HYRUM CITY
Power & Light
Impact Fee Analysis

November 2020

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EXECUTIVE SUMMARY

General:

This report documents the study performed by Active Power Engineering, LLC, for Hyrum City Power & Light to update the Hyrum City Electric Power Impact Fee Analysis.

The Utah impact fee statute Title 11 Chapter 36a "Impact Fee Act" requires the city imposing impact fees to (1) prepare an Impact Fee Facilities Plan, (2) perform an Impact Fee Analysis, (3) calculate the Impact Fee(s), and (4) certify the Impact Fee Facilities Plan and Impact Fee Analysis.

This report includes an Impact Fee Facilities Plan, Impact Fee Analysis, calculated Impact Fees and certification of the Impact Fee Facilities Plan and Impact Fee Analysis.

This report provides the background, requirements, basis, projects and analysis for new customer impact fees that must be collected for new electric service to be connected. The impact fee applies to new services and upgraded services. The 10-year period 2021 to 2030 was used in this impact fee analysis.

Impact Fee Facilities Plan (IFFP):

According to the Statute, the "Impact Fee Facilities Plan ("IFFP") shall identify (a) demands placed upon existing public facilities by new development activity; and (b) the proposed means by which the political subdivision will meet those demands."

The projected demand placed upon the Hyrum City electric power system is directly tied to the forecasted population growth. Historic growth in population has averaged about 3.5%. Power demand growth rate has averaged about 5% and is projected continue to be between 3% to 4.6% per year going forward. Hyrum City power system load was 13.0 MVA in 2020 (21.6 MVA including JBS Meat Packing Plant). Hyrum City load is forecast to add 7.6 MVA of new development load between 2021 and 2030, totaling 20.6 MVA in 2030.

To serve the projected demand new power facilities are required. The IFFP includes a new substation (Dairy) with a 25 MVA transformer, an upgraded substation transformer adding 5 MVA capacity, an upgraded 46 kV transmission line to feed the new transformer capacity, and two new distribution feeders to utilize the new capacity. The total estimated cost of these projects is about $6,070,500. The projects add 30 MVA of system capacity.

Impact Fee Analysis (IFA):

The Impact Fee Analysis ("IFA") portion of the Statute states that (1) "each local political subdivision or private entity intending to impose an impact fee shall prepare a written analysis of each impact fee:" and (2) "shall also prepare a summary of the impact fee analysis designed to be understood by a lay person."

Electric impact fees in Hyrum City are calculated using incremental costs. 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.

The 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.

The Impact Fee rate was calculated by dividing the IFFP total project cost (adjusted for construction cost escalation, and interest earned on collected impact fees) by the added system capacity. The Impact Fee rate has been calculated to be $240.39/kVA.

The kVA power demand for residential customers was calculated from the typical kW demand experienced by Hyrum City on 200-amp and 400-amp services and the typical power factor. The kVA power demand for commercial customers was calculated using the service panel size, type (i.e., single phase or three phase), voltage, power factor and the panel utilization factor typical for commercial customers.

Several sample recommended Impact Fees calculated using the Impact Fee rate and power demand calculated above are shown below.

Residential Service Level	**Typical Power Demand (kW Impact)**	**Power Factor**	**Est. kVA Impact**	**Recommended Impact Fee**
200 Amp	5	95.0%	5.3	$1,265
400 Amp	10	95.0%	10.5	$2,530
Type of Commercial Service	**Typical Power Demand (kW Impact)**	**Power Factor**	**Est. kVA Impact**	**Recommended Impact Fee**
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	$4,615
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	$6,928
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	$15,989

Conclusions: The analysis documented in this report satisfies the Impact Fee Act requirements. The Electric Power Impact Fee can be implemented upon Hyrum city council approval and completion of the other appropriate steps outlined in the Impact Fee Act.

1 IMPACT FEE STUDY--GENERAL

1.1 INTRODUCTION

The purpose of this study is to update the Hyrum City Electric Power Impact Fee Analysis. This will help the city determine an impact fee for new electrical customers. This document provides the background, requirements, basis, projects and analysis for new customer impact fees that must be collected for new electric service to be connected. The impact fee applies to new services and upgraded services.

This analysis was performed using publicly available information, information supplied by Hyrum City, and spreadsheets developed for conducting this analysis. Certain assumptions about areas of development, growth rates, and needed projects were used in the analysis in arriving at the recommended impact fee. These assumptions are believed to be appropriate and reasonable for the impact fee analysis. The 10-year period 2021 to 2030 was considered in this impact fee analysis.

This analysis complies with all the requirements of the Utah "Impact Fees Act", Utah Statute U.C.A 11-36a.

The Electric Power Impact Fee can be implemented upon Hyrum city council approval and completing the other appropriate steps outlined in the Impact Fees Act .

1.2 IMPACT FEE STATUTE REQUIREMENTS

The Utah impact fee statute requires the city imposing impact fees to (1) prepare an Impact Fee Facilities Plan, (2) perform an Impact Fee Analysis, (3) calculate the Impact Fee(s), and (4) certify the Impact Fee Facilities Plan and Impact Fee Analysis. This report documents the completion of all four of these requirements.

