

INTEGRATED RESOURCE PLAN (IRP)Date: June 30, 2008

IRPs shall consider all reasonable opportunities to meet future energy resource requirements using Demand Side Management techniques, new renewable resources and other programs that will provide retail consumers with electricity at the lowest possible costs, and minimize, to the extent practicable, adverse environmental effects.

To meet your Integrated Resource Planning reporting requirement, complete the following. Unaddressed items will be deemed incomplete and not eligible for approval. Western reserves the right to require customers to provide any supporting back-up data used to support and develop this report.

Customer Contact Information:

(Provide contact information for your organization. Contact person should be able to answer questions concerning the plan)

Customer Name:	Sacramento Municipal Utility District
Address:	6201 S Street, Sacramento, CA 95817
Contact Person:	Greg Brownell
(Signature)	
Title:	Supervisor Business Planning and Forecasting
Phone Number:	916-732-5697
E-Mail Address:	gbrowne@smud.org
Website:	

Type of Customer:

(Check one as applicable)

<input checked="" type="checkbox"/>	Municipal
<input type="checkbox"/>	State
<input type="checkbox"/>	Federal
<input type="checkbox"/>	Irrigation District
<input type="checkbox"/>	Water District
<input type="checkbox"/>	Other (Specify) _____

Identification of Resource Options (considerations that may be used to develop potential options include cost, market potential, consumer preferences, environmental impacts, demand or energy impacts, implementation issues, revenue impacts, and commercial availability):

Supply-side options:

(Including, but not limited to: purchase power contracts and conventional and renewable generation)

List existing supply-side options:	List future supply-side resource options considered and evaluated:
Hydro-electric	Wind
Gas Cogeneration	Biomass
Gas turbine	Solar Thermal
Wind power	Geothermal
Photovoltaic	Conventional Thermal
Purchases – WAPA hydro	Pump storage
Purchases – renewables	
Purchases – other	

Demand-side options:

List existing demand-side options:	List future demand-side resource options considered and evaluated:
Residential Energy Efficiency	Codes and standards
Commercial Energy Efficiency	New construction
Air conditioning load management	Emerging Technologies
Curtable Load	

Resource options chosen:

(Provide a narrative statement that describes the option chosen and clearly demonstrates that decisions were based on a reasonable analysis of the options)

The Board of Directors and SMUD adopted the Strategic Directive 9 (SD-9) in 2004, which provides guidance to SMUD staff in resource planning with clarification on SMUD's goals for renewable power and energy efficiency. In May 2007, the Board revised SD-9 to clarify cost-effective energy efficiency projects and to establish the goal of achieving 15% energy and peak demand savings by 2018. SD-9 stated the following policy:

In its resource planning, the District will first achieve its core values, including reliability, rate competitiveness, access to credit, customer service, safety, and environmental protection.

In keeping with these core values, the District seeks to achieve rate stability, improve local air quality, reduce green house gas emissions and conserve fossil fuels through an integrated resource planning and evaluation process. Accordingly, the Board establishes the following key values to guide the District in its resource evaluation and investment:

- (a) First acquire cost-effective, reliable and feasible energy efficiency and demand reduction resources. Set a goal of reducing energy consumption by 15% by 2018 with annual targets of:

<u>Year</u>	<u>Gigawatt Hours</u>	<u>MegwattsMegawatts</u>
2008	107	28
2009	145	40
2010	196	58
2011	200	59
2012	205	60
2013	209	62
2014	213	63
2015	217	64
2016	222	66
2017	226	67
Total	1,940	568

Review and revise the annual targets every three years.

- (b) Emphasize local and regional environmental benefits over global benefits.
- (c) Lower the cost to serve our customers by reducing per customer peak usage.
- (d) Set a goal of meeting 10% of the District's load with renewables by 2006 and 20% of its load with renewables by 2011, and thus meet or exceed the statewide RPS standard.
- (e) Develop and deploy cost effective, clean distributed generation. As part of this policy, the District shall continue to be a leader in solar power.

Based on SD-9, the planning group and responsible business units research and evaluate available options and develop cost-effective implementation plans to achieve the RPS and energy efficiency goals while meeting Board policy on competitive rates and reliability. The resources identified in the current plans are described in the following sections.

