8,530.00	$ 25,590.00	$ 29,013.84
15 kV VT	3	EA	4.000	12	$ 855.96	$ 2,080.00	$ 6,240.00	$ 7,095.96
15 kV 1 phase fused disconnect	3	EA	2.000	6	$ 427.98	$ 5,720.00	$ 17,160.00	$ 17,587.98
15 kV 1 phase Hookstick Switch	18	EA	2.000	36	$ 2,567.88	$ 1,250.00	$ 22,500.00	$ 25,067.88
Metering/Relaying	1	EA	120.000	120	$ 8,559.60	$ 95,000.00	$ 95,000.00	$ 103,559.60
Steel Structures	1	EA	266.000	266	$ 18,973.78	$ 370,000.00	$ 370,000.00	$ 388,973.78
Concrete Foundations	1	EA	212.000	212	$ 15,121.96	$ 429,700.00	$ 429,700.00	$ 444,821.96
Substation Bus & Material	1	EA	596.000	596	$ 42,512.68	$ 227,000.00	$ 227,000.00	$ 269,512.68
Substation Conduit & Cable	1	EA	487.000	487	$ 34,737.71	$ 119,100.00	$ 119,100.00	$ 153,837.71
Substation Grounding	1	EA	160.000	160	$ 11,412.80	$ 26,000.00	$ 26,000.00	$ 37,412.80
Substation Site Work	500	CUYD	0.100	50	$ 3,566.50	$ 60.00	$ 30,000.00	$ 33,566.50
Substation SCADA & Communications	1	EA	48.000	48	$ 3,423.84	$ 15,600.00	$ 15,600.00	$ 19,023.84
15 kV Distribution Feeders	0	EA	180.000	0	$ -	$ 166,950.00	$ -	$ -
Substation Testing & Commissioning	1	EA	375.000	375	$ 26,748.75	$ 3,900.00	$ 3,900.00	$ 30,648.75
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	3,400	CKT FT	0.040	136	$ 9,700.88	$ 50.00	$ 170,000.00	$ 179,700.88
Trenching								
Utility Trench for Single Conduit - Good Soil	3,000	LF	0.070	210	$ 14,979.30	$ -	$ -	$ 14,979.30
Conduit Installation								
New 6" PVC Conduit Installation	3,000	LF	0.040	120	$ 8,559.60	$ 16.00	$ 48,000.00	$ 56,559.60
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	4	EA	5.000	20	$ 1,426.60	$ 1,750.00	$ 7,000.00	$ 8,426.60
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	4	EA	32.000	128	$ 9,130.24	$ 18,000.00	$ 72,000.00	$ 81,130.24
Overhead								
45' CL 2 Pole	4	EA	8.500	34	$ 2,425.22	$ 1,800.00	$ 7,200.00	$ 9,625.22
Guy & Anchor	4	EA	4.250	17	$ 1,212.61	$ 275.00	$ 1,100.00	$ 2,312.61
Three Phase Primary Tangent Pole Top Assembly	0	EA	5.500	0	$ -	$ 475.00	$ -	$ -
Three Phase Primary Single Deadend Pole Top Assembly	4	EA	6.000	24	$ 1,711.92	$ 775.00	$ 3,100.00	$ 4,811.92
Three Phase Primary Conductor (477 kcmil ACSR)	0	CKT FT	0.044	0	$ -	$ 16.00	$ -	$ -
Three Phase - Primary Riser	4	EA	12.500	50	$ 3,566.50	$ 1,375.00	$ 5,500.00	$ 9,066.50
							Total	**$ 3,414,625.55**

		Subtotals		
		Total Hours	3335	Subtotal Material	$ 3,176,740.00
Avg. Labor Rate	$ 71.33			
		Subtotal Labor	$ 237,885.55	
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 3,414,625.55
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 133,400.00
Contingency	15.00%			Subtotal Contingency	$ 532,203.83
Engineering	8.00%			Subtotal Engineering	$ 273,170.04
				Total Budgetary Estimate	$ 4,353,399.43

Project 4:

