



**Heber Light & Power**  
**Electric Impact Fee Analysis**  
April 2023



Corporate location:  
Utility Financial Solutions, LLC  
185 Sun Meadow Court  
Holland, MI USA 49424  
(616) 393-9722  
Fax (888) 566-4430

Submitted Respectfully by:  
Mark Beauchamp, CPA, CMA, MBA  
President, Utility Financial Solutions, LLC  
mbeauchamp@ufsweb.com  
(616) 393-9722



April 2023

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

**TABLE OF CONTENTS**

Introduction .....	1
Steps to Complete the Analysis .....	1
Step One – Determination of Contribution Margin.....	2
Step Two - Contribution Margin Unit Conversion .....	3
Step Three - Infrastructure Cost Analysis .....	4
Step Four – Determine Cost Impact by Class.....	5
Step Five – Conversion to Amperage.....	6
Significant Assumptions .....	7
Statistical Information.....	7
Considerations .....	8

**LIST OF TABLES**

Table 1 – Contribution Margin by Class .....	2
Table 2 – Determination of Present Value of Contribution Margins.....	3
Table 3 – Average Contribution Margin per Billing Basis.....	3
Table 4 – Cost of Additional Investment in Plant.....	4
Table 5 – Calculation of Impact Fees by Class.....	5
Table 6 – Impact Fees by Amperage and Voltage Level .....	6
Table 7 – Class Load Data and Statistics .....	7
Table 8 – 120/240 Voltage Recommended Impact Fees .....	8
Table 9 – 120/208 Voltage Recommended Impact Fees .....	9
Table 10 – 277/480 Voltage Recommended Impact Fees .....	10

## **Introduction**

This report identifies the impact fees Heber Light & Power should charge to new customers by identifying the amount new customers contribute to system expansion through rates and subtracting the costs for expansion of the system. 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 exceed 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 present 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 no 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
<b>Power Supply Expenses:</b>					
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
<b>Distribution Expenses:</b>					
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
<b>Customer Related Expenses:</b>					
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
	<b>Total</b>	<b>\$ 14,188,557</b>	<b>\$ 2,573,321</b>	<b>\$ 3,550,578</b>	<b>\$ 1,863,373</b>
	<b>Total Fixed</b>	<b>\$ 5,439,907</b>	<b>\$ 998,725</b>	<b>\$ 1,170,097</b>	<b>\$ 508,490</b>

## 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.

**Table 2 – Determination of Present Value of Contribution Margins**

Customer Class	Recovery							
	Period (Years)	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	Utility Investment	Utility
			Period (Years)		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 2019 study. To accurately reflect revenue related to outstanding projects, UFS allocated the net fund balance at Year End 2022 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	Gross Investment	Additional Capacity	Optimal to Base Loading	Cost per kW	Allocation
Distribution Local & Substations	\$ 14,033,680	104,200	0.79	\$ 170.48	Customer Demand
Distribution Substation	4,730,000	34,500	0.79	173.55	Customer Demand
System Substations	35,083,000	240,000	0.79	185.04	CP
Transmission System	22,440,000	10,000	0.79	2,840.51	CP
<b>Total</b>	<b>\$ 76,286,680</b>	<b>388,700</b>		<b>3,369.57</b>	

Customer Demand = Peaks created by customers

NCP = Area or Class Peak Demands

CP = System Peak Demands

## 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. The expansion cost per kW (A. Rate per kW) is then multiplied by the capacity needs for an average residential customer to generate the cost impacts by component. For residential, the average cost impact is \$8,923 and the maximum utility contribution derived in Table 3 was subtracted to generate an average impact of \$6,310.

