of the meters are for commercial customers or the city as the customer. Going forward it is assumed that 95% of new meters will be for residential customers.

2.2.4 GROWTH AREAS

The areas of the city that are expected to see new growth are shown in Figure 3. The areas identified are considered residential based on the current projections.

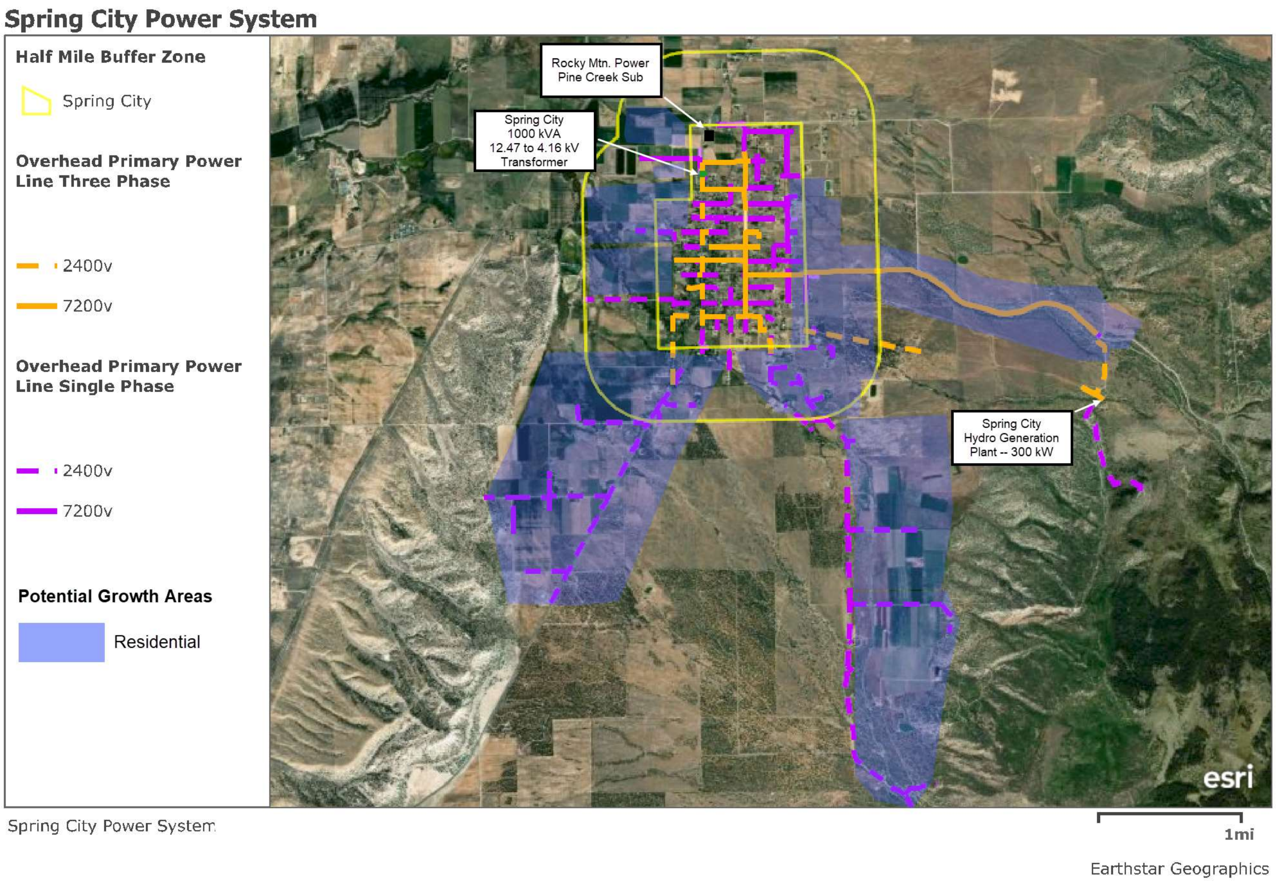

Figure 3-Growth Area Projection Map

2.3 EXISTING INFRASTRUCTURE CAPACITIES

2.3.1 POWER SYSTEM SOURCE--SUBSTATION

Electric power is supplied to Spring City from Pine Creek Substation that is owned and maintained by Rocky Mountain Power. Spring City takes delivery at 12.47 kV.