New Feeder West from New Center St. Sub	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	3,500	CKT FT	0.040	140	$ 9,986.20	$ 50.00	$ 175,000.00	$ 184,986.20
Trenching								
Utility Trench for Single Conduit - Good Soil	3,500	LF	0.070	245	$ 17,475.85	$ -	$ -	$ 17,475.85
Conduit Installation								
New 6" PVC Conduit Installation	3,500	LF	0.040	140	$ 9,986.20	$ 16.00	$ 56,000.00	$ 65,986.20
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	6	EA	5.000	30	$ 2,139.90	$ 1,750.00	$ 10,500.00	$ 12,639.90
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	6	EA	32.000	192	$ 13,695.36	$ 18,000.00	$ 108,000.00	$ 121,695.36
Overhead								
45' CL 2 Pole	0	EA	8.500	0	$ -	$ 1,800.00	$ -	$ -
Guy & Anchor	0	EA	4.250	0	$ -	$ 275.00	$ -	$ -
Three Phase Primary Tangent Pole Top Assembly	0	EA	5.500	0	$ -	$ 475.00	$ -	$ -
Three Phase Primary Single Deadend Pole Top Assembly	0	EA	6.000	0	$ -	$ 775.00	$ -	$ -
Three Phase Primary Conductor (477 kcmil ACSR)	0	CKT FT	0.044	0	$ -	$ 16.00	$ -	$ -
Three Phase - Primary Riser	0	EA	12.500	0	$ -	$ 1,375.00	$ -	$ -
							Total	**$ 402,783.51**

Subtotals					
		Total Hours	747	Subtotal Material	$ 349,500.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$ 53,283.51		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 402,783.51
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 29,880.00
Contingency	15.00%			Subtotal Contingency	$ 64,899.53
Engineering	8.00%			Subtotal Engineering	$ 32,222.68
				Total Budgetary Estimate	$ 529,785.72

Project Springville-1

46 kV Transmission Reconductor/Rebuild Baxter to Compound	Quantity Unit Qty.	 Unit Meas.	Labor Cost Hours per Unit	 Total Hours	 Total Cost	Material Cost Cost per unit	 total cost	Total Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	0	CKT FT	0.040	0	$ -	$ 50.00	$ -	$ -
Trenching								
Utility Trench for Single Conduit - Good Soil	0	LF	0.070	0	$ -	$ -	$ -	$ -
Conduit Installation								
New 6" PVC Conduit Installation	0	LF	0.040	0	$ -	$ 16.00	$ -	$ -
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	0	EA	5.000	0	$ -	$ 1,750.00	$ -	$ -
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	0	EA	32.000	0	$ -	$ 18,000.00	$ -	$ -
Overhead								
Steel Transmission Pole incl. Eng. & Foundation	4	EA	34.000	136	$ 9,700.88	$ 175,000.00	$ 700,000.00	$ 709,700.88
70' CL H1 Pole	40	EA	17.000	680	$ 48,504.40	$ 5,000.00	$ 200,000.00	$ 248,504.40
46 kV insulators	132	EA	2.000	264	$ 18,831.12	$ 200.00	$ 26,400.00	$ 45,231.12
Guy & Anchor	12	EA	4.250	51	$ 3,637.83	$ 275.00	$ 3,300.00	$ 6,937.83
Three Phase Primary Tangent Pole Top Assembly	20	EA	5.500	110	$ 7,846.30	$ 475.00	$ 9,500.00	$ 17,346.30
Three Phase Primary Single Deadend Pole Top Assembly	24	EA	6.000	144	$ 10,271.52	$ 775.00	$ 18,600.00	$ 28,871.52
Three Phase Primary Conductor (795 kcmil ACSR)	11800	CKT FT	0.044	519.2	$ 37,034.54	$ 28.95	$ 341,610.00	$ 378,644.54
Three Phase - Primary Riser	0	EA	12.500	0	$ -	$ 1,375.00	$ -	$ -
							Total	**$ 1,186,732.19**

Subtotals					
		Total Hours	1904.2	Subtotal Material	$ 1,299,410.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$135,826.59		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 1,435,236.59
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 76,168.00
Contingency	15.00%			Subtotal Contingency	$ 226,710.69
Engineering	8.00%			Subtotal Engineering	$ 114,818.93
				Total Budgetary Estimate	$ 1,852,934.20

Project Springville-2

Refer to Springville Power Estimate

Project Springville-3 (next three tables)

