

Combined Integrated Resource Plan 2008 Annual Update



Alameda Power & Telecom
Biggs
City of Gridley Electric Utility
City of Healdsburg Electric Utility
Lodi Electric Utility
City of Lompoc
Plumas-Sierra REC
Port of Oakland
Truckee-Donner PUD
City of Ukiah

July 1, 2008

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Section I – Introduction

Background

The Western Area Power Administration (Western) requires all firm power purchase customers to submit Integrated Resource Plans (IRPs) for its review.¹ The requirement is stated in Section 13 of each firm power purchase contract. In compliance with the requirement, Northern California Power Agency (NCPA) submitted a combined IRP for Western's review in May 2006. The combined IRP covered eleven NCPA members.

The submittal was based one option offered by Western as a format for IRPs – documentation of compliance with a public benefits program. The submittal provided documentation of the State of California requirement of all retail suppliers of electricity to develop and implement a public benefits program.

After reviewing the submittal, Western requested additional documentation of public participation in June 2006, which NCPA provided. Western approved the IRP, after receiving and reviewing the additional documentation, in July 2006.

Western also requires its firm power purchase customers to submit annual updates of the IRP for its review. NCPA submitted – and Western approved – the first annual update of the approved IRP in May 2007. The update represented the eleven NCPA customers in the original IRP and added an additional NCPA member, Placer County Water Agency (PCWA).

Early this year Western's Sierra Nevada Region Office set a goal of getting all to get all the customers served by the Region on the same IRP planning cycle. The Region sent out letters requesting its customers to submit IRPs this year. In verbal communications between and amongst NCPA, its contractor preparing the IRP, and Region staff, Western agreed to delay the submittal of a combined IRP by the NCPA members. Instead, those members are to annual reports until the requirement to resubmit an IRP in 2013.

This annual represents all the NCPA members identified in the first update, except for Lassen Municipal Utility District (LMUD). LMUD is no longer a member of NCPA. A separate document covers PCWA's IRP.

Energy Savings Quantification

In the fall of 2005, NCPA created a unified series of energy savings quantification methodologies for a variety of end-use retrofit DSM efficiency measures. The Combined IRP summarized the methodologies. More details are available in a

¹ Federal Register Notice 10 CFR part 905

report authored by KEMA, Inc (KEMA), the contractor that NCPA used to help in its efforts².

The methodologies provide NCPA members with a consistent set of values for estimating energy and peak load reduction as a result of DSM activities funded by Public Benefits programs. The consistent values provide uniform reporting standards that all members can use for common reporting requirements.

In developing the methodologies NCPA members provided detailed information on the measures that they are currently using in their programs and a priority ranking for all of the measures they are implementing and are considering.

NCPA members used the Database for Energy Efficiency Resources (DEER) and PG&E's 2005 workpapers to identify most of the expected savings from the measures. A detailed discussion of DEER and the PG&E workpapers is contained in NCPA's Combined IRP to Western.

Working in conjunction with the California Municipal Utilities Association and Southern California Public Power Authority and with contract assistance from Energy and Environmental Economics (E3), NCPA incorporated the above two data bases into an Energy Efficiency (EE) Reporting Tool. The EE reporting tool effectively documents the Members' – and other California publicly owned utilities' – expenditures and energy savings related to their energy efficiency programs in a manner consistent with the information reported by California's three IOUs.

The EE Reporting Tool is an Excel Spreadsheet that contains a database of energy efficiency measures. The NCPA Members select the measures that best represent the programs they have implemented and enter the relevant data.

In 2007, E3 updated the reporting tool to provide several enhancements and increase user-flexibility. More information and background on the tool can be provided to Western upon request.

Program Evaluation

Since the last annual report, the NCPA members have made strides in the area of program evaluation, including energy savings verification. They established energy efficiency targets and began developing an energy efficiency program evaluation framework. It is likely to take several years to establish standard protocols because recent history has shown that PG&E's and the other IOUs' evaluation efforts, which were initiated in 2002, are still evolving.

The ten NCPA members have begun individual and collaborative program evaluation efforts amongst themselves and other members of the Publicly Owned

² Measure Quantification Methodology, KEMA, December 29, 2005

Utility (POU) community. For example, a very effective collaboration exists through three POU regional and statewide committees: CMUA's Energy Services & Marketing Committee, NCPA's Public Benefits Committee (all ten NCPA members are represented on this committee), and SCPPA's Public Benefits Committee. These three committees regularly meet to discuss best practices for program evaluation and to assist each other in establishing an approach for measuring and verifying program performance.

As another example, NCPA's Public Benefits Committee issued a Request for Qualifications in late 2006 for program evaluation consultants. As a result of this effort, NCPA contracted with three evaluation consultants: Summit Blue Consulting, Robert Mowris & Associates, and RLW Analytics. The contracts provide members access to professional evaluation services. These results of the evaluations will be documented in future annual reports.

Section II – Combined NCPA Members IRP Update

Contact Information

Table One provides contact information for the ten NCPA members, NCPA, and the Utility Forum Connection (UFC), who together are the authors of this IRP document. Additional contact information is included in Attachment A.

Table One
Contact Information

Organization	Contact	Phone	Email
Alameda	Meredith Owens	(510) 748-3947	mowens@alamedapt.com
Biggs	Marlee Mattos	(530) 868-5493	biggsar@biggs-ca.gov
Gridley	Brad Wilkie	(530) 846-5695	bwilkie@gridley.ca.us
Healdsburg	Elizabeth Kirkley	(707) 431-3346	ekirkley@ci.healdsburg.ca.us
Lodi	Rob Lechner	(209) 333-6800	rlechner@lodielelectric.com
Lompoc	Mary Kammer	(805) 736-1261	m_kammer@ci.lompoc.ca.us
PSREC	Jessica Nelson	(800) 555-2207	jnelson@psrec.coop
POA	Anthony Kekulawela	(510) 627-1877	akekulaw@portoakland.com
TDPUD	Steve Hollabaugh	(530) 582-3931	stephenhollabaugh@tdpud.org
Ukiah	Mel Grandi	(707) 463-6295	mgrandi@cityofukiah.com
NCPA	David Reynolds	(916) 781-4293	David.Reynolds@ncpa.com
UFC	Guy Nelson	(541) 994-4670	gnelson181@aol.com

Past and Future Load Information

Tables Two and Three list the capacity and energy use for the prior five years and the future projections respectively for the ten members.