**Table 5 – Calculation of Impact Fees by Class**

Description	Residential	Small General Service	Medium General Service	Large General Service
<b>A. Rate per kW</b>				
Distribution Local	\$ 227.94	\$ 227.94	\$ 227.94	\$ 227.94
System Substation	185.04	185.04	185.04	185.04
Transmission System	2,840.51	2,840.51	2,840.51	2,840.51
<b>B. Average Impacts</b>				
Distribution Local (NCP)	8.52	5.76	84.06	379.59
System Substation (kW)	3.09	3.64	44.35	214.37
Transmission System (kW)	3.09	3.64	44.35	214.37
<b>C. Optimal to Base Loading</b>				
	0.79	0.79	0.79	0.79
<b>Cost Impact by Component (A x B x C)</b>				
Distribution Local & Substations (NCP)	\$ 1,534	\$ 1,037	\$ 15,136	\$ 68,354
System Substation (kW)	452	532	6,483	31,336
Transmission System (kW)	6,937	8,161	99,514	481,047
<b>Total Impact Cost</b>	<b>\$ 8,923</b>	<b>\$ 9,730</b>	<b>\$ 121,133</b>	<b>\$ 580,737</b>
<i>Less: Maximum Utility Contribution</i>	2,613	2,579	31,394	112,734
<b>Impact Fees to be Recovered</b>	<b>\$ 6,310</b>	<b>\$ 7,150</b>	<b>\$ 89,739</b>	<b>\$ 468,003</b>



## Step Five – Conversion to Amperage

Table 6 expresses the Table 5 results by Amperage and Voltage level using a typical residential customer’s as 200 AMP service voltage as the base.

**Table 6 – Impact Fees by Amperage and Voltage Level**

	<b>12/240</b>	<b>120/208</b>	<b>277/480</b>
	<b>Volt</b>	<b>Volt</b>	<b>Volt</b>
10 A	\$ 315	\$ 474	\$ 1,093
20 A	631	947	2,186
30 A	946	1,421	3,279
40 A	1,262	1,894	4,372
50 A	1,577	2,368	5,464
60 A	1,893	2,842	6,557
70 A	2,208	3,315	7,650
80 A	2,524	3,789	8,743
90 A	2,839	4,263	9,836
100 A	3,155	4,736	10,929
125 A	3,943	5,920	13,661
150 A	4,732	7,104	16,393
200 A	6,310	9,472	21,858
400 A	12,619	18,945	43,716
600 A	18,929	28,417	65,574

## 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%
<b>Impacts on Local Distribution Lines</b>				
Total Class - Individual NCP	95,495	9,393	13,197	7,212
Average Customer NCP	8.52	5.76	84.06	379.59
<b>Impacts on Distribution Substations</b>				
Total Class NCP	35,308	6,043	8,098	5,072
Average Customer NCP	3.09	3.64	44.35	214.37
<b>Facilities</b>				
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 34.7% adjustment.

**Table 8 – 120/240 Voltage Recommended Impact Fees**

	<b>Current 120/240 Volt</b>	<b>Proposed 120/240 Volt</b>	<b>Dollar Adjustment</b>	<b>Percent Adjustment</b>
10 A	\$ 234.20	\$ 315.49	\$ 81.29	34.7%
20 A	468.40	630.96	162.56	34.7%
30 A	702.60	946.44	243.84	34.7%
40 A	936.80	1,261.91	325.11	34.7%
50 A	1,171.00	1,577.40	406.40	34.7%
60 A	1,405.20	1,892.87	487.67	34.7%
70 A	1,639.40	2,208.36	568.96	34.7%
80 A	1,873.60	2,523.82	650.22	34.7%
90 A	2,107.80	2,839.31	731.51	34.7%
100 A	2,342.00	3,154.78	812.78	34.7%
125 A	2,927.50	3,943.48	1,015.98	34.7%
150 A	3,513.00	4,732.18	1,219.18	34.7%
200 A	4,684.00	6,309.56	1,625.56	34.7%
400 A	9,368.00	12,619.14	3,251.14	34.7%
600 A	14,052.00	18,928.69	4,876.69	34.7%
800 A	18,736.00	25,238.27	6,502.27	34.7%
1000 A	23,420.00	31,547.83	8,127.83	34.7%
1200 A	28,104.00	37,857.39	9,753.39	34.7%