New Feeder N.West from New Center St. Sub	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	2,200	CKT FT	0.040	88	$ 6,277.04	$ 50.00	$ 110,000.00	$ 116,277.04
Trenching								
Utility Trench for Single Conduit - Good Soil	1,800	LF	0.070	126	$ 8,987.58	$ -	$ -	$ 8,987.58
Bore Conduit	400	LF				$ 116.00	$ 46,400.00	$ 46,400.00
Conduit Installation								
New 6" PVC Conduit Installation	1,800	LF	0.040	72	$ 5,135.76	$ 16.00	$ 28,800.00	$ 33,935.76
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	5	EA	5.000	25	$ 1,783.25	$ 1,750.00	$ 8,750.00	$ 10,533.25
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	5	EA	32.000	160	$ 11,412.80	$ 18,000.00	$ 90,000.00	$ 101,412.80
Overhead								
45' CL 2 Pole	0	EA	8.500	0	$ -	$ 1,800.00	$ -	$ -
Guy & Anchor	0	EA	4.250	0	$ -	$ 275.00	$ -	$ -
Three Phase Primary Tangent Pole Top Assembly	0	EA	5.500	0	$ -	$ 475.00	$ -	$ -
Three Phase Primary Single Deadend Pole Top Assembly	0	EA	6.000	0	$ -	$ 775.00	$ -	$ -
Three Phase Primary Conductor (477 kcmil ACSR)	0	CKT FT	0.044	0	$ -	$ 16.00	$ -	$ -
Three Phase - Primary Riser	0	EA	12.500	0	$ -	$ 1,375.00	$ -	$ -
							Total	**$ 317,546.43**

Subtotals					
		Total Hours	471	Subtotal Material	$ 283,950.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$ 33,596.43		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 317,546.43
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 18,840.00
Contingency	15.00%			Subtotal Contingency	$ 50,457.96
Engineering	8.00%			Subtotal Engineering	$ 25,403.71
				Total Budgetary Estimate	$ 412,248.11

New Feeder East from New Center St. Sub	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	1,000	CKT FT	0.040	40	$ 2,853.20	$ 50.00	$ 50,000.00	$ 52,853.20
Trenching								
Utility Trench for Single Conduit - Good Soil	450	LF	0.070	31.5	$ 2,246.90	$ -	$ -	$ 2,246.90
Bore Conduit	550	LF				$ 116.00	$ 63,800.00	$ 63,800.00
Conduit Installation								
New 6" PVC Conduit Installation	450	LF	0.040	18	$ 1,283.94	$ 16.00	$ 7,200.00	$ 8,483.94
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	3	EA	5.000	15	$ 1,069.95	$ 1,750.00	$ 5,250.00	$ 6,319.95
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	3	EA	32.000	96	$ 6,847.68	$ 18,000.00	$ 54,000.00	$ 60,847.68
Overhead								
45' CL 2 Pole	0	EA	8.500	0	$ -	$ 1,800.00	$ -	$ -
Guy & Anchor	0	EA	4.250	0	$ -	$ 275.00	$ -	$ -
Three Phase Primary Tangent Pole Top Assembly	0	EA	5.500	0	$ -	$ 475.00	$ -	$ -
Three Phase Primary Single Deadend Pole Top Assembly	0	EA	6.000	0	$ -	$ 775.00	$ -	$ -
Three Phase Primary Conductor (477 kcmil ACSR)	0	CKT FT	0.044	0	$ -	$ 16.00	$ -	$ -
Three Phase - Primary Riser	0	EA	12.500	0	$ -	$ 1,375.00	$ -	$ -
							Total	**$ 194,551.67**

Subtotals

		Total Hours	200.5	Subtotal Material	$ 180,250.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$ 14,301.67		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 194,551.67
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 8,020.00
Contingency	15.00%			Subtotal Contingency	$ 30,385.75
Engineering	8.00%			Subtotal Engineering	$ 15,564.13
				Total Budgetary Estimate	$ 248,521.55

