Renewable Energy Resources Procurement Plan
(RPS Procurement Plan)

Section 1: Introduction

The Sacramento Municipal Utility District (SMUD) is committed to the development and procurement of renewable energy for our customers. In order to grow renewable energy supplies for its customers, SMUD voluntarily created two separate programs: a green pricing program called "Greenergy" and a Renewable Portfolio Standard (RPS) Program.

In 1997, SMUD began Greenergy, which allows participating residential customers to select renewable energy supply for 100% or 50% of their electricity for a simple monthly fee of $6 or $3, respectively, in addition to their regular electricity bill. Commercial Greenergy customers pay 1¢/kWh additional for 100% renewables and 0.5¢/kWh additional for 50% renewable energy, on top of their regular rates. Commercial Greenergy customers can also purchase 1 MWh blocks for $10 each. SMUD projected a demand of 3% renewable procurement to serve the retail load of Greenergy customers by 2010 and estimates an increase to 4% by 2020.

In 2001, SMUD established its initial RPS goals, and by 2008 had established goals of procuring 20% of its retail electricity sales from eligible renewable energy resources by 2010 and 33% by 2020 (SMUD's RPS goals). In 2002 (and in later statutes modifying the initial law), the State of California established an RPS for retail sellers of 20% of retail sales served with electricity from eligible renewable energy resources by December 31, 2010. The RPS statutes at that time did not specifically obligate local publicly owned electric utilities (POUs) such as SMUD with percentage goals and deadlines, nor did the state law require POUs to satisfy state eligibility rules for renewable energy resources to count toward their RPS goals. Nevertheless, POUs were required to consider and implement an RPS that met the "intent of the Legislature". Senate Bill 2 in 2011 (SBX1-2) established a Renewables Portfolio Standard (RPS) goal of 33% by 2020 for local publicly-owned electric utilities (POUs) as well as retail sellers. SMUD has achieved the 20% RPS in 2010, with resources meeting the state eligibility rules, and is on target to achieve the newly required 33% RPS by 2020.

SMUD's RPS policy is stated in SMUD Board Strategic Directive (SD) 9. SD9 includes the RPS goals of 20% by 2010, and 33% by 2020, and also sets policies for energy efficiency goals, clean distributed generation, and greenhouse gas reduction. Staff strives to reach the policy goals in SD9 in the most effective and efficient way practicable. SMUD balances the multiple policies in SD9 with other Board policies including those established for high levels of reliability (SD4), competitive rates (SD2), access to capital markets (SD3), and the local environment (SD7). SMUD also undertakes research, development and demonstration (RD&D) activities (SD10) that contribute to the RPS and other SD9 goals. Balancing the achievement of SMUD's RPS and other policies involves an integrated resource planning (IRP) process.

As required by Pub. Util. Code § 399.30(a), and by the *Enforcement Procedures For the Renewable Portfolio Standard For Local Publicly Owned Utilities (CEC RPS Regulations)*, Section 3205(a), SMUD is adopting a renewable energy resources procurement plan – this document – describing how it will achieve its RPS procurement requirements for each compliance period established by SBX1-2.

In December 2011, SMUD's Board also approved SMUD's RPS Enforcement and Compliance (Enforcement) Plan, pursuant to SBX1-2. In November 2013, SMUD's Board adopted a revised Enforcement Plan to ensure compliance with the *CEC RPS Regulations*. The Enforcement Plan confirms SMUD's commitment to comply with the *CEC RPS Regulations.*

Section 2: Renewable Procurement And RPS Compliance

SMUD is well underway to meeting the required 20% RPS target for the period of 2011 through 2013, the first RPS compliance period, and the established targets for the second and third compliance periods, per *CEC RPS Regulations,* Section 3204. Table 1 below shows the actual and expected generation from executed renewable contracts and owned resources that SMUD has in place. Most of these contracts reflect projects that are on-line and generating electricity. There are 2 biomethane projects and 1 geothermal project included that are not yet on-line as of October 30, 2013.