2.3.2 DISTRIBUTION SYSTEM

The power distribution system that is owned and operated by Spring City Power has two main circuit branches. One circuit branch starts at the Spring City 1000 kVA transformer about 600 North Main and runs south down Main Street. This circuit branch operates at 4.16 kV. The other circuit branch starts at a circuit recloser located about 700 North Main feeding east three blocks and running south down 300 East. This circuit branch operates at 12.47 kV. The capacities of the main line and each main branch are listed in the table below. The ultimate capacity of the Spring City Power system is limited by the capacity that is available from the RMP Pine Creek substation.

The associated capacities of the Spring City Power system's main line and two branch circuits are listed in Table 1.

Table 1-System Capacity

System Element	Conductor Size	Element Capacity Rating (kVA)
North Main Street 12.47 kV from Substation	4/0 ACSR	7,042
Main St. to 300 East(1) (700 North) 12.47 kV	1/0 ACSR	2,430 (normal(2)) 2,873 (emergency(3))
Main Street 4.16 kV	1/0 ACSR	1,000(4) After conversion to 12.47 kV this capacity limit will be the same as the row above.

(1) The recloser setting proposed for the 12.47 kV recloser in the Spring City Capital Facilities Plan has a 140 amp minimum trip.

(2) The normal capacity limit shown here is calculated using 50% of the conductor normal rating, that is also about 80% of the recloser 140 amp minimum trip (this provides a margin to avoid un-necessary tripping under normal load.) Capacity of 1/0 ACSR conductor at 12.47 kV is 4,860 kVA.

(3) The emergency capacity limit shown here is calculated using 95% of the 140 minimum trip to allow higher loading during emergency situations while staying below the minimum trip level.

(4) The capacity on the existing 4.16 kV system is limited by the 1,000 kVA transformer feeding the system. Capacity of 1/0 ACSR conductor at 4.16 kV is 1,620 kVA.

The two circuit branches of the Spring City distribution system are routed so that they can be connected together forming a loop. At the present the two sides of the loop operate at different voltages so they cannot be connected to form a loop. This is due to the partial completion of the system voltage conversion project that has been underway for several years.

2.4 LEVEL OF SERVICE

The Spring City Power system level of service for customers is based on having sufficient distribution line capacity to feed a looped system from either direction. The design criteria followed to achieve this is to limit loading to 50% of the rated capacity on the main circuit branch conductors. This ensures that there is sufficient reserve capacity built into the system to maintain service during the loss of one main circuit branch (one side of the loop) while in the peak load season.

The system voltage design criteria of Spring City Power are to maintain voltage within a range of +/- 5% nominal voltage in normal operation, and within a range of -10% to +5% during short-term emergency operation. Table 2 lists these loading and voltage design criteria.

Table 2-System Design Criteria

Element	**Normal System**	**During Short-term Emergency (“N-1” Contingency)**
North Main Street 12.47 kV from Substation (Main feeder)	100% of conductor rating	100% of conductor rating
Main St. to 300 East (700 North) 1/0 ACSR at 12.47 kV (East side of the loop)	50% of conductor rating 2,430 kVA	95% of recloser minimum trip setting 2,873 kVA
Main Street 1/0 ACSR at 4.16 kV (West side of the loop)	100% of Step-down transformer rating 1,000 kVA (2,430 kVA after conversion to 12.47 kV—transformer goes away)	115% of Step-down transformer rating 1,150 kVA
Voltage	+/- 5%	+ 5% to -10%

2.5 DEMANDS ON CURRENT SYSTEM

The peak load demand on the current system in 2020 was 1,180 kW. The Spring City Capital Facilities Plan documents a load flow analysis performed using a computer model that provides insight on the system loading. See Table 3 for the details on the 2020 power demand, and the modeled load flow analysis.