Action Plan:

Specific Action Items to be Implemented Over the Next 5 Years:

(Lists are not meant to be inclusive, complete and provide other action items as applicable)

Energy Consumption Improvements

Proposed Items	Begin Date	End Date	Est. MW capacity savings per year	Est. GWh savings per year	Milestones to evaluate accomplishments
Existing Residential					Monthly, Annual Tracking and Reporting. Periodic M&V
Shade Trees	2009	2013	0.7	1.7	"
Retail lighting	2009	2013	3.8	51.6	"
Refrigerator Recycling	2009	2013	7.8	6.7	"
Appliance efficiency	2009	2013	0.9	0.6	"
Pool pump timers	2009	2013	0.0	0.3	"
Home electronic standby control	2009	2013	2.0	6.3	"
Whole house performance	2009	2013	0.1	1.3	"
Existing Commercial					"
Customized incentives	2009	2013	3.4	20.9	"
Prescriptive equipment	2009	2013	0.7	15.2	"
Prescriptive lighting	2009	2013	4.1	23.6	"
Distributor incentive	2009	2013	1.8	2.9	"
Performance contracts	2009	2013	0.3	10.5	"
Retro-commissioning	2009	2013	2.5	1.4	"
Muti-family retrofit	2009	2013	0.8	3.0	"
New Construction					
Solar Smart HVAC & Envelope	2009	2013	2.0	1.9	"
Solar Smart Lighting	2009	2013	0.0	0.7	"
Advantage Homes	2009	2013	1.7	0.4	"

Commercial Savings by Design	2009	2013	4.5	19.2	"
Multifamily New Construction	2009	2013	0.3	0.6	"
Codes and Stds	2009	2013	4.1	16.2	"
Marketing & Outreach	2009	2013	2.9	19.3	"

Renewable Energy Activities:

Proposed Items	Estimated Activity Begin Date	Estimated Activity End Date	Est. kW	Est. kWh per year	Milestones to evaluate accomplishments / Comments
Small Hydro – Evaluating capacity increase of a SMUD facility in Northern California	Ongoing		2,750	7,227,000	Feasibility study completed. Starting preliminary transmission siting study.
Small Hydro – Pursuing efficiency improvements of a SMUD facility in N. California	Ongoing		2,000	5,256,000	Contacted CEC regarding pre-certifying the generation as eligible
Wind – Increase capacity of a SMUD project in N. California	Ongoing		128,000	392,448,000	Pending final resolution on interference with Air Force Base radar.
Biomass – Supporting capacity increase of local landfill gas project, currently under PPA	Ongoing		1,500	9,198,000	Conduct resource assessment and financial feasibility; negotiate contract; design, construct, operate
Biomass – Supporting capacity increase of local landfill project currently under contract	Ongoing		1,500	11,169,000	Conduct resource assessment and financial feasibility; negotiate contract; design, construct, operate
Biomass – Supporting development of co-generation project at local food processing plant using landfill gas	Ongoing		2,000	16,118,400	Conduct feasibility study; negotiate contract; design, construct, operate
Biomass – Supporting development of landfill gas CHP project at a local landfill	Ongoing		750	6,044,400	Conduct resource assessment and financial feasibility; negotiate contract; design, construct, operate
Biomass – Supporting development of a wood biomass combustion facility in Northern California for	Ongoing		10,000 - 15,000	78,840,000 - 118,260,000	Assessing availability of a sustainable biomass fuel source for a potential wood biomass combustion plant

PPA				
Solar – Support development of Southern California solar thermal project	Ongoing	125,000	273,000,000	Negotiate PPA; permit; construct; power plant online
Solar – Evaluating solar thermal sites and transmission feasibility for project in Northern California and Nevada	Ongoing	125,000 to 250,000	270,000,000 – 550,000,000	Conduct siting study; secure site; collect resource data; solicit design, construct, operate contractor; power plant online
Solar – California Solar Initiative	Ongoing	3,500 – 4,000	6,500,000 – 8,000,000	On the way to meet 2008 goals for PV systems in new homes, commercial retrofit projects, and residential retrofit projects.
Geothermal – Supporting development of a project in Sothern Oregon for a PPA	Ongoing	10,000	78,840	Transmission availability and cost is the primary milestone to be met initially.
Geothermal – Supporting development of multi-phase projects in Northern Nevada and Northern California	ongoing	30,000	236,520	Transmission availability and cost is the primary milestone to be met initially.