Table 1 shows actual and expected procurement of currently committed eligible renewable resources that can be allocated for and retired for SMUD's RPS compliance, but does not indicate that the associated Renewable Energy Certificates (RECs) have been all been retired for the RPS. SMUD expects to retire RECs from the identified resources and future procurement to fully achieve compliance in the compliance periods through 2020, as well as subsequent compliance periods. Table 1 shows adequate eligible renewable procurement to enable this compliance.

SMUD's currently procured renewable energy products are predominately Portfolio Content Category (PCC) 0 and PCC 1 RECs. SMUD has procured some PCC 3 RECs from our customers distributed generation systems under SB 1. SMUD may choose to strategically procure PCC 2 and additional PCC 3 renewable energy credits (RECs) to meet compliance period requirements subject to *CEC RPS Regulations,* Section 3204 (c), but does not expect to do so for the first compliance period through 2013.

Table 1 shows the PCC 0, PCC 1 and PCC 3 RECs, that SMUD expects from currently committed eligible renewable resources. Well over 90% of the procurement from contracts/agreements signed after June 1, 2010 are PCC 1, sufficient to exceed the portfolio balance requirements in the *CEC RPS Regulations,* Section 3203 (c)-(e) with regards to procured electricity products for compliance with RPS requirements. SMUD intends to retire RECs within 36 months of generation to fully meet the portfolio balance requirements.

SMUD will also bank excess procurement from one compliance period for use in subsequent periods, pursuant to the *CEC RPS Regulations,* Section 3206(a)(1). SMUD defines "excess procurement" as any eligible renewable generation in a compliance period that exceeds the compliance period requirement for that period, as calculated using the formulas in the *CEC RPS Regulations,* Section 3206(a)(1)(D). SMUD also expects to have historic carryover that will be used for SBX1 2 compliance. SMUD's expected historic carryover is included in the "Available Surplus" information in the bottom of Table 1.

As indicated in Section 7 below, SMUD is continuing to pursue additional renewable resource options not included in Table 1, to ensure compliance through 2020 and in preparation for compliance beyond 2020.

Note that Table 1, Figure 1, and the 2015 and 2020 pie charts in Figures 3 and 4 are based in part on expected generation through 2020. Actual generation and resource mixes may change as SMUD procures additional resources or resources generate differently than expected. SMUD's projected compliance may also be affected by the difference between the forecast retail sales projected in Table 1 and actual sales through 2020, in addition to changes in the procurement SMUD expects for our Greenergy customers.