Table 3 - Spring City 2020 Peak Power Demand & Modeled 2020 Peak Demand

August 2020 Peak Demand		**kW**	**Power Factor**	**kVA**
Spring City UAMPS Meter Total		1,180	0.95	1,242
Modeled 2020 Load Flow[(1)]	**% of Total Demand**	**kW**	**Power Factor**	**kVA**
Main St. to 300 East (700 North) Branch 12.47 kV	44%	543	0.95	572
Main Street Branch 4.16 kV	56%	687	0.95	723

[(1)] The load flow analysis modeled peak demand shows the estimated relative split of the power demand between the two existing system circuit branches. In the load flow analysis the sum of the two branches is about 4% higher than the August 2020 peak demand.

2.6 DEMANDS WITH GROWTH (LOAD GROWTH FORECAST)

Historic power demand growth rate has averaged about 5.4% annually from 2015 to 2020. The power demand growth rate used for this forecast is 5.2% annually from 2021 to 2025. The forecast peak power demand on the system from 2021-2025 is shown in Figure 4 as “Projected Demand.” The Spring City distribution peak power demand in 2025 is projected to be 1,425 kW.

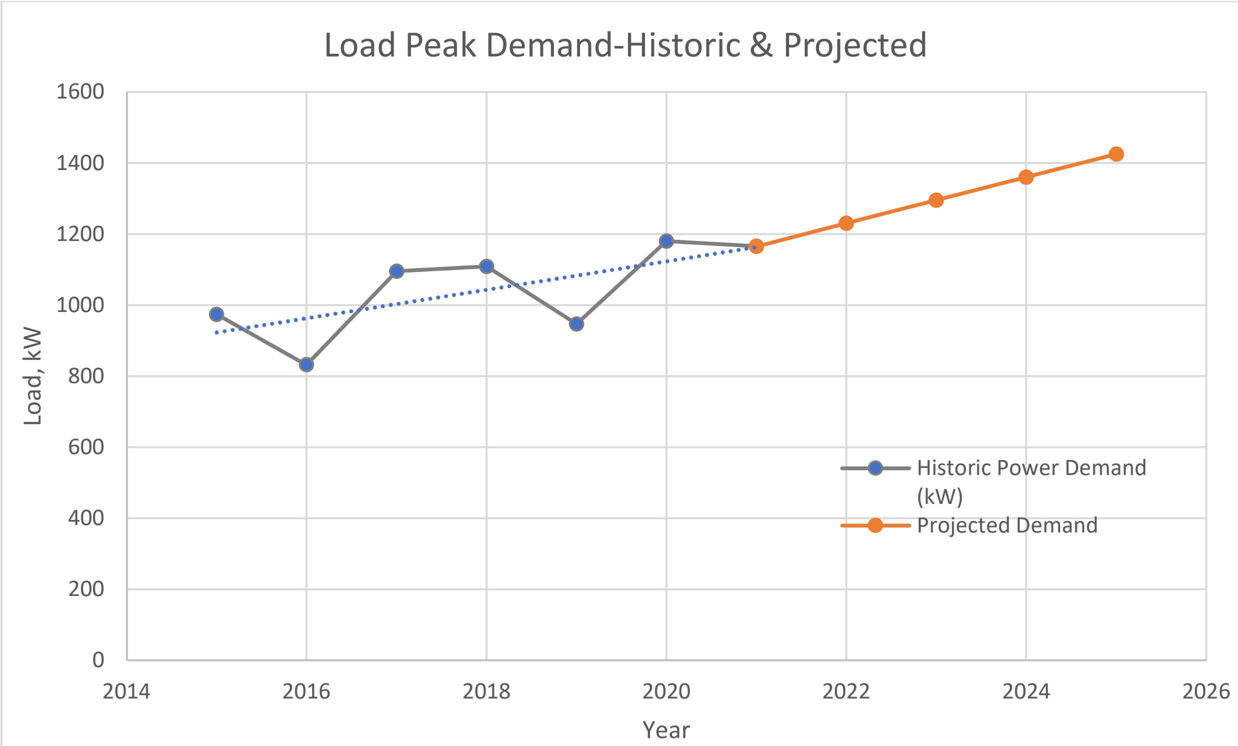

Figure 4- Power Demand

2.7 AREA-SPECIFIC LOAD FORECAST

In order to plan the capital expansion of the Spring City power system a load forecast specific to the potential growth areas in and around Spring City was performed for the 5-year period considered in this analysis.

