
Evaluation, Measurement & Verification Report for Roseville Electric 2009

Energy Efficiency Programs

- **Small Commercial Lighting**
- **Commercial & Industrial Hi-Bay Lighting**
- **Living Wise**

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ABSTRACT

The following Evaluation, Measurement, and Verification (EM&V) report for Roseville Electric provides a systematic review of the Small Commercial Lighting, Commercial & Industrial Hi-Bay Lighting and Living Wise programs. Recommendations were made to more effectively collect and manage data to improve accuracy of program results and to review the deemed hours and savings used in the tracking database.

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Executive Summary

This report provides findings from an independent Evaluation, Measurement, and Verification (EM&V) for the following energy efficiency programs from Roseville Electric's (RE) 2009 fiscal year: Small Commercial Lighting, Commercial & Industrial Hi-Bay Lighting and Living Wise. The Commercial & Industrial Hi-Bay Lighting program is a subset of both the Small Commercial Lighting and Non-Residential Lighting programs.

The programs were evaluated using a continuous improvement approach with the goal of identifying and recommending areas where changes can be made to improve data management and ensure data quality. For RE, this involved a review of the overall program, with particular focus on data collection for lighting rebates. The Living Wise program was reviewed to assess the plausibility of referenced savings. Finally, an analysis was performed on collected data to determine average savings at a 90% confidence interval.

On the whole, RE's program is well run and accurate. Data collection is done through a clean database front end that minimizes errors and automatically generates savings figures. Savings figures used are reasonable and comparable with generally accepted deemed standards.

A number of issues were found with the assumptions used in the Living Wise program. Some of these were highlighted in this report. While the program is clearly successful, it would be valuable to thoroughly review and validate the savings provided by RAP to RE.

Introduction & Purpose of Report

EM&V is the documentation of energy savings using direct measurements, engineering calculations, statistical analyses, and/or computer simulation modeling. EM&V is a requirement of two bills adopted during the 2005-2006 California legislative session:

- **SB 1037 (Kehoe):** Requires all publicly-owned utilities to report to the California Energy Commission and their local governing boards about current and projected energy efficiency programs, including expenditures and savings.
- **AB 2021 (Levine):** Reaffirms SB1037 mandates but also requires publicly-owned utilities to develop energy efficiency targets on a triennial basis and provide an independent assessment of measured savings.

This report provides unbiased, independent third-party auditing of programs selected by RE. Specifically, this report assesses 1) demand and consumption savings of the Small Commercial Lighting and Commercial & Industrial Hi-Bay Lighting programs, and 2) the accuracy of the savings calculations for the Living Wise program.

Program Descriptions

Small Commercial Lighting (Two Five-O)

This program provides rebates to RE's small business sector for the installation of energy-efficient lighting retrofits. To qualify for this program, the customer must have a peak demand of less than 150 kW per site for the previous 12 months. The maximum customer rebate (per site) is \$25,000. Most of the marketing efforts beyond general awareness are provided by participating contractors. There is a contractor incentive equal to half of the rebate total, or \$250, whichever is less. Incentives are paid per unit or at \$400 per kW. The program focuses on the following prescriptive lighting retrofits:

- T8s and T5s
- CFLs
- Hi-bay fixtures
- Hardwired fluorescent fixtures
- Exit signs
- Delamping
- Sensors
- Custom lighting (when needed)

An application form for this program is attached as Appendix B.

Commercial & Industrial Hi-Bay Lighting

This is a subset of the Small Commercial Lighting and Non-Residential Lighting programs. To qualify for this subcategory, the customer must replace existing incandescent, mercury vapor, T12 High Output, T12 Very High Output, Metal Halide, or High Pressure Sodium fixtures in a 12 foot or higher high bay application. Fixtures must be replaced one-for-one. Existing fixtures must be a minimum of 400 watts and new fixtures must contain T5, T8, or High Output T5 lamps with a maximum of 244 input watts.

Living Wise

The Living Wise program provides energy education for up to 1000 Roseville Public School sixth graders. The classroom program teaches energy and water conservation and shows students how to use natural resources wisely. Roseville Electric and the Environmental Utilities Department host this program each school year. Measures provided to participants in the program include:

- Compact Fluorescent Light Bulb
- Electroluminescent Night Light
- FilterTone® Alarm
- Oxygenics® Showerhead
- Kitchen Faucet Aerator
- Flow Rate Test Bag
- Toilet Leak Detector Tablets
- Air Temperature Ruler
- Water Temperature Check Card

A copy of the 2009 fiscal year Living Wise report can be viewed at:
<http://www.roseville.ca.us/civica/filebank/blobdload.asp?BlobID=16085>

Evaluation Standards

The requirement for utilities to provide independent third-party assessments of measured savings is relatively new and subject to some interpretation. There are published references (such as the International Measurement and Verification Protocol and the Technical, Methodological, and Reporting Requirements for Evaluation Professionals), but it is apparent from the body of previous third-party assessments that there is a range of interpretations and application of these references.

Our stance and approach is to:

- 1) Provide a rigorous review of the utility's programs.
- 2) Identify actionable improvements.
- 3) Minimize costs so more public benefits funds can be devoted to energy efficiency programs.