Table 1: SMUD's Renewable Resources and Compliance Requirements

	Compliance Periods									
	1			2			3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Retail Sales	10385	10544	10432	10363	10336	10376	10383	10397	10419	10479
RPS Annual Target. (% of Load)	**20.0%**	**20.0%**	**20.0%**	**20.0%**	**20.0%**	**25.0%**	**27.0%**	**29.0%**	**31.0%**	**33.0%**
RPS Annual Target (GWh)	**2077**	**2109**	**2086**	**2073**	**2067**	**2594**	**2803**	**3015**	**3230**	**3458**
RPS Compliance Period Requirement	6272			6734			12507			
Category 1 MINIMUM (% of RPS Portfolio)	50.0%			65.0%			75.0%			
Category 2 (% of RPS Portfolio)	25.0%			20.0%			15.0%			
Category 3 MAXIMUM (% of RPS Portfolio)	25.0%			15.0%			10.0%			
Annual Production By Technology										
Biomass and Biowaste	946	870	1099	991	590	590	536	459	459	459
Biomethane	155	231	317	635	776	797	822	843	864	878
Biogas	208	198	233	244	140	130	130	130	130	130
Geothermal	-	-	62	264	415	454	452	452	452	454
Eligible Hydro < 30MW	480	281	284	285	218	98	98	98	99	98
Solar	41	206	257	261	264	267	256	256	256	256
Wind	382	695	805	805	703	615	615	615	615	615
TOTAL	**2212**	**2482**	**3058**	**3483**	**3106**	**2952**	**2909**	**2854**	**2875**	**2890**
Annual Production By CEC Category										
Category 0 RECs	2180	1815	2056	2217	1815	1636	1580	1503	1503	1504
Category 1 RECs	18	638	966	1225	1246	1268	1293	1314	1335	1350
Pre-June 1, 2010 Category 1 RECs	-	-	-	-	-	-	-	-	-	-
Category 2 RECs	-	-	-	-	-	-	-	-	-	-
Pre-June 1, 2010 Category 2 RECs	-	-	-	-	-	-	-	-	-	-
Category 3 RECs	14	28	36	41	44	47	36	36	36	36
Pre-June 1, 2010 Category 3 RECs	-	-	-	-	-	-	-	-	-	-
TOTAL	**2212**	**2482**	**3058**	**3483**	**3106**	**2952**	**2909**	**2854**	**2875**	**2890**
Annual Production Total, Surplus and Carryover										
Annual RPS Surplus/Deficit	135	373	972	1410	1039	358	105	-161	-355	-568
Annual Applied RPS Surplus	-	-	-	-	-	-	-	-	-	-
Cumulative Surplus Through 2010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Compliance Period Total, Surplus and Carryover										
RPS Goal	6272			6734			12507			
Category 0 (% of RPS Portfolio)	78%			59.4%			53%			
Categories 1-3 (% of RPS Portfolio)	22%			40.6%			47%			
Category 1 (% of Post June 1, 2010 RPS Portfolio)	95.4%			96.6%			97.3%			
Category 2 (% of Post June 1, 2010 RPS Portfolio)	0.0%			0.0%			0.0%			
Category 3 (% of Post June 1, 2010 RPS Portfolio)	4.6%			3.4%			2.7%			
TOTAL RECs	7752			9541			11527			
RPS Surplus/Deficit Added In Compliance Period	1480			2807			-979			
RPS Surplus Used In Compliance Period	-			-			979			
Cumulative Surplus/Deficit At End Of Compliance Period	2660			5467			4487			

Note: Values in this table are subject to change.

