



Executive Report

**CITY OF ROSEVILLE
ELECTRIC DEPARTMENT**

Electric Backbone Mitigation Fee Analysis

April 2019

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Mr. Eric Campbell
Electric Financial Administrator
Roseville Electric

Dear Mr. Campbell;

We are pleased to present this executive summary report identifying our procedures and recommendations on charges for new electric customers to mitigate future backbone costs of the City of Roseville's Electric Department (Roseville Electric). This report was prepared to provide Roseville Electric with a comprehensive examination of its existing Backbone Mitigation Fee structure by an outside party. Utility Financial Solutions (UFS) has taught courses and webinars through the American Public Power Association on the various methods used by electric utilities to design rates and is a leading provider for the service in the Nation. As a result of our reputation we are also the instructors for Cost of Service and Financial Planning Courses offered through the American Public Power Association (APPA) and the National Association of Regulatory Utility Commissions (NARUC). UFS is the preferred financial services firm and partner with APPA's Hometown Connections and has completed cost of service studies in 34 states, Guam and the Caribbean.

The specific purposes of this analysis are:

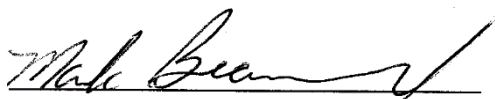
- Review and evaluate Roseville's updated Electric Backbone Fee calculation that includes planned capital improvement projects and new development expectations
- Provide pros and cons of current fee calculation method

This report includes detailed updates to the 2012 Backbone Fee calculation conducted by Roseville Electric staff and reviewed by Utility Financial Solutions, LLC. In summary, study results provided in the following pages of this report recommend a decrease of 30% to current Backbone Mitigation Fees as noted below.

Customer Class ⁽¹⁾	Current kVA Fee	Billing Method	Proposed kVA Fee
RSF (Residential Single-Family)	\$ 714.47	Per home	\$ 496.31
RMF (Residential Multi-Family)	\$ 519.61	Per dwelling	\$ 360.95
GS (Commercial/Industrial)	\$ 129.90	Per kVA	\$ 90.24

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

Sincerely,



Utility Financial Solutions, LLC
Mark Beauchamp
CPA, MBA, CMA

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INTRODUCTION

This report is an update to the analysis of the current Backbone Mitigation Fee conducted in 2012. The Backbone Mitigation Fee is a charge for new customers to connect into the distribution system based on the relationship between future costs and the impact new customers have on future expansion costs. The purpose of the Backbone Mitigation Fee is to prevent existing customers from experiencing increased electric rates due to capital expenditures directly related to the addition of new customers.

CURRENT BACKBONE MITIGATION FEE

The Backbone Mitigation Fee was developed in 2012 and adjusted annually by the construction cost index to the Current kVA Fee as listed below:

Customer Class ⁽¹⁾	2012 kVA Fee	Billing Method	Current kVA Fee ^[3]
RSF (Residential Single-Family)	\$ 645.18	Per home ⁽²⁾	\$ 714.47
RMF (Residential Multi-Family)	\$ 469.22	Per dwelling ⁽²⁾	\$ 519.61
GS (Commercial/Industrial)	\$ 117.31	Per kVA	\$ 129.90

Note: [1] Customer Class as defined in Land Use Designations per Roseville General Plan and Muni Code 4.54.040

[2] based on average dwelling unit or home

[3] Adjusted annually by construction cost index (CCI)

BACKBONE MITIGATION FEE STRUCTURE

Below is a summary of the proposed backbone fee structure.

1. Multi-Family Residential (Apartments, Condominiums, townhouses and mobile homes) – The proposed fee maintains a “per dwelling unit” fee structure and is based on average number of kVA units required per dwelling then multiplied by the determined cost per kVA.
2. Single-Family Residential (Residential units including single family homes) – The proposed fee maintains a “per dwelling unit” fee structure and is based on average number of kVA units required per dwelling then multiplied by the determined cost per kVA.
3. Commercial and Industrial facilities – The proposed fee is based on the number of calculated kVA units established on the installed service panel rating at the customer’s location. This method provides a representation of how new customers consume capacity from the system and is determined by taking the calculated kVA value and multiplying it by the determined cost per kVA.