With this approach, our goal is to provide an "optimized" assessment resulting in an actionable review at minimal cost to the utility. This Continuous Improvement approach begins with process evaluation, followed by data analysis and detailed savings verification.

Evaluation Plan

Using the approach explained above, the specific evaluation plan for RE was as follows:

Process Review

Evaluate the database for overall structure and accuracy. Conduct staff interviews to identify any specific issues with the energy efficiency program and identify improvement opportunities. Review the savings figures and calculation methodology used in the database, as described in the document provided by RE, titled "Prescriptive Retrofit Technical Document".

Small Commercial Lighting

For each measure conduct site visits to calculate coincident kW, annual kWh, and total error using the calculation methodology used in the RE database. Verify database assigned values are consistent with technical document and that correct values were applied to recorded data.

Commercial & Industrial Hi-Bay Lighting

Similar to Small Commercial Lighting, calculate and compare values for each measure. Summarize total demand reduction and energy savings for the program and compare to evaluated totals.

Living Wise

Evaluate third-party proposed energy savings and review deemed energy savings assumptions.

Findings & Recommendations

Process Review – Database Structure

On December 16, 2009, RE's rebate database was received in Microsoft Access format. The database is well constructed and logical. There are forms for generating reports and adding new measures as well as entering rebate data. A screenshot of the front end is included in Appendix A.

The benefit of this type of system is it ensures proper and complete entry of data before a record is accepted. In addition, some values, such as kW savings and rebate amount, are automatically generated once the values they depend on are entered.

The database also includes automated reports for summarizing rebates processed by program code or by month for a particular time period. The reports were tested and found to be clear and accurate when compared to summaries of the data done by hand.

If the database were to be improved, it would be by extending it so that customers could submit rebates through an online system and the database automatically updated, pending verification by RE staff.

Process Review - Staff Interviews

On December 16, 2009, a "kick-off" meeting was conducted with RE staff to begin the EM&V process. During this meeting RE staff member Mark Riffey, the program manager for Small Commercial Lighting, explained the program's goals and details. RE staff member Rachel Radell explained the Living Wise program's background and details. No significant issues were identified during these meetings.

Process Review - Deemed Assumptions and Calculation Methodology

As part of RE's tracking database, kW and kWh savings are automatically generated based on deemed savings for each measure stored within the database. The measure savings are further broken down by market sector so that coincident factors and hours of operation can be included in the calculation.

Deemed savings are based primarily on a document titled "Prescriptive Retrofit Technical Document". The estimates in this document were compared to the "Measure Quantification Methodology-Statewide Savings and Cost" report prepared for the NCPA by KEMA. It was found that while there are minor differences between the two, they are substantially in agreement. RE stated that they believe the technical document to be somewhat more accurate to their specific location and customer base.

A methodology is described in the technical document to calculate demand and energy savings based on fundamental non-coincident kW savings, modified by diversity factors and interactive effects specific to the type of facility. The non-coincident kW savings for lighting measures is simply the difference in wattage between the existing and new lights.

Demand savings is calculated by taking the non-coincident savings and multiplying by the coincident diversity factor and the demand interactive effect multiplier. Energy savings are calculated by multiplying the non-coincident kW savings by an energy interactive multiplier and the hours of operation. Again, both of these are deemed values specific to the building's market sector.

$$\text{Coincident Demand} = \text{Non-Coincident Demand} \times \text{Coincident Diversity Factor} \times \text{Demand Interactive Effect}$$

$$\text{Energy Savings} = \text{Non-Coincident Demand} \times \text{Energy Interactive Effect} \times \text{Hours of Operation}$$

Small Commercial Lighting

Site Visit Findings

To verify deemed savings figures, site visits were conducted at a number of randomly selected locations (Appendix D). The number of sites required was determined by calculating a statistically significant sample for the population. During the site visits it was observed that the majority of chosen locations were no longer in business (one location had the power shut off completely). Even though fixture counts were conducted within these locations the actual savings may be less than assumed due to the high vacancy rate. It is not surprising during these tough economic times that higher than normal vacancy rates will be encountered. RE verified with their records that all of the following locations were occupied during the 2009 fiscal year.

Customer Occupancy

Business	Address	Comments
ARM Electronics	8860 Industrial Ave., Suite 140	Occupied
David's Bridal #169	1140 Galleria Blvd., Suite 100	Occupied
Frame Factory	225 Vernon St.	Occupied
Harris & Bruno International	8555 Washington Blvd., Suite 7	Occupied
MW Investments	660 Commerce Drive, Suite E	Vacant
	660 Commerce Drive, Suite B	Vacant
	660 Commerce Drive, Suite C	Vacant
	1050 Melody Lane, Suite 160	Vacant
	1052 Melody Lane, Suite 280A	Vacant
Pasta Pomodoro	10341 Fairway Drive, Suite 100	Vacant
San Bruno Lumber Co.	1624 Santa Clara Dr.	65% Occupied
The Olive Branch Church	658 Commerce Drive, Suite E	Occupied

Source documentation was provided by RE that coincides with these findings. Grubb & Ellis (GE), a commercial real estate service and investment company, reports a vacancy rate for the Roseville, Rocklin, and Auburn area of 30.5% (Appendix C). It must be acknowledged that the demographic of office square footage of the GE report does not match all the sample locations well. The GE report only measured locations where square footage was greater than 20,000 square feet. Since location square footage is not recorded by RE it is unknown how many RE customer locations meet this criterion. Approximately one third of the sample locations appeared to easily meet this criterion, but detailed measurements were not conducted during verification.