Table Two
Prior Year Capacity and Energy Use

Year	Alameda Energy MWh	Alameda Peak MW	Biggs Energy MWh	Biggs Peak MW	Gridley Energy MWh	Gridley Peak MW	Healdsburg Energy MWh	Healdsburg Peak MW
2003	359,724	67.33	14,942	3.69	32,283	9.78	70,653	19.55
2004	367,065	68.71	15,247	3.76	32,942	9.98	72,095	19.95
2005	374,556	70.11	15,558	3.84	33,614	10.18	73,567	20.36
2006	382,200	71.54	15,876	3.92	34,300	10.39	75,068	20.78
2007	390,000	73.00	16,200	4.00	35,000	10.60	76,600	21.20

Table Two
Prior Year Capacity and Energy Use
(Continued)

Year	Lodi Energy MWh	Lodi Peak MW	Lompoc Energy MWh	Lompoc Peak MW	Plumas Energy MWh	Plumas Peak MW	POA Energy MWh	POA Peak MW
2003	423,367	127.29	129,963	23.80	144,812	28.59	68,255	11.07
2004	432,007	129.88	132,615	24.28	147,767	29.18	69,648	11.29
2005	440,824	132.54	135,321	24.78	150,783	29.77	71,070	11.52
2006	449,820	135.24	138,083	25.28	153,860	30.38	72,520	11.76
2007	459,000	138.00	140,901	25.80	157,000	31.00	74,000	12.00

Table Two
Prior Year Capacity and Energy Use
(Continued)

Year	Truckee Energy MWh	Truckee Peak MW	Ukiah Energy MWh	Ukiah Peak MW
2003	135,219	29.70	113,451	33.21
2004	137,979	30.31	115,767	33.88
2005	140,795	30.92	118,129	34.57
2006	143,668	31.56	120,540	35.28
2007	146,600	32.20	123,000	36.00

Table Three
Future Projections

Year	Alameda Energy MWh	Alameda Peak MW	Biggs Energy MWh	Biggs Peak MW	Gridley Energy MWh	Gridley Peak MW	Healdsburg Energy MWh	Healdsburg Peak MW
2008	410,700	70	17,698	4.3	40,803	13	80,012	22
2009	431,000	74	17,752	4.4	42,022	13	80,446	22
2010	438,500	75	17,874	4.4	43,239	14	81,106	22
2011	443,900	76	18,002	4.4	43,976	14	81,760	22
2012	450,300	77	18,205	4.5	44,688	14	82,612	23
2013	455,700	77	18,268	4.5	45,191	14	82,956	23
2014	462,900	79	18,393	4.5	45,840	15	83,523	23
2015	467,300	79	18,518	4.5	46,463	15	84,068	23
2016	471,200	80	18,701	4.6	47,277	15	84,864	23

Table Three
Future Projections
(Continued)

Year	Lodi Energy MWh	Lodi Peak MW	Lompoc Energy MWh	Lompoc Peak MW	Plumas Energy MWh	Plumas Peak MW	POA Energy MWh	POA Peak MW
2008	488,143	138	146,931	26	176,766	30	83,953	13
2009	492,770	139	147,069	26	178,460	31	84,836	13
2010	501,518	142	147,830	27	182,271	32	86,091	14
2011	511,123	145	148,617	27	185,923	32	87,266	14
2012	521,643	148	149,793	27	190,142	33	97,629	15
2013	529,433	150	150,048	27	192,557	34	104,687	17
2014	538,375	152	150,710	27	195,848	34	105,680	17
2015	547,369	155	151,364	28	198,806	35	106,657	17
2016	557,864	158	152,465	28	202,378	35	108,238	17

Table Three
Future Projections
(Continued)

Year	Truckee Energy MWh	Truckee Peak MW	Ukiah Energy MWh	Ukiah Peak MW
2008	157,648	38	124,952	39
2009	160,801	39	125,194	39
2010	164,017	39	125,952	39
2011	167,297	40	126,758	39
2012	170,643	41	127,964	40
2013	174,056	42	128,419	40
2014	177,537	43	129,245	40
2015	181,088	43	130,068	40
2016	184,710	44	131,296	41

Total Energy and Demand Savings

Table Four provides the savings and utility costs for the ten NCPA members in 2007. Their commitments to energy efficiency programs are extensive and comprehensive. They spent more than \$2,000,000 in energy efficiency programs. The expenditure is \$600,000 more than budgeted. The detailed information for each NCPA member is in Attachment B.

All the NCPA members have fiscal years beginning in July except for PSREC and TDPUD, which operate on the calendar year. Data on all tables for 2007 are for FY 06/07 for members with fiscal years. The energy and capacity savings are calculated using the EE reporting tool described in Section I.

The Utility Costs represented in Table 4 and Attachment B represent all costs to the utility, including rebates, marketing, and utility paid installation costs. As part of their marketing efforts, the NCPA members partner with schools and public institutions to educate residents and implement a variety of beneficial programs.

Each program includes data on two types of impacts: coincident peak demand savings and annual energy savings. Demand savings are also available to Western upon request. Demand savings represent the difference in the instantaneous energy use of the efficient and standard fixture, in kilowatts.

Coincident peak demand savings represent those demand savings that occur, in most cases, coincident with California's statewide peak, also in kilowatts. For appliances with an even level of use throughout the day – such as refrigerators and clothes washers – the coincident peak savings are equal to the demand savings. Appliances and fixtures that are used less often during peak hours – such as lighting – have coincident peak savings that are less than the demand

savings. Annual Energy Savings are the total savings for one year, in kilowatt-hours.

