

MOTHERLODE
energy
watch

Sierra Foothill Local Government
Partnership



Description of Program

- ▶ **Municipal Assistance**
 - Assessments
 - Direct Delivery
 - Incentives
 - MBCx
- ▶ **Direct Install**
 - Small Business
 - Multi Family
- ▶ **Direct Delivery**
- ▶ **Training and Education**

- ▶ El Dorado County
- ▶ Placer County
- ▶ Nevada County
- ▶ Sierra County
- ▶ Amador County
- ▶ Calaveras County



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Municipal Assistance

- ▶ Assessments
- ▶ Coordination with CEC
- ▶ Incentives
 - Lighting - \$.06/kWh
 - Motors, other - \$.14/kWh
 - HVAC - \$1.16/kWh
 - Gas - \$1.16/therm
- ▶ Direct Delivery
- ▶ MBCx



Case Study – County of El Dorado

Energy Saving Projects Identified by the Energy Partnership Program and Funded with a State Loan

EL DORADO COUNTY PROJECTS	ANNUAL ENERGY COST SAVINGS	PROJECT COST
Lighting Improvements and Controls	\$54,400	\$215,005
Energy Efficient Propane Boiler	\$103,000	\$42,000
Energy Management System	\$47,500	\$294,000
Premium Efficiency Motors	\$3,700	\$27,700
Replace Electric Space Heaters	\$1,700	\$13,300
Air Handler Improvements	\$31,000	\$420,000
Package Unit Replacements	\$2,500	\$11,000
Building Envelope Improvements	\$900	\$5,720
Kitchen Equipment Replacement	\$14,500	\$75,700
TOTAL \$	\$259,200	\$1,104,425
PROJECT ECONOMICS		
Simple Payback (Project Cost/Savings)	4.3 years	
Internal Rate of Return	20%	

Case Study – Nevada County

EEM Description	Demand Savings (kW)	Annual Electric Savings (kWh)	Annual Nat Gas Savings (Therms)	Annual Cost Savings	Implementation Cost Estimate	Simple Payback (years)
Lighting EEMs						
1. Exit Sign Retrofit: Eric Rood & Wayne Brown	0.6	4,923	---	\$559	---	Immediate
2. Mercury Vapor Retrofit: Eric Rood	0.4	2,266	---	\$329	\$108	0.3
3. Incandescent Retrofit: Wayne Brown	1.7	4,008	---	\$702	\$570	0.8
4. Photocell Control: Eric Rood	---	5,168	---	\$570	\$640	1.1
5. T-8 Retrofit & Delamping: Eric Rood & Wayne Brown	34.6	104,474	---	\$17,923	\$108,836	6.1
6. Occupancy Sensors: Eric Rood and Wayne Brown	---	21,465	---	\$2,248	\$26,393	11.7
HVAC EEMs						
1. Optimize Control: Eric Rood	---	51,876	---	\$5,723	\$0	Immediate
2. Premium Efficiency Motors: Eric Rood	0.6	3,928	---	\$458	\$1,269	2.8
3. Domestic HW Heaters Replacement: Wayne Brown	---	---	5,469	\$5,122	\$53,719	10.5
4. Rooftop A/C Units Replacement: Eric Rood & Wayne Brown	147.0	241,879	13,539	\$59,669	\$678,000	11.4
Miscellaneous Projects						
1. Vending Machine Control: Eric Rood	---	14,317	---	\$1,291	\$1,344	1.0
Total	184.9	454,205	19,008	\$94,595	\$870,878	9.2