The map of Spring City (Figure 3) shows where future residential development is anticipated. From this information the 2021-2025 area-specific load forecast was developed showing the projected power demand after five years of building in these areas.

Prior work performed by Intermountain Consumer Professional Engineers, Inc., on a Spring City Capital Facilities Plan (June 2020) concluded the following related to the forecast of new loads and where and when new load was likely to connect: (the following statements are quoted from the Spring City Capital Facilities Plan)

- “It is projected that about 10 to 13 new homes will be connected to the electrical system each year for the next five years.”
- “The new load is expected to include 19 large (5 acre) homes in a new subdivision up Canal Canyon”. [these are estimated at 9 kW each]
- “Another 31 average size homes estimated at 5 kW each…are also expected.” [these are spread throughout and around the city]

From this information the 2021-2025 area-specific load forecast was developed showing the projected power demand after the five years of building in these areas. The projected new load ("Forecast Demand") projected for 2025 is 326 kW as shown in Table 4.

Table 4-Area-Specific Load Forecast

Spring City Growth Area	Number of homes expected	Power Demand per Customer (kW)	Forecast Power Demand (kW)
County (Served by Spring City) Residential 5 Acre Lots-south of city up Canal Canyon	19	9	171
City Residential on 1 Acre Lots-throughout and around city	31	5	155
Totals	**50**		**326**

2.8 IFFP PROJECTS--PROJECTS TO MEET FORECAST DEMAND

In order to achieve the Spring City Power level of service while meeting the forecast power demand the projects included in the Spring City Capital Facilities Plan (June 2020) are required. All of the projects from the Spring City Capital Facilities Plan (June 2020) become part of the Impact Fee Facilities Plan (IFFP). The projects are described here and listed in Table 5 with the project's probable costs.

2.8.1 DISTRIBUTION SYSTEM VOLTAGE CONVERSION PROJECT

Spring City is in the process of converting the 4.16 kV distribution system to 12.47 kV. The conversion includes upgrading insulators, cutouts, transformers, and arrestors to 12.47 kV. It is projected that by the year 2025 Spring City will have their entire power system converted to 12.47 kV.

The capacity of the 4.16 kV system is limited by the 1000 kVA transformer that feeds it. Complete system conversion to a 12.47 kV distribution system will eliminate the need for the 1000 kVA transformer and increase the overall system capacity to 2,430 kVA—a 1,430 kVA increase in system capacity. This project is also a part of achieving the Spring City level of service of having sufficient distribution line capacity to feed a looped system from either direction.

The voltage conversion project is what is counted in the “Capacity Added” total in Table 5 since it represents the increase of the capacity of the system. The projects discussed below – the recloser installation and new switch—are required to utilize the new capacity of the converted 12.47 kV system at the Spring City Power level of service, so they are included as IFFP projects.

2.8.2 NEW 12.47 kV RECLOSER TO REPLACE 4.16 kV RECLOSER

The existing 4.16 kV recloser near 600 North Main St. needs to be replaced with a 12.47 kV recloser as part of the system voltage conversion. The system currently has two circuit branches that are operated at two different voltages. Both circuit branches are protected with a recloser. This project is required to maintain the Spring City level of service—two circuit branches feeding a looped system from either direction.

2.8.3 NEW 12.47 kV SWITCH

A new 12.47 kV three phase unitized switch needs to be installed in the loop of the two circuit branches—at about 150 South 300 East. Once the 4.16 kV circuit branch is converted to 12.47 kV there will be two 12.47 kV circuits. This switch will be used as a normally open point between the two 12.47 kV circuit branches that form the loop. This normally open point will be closed as necessary to feed the circuits from a different direction during an outage or for maintenance. This project is required to maintain the Spring City level of service—two circuit branches feeding a looped system from either direction.

2.9 COST OF IFFP PROJECTS REQUIRED

The opinion of the probable costs of the projects discussed in Section 2.8 are shown in Table 5. The probable cost basis are discussed in this section. The opinion of probable costs shown are in 2020-dollars.

2.9.1 DISTRIBUTION SYSTEM VOLTAGE CONVERSION COST

The city has budgeted $30,000 per year over the next five years to complete the distribution system voltage conversion. This is a total of $150,000 for the project during 2021-2025. Spring City Power provided this estimated cost of completing the system voltage conversion. This estimated cost is the same as the cost estimate for this project from the Spring City Capital Facilities Plan (June 2020).