According to the statute, the "Impact Fee Facilities Plan ("IFFP") shall identify (a) demands placed upon existing public facilities by new development activity; and (b) the proposed means by which the political subdivision will meet those demands."

The Impact Fee Analysis ("IFA") portion of the Statute states that (1) "each local political subdivision or private entity intending to impose an impact fee shall prepare a written analysis of each impact fee:" and (2) "shall also prepare a summary of the impact fee analysis designed to be understood by a lay person." The requirements of the IFA include identifying the estimated impacts on existing capacity and system improvements caused by the anticipated development activity. The political subdivision must also estimate the proportionate share of:

(i) the costs of existing capacity that will be recouped and (ii) the costs of the impacts on system improvements that are reasonably related to the new development activity.

The calculation of the Impact Fee may include the following:

(a) The construction contract price;

(b) The cost of acquiring land, improvements, materials, and fixtures;

(c) The cost for planning, surveying, and engineering fees for services provided for and directly related to the construction of the system improvements; and

(d) For a political subdivision, debt service charges, if the political subdivision might use impact fees as a revenue stream to pay the principal and interest on bonds, notes or other obligations issued to finance the costs of the system improvements.

Also, the calculation of the Impact Fee must be based on realistic estimates and the assumptions underlying such estimates must be disclosed in the impact fee analysis.

2 IMPACT FEE FACILITIES PLAN (IFFP) FOR HYRUM CITY POWER SYSTEM

2.1 GENERAL

Hyrum City Power & Light, is a municipal electric utility serving approximately 3,220 customers in Hyrum, Cache County, Utah. The system coincident peak demand including the demand of the JBS Meat Packing Plant was 21.6 megawatts (MW) in summer 2020. The utility's service area is about 6 square miles including all of Hyrum City limits and a small additional area of Cache County. Hyrum City owns and operates one hydroelectric generator that is rated 350 kilowatts (kW). The power system consists of one 46-kilovolt (kV) delivery substation and three 46/12.47 kV distribution substations: 800 East, Hammer, and Center Street substations. A map of the city and power system is shown in Figure 1.

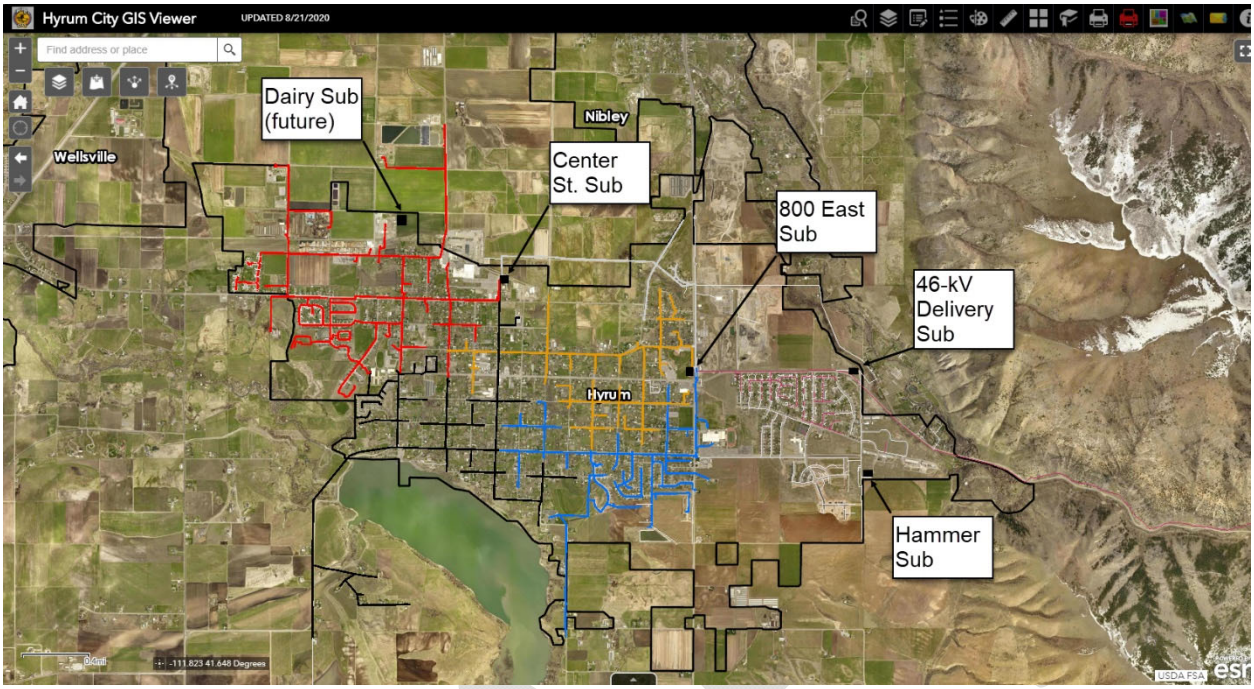

Figure 1-Hyrum City Power System Map

Hyrum City is a member of the Utah Associated Municipal Power Systems (UAMPS) organization. UAMPS is a member organization that provides wholesale electric-energy, transmission, and other energy services, on a nonprofit basis, to municipal-owned power systems. Hyrum City is able to participate along with other municipalities in projects including wind, natural gas, hydroelectric and coal-fired generation.