Case Study – Placerville Downtown Association



Case Study – Amador County

Project #	Project Description	Peak Demand Savings (kW)	Annual Electricity Savings (MWh)	Annual Gas Savings (Therms)	Project Cost Estimate (\$)	Annual Cost Savings (\$)	Payback Period without Incentive (years)	Estimated Incentive (\$)	Project Costs w/ Incentive (\$)	Payback Period with Incentive (years)
L-1A	Retrofit all existing T12 fluorescent fixtures with 28-watt T8 lamps and low-watt electronic ballasts	23.4	64,915	0	\$34,870	\$8,798	4.0	\$3,895	\$30,975	3.5
L-1B	Retrofit existing 1st generation T8 fluorescent fixtures with 28-watt T8 lamps and low-watt electronic ballasts	5.6	13,718	0	\$17,278	\$1,947	8.9	\$823	\$16,455	8.5
L-2	Replace incandescent lamps with screw-in compact fluorescent lamps or new PL-lamp fixtures	1.8	4,787	0	\$843	\$843	1.3	\$286	\$557	0.9
L-3	Add daylight controls to lighting fixtures at various Corporation Yard Shops	0	1,768	0	\$1,614	\$195	8.3	\$106	\$1,508	7.7
M-1	Complete HVAC system upgrade at the Main Library	11.1	17,072	929	\$63,722	\$3,401	18.8	\$3,810	\$49,912	14.7
M-2	Provide garage door sensor controls at the Corporation Yard to shut-off gas-fired radiant heater operation when garage door is open	0	0	321	\$5,495	\$673	8.2	\$372	\$5,123	7.6
E-1	Provide occupancy sensor controls for vending machines at the Probation Building	0	1,753	0	\$300	\$284	1.1	\$245	\$55	0.2
Total		41.9	103,982	1,260	\$114,122	\$15,938	7.2	\$9,607	\$104,684	6.8

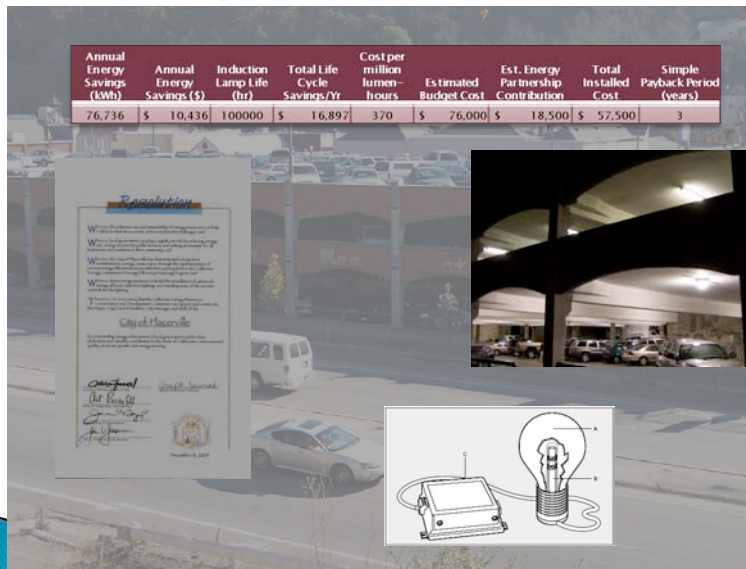
Case Study – El Dorado County Monitoring Based Commissioning

