



Heber Light & Power Electric Impact Fee Analysis

March 2024



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Submitted Respectfully by:

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March 2024

Jason Norlen
General Manager
Heber Light & Power
31 South 100 West
Heber, UT 84032

Dear Mr. Norlen:

We are pleased to present a final report for the Impact Fee Analysis for Heber Light & Power (HLP). This report was prepared to provide HLP with a comprehensive examination of its existing impact fee structure by an outside party.

The specific purposes of this rate study are:

- Identify the fixed cost contributions to plant a new customer provides through electric rate tariffs
- Identify gross investment in plant necessary to service new growth at various sizes and voltages
- Determine impact fees by subtracting the present value of the fixed cost contributions from the impacts on plant

This report utilizes results of the electric cost of service study, financial projections performed in 2022 and HLP's capital improvement plan.

This report is intended for information and use by the utility and management for the purposes stated above and is not intended to be used by anyone except the specified parties.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Beauchamp", is written over a horizontal line.

Utility Financial Solutions, LLC
Mark Beauchamp
CPA, MBA, CMA
185 Sun Meadow Ct
Holland, MI 49424

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Introduction

This report identifies the impact fees Heber Light & Power should charge to new customers by identifying the cost of expansion of the system for new customers and subtracting customers contributions toward system expansion through rates charged to the new customers (Contribution Margin). The purpose of this analysis is to help ensure:

- New customers are not subsidizing existing customers.
- Existing customers are not subsidizing new customers.

This analysis helps ensure growth will benefit all customers in the system and not be adversely impacted by rate increases due to growth of the system. Growth causes additional capacity investments that often occur intermittently, and funds generated through impact fees are used to fund the expansions. As new customers are added to the system, HLP receives contribution margins through rates to fund a portion of the fixed infrastructure costs. When electric rates are set by the governing body they include a recovery for replacement cost of current assets that new customers will contribute toward funding through the rates charged. This is often referred to as net revenue that can be used to offset a certain amount of the system expansions. When the system expansion exceeds the net revenues from customers it results in impact charges for new customers that are identified in this report.

Steps to Complete the Analysis

The following steps were taken to complete the impact fee analysis:

- 1) Identify the contribution margins (Net Revenues) generated by rate tariffs and used to fund replacement cost of existing infrastructure.
- 2) The contribution margins are valued over an appropriate period to determine the present value of the new customers contribution margins.
- 3) Review and classification of plant investments into investment to serve future growth and other investments used to either replace infrastructure or does not increase capacity in the system.
- 4) Total system cost impacts based on new plant investments divided by residential equivalent factors are then reduced by the value of the contribution margins.
- 5) The residential equivalent factors are converted to amperage and proposed to each amperage based on potential capacity needs of each customer.

Step One – Determination of Contribution Margin

Contribution margins were calculated for each class by subtracting variable costs typically power supply costs from revenues to identify the contribution margins generated by each class.

Revenue minus variable cost equals contribution margin

Table 1 identifies the total revenue requirements for each class and subtracts the variable costs to identify the fixed cost recoveries for each class of customers. Expense used in the analysis is from the cost of service study completed in 2022. Variable costs are primarily driven by power supply and transmission costs, and most of the distribution system is classified as fixed cost recovery. This includes distribution and sub-transmission cost recovery used to fund operation, maintenance, replacement, and expansion of the distribution and sub-transmission system. Table 1 below identifies the total recovery of distribution operations for each class with the residential class generating \$5.4M, Small Commercial, \$999k, Medium Commercial, \$1.2M, and Large Commercial, \$508k.