Table Four
Ten Member Total Energy Efficiency Data

Measure	Peak (kW)	Energy kWh/yr	Budgeted (\$)	Actual Exp (\$)
RESIDENTIAL				
Clothes Washers	10	25,958	47,061	37,199
Cooling	27	27,211	266,865	40,215
Dishwashers	4	11,004	23,778	20,788
Electronics	0	69	267	298
Heating	16	329,555	-	534,670
Lighting	48	277,215	114,890	71,822
Pool Pump	0	-	-	-
Refrigeration	19	147,089	205,676	118,453
Shell	33	28,423	150,510	82,532
Water Heating	2	11,677	17,373	43,512
COMMERCIAL				
Cooling	36	203,007	80,975	131,919
Heating	42	504,112	19,096	185,847
Lighting	158	873,290	227,994	480,880
Motors	106	80,947	-	62,193
Pumps	0	184,946	-	228,628
Refrigeration	19	779,780	6,642	408,244
Shell	1	7,208	2,982	4,455
OTHER	0	117,703	246,015	50,839

TOTAL	421	3,005,583	1,410,124	2,132,697
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Renewable Energy Projects

The NCPA members have individual, ongoing solar programs. Details on the programs can be found in reports to CEC in compliance with SB1. SB1 requires all publicly owned utilities to adopt, finance, and implement a solar initiative program for the purpose of investing in, and encouraging the increased installation of residential and commercial solar energy systems. NCPA members established SB1-compliant programs in 2007.

Collectively, NCPA members have performed well in launching their solar energy programs. These programs, while incorporating uniform state guidelines, have been developed to meet the unique needs of the communities they serve. As such, they provide the best opportunity to maximize program results at the local level.

Flexibility and innovation are key components in NCPA member programs and have been instrumental in initial program successes. However, in the coming years, CEC guidelines will mandate program changes that will inhibit flexibility and thus add to the uncertainty of continued program success. Of particular concern will be the consumer's response to prescriptive energy efficiency improvements as part of a solar energy system installation. Despite these and other challenges, NCPA members remain committed to working with the solar industry and with policymakers to develop successful programs that will help the state achieve its ten year solar energy goals.

In the next year, a 1 mw, 30% capacity factor solar photovoltaic project will supply peak power to one of the effluent pumping stations associated with The Geysers Geothermal field.

NCPA operates two geothermal power plants of 110 megawatts each at The Geysers geothermal field, located in the Mayacamas mountains of Sonoma and Lake Counties, and the agency also owns and operates the 70 deep production wells that supply these power plants with steam. In addition, the geothermal project includes 8 deep injection wells used to re-supply the geothermal reservoir with water to create additional steam, 10 miles of surface pipelines to deliver the produced steam to the plants, two surface water collection ponds, and a co-owned major wastewater delivery system consisting of five pump stations and 26 miles of underground pipeline that are used to supply additional fluids for injection.

The North Fork Stanislaus River Hydroelectric Development Project is a joint development project between NCPA and the Calaveras County Water District (CCWD). CCWD is the licensee and NCPA is the project operator. The Project, which has the capacity to generate 250 megawatts of power, includes the New Spicer Meadow Dam and Reservoir, two diversion dams and tunnels, the McKay's Point Reservoir with a power tunnel to the main powerhouse, and two transmission lines. Additionally, the Project includes three small storage reservoirs: Lake Alpine, Union Reservoir and Utica Reservoir.

Geothermal and Hydro Joint Ownership

Eighteen NCPA members share percentages of the Geysers Geo Plants 1 and 2 and the North Fork Stanislaus River Hydroelectric Development Project. The shares of eight of the ten NCPA members covered in this IRP are shown in Table Five below. Port of Oakland and TDPUD do not have shares in either of the two projects.

Table Five
NCPA Member Shares

Project	Hydro	Geothermal
Capacity (kW)	243,000	126,000
Alameda	10%	16.88%
Biggs	0%	0.23%
Gridley	0%	0.34%
Healdsburg	1.66%	3.67%
Lodi	10.37%	10.28%
Lompoc	2.30%	3.68%
PSREC	1.69%	0.70%
Ukiah	2.04%	5.61%

Table Six describes the Renewable Energy Activities for the ten NCPA members. The Table includes data on the jointly owned projects and the Lake Mendicino Project, a hydroelectric facility owned by Ukiah. Individual data is contained in Attachment B.

Table Six
Renewable Energy Activities

Activity	Capacity (kW)	Energy (kWh)	Expenditures (\$/yr)
Solar	36.10	51,740	112,618
Geothermal	52,151.00	404,612,000	12,513,000
Calaveras Hydro	68,186.00	79,561,000	7,081,000

Section III - Individual NCPA Member's Program Description

Alameda Power and Telecom (Alameda P&T)

The utility was established in 1887, the oldest municipal electric utility in the west. It employs 120 people. It has approximately 33,000 customers, of which 85% are residential units without air conditioning. The utility's annual sales are 390 GWh and its peak demand is 73 megawatts, which occurs in the early evening in the winter. Alameda P&T load does not have large demand spikes like those experienced by most California's electric utilities.

From FY1999 through FY2006, required public benefits expenditures totaled \$9,047,230; however, actual expenditures were \$12,431,517. Alameda P&T's high investments in renewable energy resources explain why expenditures of \$3,384,287 in excess of the public benefits requirements have been made.

Since 1991, Alameda P&T has spent \$1.9 million in energy efficiency rebates, resulting in more than a 10 percent peak demand reduction and a 5 percent energy reduction. The savings are based upon engineering estimates and measurements that have been field-verified.

Alameda P&T's commercial programs consists of

- Retrofits - targeting existing buildings with high efficiency lights and air conditioning equipment,
- Loans – providing low interest loans for the installation of efficient equipment,
- Grants – issuing grants to key accounts for energy saving projects such as building design and commissioning, and
- Audits – providing free energy audits.

The utility's residential program promotes EnergyStar® Refrigerators. The utility offers rebates for the purchase of an EnergyStar® refrigerator and the recycling of the old unit. The program also consists of.

- Weatherization Grants – with installation of cost-effective weatherization measures in electrically heated homes,
- Meter Lending – to measure the cost to operate any 120-volt Appliances,
- Coupons – for the purchase of compact fluorescent light bulbs,
- Free Energy Audits, and
- Low-Income Assistance – for qualified customers, Alameda P&T provides free energy audits, installs compact fluorescents, replaces inefficient refrigerators at no cost, and replaces halogen torchieres with compact fluorescent torchieres. After the energy audit and the efficiency measures have been completed, program participants receive a 25 percent electric bill discount.

Energy efficient lighting retrofits have been completed for all City facilities; and all traffic lights have been retrofitted with LEDs. The energy cost savings since the lighting retrofits started in 1993 is almost \$1,000,000.