The intention of the site visits was to gather information to calculate 90% confidence intervals for individual measures and compare those findings to RE's deemed savings figures. Since these site visits are taking place over a year after the retrofits have been completed, existing documentation must be relied upon for evaluation and calculation purposes. An attempt was made to quantify savings derived from the prescribed retrofits, but information on existing fixtures is not required as part of the application process. Because of the lack of verifiable information on existing fixtures, the accuracy of the 90% confidence interval is diminished and the error bound could be increased by an unknown component.

Sample Population

Measure	Qty	Proportion	RE Deemed Savings (Watts)	Std Error Mean	Std Error Proportion	Total Error (Watts)
Delamp	307	0.92	43	0.00	0.02	0.20
CFL	57	1.00	57	3.27	0.00	2.98
HID Fix, Pls Strt 0-35W	13	1.00	29	0.00	0.00	0.00
High Efficiency Exit Sign	25	0.92	36	0.82	0.05	1.54
Interior HO T5 Fixture	59	0.68	234	6.05	0.06	4.07
Sensor	115	0.83	162	0.00	0.04	0.31
T8/T5 Lamp w/EB	282	0.97	9	1.00	0.01	1.65

Recorded 2009 RE Rebates from Database

Measure	Qty	kW Savings	kWh Savings
Delamp	3,547	162.52	760,902
CFL	357	18.87	94,856
HID Fix, Pls Strt 0-35W	13	0.34	1,508
High Efficiency Exit Sign	58	2.48	20,590
Interior HO T5 Fixture	789	171.68	761,028
Sensor	147	28.25	87,732
T8/T5 Lamp w/EB	6,723	59.55	282,186
Custom	1	10.70	42,800
Total	11,635	454.39	2,051,602

Calculated 2009 RE Rebates with 90% Confidence Interval

Measure	Qty	kW Savings	kW Saving Error Bound	kWh Savings	kWh Saving Error Bound
Delamp	3,547	140.84	0.73	662,020	3,425
CFL	357	19.73	1.03	100,734	5,260
HID Fix, Pls Strt 0-35W	13	0.39	0.00	1,862	0
High Efficiency Exit Sign	58	1.92	0.09	16,828	780
Interior HO T5 Fixture	789	121.72	3.11	542,938	13,877
Sensor	147	21.65	0.05	3,991	9
T8/T5 Lamp w/EB	6,723	58.50	11.09	272,371	51,628
Custom	1	9.15	0.00	37,607	0
Total	11,635	373.90	16.10	1,638,351	74,979

Explanation of Variance

There were several factors which contributed to the variances between recorded and observed quantities, the most significant of which was the lack of customer knowledge of where retrofits occurred. A breakdown of explainable observed variances is captured in the table below.

Explanation of Quantity Variance

Business	Measure	Variance
ARM Electronics	8860 Industrial Ave., Suite 140	<ul style="list-style-type: none"> Three (3) extra T5HO lamps were installed after the initial fixtures were rebated.
David's Bridal #169	1140 Galleria Blvd., Suite 100	<ul style="list-style-type: none"> The Store Manager was not able to confirm which fixtures were retrofitted.
Frame Factory	225 Vernon St.	<ul style="list-style-type: none"> All lamps were installed, but 4 were burned out.
Harris & Bruno International	8555 Washington Blvd., Suite 7	<ul style="list-style-type: none"> Harris & Bruno is undergoing a remodel in an area where T5 lamps were installed as part of this measure. This may account for the difference in count. Cut sheets were not included with application.
MW Investments	1050 Melody Lane, Suite 160	<ul style="list-style-type: none"> Power was off.
Pasta Pomodoro	10341 Fairway Drive, Suite 100	<ul style="list-style-type: none"> Custom measures were unverifiable because this location was out of business.
San Bruno Lumber Co.	1624 Santa Clara Dr.	<ul style="list-style-type: none"> Not every office was accessible due to security alarm systems.

Since the custom measures for Pasta Pomodoro were unable to be verified this location was excluded from savings calculations, even though RE verified that this location was occupied during the 2009 fiscal year.

Future EM&V Approach

In the future the Small Commercial Lighting program should be looked at as a compilation of smaller lighting programs rather than as a single program. Consider focusing on the individual programs which save the most energy. Also consider how information on pre-retrofit fixtures can be collected in a

verifiable format.

One option to verify pre- and post-retrofit fixture types and counts would be to implement “Real-Time EM&V”, where an EM&V auditor is called on throughout the year to verify a portion of the retrofits. If the auditor is on site at the same time as the contractor then the reliability of the verification process will be improved dramatically. This approach would require some care to ensure the number of audited measures is statistically significant.

If “Real-Time EM&V” is not practical then consider other improvements to ensure that later spot checks can be conducted with higher confidence. For example, taking pictures of existing fixtures and drawing maps of fixture locations showing existing, removed and new fixtures. Labeling installation locations is key to future auditing because it was found during the audits that customers directly involved in the project could not verify the locations of new fixtures. In some cases the retrofit only applied to a portion of the fixtures and it was therefore impossible to verify quantities.