BACKBONE MITIGATION FEE ANALYSIS:

The following steps were followed to determine the Backbone Mitigation Fee for Roseville Electric:

- A. Projected capital expansions and unrecovered Capital Improvement Project (CIP) costs
- B. Projected system growth
- C. Capacity available to grow
- D. Average cost per kVA of system expansion
- E. Backbone Mitigation Fee requirement by customer

A. PROJECTED CAPITAL EXPANSIONS & UNRECOVERED CIP COSTS

The Backbone Mitigation Fee includes capital projects at the 60kV level or greater where assets are built, upgraded or replaced to account for growth over the projected life of the asset. The capital plan below in Table 1 was provided by Roseville Electric and identifies projects planned from 2019 to 2024 and includes unrecovered CIP costs incurred prior to 2019 in which capacity remains available to grow in the backbone system.

Table 1 – Planned CIP Project Costs

Planned CIP Project Costs (2019-2024) as of January 2019

Project Description	Total CIP (2019)	% Allocated to New Dev	\$ Allocated to New Dev
SIERRA VISTA SUBSTATION	\$ 10,580,000	75%	\$ 7,935,000
FIDDYMENT KY4A ADDITION [1]	5,030,000	0%	\$ -
CREEK VIEW SUB/60 KV EXTENSION	11,000,000	75%	\$ 8,250,000
VERNON SUBSTATION UPGRADE[2]	2,040,000	20%	\$ 408,000
CIP PROJECT TOTALS	\$ 28,650,000		\$ 16,593,000

Note [1] : Fiddyment KY4A Transformer Addition is being done for system reliability and as such is not allocated to new development

Note [2] : Vernon Substation Upgrade is only partially due to growth in Downtown but mainly due to the age of existing equipment so only 20% of the project will be allocated to new development

B. PROJECTED SYSTEM GROWTH

System growth projections were provided by Roseville Electric and are summarized on the following page. Table 2 identifies projected residential growth by dwelling unit for each the Residential Multi-Family (RMF) and Residential Single-Family (RSF) units. This includes growth to build-out capacity that is currently available in the system and new growth included in the projected capital improvement plans identified in Table 1. To keep the Backbone Mitigation Fee less complicated, residential growth is projected by dwelling unit or household to result in an average per unit cost, while General Service (GS) is projected at a cost per kVA due to variation in size of customer connections.

Table 2 – Projected Residential Growth by Multi and Single-Family Units

Build-out Values by Specific Plan (as of February 2019)	Single-Family (units)	Multi-family and Comm. Mixed Use (units)
<u>New Specific Plans Build-out Values</u>		
Amoruso Ranch	1,844	983
Creekview	1,464	547
Sierra Vista	5,557	2,601
<u>Existing Specific Plan Build-out Values</u>		
Downtown Specific Plan	51	1,772
Riverside Gateway Specific Plan	91	158
West Roseville Specific Plan	2,389	2,086
North Industrial	137	41
North Roseville Specific Plan	34	210
North Industrial Plan Area (includes Campus Oaks)	490	458
North Central Roseville Specific Plan	238	-
Northwest Roseville Specific Plan	63	2
Northeast Roseville Specific Plan	10	225
Southeast Roseville Specific Plan	61	55
Infill	637	(139)
TOTAL New Units (Customers)	13,066	8,999
Avg Peak kVA per Unit	5.50	4.00
Peak Demand (kVA)	71,863	35,996

C. CAPACITY AVAILABLE TO GROW (kVA)

Projected capacity was provided by Roseville Electric and Table 3 is a summary of total kVA available to new customers of the system including capacity that remains in the current system from past capital projects and the projected capacity included in the CIP plan.

Table 3 – Projected kVA available to new customers

<u>Current and Projected kVA</u>			
a	System MVA (transformers in ground)	693.0 MVA	
b	Current System kVA	693,000 kVA	b = (a*1,000)
c	Usable kVA factor	0.75	
d	Current system available kVA	519,750 kVA	d = (b*c)
e	System currently unused kVA	78,804 kVA	
f	System currently used kVA	440,946 kVA	f = (d-e)
g	kVA to be recovered from Existing Substations ^[1]	78,804 kVA	g = (e)
h	kVA to be recovered from New Substations ^[2]	105,075 kVA	
i	Total kVA's to be Recovered	183,879 kVA	i = (g+h)

Note [1]: kVA that remain available in the current system

[2]: kVA to be added in the system per the current CIP plan

D. AVERAGE COST PER KVA OF SYSTEM EXPANSION

Table 4 below calculates an average cost per kVA by dividing the assigned CIP costs for growth by the total kVA units available to new growth.