Load Management Techniques:

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Residential AC load control	2010	2013	130,000	0	
Small Commercial Direct load control	2010	2013	12,000	0	
Large Commercial Aggregator Contract	2009	2013	40,000	0	

Rate Design Improvements:

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments/comments
Cost-of-service pricing					<ul style="list-style-type: none"> All tariffs are based on cost of service principles
Elimination of declining block rates	1/2012	12/2012			<ul style="list-style-type: none"> Rate proposal to close schedule GSN
Time-of-day rates	1/2010	2013	6,000 – 50,000		<ul style="list-style-type: none"> Installation of AMI Rate proposal for TOD rate options for GSN and

					residential customers. <ul style="list-style-type: none"> • Accounts with maximum demands ≥ 300 kW currently have mandatory TOD rates.
Seasonal rates					<ul style="list-style-type: none"> • All tariffs currently have seasonal rates
Interruptible rates					
Other: Critical Peak Pricing	1/2010	ongoing	2,000 – 12,000		<ul style="list-style-type: none"> • Installation of AMI • Rate proposal for critical peak option.

Agricultural Improvements:

SMUD energy efficiency programs cover certain agricultural improvements together with our commercial customers.

Proposed Items	Begin Date	End Date	Est. kW savings per year	Est. kWh savings per year	Milestones to evaluate accomplishments
Irrigation pump utilization/scheduling					
Irrigation pump testing or efficiency improvements					
Electric motor replacement					
Photovoltaic pumping systems					
Ditch lining or piping					
Laser land leveling					
Pumpback systems					
Water conservation programs					
Other:					

Environmental Effects:

(Provide a narrative statement that sets forth the efforts taken to minimize adverse environmental effects of new resource acquisitions)

In its resource planning, SMUD will first achieve its core values, including reliability, rate competitiveness, access to credit, customer service, safety, and environmental protection. Therefore environmental protection is one of the main objectives in SMUD resource planning. Energy efficiency and conservation is our first choice in resource planning, which offers the most environmental benefits. Our goal of reducing energy consumption by 15% by 2018 is the most aggressive among California utilities – exceeding the state requirements by 50 percent.

Renewable generation resources are also our top resource choices. SMUD remains one of the cleanest electric utilities in the country. Our RPS goal is to reach 23 percent renewable generation in our portfolio in 2011 (including Greenenergy program). We are making good progress toward our goal. We are also on track to meet the standards set forth in the state solar PV initiative. SMUD is also taking steps to upgrade our thermal generation plants to make them more efficient and therefore reducing environmental impact.

Public Participation:

(Customers must provide ample opportunity for full public participation in preparing and developing an IRP. Provide a brief description of public involvement activities, including how information was gathered from the public, how public concerns were identified, how information was shared with the public, and how it responded to the public comments)

Public involvement activities include phone and mail surveys, focus groups, and public workshops. Public workshops allow customers to interact with SMUD staff in an informal setting. In some cases, SMUD staff attend community meetings to discuss and gather feedback on proposed changes. Results from these activities are reported to the Board of Directors at committee meetings, public hearings and regular board meetings. Public hearings are organized by the Board for the sole purpose of hearing comments from SMUD staff, customers and organizations on specific issues and proposed changes. Schedules and agendas for SMUD's committee meetings and regular board meetings are listed on SMUD's website at www.smud.org. SMUD's regular board meetings are shown on the Public Access cable channel. Video, audio and documents from previous Board and committee meetings are also available on the SMUD's website.

In 2001, SMUD's General Manager recommended to the Board of Directors a resource plan that included the construction of the Cosumnes Power Plant, increases to SMUD's energy efficiency and demand-side management programs and a 20 percent renewable energy resource portfolio. Public involvement for this plan included workshops in each of the District wards including one that was broadcasted on Metrocable. The public was also allowed to comments on these proposals at the Board committee meetings, public hearing and regular board meeting. Schedules for these events were publicized in the

Sacramento Bee and other neighborhood newspapers.

In 2007, SMUD initiated its "Compact with the Customer" to gather information from SMUD customers on important issues regarding SMUD's future growth. Specific issues included greenhouse gas policy, changes to SMUD's energy efficiency programs, AMI infrastructure, time-of-use and critical peak pricing rate designs, and renewable resource options. For the public involvement, SMUD held 40 focus groups where selected participants discussed these issues with a professional moderator. The results from these focus groups were presented to the Board of Directors during committee and regular board meetings.