Figure 1

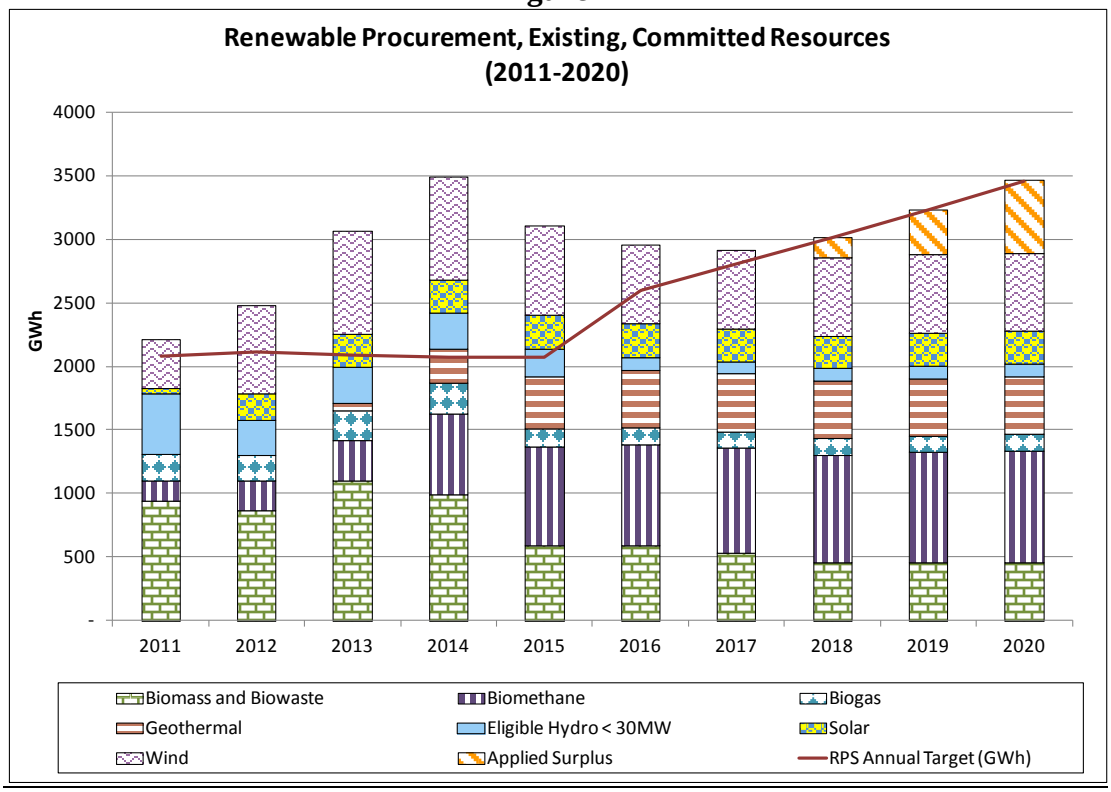


Figure 2

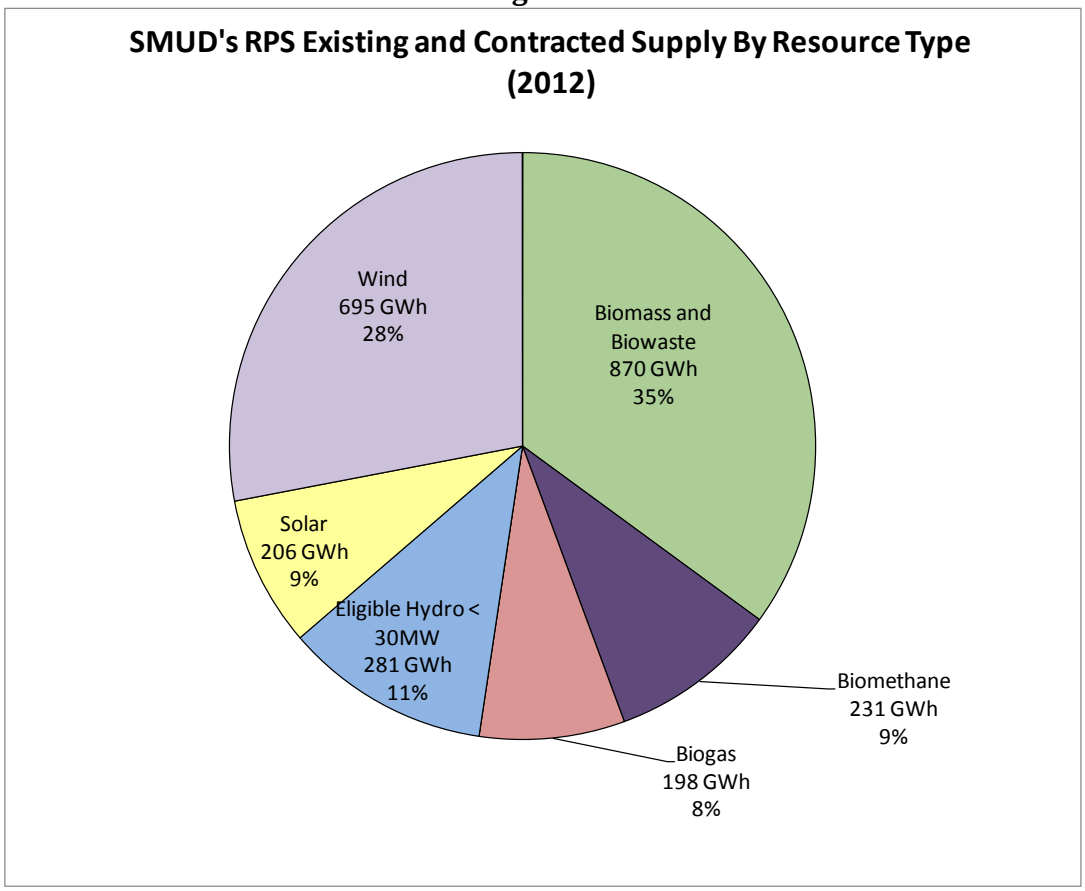