Table 4 – Determination of charge per kVA

Customer Class	Capital Costs assigned to growth	kVA to be recovered from Existing Substations	Charge per kVA
ALL	\$ 16,593,000	183,879	\$ 90.24

E. BACKBONE MITIGATION FEE REQUIREMENT BY CUSTOMER

A “Per kVA” method was calculated to identify charges based on the number of calculated kVA units established on the installed service panel rating at the customer’s location. This method provides a representation of how new customers consume capacity from the system. Table 5 provides a summary of projected kVA growth by each Residential (RMF,RSF) class and General Service (GS) class. An average residential peak kVA was provided by Roseville Electric and is used to determine projected residential kVA units of this customer class. Any policy or fee may note that residential units which are smaller or larger than average should be reviewed by the utility. General Service (GS) or Commercial/Industrial kVA were determined based on the number of kVA units remaining after application of residential growth.

Table 5 –Projected System Growth by Customer Class

Customer Class	Customer Units Served by Existing Capacity	Customer Units Served by New Capacity	TOTAL New Customers
RSF (Residential Single-Family)	4,201	8,865	13,066
RMF (Residential Multi-Family)	4,868	4,131	8,999
TOTAL New Units (Customers)	9,069	12,996	22,065

Customer Class	kVA Served by Existing Capacity	kVA Served by New Capacity	TOTAL New kVA
RSF (Residential Single-Family)	23,106	48,758	71,863
RMF (Residential Multi-Family)	19,472	16,524	35,996
GS (Commercial/Industrial)	36,227	39,794	76,020
TOTAL kVA units Available	78,804	105,075	183,879

Projected cost recovery is calculated in Table 6 on the following page. New residential connections are based on a flat fee and commercial/industrial are a per installed kVA fee. The residential flat fee is determined using average kVA per installation as identified in Table 2 and the average charge per kVA identified in Table 4. The kVA fee is then multiplied by the projected number of new customers or kVA (based on customer class) to identify the projected recovery that is equal to total costs identified in Table 1.

Table 6 – Revenues Generated from kVA based rate

Customer Class	Approximate kVA per Customer	Projected # of New Customer or kVA units	kVA Fee per Customer Unit	Total Recovery from kVA Fee
RSF (Residential Single-Family)	5.50	13,066	\$ 496.31	\$ 6,484,823
RMF (Residential Multi-Family)	4.00	8,999	360.95	3,248,232
GS (Commercial/Industrial)	1.00	76,020	90.24	6,859,945
Estimated Recovery based on kVA units				\$ 16,593,000
CIP Costs assigned to growth				\$ 16,593,000
Recovery Over(Under)				\$ -

Significant Assumptions

The following assumptions are made in development of the Backbone Mitigation Fee report:

- 1) **Planned CIP** – Project Costs planned between 2019-2024 as provided by Roseville Electric
- 2) **Projected kVA** – Available kVA projections from Roseville Electric to account for all known new substation kVA included in planned upgrades and remaining available kVA where development is left to be built-out.
- 3) **System Growth** – Long term growth as provided by Roseville Electric
- 4) **Future fee adjustments** – The backbone fee should be reviewed on a regular basis to ensure it represents projected costs included in the capital improvement plans.
- 5) **Inflationary Adjustments** - The Backbone Mitigation Fee should continue to be reviewed and adjusted annually per Muni Code 4.54.140: The Construction Cost Index (CCI) inflationary fee adjustment.
- 6) **Customers at 60kV or higher** - All backbone fees associated with customers taking service at this level shall be negotiated prior to their interconnection. This level customer will not be subject to backbone rates identified in this report.

Summary

The following table is a summary of the proposed Backbone Mitigation Fees by customer class

Customer Class ^[1]	PROPOSED kVA Fee by Customer Class	Billing Method	CURRENT ^[3] kVA Fee by Customer Class	Percent Change
RSF (Residential Single-Family)	\$ 496.31	per home ^[2]	\$ 714.47	-30.5%
RMF (Residential Multi-Family)	\$ 360.95	per dwelling ^[2]	\$ 519.61	-30.5%
GS (Commercial/Industrial)	\$ 90.24	per kVA	\$ 129.90	-30.5%

Note: [1] Customer Class as defined in Land Use Designations per Roseville General Plan and Muni Code 4.54.040

[2] based on average dwelling unit or home

[3] Adjusted annually by construction cost index (CCI)

Appendix A – Strength/Weakness Analysis

In the prior (2012) backbone fee calculation and in accordance with AB1600, three separate methods for calculating the backbone fee were examined:

- kVA based
- Equity Based
- Equity and kVA based

The kVA based method was determined to be the most equitable as it is tied directly to a customer's impact on the power delivery system. This method is also "forward looking" and more representative of the actual forecasted costs.

For these same reasons, the kVA based methodology was chosen for the backbone fee analysis described in this report.