Table 1 – Contribution Margin by Class

Expense Description	Expense Classification	Residential	Small General Service	Medium General Service	Large General Service
Power Supply Expenses:					
Summer Demand	Variable	\$ 1,074,995	\$ 92,493	\$ 226,682	\$ 52,802
Summer Energy	Variable	1,514,690	240,935	415,564	260,351
Winter Demand	Variable	455,422	59,345	58,042	49,763
Winter Energy	Variable	2,156,849	408,251	607,392	350,656
Inter 2 Demand	Variable	195,708	21,044	48,731	12,732
Inter 2 Energy	Variable	1,071,089	189,679	345,996	227,691
Inter 4 Demand	Variable	353,333	64,478	103,285	48,860
Inter 4 Energy	Variable	1,544,119	315,405	534,075	341,859
Distribution Expenses:					
Distribution	Fixed	482,160	71,625	134,090	63,976
Transmission	Fixed	583,033	68,790	123,013	48,261
Transformer	Fixed	223,508	33,202	62,158	29,656
Substation	Fixed	2,251,814	334,508	626,236	298,783
Customer Related Expenses:					
Distribution Customer Costs	Fixed	599,385	167,964	81,688	24,913
Transformer Customer Costs	Fixed	106,215	29,861	14,372	4,348
Substation Customer Costs	Fixed	277,460	78,003	37,543	11,359
Meter O&M	Fixed	304,780	42,842	8,248	2,158
Meter Reading	Variable	169,033	122,967	11,837	1,432
Billing	Variable	213,411	59,997	28,877	8,737
Services	Fixed	218,377	61,393	29,549	8,940
Customer Service	Fixed	393,176	110,535	53,201	16,096
Total		\$ 14,188,557	\$ 2,573,321	\$ 3,550,578	\$ 1,863,373
Total Fixed		\$ 5,439,907	\$ 998,725	\$ 1,170,097	\$ 508,490

Step Two - Contribution Margin Unit Conversion

The contribution to margin (Net Revenue) is present valued over a specified time period to determine the maximum value a new customer will generate over an appropriate recovery period. Table 2 shows the average net revenue generated by each customer type on a per kWh or kW basis. For example, for each kWh sold to the residential class generated \$0.0466 cents of fixed cost recovery used to fund the distribution system. For the remaining classes the contribution margins are expressed in dollars per kW of demand charged to the customers.

Table 2 – Determination of Present Value of Contribution Margins

Customer Class	Recovery Period (Years)	Recovery Period						
		1	2	3	4	5	6	7
Residential	7	\$0.0466	\$0.0466	\$0.0466	\$0.0466	\$0.0466	\$0.0466	\$0.0466
Small Commercial	5	17.52	17.52	17.52	17.52	17.52	-	-
Medium Commercial	5	11.12	11.12	11.12	11.12	11.12	-	-
Large Commercial	5	8.26	8.26	8.26	8.26	8.26	-	-

Table 3 details the value of the contribution margins by customer class. The value of the fixed cost recovery for a typical residential customer is \$2,613. Due to variations in customer usages within the small, medium, and large commercial classes, the utility investment is best expressed on a per kW basis multiplied by the projected annual kW sales for that customer. For example, to determine the value of a new small commercial customer’s \$73.78 kW is multiplied by the annual kW sales to the new customer.

Table 3 – Average Contribution Margin per Billing Basis

Customer Class	COS Revenue Requirement	Fixed Costs Contribution	Recovery Period (Years)	Utility Investment		Maximum Utility Investment per
				Utility Investment	Investment per	
Residential	\$ 13,063,323	\$ 5,064,162	7	\$ 0.2604 per kWh	\$ 2,613	
Small Commercial	2,573,321	998,725	5	73.78 per kW	2,579	
Medium Commercial	3,550,578	1,170,097	5	46.85 per kW	31,394	
Large Commercial	1,863,373	508,490	5	34.80 per kW	112,734	

Step Three - Infrastructure Cost Analysis

The determination of impact fees depends on the additional capacity needed to service new load and is expressed by amperage and voltage requirements. The infrastructure costs are broken down into the following components:

- Distribution Local - investments made to service customers peak demands
- Distribution Substation - investments made to service peaks of customers located in specific areas
- System Substations - investments made to handle HLP’s peak demands
- Transmission System - investments made to handle HLP’s peak demands

HLP provided a capacity plan for the total system with a breakout of the amount attributed to expansion due to growth. The table below outlines the projected HLP investments in plant, the additional capacity provided by the investments, the expansion costs on a per kW basis, and the location of the capacity investment.

In addition, HLP provided historic record of impact fee related revenue and expenditures since the 2022 study. To accurately reflect revenue related to outstanding projects, UFS allocated the net fund balance at Year End 2023 to the components below.

Table 4 is used to identify the cost impacts associated with each type of cost component.