New Feeder South from New Center St. Sub	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	3,200	CKT FT	0.040	128	$ 9,130.24	$ 50.00	$ 160,000.00	$ 169,130.24
Trenching								
Utility Trench for Single Conduit - Good Soil	3,050	LF	0.070	213.5	$ 15,228.96	$ -	$ -	$ 15,228.96
Bore Conduit	150	LF				$ 116.00	$ 17,400.00	$ 17,400.00
Conduit Installation								
New 6" PVC Conduit Installation	3,050	LF	0.040	122	$ 8,702.26	$ 16.00	$ 48,800.00	$ 57,502.26
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	7	EA	5.000	35	$ 2,496.55	$ 1,750.00	$ 12,250.00	$ 14,746.55
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	7	EA	32.000	224	$ 15,977.92	$ 18,000.00	$ 126,000.00	$ 141,977.92
Overhead								
45' CL 2 Pole	0	EA	8.500	0	$ -	$ 1,800.00	$ -	$ -
Guy & Anchor	0	EA	4.250	0	$ -	$ 275.00	$ -	$ -
Three Phase Primary Tangent Pole Top Assembly	0	EA	5.500	0	$ -	$ 475.00	$ -	$ -
Three Phase Primary Single Deadend Pole Top Assembly	0	EA	6.000	0	$ -	$ 775.00	$ -	$ -
Three Phase Primary Conductor (477 kcmil ACSR)	0	CKT FT	0.044	0	$ -	$ 16.00	$ -	$ -
Three Phase - Primary Riser	0	EA	12.500	0	$ -	$ 1,375.00	$ -	$ -
							Total	**$ 415,985.93**

Subtotals

		Total Hours	722.5	Subtotal Material	$ 364,450.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$ 51,535.93		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 415,985.93
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 28,900.00
Contingency	15.00%			Subtotal Contingency	$ 66,732.89
Engineering	8.00%			Subtotal Engineering	$ 33,278.87
				Total Budgetary Estimate	$ 544,897.69

Project Springville-4

(August 30, 2023, email, from Shawn Black to Michael Anderson)

As far as new installation, we received bids this year that include a building along with gensets, but again exclude underlying land, gas infrastructure, water and sewer infrastructure, and most importantly a substation.

Shawn,

Here is some recent budgetary info. The column that may make the most sense to you is the one labeled "genset installed price". That has everything but the building in the price.

Plant Size	Genset Model	Site Gen ekW	# of Gens	Site Facility ekW	Site Facility MW	Emission Technology	Order Processing Description	Estimated Availability with March 15, 2023 PO. Units begin Shipping	Genset Installed Price	Genset Installed $/kW	Genset Installed with Building Price Baked In	Genset Installed with Building Price Baked In $/kw	Total Project Price, Turnkey Services for Complete Generation Facility	Project $/kW
10 MW	G3520H	2,492	4	9,968	9.968	SCR	Standard 110 Week lead Time	4/1/2025	$ 3,348,205.94	$1,343.58	$ 4,084,162.05	$1,638.91	$ 16,336,648.22	$ 1,638.91
10 MW	G3520H	2,492	4	9,968	9.968	SCR	PO within 1 month for reserved gens	10/1/2023	$ 3,139,679.74	$1,259.90	$ 3,875,635.86	$1,555.23	$ 15,502,543.43	$ 1,555.23
15 MW	G3520H	2,492	6	14,952	14.952	SCR	Standard 110 Week lead Time	4/1/2025	$ 3,283,897.90	$1,317.78	$ 3,924,348.27	$1,574.78	$ 23,546,089.60	$ 1,574.78
15 MW	G3520H	2,492	6	14,952	14.952	SCR	PO within 1 month for reserved gens	10/1/2023	$ 3,075,371.71	$1,234.10	$ 3,719,822.07	$1,491.10	$ 22,294,932.42	$ 1,491.10

Kind Regards,

The more generators installed helps spread the cost out for the building. These numbers came to me on February 9, 2023. I believe they have gone up a little since then.

The cost of a substation would be similar to the one we are building in the West Fields. We will be into that substation around $4,000,000. We wouldn't need a breaker house in a powerplant substation because the generator switchgear would be included in the power plant bid and building, so I think an estimate of $3,300,000 would work. I am not sure how to include the land, gas or water price?

I think a good estimate for future peaking capacity would be 15 MW at a cost of about $25,500,000 for (6) Caterpillar 3520H gensets along with building and substation. Which would be about $1700 per kw.