Alameda P&T rebates of \$126,000 since program inception have helped support the retrofit of the 18 public schools with energy efficient lighting and heating and cooling equipment. The resulting energy cost savings is more than \$3 million since the 1994 retrofit. In FY07/08, Alameda P&T provided building facilities training focused on energy efficiency for the school district maintenance staff.

Alameda P&T has developed an estimate of all potentially achievable cost effective energy efficiency savings and established an annual target for energy savings over 10 years. To achieve this goal, Alameda P&T is updating the energy efficiency rebate levels and developing new programs. An interdepartmental Energy Efficiency Implementation Team is responsible for developing and evaluating the new programs. The Team is also responsible for the development and implementation of a new marketing plan for all of the energy efficiency programs. Additionally, staff plan to complete an energy efficiency evaluation of Alameda P&T's electric distribution system.

In addition to the above activities, in the next year, Alameda P&T plans to

- Ensure that all new electric load is efficient
- Evaluate the appropriateness of any new energy efficiency technologies
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures
- Measure and evaluate the impact of energy efficiency programs
- Ensure that all qualified customers are enrolled in the low-income program
- Continue the NCPA geothermal effluent pipeline project and expand the near horizontal injection well project
- Continue to evaluate landfill gas projects and other renewable power supplies close to Alameda

Biggs

The municipality was established in 1903 and employs 10 people. It has three industrial customers, 55 commercial customers, and 611 residential customers. It projects a growth rate of 5% over the next 3 years. The peak demand is 4 mW and annual energy sales are 16.2 gWh.

The City of Biggs implemented residential energy efficiency programs in 1997 and revised all of the programs in 2005. The energy efficiency programs being implemented for 2006-2007 have been expanded and to include commercial audits and educational programs.

The City's program consists of

- Residential Energy Audits - free, customized home energy audits, including blower door tests, weatherization evaluations, and a review of energy usage. Specific recommendations to improve energy efficiency and reduce energy use are provided.
- Commercial Energy Audits - free, customized commercial energy audits, including lighting assessment, HVAC assessment, equipment assessment and a review of energy usage. Specific recommendations to improve energy efficiency and reduce energy use are provided.
- Fluorescent Light Program - a CFL Give-away Program to encourage customers to replace incandescent bulbs with CFLs.
- Residential Energy Rebate Program - The City of Biggs manages a comprehensive residential energy efficiency incentive program, focusing on peak load reduction and energy savings. Generous rebates and comprehensive technical support are available to residential customers to promote the installation of attic/roof insulation, dual pane windows, shade screens, higher-efficiency water heaters, higher efficiency pool pumps and the purchase of energy efficient clothes washers and refrigerators.
- Commercial Energy Rebate Program - The City of Biggs offers customized energy efficiency incentive programs to commercial customers, focusing on peak load reduction and energy savings. Generous rebates and comprehensive technical support are available to commercial customers to promote the installation of energy efficient lighting, HVAC, equipment and controls.
- Investment Grade Audit Program - The City of Biggs offers, free of charge, investment grade audits for all school district buildings as a way to support the district in acquiring grant funding for energy efficiency retrofits.
- Education Services - The City of Biggs supports its Solar Schoolhouse Program by funding teacher participation in the "Summer Institute for Educators" and by supplying Solar Schoolhouse Educational Tools for classroom use.

Gridley Municipal Utility (GMU)

GMU was established in 1910. It has 2,650 customers, of which 83 percent are residential. It projects a growth rate of 5 percent for the next 5-10 years. It has a peak demand 10.6 mW – typically in July or August and annual sales of 35 gWh.

GMU initiated a variety of new energy efficiency programs in 2000. Because of the high percentage of residential customers, the program offerings have been tailored to residential customers and have included a refrigerator buy-back

program, a compact florescent light giveaway, a residential weatherization program, and an appliance rebate program.

Current Commercial Customers Programs consist of

- Audits – providing on-site energy audits by GMU energy specialists which result in recommendation to improve energy efficiency. Energy efficiency measures are recommended based on each audit and the GMU personnel follow up with additional visits to answer questions and make additional recommendations,
- Custom Energy Efficiency Incentives – providing financial incentives for commercial customers based on individual audits and audit recommendations, and
- Lighting retrofits – offering replacements of existing T-12 lighting in businesses throughout the City.

Current Residential Customer Programs include

- Hotline – providing a toll free line with GMU personnel is available to answer questions and provide information on energy efficiency related matters,
- Audits – conducting on-site energy audits and follow-up by GMU energy specialists that provide energy efficiency recommendations are available to residential customers,
- Rebates – offering rebates for the purchase of EnergyStar® appliances and other incentives for homeowners who invest in weatherization measures, efficient air conditioners and heat pumps, lighting, and ceiling fans, and
- Rate and Energy Assistance – offering rate assistance for customers with a medical necessity and low-income senior citizens.

The City's current Community and Education Programs target

- Municipal Facilities – The City initiated a complete replacement of refrigerators at city facilities at the same time that it offered a residential refrigerator “buy-back” program. The refrigerators replaced older inefficient units at local districts as well. Estimated reductions of 5 kilowatts and 20 megawatt-hours annually were realized,
- Solar Aerator Installation – The City installed Solar Bee® aerators at its sewer plant and has reduced both peak demand and overall usage,
- Photovoltaic Demonstration Projects – GMU has initiated 2 PV demonstration projects (2-3 kilowatts each) to be sited in Gridley. These PV projects will be evaluated for their feasibility; be used to demonstrate to the community how PV projects work; and be used to familiarize staff, crew and key decision makers with PV technology. In conjunction with these projects, GMU is developing a program that meets the guidelines of the recently enacted SB 1 legislation,
- Ultra-High Efficiency Cooling Projects – GMU is funding demonstration projects on community facilities to test new cooling technologies and assess their viability for additional applications in Gridley, and

- Energy Curriculum – GMU provides 5th Grade teachers with a energy/water efficiency curriculum for use in their classrooms.

In the next year, GMU plans to

- Maintain existing programs at current levels,
- Ensure that all new electric load is efficient,
- Evaluate the appropriateness of any new energy efficiency technologies,
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures, and
- Measure and evaluate the impact of energy efficiency programs.

