

SPRING CITY POWER  
ELECTRIC IMPACT FEE ANALYSIS

Table 6-Impact Fee Rate Calculation

Row Item	Value	Notes
(1) Total Cost of IFFP Projects	\$187,000	2020-dollar costs of new development-related projects shown in Table 5
(2) Added kVA	1,430 kVA	Capacity addition due to system upgrade from 4.16 kV to 12.47 kV
(3) Cost per kVA	\$130.77 per kVA	$(Row\ 1) \div (Row\ 2) = \frac{\$}{kVA}$
(4) 2025 Escalated Total Cost of Projects	\$211,573	Assumed construction cost escalation rate of 2.5% per year. $(Row\ 1) \times (1.025)^5$
(5) 2025 Escalated Cost per kVA	\$147.95 per kVA	$(Row\ 4) \div (Row\ 2) = \frac{\$}{kVA}$
(6) Present Value of 2025 Escalated Total Cost of Projects	\$206,353	Assumed interest earnings rate of 0.5% per year compounded quarterly, Impact fees collected evenly over 5 years
(7) Cost per kVA considering earned interest	\$144.30	$(Row\ 6) \div (Row\ 2) = \frac{\$}{kVA}$
<b>Impact Fee Rate</b>	<b>\$144.30</b>	

As shown in Table 6 the estimated cost/kVA of new system capacity is \$130.77/kVA at present day pricing and \$147.95/kVA for projected 2025 pricing<sup>2</sup>, assuming no interest is earned on the collected fees. However, if the current rate of 0.5% interest earnings<sup>3</sup> on invested funds can be maintained, the impact fee rate can be reduced to \$144.30/kVA.

Spring 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 Spring City will be based on the rate of \$144.30 per kVA of power demand added to the system.

<sup>2</sup> Calculated based on assumed construction cost escalation rate of 2.5%

<sup>3</sup> 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 several residential service levels recognized by Spring City Power—from 100-amp service to 400-amp service. Typical historic power demand seen in the experience of Spring City Power has been about 5 kW on average for a 100 to 200-amp residential service and about 9 kW on average on a 225 to 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

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

#### Example 200A 120/240V Single Phase Residential Service

$$\text{For 200A Residential Service: } \frac{5 \text{ kW}}{0.95} \times \$144.30/kVA = \$759$$

Table 7 shows the recommended Impact Fee charge for the several residential service levels. A complete table of recommended Impact Fee charges for residential customers is included in Table A in the Appendix.

*Table 7-Typical Residential Impact Fees*

Residential Service Level	Typical Power Demand (kW Impact)	Power Factor	Est. kVA Impact	Recommended Impact Fee
100 – 200 Amp	5	95.0%	5.3	\$759
225 – 400 Amp	9	95.0%	9.5	\$1,367

**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 Spring City Power has been about 40% on average. Table B 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**

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

**Example 200A 120/240V Single Phase Service**

$$\text{For 200A Single Phase Service: } \frac{200A \times 240V \times 0.4}{1000} \times \$144.30/kVA = \$2,771$$

Equation 3

**3 Phase Calculation**

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

**Example 600A 120/208V Three Phase Service**

$$600A \text{ Three Phase Service: } \sqrt{3} \times \frac{600A \times 208V \times 0.4}{1000} \times \$144.30/kVA = \$12,477$$

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 B in the Appendix.

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*Table 8-Selected Commercial Impact Fees*

<b>Type of Commercial Service</b>	<b>Typical Power Demand (kW Impact)</b>	<b>Power Factor</b>	<b>Est. kVA Impact</b>	<b>Recommended Impact Fee</b>
Single Phase 120/240 V 200 Amp Panel	17.3	90.0%	19.2	\$2,771
Three Phase 120/208 V 200 Amp Panel	25.9	90.0%	28.8	\$4,159
Three Phase 277/480 V 200 Amp Panel	59.9	90.0%	66.5	\$9,598

### 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:**

Signature: 

Name: Michael R. Anderson

Title: Principal Engineer, Active Power Engineering, LLC

Date: 04/16/2021

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APPENDIX

ELECTRIC IMPACT FEE ANALYSIS  
SUPPORTING DOCUMENTATION

# SPRING CITY POWER ELECTRIC IMPACT FEE APPENDIX

*Table A--Residential Customer Power Demand and Recommended Impact Fee*

RESIDENTIAL IMPACT FEES -- Panel Utilization assumed 16%						
	Est. kW Impact		Power Factor		Est. kVA Impact	Incurred Impact Fee
100 Amp Panel	5.0		0.95		5.3	\$759
125 Amp Panel	5.0		0.95		5.3	\$759
150 Amp Panel	5.0		0.95		5.3	\$759
200 Amp Panel	5.0		0.95		5.3	\$759
225 Amp Panel	9.0		0.95		9.5	\$1,367
320 Amp Panel	9.0		0.95		9.5	\$1,367
400 Amp Panel	9.0		0.95		9.5	\$1,367

# SPRING CITY POWER ELECTRIC IMPACT FEE APPENDIX

Table B--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	\$2,771
Single Phase 120/240 V 400 Amp Panel	34.6	0.90			38.4	\$5,541
Three Phase 120/208 V 200 Amp Panel	25.9	0.90			28.8	\$4,159
Three Phase 120/208 V 400 Amp Panel	51.9	0.90			57.6	\$8,318
Three Phase 120/208 V 600 Amp Panel	77.8	0.90			86.5	\$12,477
Three Phase 120/208 V 800 Amp Panel	103.8	0.90			115.3	\$16,636
Three Phase 120/208 V 1200 Amp Panel	155.6	0.90			172.9	\$24,954
Three Phase 120/208 V 1600 Amp Panel	207.5	0.90			230.6	\$33,272
Three Phase 277/480 V 200 Amp Panel	59.9	0.90			66.5	\$9,598
Three Phase 277/480 V 400 Amp Panel	119.7	0.90			133.0	\$19,195
Three Phase 277/480 V 600 Amp Panel	179.6	0.90			199.5	\$28,793
Three Phase 277/480 V 800 Amp Panel	239.4	0.90			266.0	\$38,391
Three Phase 277/480 V 1200 Amp Panel	359.2	0.90			399.1	\$57,586
Three Phase 277/480 V 1600 Amp Service	478.9	0.90			532.1	\$76,781
Three Phase 277/480 V 2000 Amp Service	598.6	0.90			665.1	\$95,977
Three Phase 277/480 V 2500 Amp Service	748.2	0.90			831.4	\$119,971
Three Phase 277/480 V 3000 Amp Service	897.9	0.90			997.7	\$143,965