Project Springville-5

Upgrade Compound Feeder 602--600-amp Tie to 201	Quantity		Labor Cost			Material Cost		Total
	Unit Qty.	Unit Meas.	Hours per Unit	Total Hours	Total Cost	Cost per unit	total cost	Unit Cost
Underground Primary Cable Installation								
3-Phase 15 kV Cable (1100 Al w/1/6 Con. Neutral)	1,175	CKT FT	0.040	47	$ 3,352.51	$ 50.00	$ 58,750.00	$ 62,102.51
Trenching								
Utility Trench for Single Conduit - Good Soil	1,105	LF	0.070	77.35	$ 5,517.38	$ -	$ -	$ 5,517.38
Conduit Installation								
New 6" PVC Conduit Installation	1,105	LF	0.040	44.2	$ 3,152.79	$ 16.00	$ 17,680.00	$ 20,832.79
Switchgear Installation & Equipment								
Box Pad Base for - Three Phase Switch PME Switchgear	2	EA	5.000	10	$ 713.30	$ 1,750.00	$ 3,500.00	$ 4,213.30
PME-9 Switchgear (2-600 Amp Sw. & 2-200 Amp Fused)	2	EA	32.000	64	$ 4,565.12	$ 18,000.00	$ 36,000.00	$ 40,565.12
Overhead								
45' CL 2 Pole	12	EA	8.500	102	$ 7,275.66	$ 1,800.00	$ 21,600.00	$ 28,875.66
Guy & Anchor	6	EA	4.250	25.5	$ 1,818.92	$ 275.00	$ 1,650.00	$ 3,468.92
Three Phase Primary Tangent Pole Top Assembly	6	EA	5.500	33	$ 2,353.89	$ 475.00	$ 2,850.00	$ 5,203.89
Three Phase Primary Single Deadend Pole Top Assembly	6	EA	6.000	36	$ 2,567.88	$ 775.00	$ 4,650.00	$ 7,217.88
Three Phase Primary Conductor (477 kcmil ACSR)	1621	CKT FT	0.044	71.324	$ 5,087.54	$ 16.00	$ 25,936.00	$ 31,023.54
Three Phase - Primary Riser	3	EA	12.500	37.5	$ 2,674.88	$ 1,375.00	$ 4,125.00	$ 6,799.88
							Total	**$ 215,820.85**

Subtotals					
		Total Hours	547.874	Subtotal Material	$ 176,741.00
Avg. Labor Rate	$ 71.33				
		Subtotal Labor	$ 39,079.85		
Sales Tax Material	0.00%			Subtotal Tax	$ -
				Subtotal Labor, Material & Tax	$ 215,820.85
Equipment & Trucks	$ 40.00			Subtotal Equipment & Trucks	$ 21,914.96
Contingency	15.00%			Subtotal Contingency	$ 35,660.37
Engineering	8.00%			Subtotal Engineering	$ 17,265.67
				Total Budgetary Estimate	$ 290,661.85

Project Springville-6

SCADA		120000	(20k each of 5 subs, 20k engineering)			
OMS		100000				
Model		190000	(30k software, 150k field audit, 10k eng)			
Dispatch		23000				
	total	433000				

12. APPENDIX E: SUVPS PROJECTS FROM "SOUTHERN UTAH VALLEY JOINT STUDY REPORT, 2022"

Executive Summary and Project Summary Table included here.

1.0 EXECUTIVE SUMMARY

The 2022 Southern Utah Valley joint study was initiated to address significant system load growth projections for the area in one study that combines and coordinates the individual study efforts that have previously been performed by SUVPS, SUVPS members, UAMPS and PacifiCorp on their individual transmission systems.

This planning study is the product of representatives of the signatory organizations. The study establishes best system improvement recommendations to serve projected loads based on a single utility concept. The study does not establish the requirement for any party to fund projects or operational considerations. Further discussions regarding cost-sharing and the responsibilities of each party are ongoing and will continue on a project-by-project basis.