2.2 POPULATION AND GROWTH

The population of Hyrum City in 2019 was estimated by the Utah Governor's Office to be 8,619. The estimated population provided by Hyrum City for 2020 is 9,000. Population growth rate averaged over 2016-2020 is 2.5% to 3.5%, and the most recent year growth was about 4.5%.

2.2.1 POPULATION FORECAST

The population growth rate of 3.5% was applied over the 10-year period, 2021 to 2030, in this impact fee analysis. The estimated historic and projected future population of Hyrum City is shown in Figure 2.

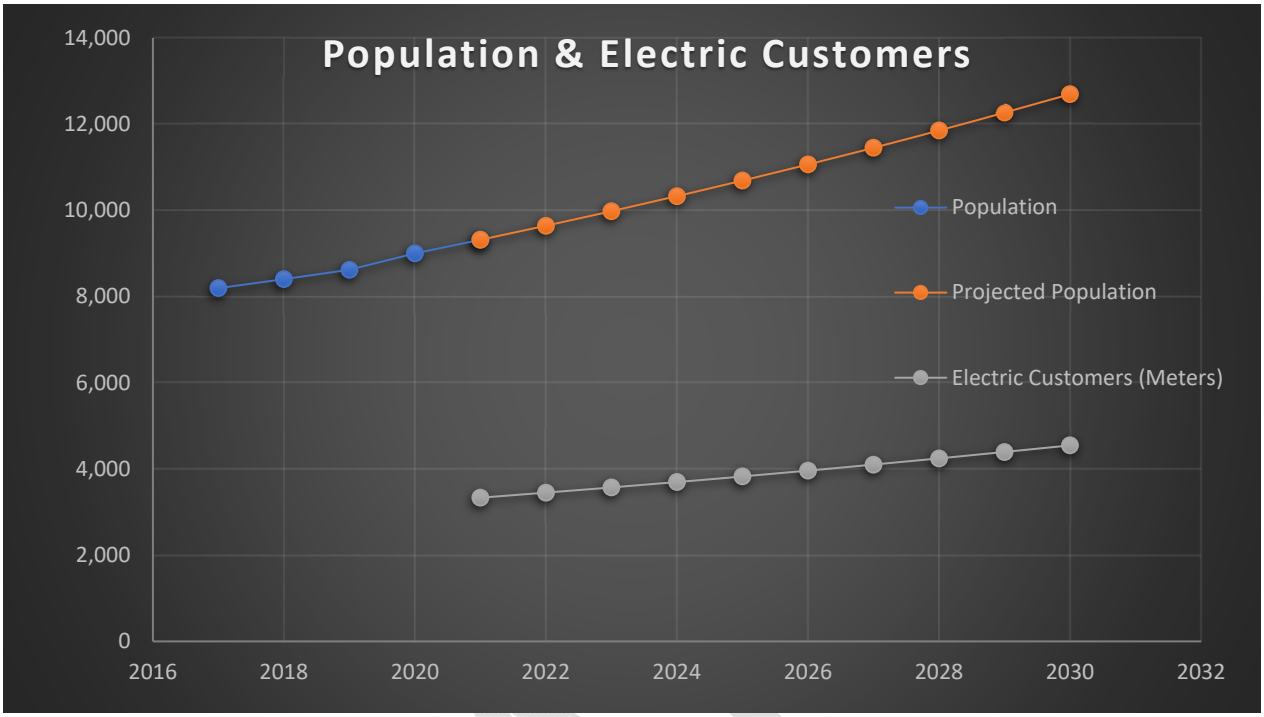

Figure 2 – Hyrum Population and Electric Customers

2.2.2 ELECTRIC CUSTOMERS

Hyrum City has about 3,220 electric meters installed as of 2020. Each meter is considered a customer, so the ratio of customers to population is 3,220:9,000 or 1 meter per 2.8 people. An estimated projection on the new of new meters or customers can be made from the population projection and the meters per population ratio. The projected number of total electric customers, or meters, is shown in Figure 2.

2.2.3 CUSTOMER FORECAST

The estimate for new meters is an average of 132 per year, some years might be less and some years might be more. Based on 2020 data, 94% of the meters are for residential customers, 4% of the meters are for commercial customers, and 2% of the meters are net meters or other type of meters. Going forward it is assumed that 94% 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 are identified as either residential or industrial based on the current zoning.