2.9.2 NEW 12.47 kV RECLOSER COST

A 12.47 kV three-phase, overhead pole-mounted recloser with control is estimated to cost about $30,000. One of these reclosers is required to replace the 4.16 kV recloser as part of completing the system voltage conversion. The basis of this cost comes from the Spring City Capital Facilities Plan (June 2020).

2.9.3 NEW 12.47 kV SWITCH COST

The estimated cost of a new 12.47 kV three-phase unitized overhead pole-mounted switch is about $7,000. This cost estimate comes from the Spring City Capital Facilities Plan (June 2020).

Table 5- IFFP Projects & Capital Facilities Plan (CFP)

Proposed Project	Reason	Added Capacity	Year	CFP or IFFP Project	Opinion of Probable Cost
1. Convert the 4.16 kV circuit to 12.47 kV	The city is upgrading to 12.47 kV to increase capacity to meet the power demand of future growth.	1,430 kVA	2021-2025	CFP & IFFP	$150,000
2. New 12.47 kV Recloser	As part of the system voltage conversion, it will be necessary to install a new 12.47 kV recloser to replace the existing 4.16 kV recloser	n/a	2025	CFP & IFFP	$30,000
3. New 12.47 kV switch	Install a new switch at 150 South 300 East. This will be used as a normally open point in the loop between the two 12.47 kV circuits (after conversion).	n/a	2025	CFP & IFFP	$7,000
				All Projects Total	$187,000
				IFFP Projects Total	$187,000

2.10 CERTIFICATION OF THE IFFP

I certify that the attached Impact Fee Facilities Plan:

1. includes only the costs of public facilities that are:
    a. allowed under the Impact Fees Act; and
    b. actually incurred; or
    c. projected to be incurred or encumbered within six years after the day on which each impact fee is paid;
2. does not include:
    a. costs of operation and maintenance of public facilities;
    b. costs for qualifying public facilities that will raise the level of service for facilities, through impact fees, above the level of service that is supported by existing residents;
    c. an expense for overhead, unless the expense is calculated pursuant to a methodology that is consistent with generally accepted cost accounting practices and the methodological standards set forth by the federal Office of Management and Budget for federal grant reimbursement;
3. complies in each and every relevant respect with the Impact Fees Act.

CERTIFIED BY:

Signature:

Name: Michael R. Anderson

Title: **Principal Engineer, Active Power Engineering, LLC**

Date: **04/16/2021**

3 IMPACT FEE ANALYSIS (IFA)

3.1 GENERAL

Impact fees are one-time charges imposed on new development activity as a condition of development approval to mitigate the costs associated with necessary capital improvements to the public infrastructure, in this case the electric system. Utah has put in place Title 11, Chapter 36a (the "Impact Fee Act"). The "Impact Fee Act" imposes requirements regulating impact fees which apply to municipally owned electric utilities.

To implement impact fees as defined by the Impact Fee Act, "local political subdivisions" must conduct an analysis with the following elements:

Identification of the impact on or consumption of any existing capacity of a public facility by the anticipated development activity;

Identification of the anticipated impact on system improvements required by the anticipated development activity to maintain the established level of service;

Demonstration of how those impacts on system improvements are reasonably related to the development activity;

Estimation of the proportionate share of the costs for existing capacity that will be recouped and the costs of impacts on system improvements; and

Explanation of how the impact fee was calculated.

Electric impact fees in Spring City are calculated using incremental costs, which is one of several methods for calculating impact fees. This method determines what new developments pay for improvements or a portion of the improvements needed to serve them. This is a "capacity-based" fee structure. In this way existing customers are not burdened by the new growth.

This Impact Fee Analysis involves three basic steps or sub-analyses: (1) determining an Impact Fee rate that applies a cost per each kVA of new power demand from development; (2) determining the kVA power demand for the typical customer types and service levels; and (3) calculating the proposed Impact Fee

3.1.1 IMPACT FEE RATE CALCULATION

As in shown Table 5 the total cost of new development-related projects in the IFFP is $187,000. The Impact Fee rate analysis is shown in Table 6.