Figure 3

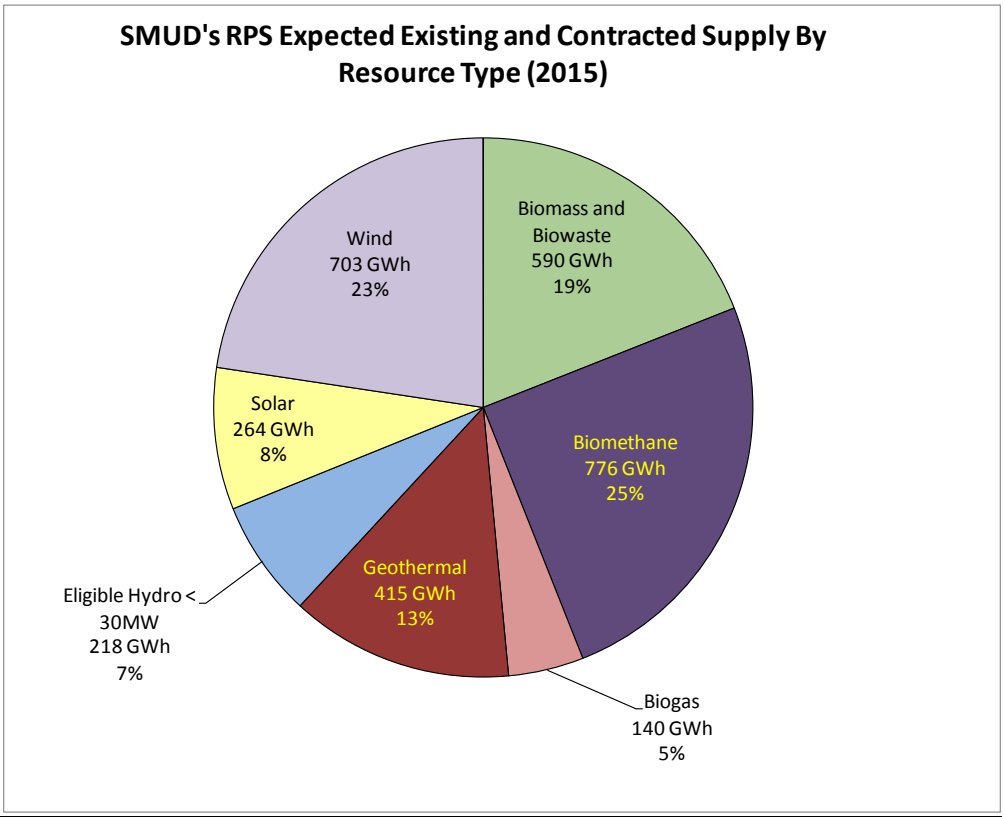
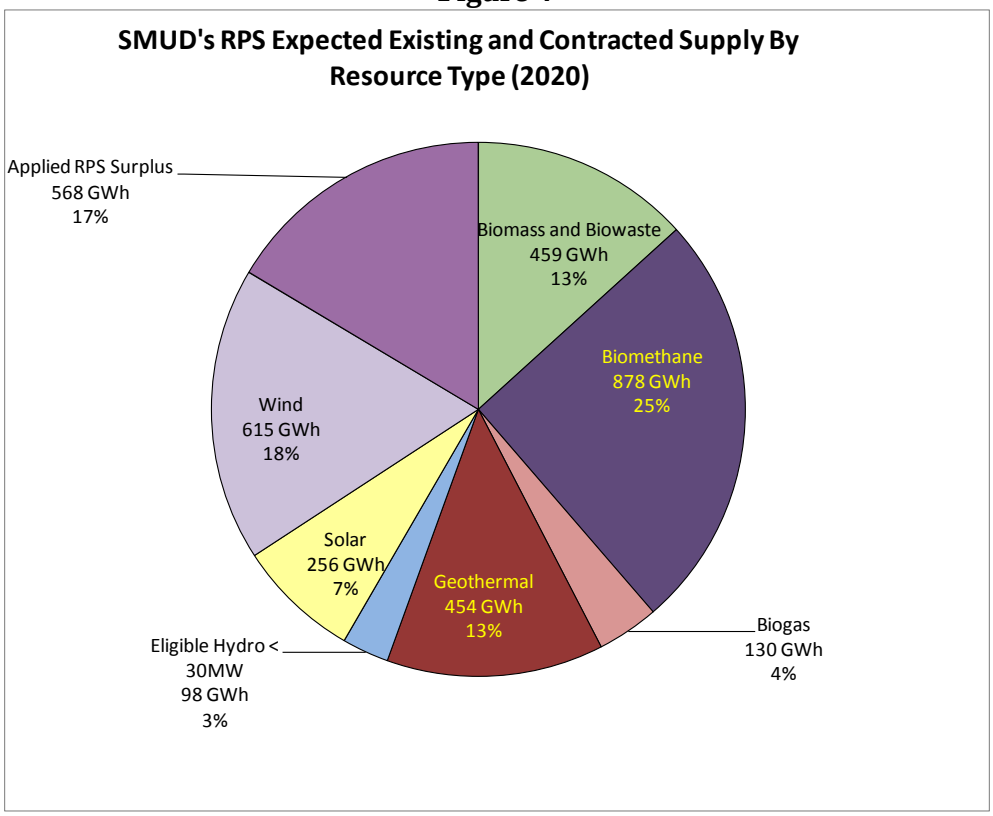