Commercial & Industrial Hi-Bay Lighting Retrofit

This category includes only one measure, Interior High Output T5 Fixtures. The measure savings and calculations were verified in a similar manner to the Small Commercial Lighting.

Recorded 2009 RE Rebates from Database

Measure	kW Savings	kWh Savings
Interior HO T5 Fixture	558.68	2,709,070

Calculated 2009 RE Rebates with 90% Confidence Interval

Measure	kW Savings	kW Saving Error Bound	kWh Savings	kWh Saving Error Bound
Interior HO T5 Fixture	390.83	9.99	1,857,876	47,485

Living Wise

Resource Action Programs (RAP), the third-party provider of the Living Wise program, was contacted and asked to provide all cited sources and assumptions for their savings calculations. RAP furnished the requested information on January 14, 2010.

While the program is fairly well documented, there were some issues with assumptions made in the energy savings estimates.

- **Showerhead Replacement:** The showerhead retrofit calculation shows that the average home in RAP’s 2008-2009 report calculation uses 4 gallons per minute (gpm) as the average flow rate, but the report questionnaire shows 68 percent of the homes were built after 1992, after the Federal Energy Policy Act of 1992 enacted a maximum showerhead flow of 2.5 gpm. Therefore, it is likely that faucets and showerheads installed in these homes have a flow rate no greater than 2.5 gpm.
- **CFL Replacement:** In the CFL replacement calculation, RAP assumes an average lamp annual runtime of 1460 hours. The Measure Quantification Methodology-Statewide Savings and Cost report prepared for NCPA by KEMA Inc. recommends an estimate of 840 annual runtime hours for a screw-in residential internal CFL.
- **Filtertone:** After review of RAP’s source document, “Engineering Review and Savings Estimates for the “Filtertone” Filter Restriction Alarm,” several questions about accuracy were raised. The report states on the first page that all calculations for this device are “ball park” estimates. This calls into question the accuracy and precision of the figures in the report. The report looks at two filters. One changed after one year, the other changed after two years. The restriction assumption used in this calculation assumes a linear ¼ inch water column gain each year. An error in the calculation occurs when trying to show savings between the two different filter changes at the end of the second year. The report uses a ½ inch water column gain as the difference between the two filters at the end of the second year. This is an incorrect assertion since the filter which was replaced at the first year will

continue to become restricted at the prescribed linear rate, so ¼ inch water column gain should have been used per the prescribed calculations. This would reduce savings figures by half. Furthermore, since the filters are assumed to become fouled linearly it should be assumed that the water column gains will be the maximum amount of pressure gained over the prescribed time. So an average should be taken of the two rates. This would reduce the amount of savings again by half.

- **Night Light Replacement:** RAP's 2008-2009 Living Wise report asserts that every student in the program who installed the Electroluminescent Night Light replaced a 7 watt night light. Without cited or questionnaire data to back up this claim, it remains questionable whether 100 percent of the students who installed the measure replaced a 7 watt nightlight.

While there are many benefits to a program such as this, it is not clear that the savings estimates produced by Resource Action Programs are entirely reliable. It is outside the scope of this EM&V report to do a more thorough engineering review of this program, but it is our recommendation that such an evaluation is performed to more clearly substantiate the program's impact.

Although RAP estimated an annual savings of 280,180 kWh, RE chose to use only 34,602 kWh in their annual reporting because of concerns with the accuracy of estimates. A further benefit of a more thorough engineering review would be the ability to increase reported savings if they can be verified.

Appendix A – Database Input Form

Account No:	000000-00000	Customer Name:	
SIC Code:		Address:	
Rate Class:	GS-1 <input type="checkbox"/> Green	Zip Code:	95747
Market Sector:	Office	Telephone:	916 Ext: <input type="text"/>

Prescriptive: Lighting | Prescriptive: HVAC | Prescriptive: Refrig | Custom | New Construction | Photovoltaics | Audits | Shade Tree

Select a Program:	Small Commercial Lighting Rebate	<input checked="" type="checkbox"/> Auto Calculate	
Type:	2-Foot Delamp 2007-SCL	Rebate:	\$28.00
Project Description:		Fund Source:	Small Commercial
Contact Name:		Disposition:	Check
Contact Phone:	916	Mail Check To:	Contractor
Gross Sq. Ft.:	0 sq. ft.	Account Rep:	Mark Riffey
Quantity:	4	Contractor:	
Date Stamped:		Job Description/Code:	
Date Logged:	2/25/2010	Notes:	
Date Pre-Inspected:			
Date Post-Inspected:			
Date Processed:			
Est Completion Date:			
kW:	0.13		
kWh:	600		

Record: 1 of 1 | No Filter | Search

Appendix B – Sample Rebate Applications

Roseville Electric's Small Commercial Lighting Retrofit Rebate Two Five - O Program Reservation Form

Customer Information

RE Account #	Rate Schedule
Name of company (as it appears on electric bill)	
Address where item is installed	Zip Code
Name of contact person	Contact Phone

Contractor

Name of company (installer)	CL #
Address	Zip Code
Contact person	Contact Phone
Contact Fax	Contact Email

Total Rebate \$ 0.00 [See worksheet page 2]

Estimated Installation Date: _____

Acknowledge

- Submit a lighting schedule of existing and proposed lighting, area by area.
- Provide the manufacturer's part number and spec sheet for proposed items.
- I have read and understand the program requirements set forth in these application forms and agree to abide by these requirements. I have attached the required documentation for the program under which I am applying. I certify that the information provided on this application and associated required documents is true and correct.