In addition GMU plans to continue its demand reduction program. The program includes determining the demand reduction impact of the City's energy efficiency programs. Also, the City's water and sewer utilities can activate backup generators at wells and sewer lift stations throughout the City resulting in up to a 15 percent reduction of overall demand. In addition, the City has called upon the local hospital to utilize their backup generator for additional demand reduction capacity. Finally, in extreme circumstances, the City has called upon its single largest customer to shut down. Their load of approximately 750 kilowatts can be as much as 15 percent of average city loads.

City of Healdsburg

The City has 5,500 customers, of which 4,460 are residential. It projects a growth rate of 1.5 percent over the next 3 years. It has a peak demand of 21.2 mW and annual sales of 76.6 gWh.

The City started implementing efficiency programs in 2003. In 2007, Healdsburg underwent an extensive redesign/upgrade of their energy efficiency and renewable energy (PV) programs. As a result, Healdsburg now manages a comprehensive energy efficiency incentive program for residential & commercial customers focusing on energy conservation and peak load reduction.

For residential customers, the City offers rebates for the installation of energy efficiency weatherization measures for customers with central air conditioning and/or electric heat including, but not limited to, insulation and window shade & films. Rebates are also available for compact fluorescent lamps, as well as the purchase of higher-efficiency HVAC systems and energy star appliances such as room air conditioners, refrigerators, and for residences with electric water heaters, electric clothes dryers, and dishwashers.

For commercial customers, rebates are available for upgraded energy efficient lighting, HVAC equipment and, in cases where an analysis is performed, rebates are offered for additional equipment that reduces energy use and/or demand.

Programs offered in the past that will continue forward include the following:

- “Time-of-Use Rates” Program: The City of Healdsburg has implemented a “time-use-rate” program for both residential and commercial customers, enabling them to reduce their energy costs through the time management of their energy usage.
- Residential “Energy Efficiency Outreach”: The City of Healdsburg has implemented an energy outreach program for its Hispanic residential customers offering comprehensive energy efficiency information to improve energy efficiency and reduce energy use.

In the next year, the City plans to

- Ensure that all new electric loads are efficient.
- Evaluate the appropriateness of any new energy technologies.
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures.
- Measure and evaluate the impact of energy efficiency programs.

The City of Healdsburg has implemented a comprehensive energy efficiency program for City facilities focusing on peak load reduction, resulting in substantial energy savings. In addition, new programs and current programs now being implemented will include consideration and evaluation of their impact on demand reduction.

Lodi Electric Utility (LEU)

The utility was established in 1910 and has 28,000 customers (23,500 residential; 5,000 commercial/industrial). Its peak demand is 138 mW. Its annual sales are 459 gwh. Since 1998, LEU has spent more than \$6 million on demand-side management rebates and programs to increase energy efficiency for the Lodi community, resulting in a 12 percent peak demand reduction and an 8 percent energy reduction.

LEU offers on-line and on-site residential energy audits and on-site small commercial customer energy audits. Lodi utilizes KEMA's ‘Measure Quantification Methodology’ report for various residential and small commercial rebate programs. For large commercial and industrial customer rebates/programs, the customer is required to provide to the utility an engineered energy analysis/audit detailing their projected savings.

Commercial Customer Programs:

- Lodi Commercial Rebate Program: Offers rebates to small business customers (G1 and G2) who purchase and install energy efficiency measures, such as: attic insulation, window tinting/shade screens, programmable thermostats, ceiling fans, and refrigeration/HVAC equipment maintenance.
- Lodi Industrial Customer High Efficiency Program: Offers rebates of up to \$12,500 to large commercial/industrial customers G-3 – I-1); the rebate is for pumps/motors, process equipment improvements, building envelope improvements, HVAC/chiller replacements, lighting retrofits. The rebate formula is \$0.15 for every kilowatt-hour of proven energy savings.

Residential Customer Programs:

- Lodi Appliance Rebate Program: Provides rebates to all customers who purchase an EnergyStar® refrigerator, dishwasher, and/or front-loading clothes washer.
- Lodi Energy Efficient Home Improvement Rebate Program: Provides rebates to residential customers for installing attic/wall insulation, radiant barriers, and ceiling fans, repairing/replacing HVAC duct work, installing attic fans, whole fans, and shade screens/window tinting, and installing high efficiency (14+ SEER) air conditioning systems.
- HVAC System Performance Test: provides a rebate for customers who utilize a select list of HVAC contractors capable of performing a high-end duct system performance test (the test measures air flow, air return and system balance).

Commercial and Residential Customer Programs

- Lodi Refrigerator/Freezer Recycling Program: Offers (once per year), the removal and recycling of old refrigerators/freezers to Lodi customers.
- Lodi Energy Audit Program: Provides free on-site and computer/on-line energy audits for residential and small commercial customers.

Public School Programs:

- Lodi "LivingWise" Program: Provides energy efficiency kits and manuals to up to more than 400 6th grade students in Lodi schools - teaching them about the basics of energy and water conservation.
- Lodi Solar Schoolhouse Program: Provides teacher mini-grants and teacher training regarding solar/renewable energy resources. LEU also sponsors the annual Lodi Solar Olympics. The Olympics are held May and feature solar-powered model race cars, fountains, ovens, and model homes built by area students.

Low Income Residential Support Programs:

- **Lodi C.A.R.E. Package Program:** Provides grants to very low-income in paying their electric utility account. The program coordination/customer screening is provided by the Lodi Salvation Army with monetary support (time, talents, and grant dollars of up to \$150 per eligible family). To secure a grant payment, customers must consent to in an in-home energy audit. Provides rebates to all customers who purchase an EnergyStar® refrigerator, dishwasher, and/or front-loading clothes washer.
- **Lodi Helping Hands Project:** Provides weatherization services to low-income families and senior shut-in's.

In the next year, LEU plans to maintain Existing Programs at current levels. It may also expend additional Public Benefit Program funds on demand-side management rebates/incentives.

LEU does not currently have any demand reduction programs in place.

Lompoc

The utility was established in 1923. Residential users represent 90% of its 14,700 customers and 44% of its sales. Commercial customers use 22%; industrial and demand customers 25%; and municipal facilities 9%. The utility has a 26 mW winter peak. The City is located in coastal climate zone 4, subsequently, there is virtually no air conditioning needed in residential construction and a limited need in commercial buildings. The City does not offer rebates for retrofit to more efficient air conditioning units. The majority of the energy efficiency programs focus on rebates to increase appliance efficiency.