Table 1. Cost and Savings estimates for El Dorado County

Table 1. El Dorado County
Summary of Recommendations

#	Recommended Measures	\$/kV: \$4.00		\$/kwh: \$0.100		\$/gallon: \$1.65		Estimate	In-hrs	Simple Payback
		peak kW	kWh/yr savings	gal prop/yr savings	\$ maint saving	Total \$ savings	d \$ cost			
1	Building A Limit Outside Air to Design Level	0.0	15,551	2,473	\$0	\$6,208	\$4,050	No	0.7	
2	Building A Optimize Pre-Occupancy Schedule	0.0	34,188	726	\$0	\$5,129	\$2,000	No	0.5	
3	Building A Retrofit MY Recessed Fixtures	2.5	29,229	0	\$0	\$4,052	\$5,400	No	1.6	
4	Building A Retrofit Switching of Interior HID recessed fixtures	0.0	6,336	0	\$0	\$887	\$750	No	0.8	
5	Building A Retrofit Restroom Lighting	0.0	10,776	0	\$0	\$1,509	\$750	No	0.5	
6	Building B Limit Outside Air to Design Level	0.0	32,626	5,591	\$0	\$14,911	\$5,800	No	0.4	
7	Building B Optimize Pre-Occupancy Schedule	0.0	47,653	1,190	\$0	\$8,873	\$3,000	No	0.3	
8	Building B Add Photocell control for Upper Level Atrium Lighting	0.0	3,482	0	\$0	\$487	\$500	No	1.0	
9	Building B Retrofit MY Recessed Fixtures	2.3	25,682	0	\$0	\$3,706	\$5,800	No	1.6	
10	Building B Retrofit Restroom Lighting	0.0	17,745	0	\$0	\$2,494	\$1,000	No	0.4	
11	Building C Repair Vorn Damper Linkages on AH1 & AH2	0.0	22,420	2,364	\$0	\$7,512	\$3,800	No	0.5	
12	Building C Optimize Pre-Occupancy Schedule	0.0	8,270	682	\$0	\$2,363	\$3,000	No	1.3	
13	Building C Add VFD's to AH1 & AH2	0.0	26,822	0	\$0	\$2,766	\$12,320	No	3.3	
15	Building C Retrofit Restroom Lighting	0.0	3,346	0	\$0	\$468	\$1,000	No	2.1	
16	Jail - Throttle Chilled Water Pump	1.2	3,746	0	\$0	\$582	\$500	Yes	0.9	
17	Jail - Install Eah Fan for Elect. Rm & Schedule AHU-3	0.0	59,063	1,744	\$0	\$11,495	\$3,500	No	0.3	
18	Jail - Add VFD's to AH3	0.0	5,749	0	\$1,000	\$1,805	\$7,320	No	4.1	
19	Jail - Add VFD's to AC1	0.0	63,328	0	\$1,000	\$10,706	\$8,890	No	0.8	
20	Main Library - Add Occupancy Sensors to Restroom Lighting	0.0	1,895	0	\$0	\$232	\$500	No	2.2	
21	Senior Services - 837 Spring Street - Reduce OA & AHU Airflow	0.0	12,368	2,181	\$0	\$5,767	\$3,000	No	0.5	
TOTALS		6.1	435,856	16,931	\$2,000	\$53,993	\$74,880		0.8	
Existing consumption			5,606,840		unknown					
% of existing consumption			8%							

Case Study – City of Placerville



Small Business/Multi Family Direct Install

- ▶ No cost installation of
 - Hard wired fixtures
 - Linear retrofits
 - Variety of CFL options
 - Sensors
 - Exit signs
- For Small Business and Multi Family units



Training and Education



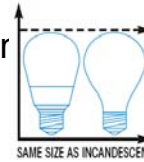
- Basics of Photovoltaic Systems
- Not Your Plain Vanilla Lighting Retrofit
- Title 24 Duct Installation Standards and Diagnostic Testing
- Photovoltaic Site Analysis and System Sizing
- LEED for Homes
- Greening the Plumbing in Your Home
- Home Performance and Solar

High Bays



CFL's – Much more than Twists!!

- ▶ Minicandles, minibulbs, PARS & R's, Dir



Program Accomplishments

- ▶ Total kWh and kW – 11.7 GWh, 2.2 MW
- ▶ B/C Ratio or TRC – 1.19
- ▶ Estimate of total annual electric benefits - \$3.5Million
- ▶ Annual Tons of Carbon
 - Reduced – 4,700



2009–2011 Sierra Nevada Energy Watch



- ▶ Substantial increase in Territory
- ▶ Sierra Business Council will be Program Administrator
- ▶ Most programs from Motherlode Energy Watch will be retained
- ▶ Focus on contractor capacity building