Contractor (please print)

Contractor Signature

Date

Roseville Electric Use Only

Date Received:	KW Reduced:
Re Inspect Date:	kWh Reduced:
Reserved Amount:	Source:
Authorized by:	Date Approved:

Mail completed form to:
Roseville Electric
Attn: Small Commercial Lighting
2090 Hilltop Circle
Roseville, CA 95747

www.roseville.ca.us/250
79-POWER (797-6937)



Roseville Electric

Roseville Electric's Small Commercial Lighting Retrofit Rebate Program
Two Five - O Program **Reservation Form**

Roseville Electric Small Commercial Lighting Retrofit Worksheet

Business Name:					
Business Street Address:					
City: Roseville		Business Contact Name:			
Zip Code:		Phone Number:			
Type of Business:			Floor Area (ft ²):		
RE Account Number:			Premise ID Number:		
Contractor Name:			Phone Number:		
Contractor Address:			Cell Phone:		
City:			Fax Number:		
Zip Code:			Email:		
Circle One: Reservation Notice of Completion					
Equipment Category		# of Items Installed	Rebate/Unit	Per Unit	Rebate
A. Compact Fluorescent Lamp					
	5 - 13 watts		\$ 5.00	/Lamp	\$0.00
	> 13 watts		\$ 10.00	/Lamp	\$0.00
B. Hardwired Fluorescent Lamp					
	5 - 13 watts		\$ 20.00	/Fixture	\$0.00
	14 - 26 watts		\$ 20.00	/Fixture	\$0.00
	27 - 65 watts		\$ 24.00	/Fixture	\$0.00
	66 - 90 watts		\$ 36.00	/Fixture	\$0.00
	> 90 watts		\$ 44.00	/Fixture	\$0.00
C. High Efficiency Exit Sign					
			\$ 60.00	Sign	\$0.00
D. T-8 or T-5 Lamps with Electronic Ballasts					
	2-Foot Lamp		\$ 4.50	/Lamp	\$0.00
	3-Foot Lamp		\$ 6.50	/Lamp	\$0.00
	4-Foot Lamp		\$ 8.50	/Lamp	\$0.00
	8-Foot Lamp		\$ 15.00	/Lamp	\$0.00
E. Lamp Removal*					
	2-Foot Lamp		\$ 7.00	/Lamp	\$0.00
	3-Foot Lamp		\$ 8.00	/Lamp	\$0.00
	4-Foot Lamp		\$ 12.00	/Lamp	\$0.00
	8-Foot Lamp		\$ 18.00	/Lamp	\$0.00
F. High-Intensity Discharge Fixtures, Pulse Start					
	0 - 35 watts		\$ 30.00	/Fixture	\$0.00
	36 - 70 watts		\$ 50.00	/Fixture	\$0.00
	71 - 100 watts		\$ 80.00	/Fixture	\$0.00
	101 - 175 watts		\$ 80.00	/Fixture	\$0.00
	176 - 250 watts		\$ 80.00	/Fixture	\$0.00
	> 250 watts		\$ 100.00	/Fixture	\$0.00
G. Interior Linear Fluorescent HiBay Fixtures					
			\$ 200.00	/Fixture	\$0.00
H. Induction Lights					
	55 -100 watts		\$ 70.00	/Lamp	\$0.00
	> 100 watts		\$ 100.00	/Lamp	\$0.00
I. Sensors					
	Wallbox Lighting		\$ 40.00	/Sensor	\$0.00
	Wall or Ceiling Mounted		\$ 44.00	/Sensor	\$0.00
	Plug Load		\$ 30.00	/Sensor	\$0.00
	Photocell		\$ 44.00	/Sensor	\$0.00
	Integrated HiBay		\$ 40.00	/Sensor	\$0.00
J. Bi-Level Fluorescent Fixture					
			\$ 50.00	/Fixture	\$0.00
K. Custom Lighting Rebate					
			\$ 400.00	/KW	\$0.00
Total Rebate:					\$0.00

* When pre- and post-retrofit lamps are the same length, then the number of lamps removed equals the pre-retrofit lamps count minus the post-retrofit lamp count. When lamps are replaced by shorter lamps the number of lamps removed is considered equal to the linear feet of pre-retrofit lamps minus the linear feet of the post-retrofit lamps divided by the length of the pre-retrofit lamps.

Terms and Conditions

Customer Eligibility

- This program is open to all Roseville Electric commercial customers with a peak monthly demand that does not exceed 150 kW per customer site in the past 12 months. If you are not sure the account qualifies, please contact Roseville Electric at 916-79-POWER
- The total demand (KW) is measured by Roseville Electric meters. Total demand adds together all meters at customer's site to determine eligibility.
- A customer site is defined as a continuous building that is owned and/or operated by the same entity, as interpreted by Roseville Electric.