Lompoc initially implemented energy audit programs in 1981. In 1991, the programs were expanded to include energy efficiency education programs. In 2001, energy efficiency rebates and a low-income refrigerator subsidy program were added. Since then, additional programs have been added and existing programs modified to accommodate the community's needs.

Commercial Customer Programs:

- **Commercial Lighting Rebate:** A rebate of \$15 per ballast is paid to commercial customers who replace/retrofit current lighting with more energy efficient fixtures or hard wired in lamps and ballasts. This program was first offered in May 2001.
- **Exit Sign Rebate:** A rebate of \$15 to replace existing incandescent or fluorescent-lit exit signs with LED, or \$30 the replace same signs with electro-luminescence signs. This rebate was first offered in 2002 and provides a net annual savings of 28 mWh.

Commercial and Residential Customer Programs:

- Refrigerator Rebate: A \$120 rebate is paid to electric customers or landlords who rent to City customers to replace working refrigerators or freezers manufactured before 1992 with a new model. The old appliance must be recycled at the City Landfill. (Net Annual Savings [all refrigerator programs]: 85,263 kilowatt-hours.)
- Refrigerator BuyBack Program: \$35 is paid to customers who recycle, at the Landfill, any second working refrigerator or freezer. This program was first offered in May 2001.
- Clothes Washer Rebate: A \$120 rebate is paid to customers who replace a working (non Energy Star®) clothes washer with a new Energy Star® model. The old clothes washer must be recycled at the Landfill. This program was first offered in March 2003. (Net Annual Savings: 3,405 kilowatt-hours).
- Dishwasher Rebate: A \$50 rebate is paid to electric customers who replace working dishwashers, which were manufactured before 1994, with an Energy Star® model. The old dishwasher must be recycled at the Landfill. This program was first offered in March of 2003. (Net Annual Savings: 1,347 kilowatt-hours).
- Gas Conversion Payment: \$100 is paid to electric customers who replace and recycle an electric water heater or clothes dryer with a gas appliance. The electric appliance must be recycled at the Landfill. (Net Annual Savings: 12,717 kilowatt-hours).
- LED Holiday Lighting: A rebate of \$4 for up to 35 light strands and \$8 for larger strands is paid to utility customers who purchase LED holiday lighting. This program was first offered in October of 2005.
- Renewable Resource Rebate: Any electric customer who installs a grid-tied self-generating electric system that is considered to be renewable energy will receive a rebate of \$3.50 per watt. This program was first offered in February 2004. (Net Annual Savings: 24,000 kilowatt-hours).
- Energy Audits: Lompoc provides free energy audits for all customers and an online audit for residential customers.

Current Low Income Customer Programs include:

- Income Qualifying Refrigerator Purchase Program: Up to a \$570 payment is made for a new refrigerator for income qualifying customers. The old refrigerator must be in working order; must have been manufactured before 1992; and will be recycled at the landfill. The customer is required to repay the City \$240 over a one-year time period.
- Rate and Energy Assistance Programs: Lompoc offers a rate discount for low-income customers and a special medical needs rate. Lompoc offers a subsidized refrigerator program to low-income customers.

In addition, Lompoc has an education program where it encourages energy conservation through school and community education programs. In next year, Lompoc will:

- Evaluate existing programs to determine if incentives are attractive to customers and increase incentive levels if necessary to assure continued participation in all programs.
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures.
- Provide financial incentives for energy efficiency upgrade of existing equipment for both residential and commercial customers.

In addition, Lompoc will be continuing the upgrading of all 4 kilovolts lines to 12 kV distribution lines and is purchasing only low-loss transformers.

Lompoc offers a Firm Curtailable Load Purchase Program, but no customer has utilized it since it was created. Customers who have an average peak-period demand of at least 500 kW during each of the last six summer months may sign up for this rate program. The customer must sign a contract for electric service for a five-year period, and will be required to reduce demand when the City requests such curtailment. The customer receives a demand payment of \$6.00 per kW of curtailed demand per season and \$0.10 per kilowatt-hour.

Plumas-Sierra Rural Electric Cooperative (PSREC)

PSREC was established in 1937. It has 7,677 member-owners. Residential sales account for 50 percent of revenue, commercial/industrial for 44 percent, irrigators for 5 percent, and 1 percent other. It estimates a growth rate of 1.7 percent per year. Its peak demand is 31 MW for both summer (noon-8pm) and winter (5-10am). Annual sales are 157 GWh (49 percent commercial/industrial, 44 percent residential, 6 percent irrigation, 1 percent other).

PSREC facilities include two 69 kilovolt interconnect substations, 150 miles of transmission line, 11 distribution substations, and 1200 miles of 12.47/7.2 kV distribution line. Its 78 employees have a mission to provide utility services with a high level of reliability for fair and reasonable costs. PSREC is dedicated to improving the quality of life of their member-owners and local communities. The focus is to provide electric, telecommunications, satellite television, and internet services that enhance the lives of the rural communities it serves.

PSREC implemented energy efficiency programs in the early 1980s. These programs are designed to encourage members to be more energy efficient, decrease energy demand and costs, and conserve resources. PSREC has consistently exceeded its Public Benefits spending requirements.

PSREC manages a comprehensive package of customer-centered energy efficiency programs, helping members make their homes more energy efficient, including:

- Energy Star® Rebates: Available to members who purchase and install Energy Star® appliances such as refrigerators, dishwashers, clothes washers or small appliances.
- GeoExchange Heating and Cooling Program: Includes rebates and 0% interest loop-leases. This program is one of the most successful ground-source heat pump programs in the nation.
- Energy Audits: PSREC provides free energy audits for residential and business customers.
- Discount program: PSREC also encourages the installation of Marathon water heaters, compact fluorescent bulbs, water heater blankets, ConvectAir heaters, and low-flow showerheads by providing discounts to members when they purchase them through the Cooperative. PSREC also gives away hundreds of CFLs every year.
- PSREC's Solar Program provides rebates and net-metering for installation of photovoltaic solar systems. It also provides free on-site analysis of solar resources and a valuable partnership with Cooperative Community Energy to assist with system design and financial analysis.
- Non-essential Freezer/Fridge Retirement: Rebates offered for recycling a non-essential freezer or refrigerator.
- Meter Lending Program: Members can borrow kWh meters to plug in 120-volt appliances and help them troubleshoot energy usage.
- Green Building Program: Quarterly presentations to introduce contractors to new technologies for building more energy efficient homes and incorporating energy efficient building techniques and appliances into construction planning.
- Education/Outreach: Provide energy efficiency and conservation information to interested members to help them reduce their bills. PSREC also provides books to local libraries about energy efficiency and conservation.