Figure 4



Section 3: Procurement Process

The SMUD Board of Directors (Board) establishes all RPS goals and SDs and considers them in short and long term renewable resource investment decisions. As mentioned above, the SDs include policies for environmental performance, power reliability, carbon emissions reductions, financial objectives, and renewables RD&D and procurement SMUD's IRP process helps ensure SMUD achieves its long term goals and SDs, at a reasonable cost. The IRP process helps develop balanced recommendations that support renewable procurement and development actions and other SMUD SDs.

SMUD owns and operates eligible renewable energy resources, with the resulting electricity products used for RPS compliance. SMUD's small hydro facilities include Jones Fork, Robbs Peak and Slab Creek Powerhouses (Slab Creek procurement is currently allocated to Greenergy). SMUD's Solano Wind Facility is located in Rio Vista just west of our service area. SMUD's solar facilities include Rancho Seco PV, Hedge PV, Cal Expo Parking Solarport and Arden Fair Solarport (Arden Fair Solarport procurement is also currently allocated to Greenery). SMUD also procures eligible renewable electricity resources by contract through formal solicitation processes and unsolicited offers. These proposals and offers are evaluated based on benefits, costs and overall value to SMUD's customer/owners.

Section 4: Historic Carryover

Since the Board approved a RPS goal in 2001, SMUD has actively procured renewable energy. In order to ensure meeting its annual RPS goals and, specifically, the 2010 target, SMUD procured renewable energy exceeding the annual targets established in the *CEC RPS Regulations*. SMUD expects to count this excess procurement as historic carryover, which will count in full for the RPS. Per the *CEC RPS Regulations*, "Historic carryover" means a POU's procurement that satisfies the following criteria:

1. The procurement is for electricity and the associated renewable energy credit generated in 2004-2010 by any eligible renewable energy resource that met the Commission's RPS eligibility requirements in effect when the original procurement contract or ownership agreement was executed by the POU.
2. The original contract or ownership agreement was executed by the POU prior to June 1, 2010.
3. The procurement is in excess of the sum of the 2004-2010 annual procurement targets defined in section 3206 (a)(5)(D) and was not applied to the RPS of another state or to a voluntary claim.

By this definition, SMUD currently expects to have about 1,180 GWh of historic carryover from renewable energy consistent with these criteria. See Table 2 below. SMUD may apply historic carryover towards the requirements for Compliance Periods 1 through 3 and/or future years. Historic carryover does not expire.