Customer Rebate

- Submitted and approved rebates will be paid directly to the installing contractor.
- Reservations for funds will be accepted on a first-come, first-served basis until allocated funds are spent.
- A reservation must be received and approved prior to commencement of project work.
- All projects must be completed within 90 days of reservations.
- Deadline for project completion and application submittal is December 31, 2008.
- The maximum customer rebate is \$25,000 per customer site.

Contractor Incentive

- The 'contractor's incentive' is equal to ½ of rebate total or \$250, whichever is less.
- The 'contractor's incentive' will be paid once per customer site address, as defined above.
- The 'contractor's incentive' will be paid per customer site, as defined above, one time within a 24 month period.
- Eligible contractors must be licensed in the State of California.
- Eligible contractors must hold a current C-10 electrical contractor license to receive additional contractor incentive.

Requirements

- Rebate items must be installed at the service address of the Roseville Electric account listed on the reservation form.
- The installed equipment must be 'permanent', replacing existing equipment.
- Qualifying project must have invoices dated August 21, 2007 or thereafter. All rebate items must be purchased and installed prior to submitting a notice of completion for payment.
- The utility rebate will not exceed 100% of the actual non-taxed purchase price of the items to be rebated.
- Equipment must meet the technical requirements listed in this reservation form. Check with your Roseville Electric representative to confirm eligibility before purchasing products. Roseville Electric reserves the right to withhold payment for products that do not meet program requirements.
- Roseville Electric reserves the right to inspect customer facility(ies) for installation verification, as listed on rebate application form.

Terms and Conditions Continued

How to Apply

Reservation

- Fill out and submit a completed reservation form prior to the purchase of materials and beginning work.
- Submit a lighting schedule of existing and proposed lighting, area by area.
- Manufacturer's part number and spec sheet for proposed items.
- Roseville Electric will review and provide written confirmation regarding the reservation acceptance or rejection. Do not begin work until written confirmation has been received from Roseville Electric.

Rebate/Contractor Payment

- Fill out the Project Worksheet. The information should reflect the actual 'Equipment Category' and 'Number of Items Purchased'.
- Fill out the Notice of Completion Form.
- Attach the paid, itemized invoice(s), with the customer's signature. Be sure that the make and model number of each item appears on the invoice(s). Invoice must reflect Total Project Cost, Utility Rebate and remaining Net Project Cost to Customer.
- Submit package to Roseville Electric.

Project Warranty

- All lighting projects receiving incentives through the Small Commercial Lighting Retrofit Rebate Program shall warrant parts and labor for one year from date of installation. The exception is the 3-year warranty for 4' and 8' fluorescent electronic ballasts.

Roseville Electric's Small Commercial Lighting Retrofit Program
Two Five - O Program Reservation Form

Technical Requirements

All equipment must be new. Used or rebuilt equipment is not eligible. Lighting application must be for typical non-residential use that is normally on during the working day. Exterior lighting does not qualify.

A. Compact Fluorescent Lamp (CFL)

Must replace an incandescent lamp. The lamp/ballast combination must have a minimum efficacy of 40 LPW and electronic ballasts are required for lamps 18 watts and greater. Rebate is based on lamp wattage. Residential applications within commercial properties do not qualify. Must be Energy Star labeled.

B. Hardwired Fluorescent Fixture

Must replace hard wired incandescent or mercury vapor fixture. Only complete, new fixtures and hardwired retrofits with socket removal qualify. Residential applications within commercial properties do not qualify. Rebate is based on the total nominal lamp wattage of new fixture. The lamp/ballast combination must have a minimum efficacy of 40 LPW. Electronic ballasts are required for lamps 15 watts or greater. T-8 and T-5 lamps are required for linear fluorescent fixtures and must meet or exceed the requirements stated in Category "D".

C. High Efficiency Exit Sign

Only new exit signs that replace an incandescent exit sign qualify. Non-electrified (e.g. tritium) and remote exit signs are NOT eligible. New exit signs must meet UL-924 requirements, be Energy Star labeled, and have an input wattage less than 5 watts and a 10-year rated life. Conversion must meet local fire codes.

D. T-8 & T-5 Linear Fluorescent Lamp and Ballast Retrofits

Applies to applications where T-8 and T-5 lamps and UL listed, high frequency (>20Hz) ballasts replace T-12 lamps with magnetic ballasts. Qualifying ballast must be warranted against mechanical or electrical defects for five years. Total Harmonic Distortion at full light output must be < 21% for 4' and 8' lamps, and < 33 for 2' and 3' lamps.

Lamp Type and Size	Ballast Type	CRI	Minimum Rated Lamp Life @ 3 Hour Start
T-5 (All Lengths)	Programmed Start or Programmed Rapid Start	>81	20,000 Hours
T-8 (2', 3' & 4')	Programmed Start or Programmed Rapid Start	>79	24,000 Hours
T-8 (All Lengths)	Instant Start	>79	18,000 Hours

Installation recommendations: For general illumination purposes T-8 lamps with instant start ballasts must be used. When using occupancy sensors to control the lighting circuit Programmed Start/Programmed Rapid start ballasts are recommended in order to maximize lamp life.