Table 4 – Cost of Additional Investment in Plant

Cost Component	Net Cost of Capacity Additions	Capacity (kW) for New Load	Cost per kW	Class Impact Basis	New Residential Impact - kW	New Residential Customer's Dollar Impact
Distribution Local & Substations	\$ 15,679,426	88,400	\$ 177.37	Class NCP	8.52	\$ 1,511
Distribution Substation	1,130,000	88,400	12.78	Class NCP	8.52	109
System Substations	56,089,487	240,000	233.71	Area Peak Demand	3.09	722
Transmission System	36,307,992	16,000	2,269.25	System Peak Demand	3.09	7,015
Total	\$ 109,206,905					\$ 9,358

Net Cost of Capacity Additions – Cost for capacity additions by cost component

Capacity (kW) for New Load – Additional capacity added by cost component

Cost per kW – Cost to add additional kW of capacity by cost component

Class Impact Basis:

Class NCP – Residential customer’s peak demand

Area Peak Demand – Residential customers usage at time of area peak

System Peak Demand – Residential customer usage at time of Heber City Light & Power’s peak demand

New Residential Impact – kW – Typical residential customers impact by cost component

New Residential Customer’s Dollar Impact – Dollar impact by cost component

Step Four – Determine Cost Impact by Class

The cost of service study provided information on each class’s demand impacts on various portions of the electric system and the capacity needs for a new customer within each class.

Residential Class Example

The average residential customer creates a peak demand of 8.52 kW on local infrastructure and substations and 3.09 kW on system substations and transmission systems. For residential, the average cost impact of \$9,358 (Table 4) and the maximum utility contribution of \$2,613 (Table 3) was subtracted to generate an average impact of \$6,744.

Table 5 – Calculation of Impact Fees by Class

Description	Residential
Number of Customers	11,210
Energy at Meter	119,870,177
NCP Meter	31,179
NCP Primary	32,570
NCP Input	34,010
Annual LF	14%
Group LF	39%
Class Peak Factor	98%
Impacts on Local Distribution Lines	
Total Class - Individual NCP	95,495
Average Customer NCP	8.52
Impacts on Distribution Substations	
Total Class NCP	35,308
Average Customer NCP	3.09
Impacts on System Substations and Sub-	
Total System CP	34,654
Average kW - System	3.09

Step Five – Conversion to Amperage

Table 6 expresses the results by Amperage and Voltage level using a typical 200 AMP residential service voltage as the base.

Table 6 – Impact Fees by Amperage and Voltage Level

	120/240	120/208	277/480
	Volt	Volt	Volt
10 A	\$ 337	\$ 506	\$ 1,168
20 A	674	1,012	2,336
30 A	1,012	1,519	3,504
40 A	1,349	2,025	4,673
50 A	1,686	2,531	5,841
60 A	2,023	3,037	7,009
70 A	2,360	3,544	8,177
80 A	2,698	4,050	9,345
90 A	3,035	4,556	10,513
100 A	3,372	5,062	11,682
125 A	4,215	6,328	14,602
150 A	5,058	7,594	17,522
200 A	6,744	10,125	23,363
400 A	13,488	20,249	46,726
600 A	20,232	30,374	70,089

Significant Assumptions

The following assumptions are made in the creation of this report:

- 1) **Discount Rate** – 6.0%
- 2) **Recovery Period:**
 - All Residential Services – 7 year recovery
 - Commercial – 5 year recovery

Statistical Information

Table 7 – Class Load Data and Statistics

Description	Residential	Small General Service	Medium General Service	Large General Service
Number of Customers	11,210	1,631	157	19
Energy at Meter	119,870,177	22,242,699	36,516,081	22,620,512
NCP Meter	31,179	4,854	8,671	4,289
NCP Primary	32,570	4,975	9,058	4,410
NCP Input	34,010	5,052	9,458	4,513
Annual LF	14%	27%	32%	36%
Group LF	39%	42%	51%	51%
Class Peak Factor	98%	98%	86%	80%
Impacts on Local Distribution Lines				
Total Class - Individual NCP	95,495	9,393	13,197	7,212
Average Customer NCP	8.52	5.76	84.06	379.59
Impacts on Distribution Substations				
Total Class NCP	35,308	6,043	8,098	5,072
Average Customer NCP	3.09	3.64	44.35	214.37
Impacts on System Substations and Sub-Transmission				
Total System CP	34,654	5,932	6,962	4,073
Average kW - System	3.09	3.64	44.35	214.37

Considerations

Currently, new customers are not contributing enough to cover the cost of capacity upgrades to the system. The table below compares the current and proposed impact fees and has identified the need for a 6.9% adjustment.