The local transmission system in the Southern Utah Valley area was analyzed with projected load from 2022 through 2036. Load projections from each utility were organized by year and imported into 15 corresponding load flow models. Each year has an associated "gross load" derived from the load flow cases, equal to the total load at SUVPS points of interconnection plus the total generation inside the SUVPS system. The gross load does not include other load in the Southern Utah Valley area. More information on load projections can be found in Section 5.

This study recommends projects that are to be constructed at or before a projected gross load level and associated year. Because that load estimation is representative of the system as a whole it is most accurate as a projection for larger system-wide projects, but the projected years and gross load levels may be earlier or later based on actual growth patterns. For this reason, the need for the recommended project should be reassessed by analyzing the conditions of the system with time to complete project procurement and construction. Timely execution of this analysis is necessary to enable completion of the project at or before its associated issue arises.

In addition, the project recommendations and estimated timing assume that every load will grow evenly. However, projects that address thermal and voltage issues occurring on local 46 kV transmission equipment will be more affected by variations in load growth between individual cities. The timing of these projects should therefore be reevaluated by the owners in each area if growth in that area deviates from projections. Further explanation of the issues that drive the need for each project can be found in the descriptions in Section 7.

Study recommendations to meet the projected conditions to 2036 are found in Table 1, organized by ascending load level where the driving issue is first observed:

Section	Project	Gross Load	Projected Year
7.1.1	Mercer-Spanish Fork 345 kV Line	215 MW	N/A
7.1.2	New SUVPS Point-of-Interconnection Substation at Spanish Fork (PacifiCorp)	215 MW	N/A
7.3.1	Build a new SUVPS POI-Taylor 138 kV Line	215 MW	2022
7.3.2	Build a new 138-46 kV source at Taylor	215 MW	2022
7.3.3	Build a new Nebo Power Station-Suter 46 kV Line	215 MW	2022
7.3.4	Install 46 kV Capacitor Bank at Canyon Road	215 MW	2022

Section	Project	Gross Load	Projected Year
7.2.1	New Distribution Capacity – 1900S, West (Salem), Leland, New Springville	243 MW	2023
7.3.5	Install 46 kV Capacitor Bank at Dry Creek	243 MW	2023
7.3.6	Reconductor Canyon Road-Taylor 46 kV Line	243 MW	2023
7.3.7	Reconductor Baxter-Dry Creek 46 kV Line	243 MW	2023
7.2.3	New Distribution Capacity – West (SESD), North (Spanish Fork), North West (Spanish Fork), Oberg (Spanish Fork)	270 MW	2024
7.2.2	Convert North Substation to 138 kV	270 MW	2024
7.2.4	New Distribution Capacity – Spanish Fork (PacifiCorp)	303 MW	2025
7.2.5	New Distribution Capacity – 1700 W (Payson), Veridian (Salem), Hamilton (SESD)	303 MW	2025
7.1.3	Loop Spanish Fork-Hale 138 kV Line into Dry Creek	303 MW	2025
7.2.6	New Distribution Capacity – Davis (Salem)	322 MW	2026
7.3.8	Install Third 138-46 kV Transformer at Dry Creek (Or Upgrade Existing Two)	322 MW	2026
7.3.9	Install 46 kV Capacitor Bank at Suter	322 MW	2026
7.3.10	Reconductor Strawberry-SUVPS POI 46 kV Line	337 MW	2027
7.3.11	Install 46 kV Capacitor Bank at Taylor	353 MW	2028
7.3.12	Reconductor Strawberry-Hamilton-Veridian 46 kV Line	353 MW	2028
7.3.13	Reconductor Dry Creek-New Springville 46 kV Line	385 MW	2030
7.3.14	Build new Nebo Power Station-Taylor 138 kV Line	403 MW	2031
7.3.15	Reconductor Payson 46 kV Lines	420 MW	2032
7.3.16	Reconductor Veridian-Davis Tap 46 kV Line	437 MW	2033
7.1.4	Create a Transfer-Trip Scheme for Dry Creek-Spanish Fork Outages	437 MW	2033
7.1.5	Reconductor Clover Tap-Nebo (PacifiCorp) 138 kV Line	455 MW	2034
7.3.17	Move Normal-Open Point from Whitehead to Woodhouse	472 MW	2035

Table 1 – Summary of Projects

Note: Estimated years for "Distribution Capacity" projects were furnished by each utility and not determined by this study.