E. Lamp Removal* (see worksheet)

Contractor must contact Roseville Electric to schedule a site inspection before removing existing equipment. Lamp removal may only be done jointly with conversions to T-8 or T-5 lamps with electronic ballast under category D. The number of lamps claimed for a lamp removal rebate may not exceed the number of T-8 or T-5 lamps installed. Customers are responsible for determining whether or not delamping will maintain adequate lighting levels. Delamping is the permanent removal of the existing T-12 lamp, ballast and lamp holders from the fixture without replacing the lamps.

F. High Intensity Discharge (HID) Fixtures, Pulse Start

Must replace existing incandescent or mercury vapor fixture. Fixture system must have a minimum efficacy of 45 LPW for compact sources (<101 watts) and 55 LPW for standard or full-size sources (>100 watts). Metal halide fixtures under 400 watts can use electronic or magnetic ballasts. Rebate is based on the total lamp wattage. All fixtures must be hardwired. See Item I for integrated sensor rebate.

G. Interior Linear Fluorescent HiBay Fixtures

Contractor must contact Roseville Electric to schedule a site inspection before removing existing equipment. Must replace existing incandescent, mercury vapor T12/HO, T12/VHO, standard Metal Halide or High Pressure Sodium fixtures in a 12' or greater high bay application. Fixtures must be replaced one-for-one. Existing fixtures must be a minimum of 400W. New fixtures will contain T5, T8 or HOT5 lamps and have a maximum of 244W. All fixtures must be hardwired. Lamps and ballasts in this category must meet the requirements in Item D for T5 and T8 linear fluorescent lamps and ballasts. Fixtures may qualify for additional rebates under Item I. Exterior lighting does not qualify.

H. Induction Lamps

Only complete new induction fixtures > .54 watts that replace existing incandescent or mercury vapor fixtures qualify. Each new fixture must have a mean lamp/ballast efficacy of greater than 50 lumens/watt.

I. Sensors

Motion Sensors – Only passive infrared and/or ultrasonic detectors are eligible. They must be hardwired and control interior lighting fixtures. Wall box lighting occupancy sensors should not control more than 350 watts. Wall or Ceiling mounts lighting sensors should not control more than 1,000 watts.

Plug Load Sensors – Should control electricity-using equipment in offices or cubicles or shared copiers and/or printers.

Photocell Sensor - Shuts off indoor lights from dawn to dusk qualify. Replacements of existing time clock with photocells do not qualify.

Integrated High Bay Sensor - Permanently installed in the lighting fixture to control all lamps in the fixture.

J. Bi-Level Fluorescent Fixture

Each fixture must include a passive infrared and/or ultrasonic occupancy sensor that is built into and controls each individual fixture, manual overrides do not qualify. Must be hardwired fluorescent pin based lamps with electronic ballasts replacing an existing fluorescent fixture. During occupied times fixture will operate at full power and light output, during unoccupied times the fixture will operate at partial power and light output. This category does not qualify for a separate sensor rebate.

K. Customer Lighting Retrofit

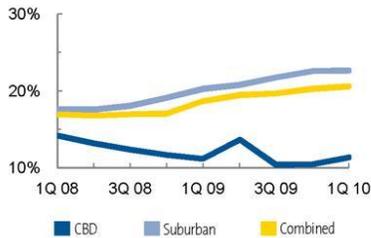
Have a lighting retrofit that doesn't fit those called out? Here you can design your own retrofit – submit all the information required for a reservation along with a daily schedule of operation. Include a calculation for the existing and proposed kW demand and annual lighting use for rebate consideration.

Appendix C – Roseville Vacancy Rate

Office Trends Report—First Quarter 2010 Sacramento, CA



Vacancy Rate



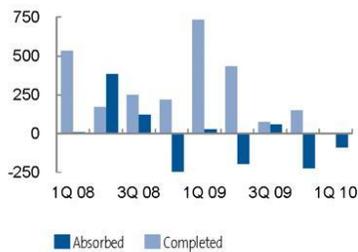
The Worst Is Over

Erasing virtually all positive net absorption achieved during the second half of 2009, nearly 100,000 square feet of additional space became vacant during the first quarter, raising Sacramento's office vacancy rate by 20 basis points to 20.6 percent. While almost all submarkets except Folsom/El Dorado Hills suffered from tenant vacancies, the CBD, Highway 50 and West Sacramento submarkets fared the worst as several tenants relocated to smaller spaces, or, in the case of the California Highway Patrol, completed their consolidation to their new headquarters.

Insurance companies and law firms were very active during the quarter, driving much of the occupancy in the Folsom submarket, as well as at least one major vacancy in the CBD. Look for professional firms to continue to upgrade and right-size in the coming months, though the effect should be nominal as a majority of these firms reacted quickly to employee and office size questions at the beginning of the recession in late 2007, early 2008. We should still expect health care and medical firms to show increasing demand over the coming months as the aging of the local, and national, population creates a rising need among those business sectors and services, even in the wake of recently enacted federal health insurance regulations.

Local job losses continued to mount during the first two months of the year, but to a much lesser degree than during 2009. Further, local employers/hiring managers have suggested that hiring may resume at several companies. This is in sharp contrast to last year at this time, when these companies indicated virtually no hiring on the horizon. This lagging indicator would support the notion that activity is on the upswing and that we have seen the worst.