Table 8 – 120/240 Voltage Recommended Impact Fees

	Current 120/240 Volt	Proposed 120/240 Volt	Dollar Adjustment	Percent Adjustment
10 A	\$ 315.49	\$ 337.21	\$ 21.73	6.9%
20 A	630.96	674.41	43.45	6.9%
30 A	946.44	1,011.62	65.18	6.9%
40 A	1,261.91	1,348.81	86.90	6.9%
50 A	1,577.40	1,686.03	108.62	6.9%
60 A	1,892.87	2,023.22	130.35	6.9%
70 A	2,208.36	2,360.43	152.07	6.9%
80 A	2,523.82	2,697.62	173.80	6.9%
90 A	2,839.31	3,034.84	195.52	6.9%
100 A	3,154.78	3,372.03	217.25	6.9%
125 A	3,943.48	4,215.04	271.56	6.9%
150 A	4,732.18	5,058.05	325.87	6.9%
200 A	6,309.56	6,744.05	434.50	6.9%
400 A	12,619.14	13,488.13	868.99	6.9%
600 A	18,928.69	20,232.18	1,303.49	6.9%
800 A	25,238.27	26,976.26	1,737.98	6.9%
1000 A	31,547.83	33,720.31	2,172.48	6.9%
1200 A	37,857.39	40,464.36	2,606.97	6.9%

Table 9 – 120/208 Voltage Recommended Impact Fees

	Current 120/208 Volt	Proposed 120/208 Volt	Dollar Adjustment	Percent Adjustment
10 A	\$ 473.64	\$ 506.25	\$ 32.62	6.9%
20 A	947.24	1,012.47	65.23	6.9%
30 A	1,420.88	1,518.73	97.85	6.9%
40 A	1,894.48	2,024.94	130.46	6.9%
50 A	2,368.12	2,531.20	163.08	6.9%
60 A	2,841.73	3,037.42	195.69	6.9%
70 A	3,315.36	3,543.67	228.31	6.9%
80 A	3,788.97	4,049.89	260.92	6.9%
90 A	4,262.61	4,556.14	293.54	6.9%
100 A	4,736.21	5,062.36	326.15	6.9%
125 A	5,920.27	6,327.96	407.69	6.9%
150 A	7,104.33	7,593.56	489.23	6.9%
200 A	9,472.42	10,124.72	652.30	6.9%
400 A	18,944.87	20,249.47	1,304.60	6.9%
600 A	28,417.29	30,374.19	1,956.90	6.9%
800 A	37,889.74	40,498.94	2,609.20	6.9%
1000 A	47,362.16	50,623.66	3,261.50	6.9%
1200 A	56,834.57	60,748.37	3,913.80	6.9%
1400 A	66,307.01	70,873.11	4,566.10	6.9%
1600 A	75,779.44	80,997.84	5,218.40	6.9%
1800 A	85,251.88	91,122.58	5,870.70	6.9%
2000 A	94,724.29	101,247.29	6,523.00	6.9%
2500 A	118,405.38	126,559.13	8,153.75	6.9%
3000 A	142,086.45	151,870.95	9,784.50	6.9%

Table 10 – 277/480 Voltage Recommended Impact Fees

	Current 277/480 Volt	Proposed 277/480 Volt	Dollar Adjustment	Percent Adjustment
10 A	\$ 1,092.93	\$ 1,168.19	\$ 75.26	6.9%
20 A	2,185.78	2,336.30	150.52	6.9%
30 A	3,278.71	3,504.49	225.78	6.9%
40 A	4,371.56	4,672.60	301.04	6.9%
50 A	5,464.49	5,840.80	376.30	6.9%
60 A	6,557.35	7,008.90	451.56	6.9%
70 A	7,650.28	8,177.10	526.82	6.9%
80 A	8,743.13	9,345.21	602.08	6.9%
90 A	9,836.06	10,513.40	677.34	6.9%
100 A	10,928.91	11,681.51	752.60	6.9%
125 A	13,661.16	14,601.91	940.75	6.9%
150 A	16,393.40	17,522.30	1,128.90	6.9%
200 A	21,857.82	23,363.01	1,505.20	6.9%
400 A	43,715.72	46,726.11	3,010.40	6.9%
600 A	65,573.54	70,089.13	4,515.59	6.9%
800 A	87,431.44	93,452.23	6,020.79	6.9%
1000 A	109,289.26	116,815.24	7,525.99	6.9%
1200 A	131,068.06	140,093.79	9,025.74	6.9%
1400 A	152,913.04	163,443.09	10,530.05	6.9%
1600 A	174,756.16	186,790.40	12,034.23	6.9%
1800 A	196,601.15	210,139.70	13,538.54	6.9%
2000 A	218,446.14	233,488.99	15,042.86	6.9%
2500 A	273,058.60	291,862.24	18,803.63	6.9%
3000 A	327,671.07	350,235.48	22,564.41	6.9%