In 2008, SMUD staff proposed a tariff provision to financially hedge the uncertainty of SMUD's hydro electric generation. The General Manager's Report and Recommendations for this rate proposal was released to the public on the SMUD website. SMUD staff held several public workshops and attended community meetings to explain and gather information on the design and impact of this tariff change. The results from these meetings were presented to the Board of Director's at a public hearing devoted to this issue.

Future Energy Service Projections:

(Provide a load forecast to show expected growth or expansion; or a narrative statement concerning expected future growth)

Baseline Forecast	Peak Demand (kW)	Total Energy (kWh)
2009	3,101,000	12,036,373,000
2010	3,144,000	12,193,838,000
2011	3,190,000	12,361,436,000
2012	3,238,000	12,544,913,000
2013	3,289,000	12,732,002,000

or Narrative Statement:

Measurement Strategies:

(Provide a brief description of measurement strategies for options identified in the IRP to determine whether the IRP's objectives are being met. These validation methods must include identification of the baseline from which a customer will measure the benefits of its IRP implementation)

Monitoring and Verification of SMUD's Energy Efficiency Programs

Evaluation of SMUD's Energy Efficiency programs are needed to improve program operations and effectiveness, to accurately measure the impacts of programs and ensure that they deliver the projected capacity and energy savings, and to provide assurance that program investments are sound and prudent.

The goal of SMUD's evaluation is to provide strategic information to enable appropriate and knowledgeable decisions on the part of program managers, program planners, resource planners and management. Accurately measuring energy and demand savings by program and technology, characterizing energy efficiency markets and potential, assess customer and trade ally response to programs, provide early warning of program operational problems, and identify areas and means of program improvement.

Although the needs for program evaluation may appear straightforward, the uses of program evaluation information are many and the methods for collections and analyzing evaluation information are complex. SMUD will be following the guidelines developed by the California Public Utilities Commission; "California Evaluation Framework" (June 2004), and "California Energy Efficiency Evaluation Protocols" (April 2006) to provided guidance on methodological approaches and study focus needed to perform specific types of evaluations. This framework also provides SMUD the flexibility for the use of alternative evaluation approaches, especially when they can be shown to provide reliable results.

Our objectives are to set up a framework to develop yearly action plans for each year until 2017. SMUD will plan M&V activities for each program scheduled at fixed intervals (two to four years apart) with the intention of evaluating all programs at least once by the end of the year 2009, and continuing until year 2017. Details for each M&V activities will be develop the prior year of the scheduled evaluation adjusting for changes in program designs that can effect energy and demand savings, and to make

allowances for programs that are newly developed or that have been closed down. SMUD is allocating 3% of its' Energy Efficiency budget to the function of M&V of energy savings, with the budget still to be determine for M&V for Demand only programs allocated from Operations and Reliability Department. In 2008 SMUD is in the process of awarding contracts for consultants to perform evaluations of programs in both the residential and commercial sectors. For the commercial sector SMUD will be conducting impact evaluations of the "Retrofit Energy Efficiency" and "HVAC & Motors Distributors" programs. In the residential sector impact evaluations are to include the "Energy Advisory Services", "Pool & Spa Efficiency", "Solar Smart Homes" programs, along with developing a Title-24 (2005) residential base case of load profiles for HVAC, whole house, and characterizations of plug loads.

Measuring Renewable Generation and Purchases

Senate Bill 1305, Statutes of 1997c requires ESPs to disclose information to their customers about the energy resources used to generate the electricity they sell. As directed, the California Energy Commission (Energy Commission) created a user-friendly way of displaying this information called the "power content label." This label will provide utility customers with reliable information about the energy resources used to generate electricity, enabling customers to easily compare the power "content" of one electricity product with that of others.

The power content label describes the sources of electricity that is put into the power grid. Each ESP must display information about the energy resources represented by their contracts with electricity generators.

As of fall 1998, ESPs are required to include the power content label in all advertisements sent to customers in the mail or over the internet. Furthermore, ESP's must send customers quarterly updates for the product they are selling.

A verification process is in place to minimize fraudulent claims. There can be no guarantee that the information is 100 percent accurate, but Senate Bill 1305 (now part of the Public Utilities Code) provided for a verification process administered by the Energy Commission. Any violations of the Public Utilities Code may be prosecuted as misdemeanors, and any company making misleading claims runs the risk of being exposed by other companies or by consumer protection organizations.

SMUD follows related regulation and report to CEC and our customers quarterly its "power content label". The current Power Content Label for SMUD can be found at www.smud.org.

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Other Information:
(Provide/attach additional information if necessary)