. In the next year, PSREC will maintain or increase rebates in existing programs. It will also:

- Expand CFL program to allow members to receive rebates for CFLs purchased at any retail store.
- Target businesses with large lighting loads to provide incentives to encourage lighting retrofits.
- Evaluate new energy efficiency programs and technologies and implement, as applicable.

Port of Oakland (POA)

POA has over 200 customers, all commercial, with a peak demand of 12 mW and annual energy use of 74 gWh. POA has three current energy efficiency projects:

- An Energy Audit program that will result in recommendations of five major energy saving retrofit/improvement projects that could be undertaken to

effectively support load reduction and the more efficient use of energy in the area. The proposed energy efficiency projects will be prioritized by highest to lowest energy savings. Rebates will be provided for the energy efficiency projects completed based on the energy audit recommendations, up to 100 percent of the total energy audit cost.

- **Lighting Retrofit:** A program providing rebates for the installation of energy efficient lighting that reduces annual energy usage by at least 35 percent in commercial facilities. This rebate is based on a single flat incentive rate of is \$0.05 per annual kilowatt-hours saved.
- **Energy Saving Measures Exceeding Title 24 Standards:** Port will provide a rebate for any new facility constructed within the Port by its electricity customers that exceed the Title 24 standards in energy saving measures. Eligible facility must reduce energy usage by a minimum of 10 percent compared to the standard Title 24 facility. This rebate will pay for a percentage of the cost difference between a standard and an upgraded Title 24 equipment (such as HVAC units) and material.
- **Energy Saving Equipment Retrofits/Improvements Rebates:** POA provides rebates and technical support for the installation of new energy efficient equipment/improvements. The projects must reduce energy usage by a minimum of 20 percent to be eligible for a rebate of the equipment cost differential (up to a 90 percent rebate for energy savings of 90 percent or more).
- **Energy Saving / Efficiency Research, Development, and Demonstration Programs:** customers that do research, development and demonstrate new energy saving/efficiency activities are entitled to a rebate up to 20 percent of the cost of a project based on availability of funds. To qualify for a rebate under this program all activities must be based on environmental friendly natural resources (or waste products).

POA will also provide a rebate of up to 20 percent of the total cost of an electric vehicle charging station(s) and/or a compressed natural gas station. In the next year, POA will

- Maintain existing programs at current levels.
- Reimburse new solar energy generating facilities a one time flat rate of \$3.50 per watt (Alternating Current) of installed capacity. In the event the new solar facility generates more than the electric customer's monthly electric consumption, then the Port will purchase the excess solar electric power from said facility at the same rate the Port sells power to said facility. In addition, the new solar energy generating facilities must obtain Port approval and must comply with all regulatory requirements prior to the construction of the facility. This rebate is subjected to 7 percent annual reduction.
- Reimburse new clean wind energy generating facilities that generates over 7.5 kilowatts a one time flat rate of \$1.50 per watt (alternating current) of installed capacity and if the facility generates less than 7.5 kilowatts then the rebate will be a one time flat rate of \$2.50 per watt (alternating current) of installed capacity. In the event the new wind power facility generates more than the electric

customer's monthly electric consumption, then the Port will purchase the excess electric power from said facility at the same rate the Port sells electric power to said facility. In addition, the new wind power energy generating facilities must obtain Port approval and must comply with all regulatory requirements prior to the construction of the facility. All other renewable generation that qualify under this program are given a maximum rebate of 20 percent of the construction cost of the generating facility, based on the availability of funds.

The Port of Oakland does not currently have any demand reduction programs in place.

Truckee Donner Public Utility District (TDPUD)

The District was established in 1927 and has 12,562 customers, 88% residential. It projects an average growth rate of 3-5 percent per year, for the next 10 years. It has a winter peak demand of 32.2 mW and annual sales of 146.6 gWh.

The Town of Truckee expects to become the "Greenest Small Town in America" by 2010 due to its high per capita number of green buildings and high energy and water efficiency and renewable energy projects expected to be built by 2010. Its current Commercial Program consists of:

- Commercial Energy Audits: TDPUD offers free on-site energy audits conducted by a TDPUD Energy Specialist for commercial customers that provide specific recommendations on cost-effective energy improvements to manage and reduce energy load and provided savings.
- Commercial Energy Conservation Rebate Program: TDPUD provides a comprehensive commercial energy efficiency incentive program, focusing on peak load reduction and energy savings. Generous rebates and technical support are available to commercial customers to promote the installation of energy efficiency measures including: ground source heat pumps; duct testing; and the purchase of energy efficient clothes washers and refrigerators, and electric GSHP and solar water heaters.

Its Current Residential Customer Programs are:

- Residential Energy Audits: TDPUD offers free on-site energy audits conducted by a TDPUD Energy Specialist for commercial customers that provide specific recommendations on cost-effective energy improvements to manage and reduce energy load and provided savings.
- Residential Energy Conservation Rebate Program: TDPUD provides a comprehensive residential energy efficiency incentive program, focusing on peak load reduction and energy savings. Generous rebates and technical support are available to residential customers to promote the installation of energy efficiency measures including: ground source heat pumps; duct testing; and the purchase

of energy efficient clothes washers and refrigerators, and electric GSHP and solar water heaters.

Its Current Community Programs are:

- Green Building Education: TDPUD has partnered with the local Sierra Green Building Association and the Truckee Green Building Committee to design and implement green building education and training programs for the Truckee/Tahoe communities.
- Green Buildings Tour: TDPUD works with the Sierra Green Building Association, the Town of Truckee and local groups to provide tours of buildings in the community that incorporate green building design features.
- Green Building Design Assistance: TDPUD Energy Specialists work with homeowners, businesses and developers to provide information and resources design assistance for the development of "green" building plans. TDPUD has taken the lead in the production of a "Green Building Resource Guide" for the community.
- Landscape Water Conservation Workshops: TDPUD has partnered with local nurseries to conduct landscape water conservation workshops for the community.