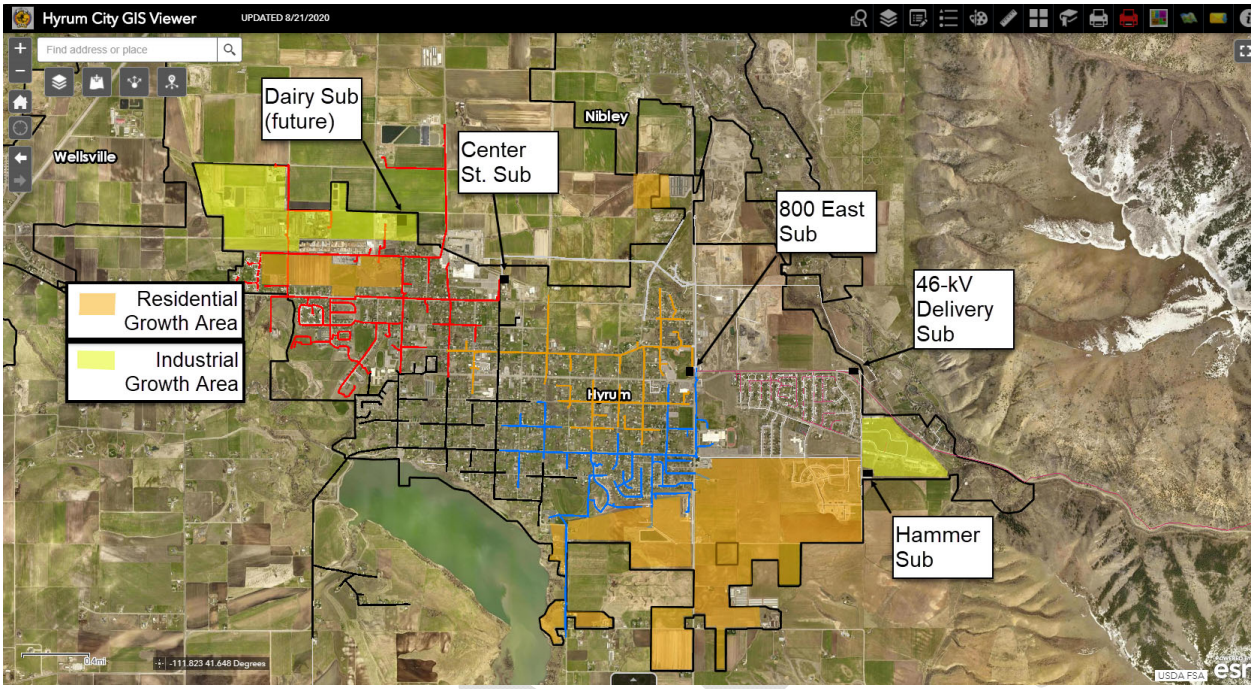

Figure 3-Growth Area Projection Map

2.3 EXISTING INFRASTRUCTURE CAPACITIES

2.3.1 TRANSMISSION SYSTEM AND SUBSTATIONS

Electric power is supplied to Hyrum City on a 46 kV transmission line owned and maintained by Rocky Mountain Power to one 46 kV breaker in the delivery substation. The city owns about 3.5 miles of 46 kV transmission line that feed four substations. An extension of the 46 kV transmission line will feed one future substation west of Center Street substation (the Dairy substation).

The 46 kV transmission system that is owned and operated by Hyrum City Power& Light has two branches. One branch goes to Hammer substation and another—the main branch—serves the substations at 800 East, Center Street, JBS[1] and will extend to feed the future Dairy substation. This main branch transmission line capacity is 23 MVA based on the 3/0 ACSR conductor rating (25 MVA short-term).

The substations and their associated transformers are listed in Table 1.

[1] JBS is a customer owned substation serving only the JBS plant. It is not counted as a Hyrum City Power distribution substation.

Table 1-Substation Transformers

Substation	Transformer Manufacturer	Transformer Rating (MVA)
800 East	Westinghouse	5
Center Street	Westinghouse	5
Hammer	ABB	10
Total Existing Transformer Rated Capacity		20
Dairy (Planned Future)	To be determined	10 (planned) 25 (ultimate)

2.3.2 DISTRIBUTION SYSTEM

From the three distribution substations there are nine 12.47/7.2 kV distribution feeders. These nine distribution feeders leaving the substations are generally constructed with 4/0 aluminum ACSR overhead conductor or 1100 MCM aluminum (Al) underground cable. The feeders built with 1100 MCM Al underground cable are classified as 600-amp circuits based on the limiting ratings of the other equipment in the system (e.g., reclosers, switchgear, elbows, bushings, connectors, etc.) The feeders built with 4/0 Al ACSR overhead conductor are rated at 340 amps and operated normally limited to 200 amps.

2.4 CURRENT LEVEL OF SERVICE

The current level of service is the system loading design criteria that Hyrum City Power & Light has historically used in designing, operating, and expanding the power system. The criteria followed is to limit loading to the base rating on substation transformers and to 80 percent of the rated capacity on main line feeder conductors. This ensures that there is sufficient reserve capacity built into the system to maintain service during the loss of a substation transformer or feeder while in the peak load season.