**Table 9 – 120/208 Voltage Recommended Impact Fees**

	<b>Current 120/208 Volt</b>	<b>Proposed 120/208 Volt</b>	<b>Dollar Adjustment</b>	<b>Percent Adjustment</b>
10 A	\$ 351.60	\$ 473.64	\$ 122.04	34.7%
20 A	703.20	947.24	244.04	34.7%
30 A	1,054.80	1,420.88	366.08	34.7%
40 A	1,406.40	1,894.48	488.08	34.7%
50 A	1,758.00	2,368.12	610.12	34.7%
60 A	2,109.60	2,841.73	732.13	34.7%
70 A	2,461.20	3,315.36	854.16	34.7%
80 A	2,812.80	3,788.97	976.17	34.7%
90 A	3,164.40	4,262.61	1,098.21	34.7%
100 A	3,516.00	4,736.21	1,220.21	34.7%
125 A	4,395.00	5,920.27	1,525.27	34.7%
150 A	5,274.00	7,104.33	1,830.33	34.7%
200 A	7,032.00	9,472.42	2,440.42	34.7%
400 A	14,064.00	18,944.87	4,880.87	34.7%
600 A	21,096.00	28,417.29	7,321.29	34.7%
800 A	28,128.00	37,889.74	9,761.74	34.7%
1000 A	35,160.00	47,362.16	12,202.16	34.7%
1200 A	42,192.00	56,834.57	14,642.57	34.7%
1400 A	49,224.00	66,307.01	17,083.01	34.7%
1600 A	56,256.00	75,779.44	19,523.44	34.7%
1800 A	63,288.00	85,251.88	21,963.88	34.7%
2000 A	70,320.00	94,724.29	24,404.29	34.7%
2500 A	87,900.00	118,405.38	30,505.38	34.7%
3000 A	105,480.00	142,086.45	36,606.45	34.7%

**Table 10 – 277/480 Voltage Recommended Impact Fees**

	<b>Current 277/480 Volt</b>	<b>Proposed 277/480 Volt</b>	<b>Dollar Adjustment</b>	<b>Percent Adjustment</b>
10 A	\$ 811.30	\$ 1,092.93	\$ 281.63	34.7%
20 A	1,622.60	2,185.78	563.18	34.7%
30 A	2,433.90	3,278.71	844.81	34.7%
40 A	3,245.20	4,371.56	1,126.36	34.7%
50 A	4,056.50	5,464.49	1,407.99	34.7%
60 A	4,867.80	6,557.35	1,689.55	34.7%
70 A	5,679.10	7,650.28	1,971.18	34.7%
80 A	6,490.40	8,743.13	2,252.73	34.7%
90 A	7,301.70	9,836.06	2,534.36	34.7%
100 A	8,113.00	10,928.91	2,815.91	34.7%
125 A	10,141.25	13,661.16	3,519.91	34.7%
150 A	12,169.50	16,393.40	4,223.90	34.7%
200 A	16,226.50	21,857.82	5,631.32	34.7%
400 A	32,452.00	43,715.72	11,263.72	34.7%
600 A	48,678.00	65,573.54	16,895.54	34.7%
800 A	64,904.00	87,431.44	22,527.44	34.7%
1000 A	81,130.00	109,289.26	28,159.26	34.7%
1200 A	97,356.00	131,068.06	33,712.06	34.7%
1400 A	113,582.00	152,913.04	39,331.04	34.7%
1600 A	129,808.00	174,756.16	44,948.16	34.7%
1800 A	146,034.00	196,601.15	50,567.15	34.7%
2000 A	162,260.00	218,446.14	56,186.14	34.7%
2500 A	202,825.00	273,058.60	70,233.60	34.7%
3000 A	243,390.00	327,671.07	84,281.07	34.7%