Its Current Education Programs are:

- Energy Education: TDPUD personnel make presentations on energy issues to local schools each year.
- "LivingWise" Resource Efficiency Program: TDPUD collaborates with the 6th grade staff in the local schools to provides the curriculum and resources for "LivingWise" Resource Efficiency program.
- Truckee High School Green Film Festival: TDPUD organized and supported the 2006 Truckee HS "Green Film Festival"
- Climate Change Symposium: TDPUD assists the Tahoe-Truckee Regional Education Coalition w/Climate Change Symposium.
- Green Building Symposium: TDPUD organizes and provides support for the Truckee Home Show's Green Building Symposium.
- Smart Living EXPO: TDPUD helps organize and participates in the Smart Living EXPO in Reno, NV.
- Regional Sustainability Assessment/Education: TDPUD collaborates with the northern Nevada AIA for Regional Sustainability Assessment/Education.

In the next year TDPUD will maintain existing Programs at current levels and add the following:

- Commercial Water Conservation Rebate Program: TDPUD offers rebates to commercial customers for the installation of water-saving measures including water-efficient clothes washers. Additional water-efficient investments including low-flush toilets; waterless urinals and other water saving devices will soon be eligible for this rebate.
- Solar PV Program: TDPUD plans to offer financial incentives to commercial customers who incorporate solar PV technologies into their businesses.
- Residential Water Conservation Rebate Program: TDPUD offers financial rebates to residential customers for the installation of water-saving measures including water-efficient clothes washers. Additional water-efficient investments including low-flush toilets; waterless urinals and other water saving devices will soon be eligible for this rebate.
- Solar PV Program: TDPUD plans to offer financial incentives to residential customers who incorporate solar PV technologies into their homes.
- Low-Income Weatherization: TDPUD is providing home weatherization services to low-income residential customers.

TDPUD does not currently have any demand reduction programs in place.

Ukiah Public Utility (UPU)

UPU is Mendocino County's only customer-owned utility and supplies electricity, water and wastewater treatment to Ukiah's 15,000 plus residents and businesses. It has a peak demand of 36 mW and annual sales of 123 gWh. Renewable generation and hydropower provide over 81 percent of Ukiah's power needs.

UPUs first energy efficiency programs were implemented in January of 2003. For Fiscal Year ending 6/30/2006 these programs have resulted in peak demand reductions of 18 kilowatts, net demand savings of 23 kilowatts, and cumulative energy savings of 21,511 kilowatt-hours. Current Energy Efficiency Programs and Services include:

- Customer-Centered Programs: UPU manages a comprehensive energy efficiency incentive program for residential & commercial customers focusing on peak load reduction and energy conservation. Generous rebates are offered for the installation of various energy efficiency weatherization measures including, but not limited to, awnings, shade screens, compact fluorescent lamps, insulation, and double paned windows, as well as the purchase of higher-efficiency HVAC systems, electric clothes washers & dryers, refrigerators, freezers, dishwashers, and ceiling fans.
- "PV Buy Down" Program: UPU's Photovoltaic (PV) Buy Down Program is a rebate program available to residential & commercial customers to help offset the investment in a PV system, enabling the customer to use a renewable source of energy. The rebates reduce the initial system cost for the customer and facilitate purchase and installation of Photovoltaic (Solar Panel) systems. Customers who

install PV systems offset their electrical energy use with their self-generated solar power.

- Municipal Facilities: The City of Ukiah has a PV system installed on one of the City facilities, and hybrid vehicles are used by City employees.
- Low Income: Ukiah C.A.R.E.S. is the financial assistance program for low-income eligible households. It provides temporary emergency assistance, senior citizen monthly discounts and non-senior household monthly discounts.

In the next year, UPU will maintain existing programs at current levels until new programs are in place and

- Ensure that all new electric loads are efficient
- Evaluate the appropriateness of any new energy efficiency technologies
- Ensure that energy efficiency is part of integrated resource planning by determining and implementing the most cost-effective, reliable, and feasible energy efficiency measures
- Measure and evaluate the impact of energy efficiency programs

Ukiah does not currently have any demand-side management programs in place.

Section IV – Enhanced Efficiency in Generation and Transmission Systems

This section addresses programs and projects that provide efficiency gains and yet are beyond the scope of the IRP Annual Report. Efficiency gains related to generation and transmission services serve an important role in reducing the cost of electricity to consumers, ensuring reliable operation of the statewide grid, and helping to significantly reduce the use of fossil fuels for power generation.

For example, NCPA has one steam-injected combustion turbine (STIG) located in the City of Lodi. At the STIG facility there was a comprehensive energy audit to find ways to improve efficiency. This review indicated that a replacement of the air compressors would reduce energy use. In 2006, NCPA replaced a 75-horsepower air compressor with a more advanced 25-horsepower compressor that includes an integrated air dryer -- reducing fuel consumption at the facility by nearly \$60,000 per year. Additionally, NCPA members will avoid the generation of 15,000 kilowatt-hours per month by implementing recommendations regarding lighting changes.

NCPA Members continually conduct energy efficiency audits of generation and transmission facilities. Two NCPA facilities and a PSREC project are highlighted below.

Geysers Geothermal Power Plant

In the past fiscal year, NCPA took several projects to improve the performance of its geothermal power plants in Sonoma and Lake County. The projects and annual increases in energy production from them are listed below:

Improvement	Annual Energy Increase (mWh)
Injection Well Cleaning	6,000
Injection Well Deepening	77,000
Turbine Overhaul	3000-6000

Collierville Hydroelectric Power Plant

NCPA has two hydroelectric units at Collierville Powerhouse, located in Calaveras County. NCPA installed a turbine runner on Unit 1, increased operational efficiency by 0.38-0.47 percent. This action adds to savings associated with a November 2006 control system modification which increased the operating efficiency of the facility by 10 percent during non-peak periods.

PSREC

Because of the remote nature of its service territory, PSREC has distribution losses of about 17,500 mWh per year. The bulk of the losses occur on two lines. The Cooperative has begun reconstruction projects on those lines. The Clio Overhead Rebuild Project is nearly 70% completed and is estimated to reduce system peak losses by 90 kilowatts. The Wingfield Road Rebuild Project has already been completed and is estimated to reduce system peak losses by one kilowatt