The system voltage design criteria of Hyrum City Power & Light 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)
Substation transformer loading	5 MVA on 800 East Sub 5 MVA on Center St. Sub 10 MVA on Hammer Sub	6.25 MVA on 800 East Sub 6.25 MVA on Center St. Sub 12.5 MVA on Hammer Sub (Transformer "Emergency" rating is 125% of its base rating)
Main line feeder loading	80% of conductor rating	100% of conductor rating
Main tie or main branch line loading	80% of conductor rating	100% of conductor rating
Voltage	+/- 5%	+ 5% to -10%

2.5 DEMANDS ON CURRENT SYSTEM

The peak load demand on the current system in 2020 was 21.66 MVA. This includes the load of the JBS plant. The Hyrum City distribution load not including the JBS plant was 12.34 MVA. See Table 3 for the details on the 2020 power demand.

Table 3 - Hyrum 2020 Peak Power Demand

July 2020 Peak Demand	MW	Power Factor	MVA	% of Total
Hyrum UAMPS Meter Total	19.912	0.9199	21.646	100%
JBS Meat Packing Plant UAMPS Meter	7.575	0.8778	8.630	39.9%
Hyrum City (without JBS)	12.337	0.9478	13.016	60.1%

Load on the main branch of the Hyrum owned and operated 46 kV transmission line in 2020 is estimated to have been 17.6 MVA (includes JBS load).

2.6 DEMANDS WITH GROWTH (LOAD GROWTH FORECAST)

Historic power demand growth rate has averaged about 5% from 2016 to 2020. Power demand growth correlates with and is tied to the population growth rate. The forecast peak load demand on the system from 2021-2030 is shown in Figure 4. The orange line Includes Hyrum City distribution load with the JBS plant load with a 3% growth rate per year applied. The blue line shows the Hyrum City distribution load only, with a 4.6% growth rate per year applied to it. The Hyrum City distribution peak load demand in 2030 is projected to be 20.6 MVA.

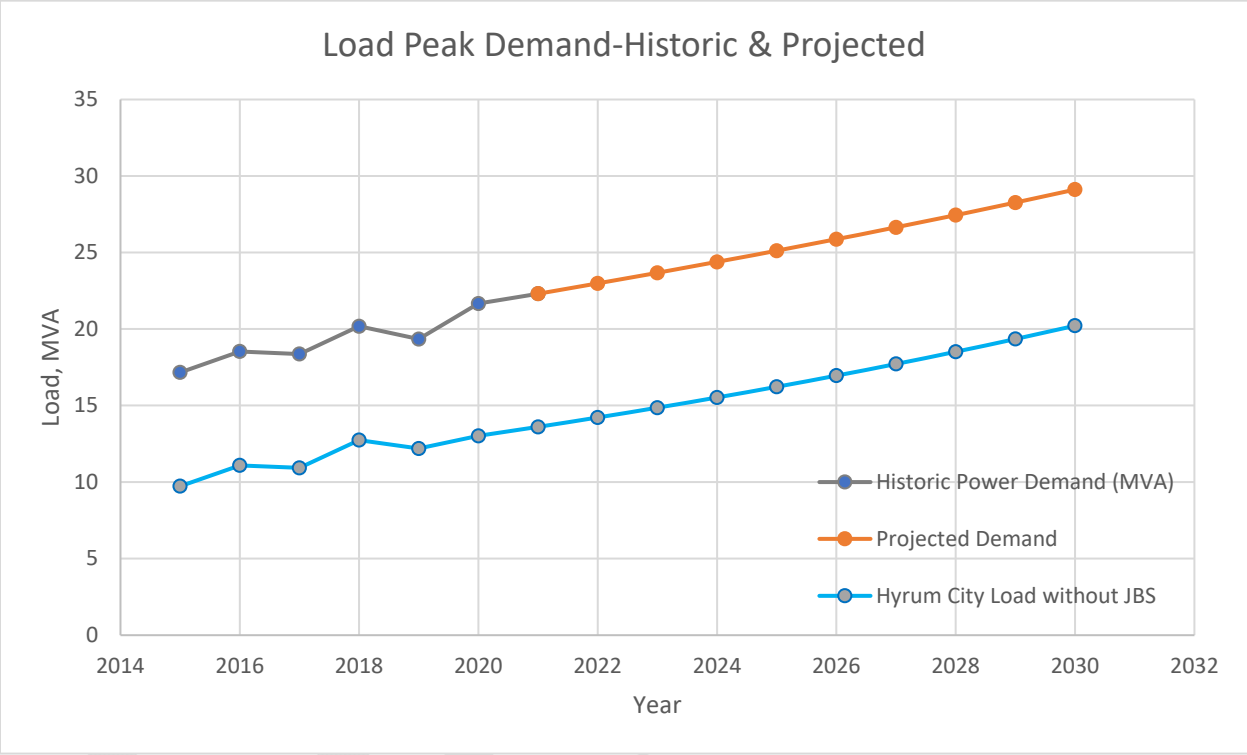

Figure 4- Power Demand

2.7 SPATIAL LOAD FORECAST

In order to plan the capital expansion of the Hyrum City power system, a spatial load forecast was performed. Spatial load forecast was performed using the growth areas provided in Figure 3 to obtain a prediction of future electric demand in those specific areas. The Figure 3 map of Hyrum City shows where and what types of future development is anticipated. From this information the 2021-2030 spatial load forecast was developed showing the projected power demand at build-out of these areas. The total Hyrum City power demand projected at build-out is approximately 20.6 MVA[2] as shown in Table 4.