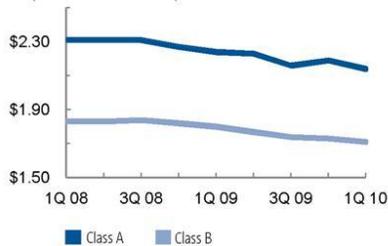
Completions vs. Absorption
(in Thousands of SF)



FORECAST

- Tenants begin to re-emerge, vacancy slowing through the rest of the year.
- Banks will take an even more active role in dealing with default situations as short-sales, note sales and foreclosure actions become more prominent.
- Asking rates, net effective rates continue to trend slightly downward.

Asking Rental Rates
(\$/SF/Yr. Full Service)



KEY TRANSACTIONS

Lessee/Buyer	Lessor/Seller	Property	Size (SF)/Price
California Finance & Housing Agency	Tsakopoulos Investments	500 Capitol Mall	65,000
Metro Calvary Rocklin	Triple Net Properties, Inc.*	1660 E. Roseville Pkwy	38,115
Avanti, Inc.	Umpqua Bank	1264 Hawks Flight	28,000

■ Leasing ■ Sales (R) = Renewal (S) = Sublease * indicates Transaction Represented by Grubb & Ellis

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Office Trends Report—First Quarter 2010 Sacramento, CA



By Submarket	Total SF	Vacant SF	Vacant %	NET ABSORPTION		Under Construction SF	ASKING RENT	
				Current	Year To Date		Class A	Class B
Downtown	10,853,983	1,235,402	11.4%	(56,499)	(56,499)	-	\$2.85	\$1.79
CBD Total	10,853,983	1,235,402	11.4%	(56,499)	(56,499)	-	\$2.85	\$1.79
Carmichael, Fair Oaks, C.H., Oran	1,488,004	276,731	18.6%	638	638	-	\$1.45	\$1.48
Folsom, El Dorado Hills	4,201,550	834,795	19.9%	125,606	125,606	19,500	\$1.98	\$1.90
Hwy 50 Corridor	13,385,153	2,379,385	17.8%	(79,041)	(79,041)	-	\$1.78	\$1.57
Hwy 80 Corridor	6,757,395	1,546,516	22.9%	(49,755)	(49,755)	34,530	\$2.04	\$1.67
Laguna/Elk Grove	980,474	343,338	35.0%	15,698	15,698	-	\$2.36	\$1.92
Midtown	2,768,979	392,090	14.2%	23,439	23,439	-	\$2.22	\$1.88
Natomas	6,611,404	1,695,932	25.7%	18,413	18,413	122,500	\$2.54	\$1.73
North Sacramento	1,450,712	490,748	33.8%	(30,375)	(30,375)	-	\$1.45	\$0.96
Roseville, Rocklin, Auburn	7,864,181	2,402,285	30.5%	19,897	19,897	120,609	\$2.06	\$1.83
South Sacramento	1,127,891	100,807	8.9%	(4,154)	(4,154)	-	-	\$1.75
West Sacramento	1,488,913	468,228	31.4%	(75,384)	(75,384)	-	-	\$1.52
Suburban Total	48,124,656	10,930,855	22.7%	(35,018)	(35,018)	297,139	\$2.04	\$1.70
Totals	58,978,639	12,166,257	20.6%	(91,517)	(91,517)	297,139	\$2.14	\$1.71

By Class	AVAILABLE FOR SUBLEASE		Vacant %	Current	Year To Date	Under Construction SF	Class A	Class B
	CBD	Suburban						
Class A	28,360,557	6,137,971	21.6%	101,105	101,105	53,985	30,567	662,914
Class B	21,316,059	4,260,087	20.0%	(118,498)	(118,498)	243,154	42,095	144,077
Class C	9,302,023	1,768,199	19.0%	(74,124)	(74,124)	-	7,000	73,019
Totals	58,978,639	12,166,257	20.6%	(91,517)	(91,517)	297,139	79,662	880,010

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OFFICE TERMS AND DEFINITIONS

Total SF: Office inventory includes all multi-tenant and single-tenant buildings at least 20,000 square feet. Owner-occupied, government and medical buildings are not included.

Office Building Classifications: Grubb & Ellis adheres to the BOMA guidelines. Class A properties are the most prestigious buildings competing for premier office users with rents above average for the area. Class B properties compete for a wide range of users with rents in the average range for the area. Class C buildings compete for tenants requiring functional space at rents below the area average.

Vacancy and Availability: The vacancy rate is the amount of physically vacant space divided by the inventory and includes direct and sublease vacant. The availability rate is the amount of space available for lease divided by the inventory.

Direct Vacant: This is the vacancy rate in space offered on the market directly by the landlord in single and multi-tenant buildings. This excludes vacant space offered for sublease and vacant space that is not offered on the market, for whatever reason.

Net Absorption: The net change in physically occupied space over a period of time.

Asking Rent: The dollar amount asked by landlords for available space expressed in dollars per square foot per year in most parts of the country and dollars per square foot per month in areas of California and selected other markets. Office rents are reported full service where all costs of operation are paid for by the landlord up to a base year or expense stop. The asking rent for each building in the market is weighted by the amount of available space in the building.

** Grubb & Ellis statistics are audited annually and may result in revisions to previously reported quarterly and final year-end figures.*