[2] Does not include JBS substation/plant load

Table 4-Spatial Load Forecast

Hyrum City Zoning Category	Approx. Total Acres	Factor of Usable Acreage (Accounts for roads, parks, open space, etc.)	Number of Units per Acre	Demand per Customer (kW)	Spatial Forecast Demand (kW)
R-2 (Residential Multi Family)	725	0.4	4	5	5,800
M-2 (Manufacturing-Med. To Heavy)	250	0.625	0.36 (2.75 acres per unit)	25	1,400
Totals	975				7,200

Future Load (kW) (kVA @ 0.95 P.F.)	7,200 kW 7,579 kVA	From above Spatial Forecast
Hyrum City 2020 Peak Load (kVA)	13,016 kVA	(Without JBS)
Total (kVA)	20,595 kVA	Projected for 2030

2.8 PROJECTS FOR IFFP—REQUIRED CAPACITY ADDITIONS

The projects below are included in the IFFP to meet the demand of future growth. They are also listed with the project's probable costs in Table 5.

2.8.1 46 kV TRANSMISSION PROJECT

When the Dairy substation is built (10 MVA capacity initially) it will have about 5 MVA of new load on it. The Dairy substation and its load will be served by the main transmission branch. The year that the Dairy substation load is added the main branch transmission line is projected to be loaded over its normal rating.

Even if the Dairy substation load is not added, in the "N-1" contingency loss of Hammer substation the entire Hyrum load is on the transmission line. The projected load in 2022 that the main branch transmission line would carry in this "N-1" is 23.1 MVA which exceeds the 23 MVA normal rating.

When the new Dairy substation is built and loaded, but no later than 2022, the 46 kV transmission line to the substations at 800 East, Center Street, and JBS substations and the new Dairy substation needs to be rebuilt with conductor that adds at least 9 MVA additional capacity--such as 397.5 ACSR conductor (rated 44 MVA) or greater.

2.8.2 SUBSTATION TRANSFORMERS

Hyrum City substation transformer total existing base capacity is 20 MVA which is sufficient for 2021 projected load of about 13.6 MVA. However, the 2020 load on Center Street substation appears to be about 5.7 MVA which is over its base rating capacity of 5 MVA. Load transfer could be used to address this existing loading issue. This is an existing system issue the resolution of which is not included as an IFFP project.

Prior to building Dairy Sub the worst-case emergency ("N-1") contingency is the loss of the Hammer sub transformer (10 MVA capacity). In this "N-1" contingency there is emergency capacity of 12.5 MVA on the two remaining subs which is not enough capacity for the 13.6 MVA projected load in 2021. As development driven load continues to increase beyond this, another substation transformer or upgraded substation transformer is needed to serve the load. Either adding the Dairy substation or upgrading the Center St. substation transformer could fix this deficiency. The resolution of this issue is included in IFFP projects.

When the Dairy substation is built (10 MVA capacity initially) then the worst case emergency ("N-1") contingency would be the loss of the Dairy substation transformer (10 or 25 MVA)—there is emergency capacity of 25 MVA on the three remaining substations, which is enough capacity for the projected load until 2029. Another substation transformer or upgraded substation transformer is needed in 2029 to meet and serve the projected 2029 load under the worst-case emergency ("N-1") contingency. The resolution of this issue is included as an IFFP project.

2.8.3 DISTRIBUTION SYSTEM

In order to serve the projected new load one feeder with at least 360 amp capacity (477 ACSR overhead or 1100 MCM aluminum (Al) underground needs to be built, and another feeder of the same size is needed to back it up in the "N-1" contingency situation. Since the forecasted load is projected to be connected in two separate geographical areas, the southeast and northwest areas of the city, new feeders will be need in each area.

A total of two new feeders are considered necessary to maintain the level of service to Hyrum City Power & Light customers. One new feeder would be built into the northwest area and one new feeder would be built into the southeast area. This would likely satisfy the capacity requirements of new load in these areas. The new feeder built in the southeast area would likely be built from the Hammer substation into the areas that are being developed. The new Dairy substation or existing Center Street substation would be the source for the new feeder that would be built into the northwest area where it would be developed.

2.9 COST OF IFFP PROJECTS REQUIRED

The opinion of the probable costs of the capacity additions required and discussed in Section 2.8 are show in Table 5 and discussed in this section. Costs shown are 2020-dollar probable costs.

Table 5-IFFP Projects

Project	Added Capacity	Year	Opinion of Probable Cost
Build Dairy Substation	25 MVA (10 MVA initially, 25 MVA ultimate)	2021	$3,000,000
Center St. Substation Transformer Upgrade	5 MVA (10 MVA transformer replaces 5 MVA)	2021-2029	$800,000
Two New Feeders	15 MVA	2021-2026 (dependent on growth)	$575,000
46 kV Transmission Upgrade	21 MVA (44 MVA line replaces 23 MVA line)	2022 (or earlier when Dairy Sub is added)	$1,695,500
Capacity Added[3] (MVA)	**30 MVA**	**TOTAL Cost**	**$6,070,500**

2.9.1 SUBSTATION TRANSFORMER COST

The probable cost of the Dairy substation with a 25 MVA transformer is likely about $3,000.000. A transformer upgrade at Center St. substation to a 10 MVA transformer is an option in 2021, or required in 2029, and is likely about $800,000. These substation transformers are what are counted in the "Capacity Added" total in Table 5 since they represent the increase of the capacity of the system. The transmission upgrade and two new feeders are means to feed and utilize, respectively, the new transformer capacity.

2.9.2 FEEDER COST

Standard feeders are underground 1100 MCM aluminum (Al) feeders with a feeder breaker at the substation. The opinion of cost of a feeder is approximately $50,000 for the feeder breaker and $287,500 for an underground feeder that extends approximately one mile from the

[3] The 46 kV transmission upgrade is required for the capacity of the Dairy substation so it is not included in the total of the capacity added. Also, the two new feeders do not increase the system capacity but are needed to utilize it, so they are not included in the total of the capacity added.

substation. One feeder from Hammer substation and one feeder from the Dairy substation are included in Table 5.

2.9.3 46 KV TRANSMISSION COST

The cost of the 46 kV transmission upgrade is based on 46 kV transmission line costing about $500,000 per mile. The length of the 46 kV transmission line to be built--upgraded to higher capacity--is 3.39 miles. The opinion of probable cost on this project is $1,695,500.

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: _____

Title: _____

Date: _____

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 Hyrum 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 $6,070,500. The Impact Fee rate analysis is shown in Table 6.

As shown in Table 6 the estimated cost/kVA of new system capacity, including transmission and substation capacity, and distribution feeders, is $202.35/kVA at present day pricing and

$252.71/ kVA for projected 2029 pricing[4], assuming no interest is earned on the collected fees. However, if the current rate of 0.5% interest earnings[5] on invested funds can be maintained, the impact fee rate can be reduced to $240.39/kVA.

Table 6-Impact Fee Rate Calculation

Row Item	Value	Notes
(1) Total Cost of IFFP Projects	$6,070,500	2020-dollar costs of new development-related projects shown in Table 5
(2) Added kVA	30,000 kVA	25,000 kVA New Dairy Sub + 5,000 kVA transformer upgrade at Center St. Sub
(3) Cost per kVA	$202.35 per kVA	$(Row\ 1) \div (Row\ 2) = \frac{\$}{kVA}$
(4) 2029 Escalated Total Cost of Projects	$7,581,223	Assumed construction cost escalation rate of 2.5% per year. $(Row\ 1)x(1.025)^9$
(5) 2029 Escalated Cost per kVA	$252.71 per kVA	$(Row\ 4) \div (Row\ 2) = \frac{\$}{kVA}$
(6) Present Value of 2029 Escalated Total Cost of Projects	$7,211,707	Assumed interest earnings rate of 0.5% per year compounded quarterly, Impact fees collected evenly over 10 years
(7) Cost per kVA considering earned interest	$240.39	$(Row\ 6) \div (Row\ 2) = \frac{\$}{kVA}$
Impact Fee Rate	**$240.39**	

Hyrum City states that there is no cost of debt service since there are no bonds for electrical capital projects, and there are no offsets to project costs with grants or other alternate sources of payment. Therefore, the impact fees recommended for Hyrum City will be based on the rate of $240.39 per kVA of power demand added to the system.

[4] Calculated based on assumed construction cost escalation rate of 2.5%

[5] The 0.5% rate of return is the present rate of return available to the City for these funds.

3.1.2 POWER DEMAND AND IMPACT FEE CALCULATION

The methods used to determine the estimated power demand--kW impact--on the power system of residential customers and commercial customers are different as shown in the following sections. The power demand calculations shown in sections 3.1.2.1 and 3.1.2.3 are used in calculating the Impact Fee in sections 3.1.2.2 and 3.1.2.4. A summary of recommended Impact Fee charges for the Residential and Commercial customer classes is provided in Table 7 and in Table 8.

3.1.2.1 RESIDENTIAL POWER DEMAND

The estimated power demand--kW impact--of residential customers is based on typical usage rather than on electric panel size. There are two residential service levels recognized by Hyrum City Power & Light—200-amp service and 400-amp service. Typical historic power demand seen in the experience of Hyrum City Power & Light has been about 5 kW on average for a 200-amp residential service and about 10 kW on average on a 400-amp residential service. Power factor on residential services is typically about 95%.

3.1.2.2 RESIDENTIAL IMPACT FEE CALCULATION

Recommended residential Impact Fee is calculated based on Equation 1:

Equation 1

Single Phase Residential Calculation

$$\frac{Typical\ Residential\ Demand\ (kW)}{Power\ Factor} \times Impact\ Fee\ Rate(\$/kVA) = Incurred\ Fee$$

Example 200A 120/240V Single Phase Residential Service

$$For\ 200A\ Residential\ Service\text{:}\ \frac{5kW}{0.95} \times \$240.39/kVA = \$1{,}265$$

Table 7 shows the recommended Impact Fee charge for the two residential service levels.

Table 7. RESIDENTIAL IMPACT FEES

Residential Service Level	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
200 Amp	5	95.0%	5.3	$1,265
400 Amp	10	95.0%	10.5	$2,530

3.1.2.3 COMMERCIAL POWER DEMAND

Commercial customers should be assessed an impact fee amount that is based on their estimated load placing power demand on the system. The estimated power demand for commercial customer classes have been calculated using the service panel size, voltage, and panel utilization. Typical panel utilization seen in the experience of Hyrum City Power & Light has been about 40% on average. Table A in the Appendix shows the estimated power demand (column 2) for commercial customers with various typical service panel sizes (column 1).

3.1.2.4 COMMERCIAL IMPACT FEE CALCULATIONS

The calculation of the Impact Fee charges for commercial customer classes are based on the following Equation 2 and Equation 3:

Equation 2

Single Phase Calculation

$$\frac{Main\ Panel\ Size\ \times Line\ to\ Line\ Voltage\ \times\ Panel\ Utilization}{1000} \times Impact\ Fee\ Rate = Incurred\ Fee$$

Example 200A 120/240V Single Phase Service

$$For\ 200A\ Single\ Phase\ Service\text{:}\ \frac{200A\ \times 240V \times\ 0.4}{1000} \times \$240.39/kVA = \$4{,}615$$

Equation 3

3 Phase Calculation

$$\sqrt{3} \times \frac{Main\ Panel\ Size \times Line\ to\ Line\ Voltage \times Panel\ Utilization}{1000} \times Impact\ Fee\ Rate = Incurred\ Fee$$

Example 600A 120/208V Three Phase Service

$$600A\ Three\ Phase\ Service\text{:}\ \sqrt{3} \times \frac{600A\ \times 208V\ \times 0.4}{1000} \times \$240.39/kVA = \$20{,}785$$

A selected sample of recommended Impact Fee charges for commercial class customers is shown in Table 8. A complete table of recommended Impact Fee charges for commercial class customers is included in Table A in the Appendix.

Table 8. SELECTED COMMERCIAL IMPACT FEES

Type of Commercial Service	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	$4,615
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	$6,928
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	$15,989

3.2 CERTIFICATION OF THE IFA

I certify that the attached Impact Fee Analysis:

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; and
3. offsets costs with grants or other alternate sources of payment; and
4. complies in each and every relevant respect with the Impact Fees Act.

CERTIFIED BY:

CERTIFIED BY:

Signature: _____

Name: _____

Title: _____

Date: _____

HYRUM CITY
Power Department

APPENDIX

IMPACT FEE ANALYSIS
SUPPORTING DOCUMENTATION

Table A--Commercial Customer Power Demand and Recommended Impact Fee

COMMERCIAL IMPACT FEES -- Panel Utilization assumed 40%				
	Est. Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
Single Phase 120/240 V 200 Amp Panel	17.3	0.90	19.2	$4,615
Single Phase 120/240 V 400 Amp Panel	34.6	0.90	38.4	$9,231
Three Phase 120/208 V 200 Amp Panel	25.9	0.90	28.8	$6,928
Three Phase 120/208 V 400 Amp Panel	51.9	0.90	57.6	$13,857
Three Phase 120/208 V 600 Amp Panel	77.8	0.90	86.5	$20,785
Three Phase 120/208 V 800 Amp Panel	103.8	0.90	115.3	$27,713
Three Phase 120/208 V 1200 Amp Panel	155.6	0.90	172.9	$41,570
Three Phase 120/208 V 1600 Amp Panel	207.5	0.90	230.6	$55,427
Three Phase 277/480 V 200 Amp Panel	59.9	0.90	66.5	$15,989
Three Phase 277/480 V 400 Amp Panel	119.7	0.90	133.0	$31,977
Three Phase 277/480 V 600 Amp Panel	179.6	0.90	199.5	$47,966
Three Phase 277/480 V 800 Amp Panel	239.4	0.90	266.0	$63,954
Three Phase 277/480 V 1200 Amp Panel	359.2	0.90	399.1	$95,931
Three Phase 277/480 V 1600 Amp Service	478.9	0.90	532.1	$127,908
Three Phase 277/480 V 2000 Amp Service	598.6	0.90	665.1	$159,885
Three Phase 277/480 V 2500 Amp Service	748.2	0.90	831.4	$199,857
Three Phase 277/480 V 3000 Amp Service	897.9	0.90	997.7	$239,828