Table 2: SMUD's Historic Surplus

	Historic Surplus Period (2004-2010)						
	2004	2005	2006	2007	2008	2009	2010
Retail Sales	10237	10486	10799	10818	10917	10692	10285
RPS Annual Target. (% of Load)	**8.5%**	**9.3%**	**10.0%**	**11.0%**	**11.9%**	**13.2%**	**20.0%**
RPS Annual Target (GWh)	**874**	**976**	**1081**	**1189**	**1297**	**1406**	**2057**
RPS Compliance Period Requirement Category 1 MINIMUM (% of RPS Portfolio) Category 2 (% of RPS Portfolio) Category 3 MAXIMUM (% of RPS Portfolio)							
Annual Production By Technology							
Biomass and Biowaste	243	223	242	663	567	790	984
Biomethane	-	-	-	-	-	134	191
Biogas	44	42	64	98	79	134	176
Geothermal	215	438	438	438	439	217	-
Eligible Hydro < 30MW	95	211	427	190	196	338	343
Solar	4	6	6	6	8	13	25
Wind	2	93	76	64	447	224	428
TOTAL	**603**	**1012**	**1253**	**1459**	**1737**	**1850**	**2147**
Annual Production Total, Surplus and Carryover							
Annual RPS Surplus/Deficit	-271	36	172	270	440	444	90
Annual Applied RPS Surplus		36	172	63	-	-	-
Cumulative Surplus Through 2010	-271	-235	-63	207	646	1090	1180

Note: Values in this table are subject to change. Numbers will be final once the historical surplus report is submitted to and accepted by the CEC.

Section 5: Portfolio Content Category 0 Resources

SMUD has much of its current renewable supply procured pursuant to contracts or ownership agreement executed before June 1, 2010 from resources that met the CEC's eligibility requirements when the resources were procured. Per the *CEC RPS Regulations 3202 (2),* the electricity product from these "grandfathered resources" are counted in full toward the RPS requirements. The CEC reporting forms refer to these resources as PPC 0 resources.

SMUD has modified or extended some of these contracts and as a result has changed the status of the resources from the point of modification on from PCC 0 to PCC 1. See Table 3.

Table 3: SMUD's PCC 0 Resources

PCC0 (GWh)	Resoruce Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CVFA (Carson - SRCSD)	Biogas	47.3	31.6	4.8	5.3	5.3	5.4	5.4	5.4	5.4	5.4
Kiefer 2 - LES	Biogas	45.1	44.0	47.4	47.4	10.8	0.0	0.0	0.0	0.0	0.0
Yolo Landfill	Biogas	18.4	18.5	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
Avista (Biomass)	Biomass and Biowaste	578.3	478.9	546.6	438.0	0.0	0.0	0.0	0.0	0.0	0.0
SPI / SCL - Burlington (15 MW @ 90% CF = 118 GWh)	Biomass and Biowaste	126.5	124.7	131.4	131.4	131.4	131.4	76.7	0.0	0.0	0.0
Simpson (43 MW; 339 GWh; Tacoma, WA)	Biomass and Biowaste	241.4	258.5	301.3	301.3	339.0	339.0	339.0	339.0	339.0	339.0
GRS - Santa Cruz Landfill (1.5 MW; 12 GWh/yr)	Biogas	11.5	10.7	11.6	11.7	11.7	11.8	11.8	11.8	11.8	11.8
CPP - (Biogas sources: Shell)	Biomethane	154.8	53.1								
CPP - (Biogas sources: Heartland)	Biomethane		0.0	0.0	68.1	190.4	190.4	190.4	190.4	190.4	190.4
Buena Vista (17 MW @ 82% CF = 122 GWh)	Biomass and Biowaste		8.1	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
Calpine (Existing - 50 MW 7x24 = 438 GWh)	Geothermal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UARP (Robbs Pk 29 MW, Jones Fork 11.5 MW)	Eligible Hydro < 30MW	114.9	63.0	57.1	57.1	57.0	56.7	56.4	56.6	57.3	56.9
Camp Far West (CFW)	Eligible Hydro < 30MW	38.6	23.2	20.7	21.0	21.0	21.0	21.0	21.0	21.0	21.0
WAPA CVP- Nimbus, Stampede, Lewiston	Eligible Hydro < 30MW	36.4	21.0	25.0	25.0	20.3	20.3	20.3	20.3	20.3	20.3
East Bay MUD (Pardee 30 MW, Com. 10 MW)	Eligible Hydro < 30MW	240.5	81.7	181.5	181.5	119.8	0.0	0.0	0.0	0.0	0.0
Avista (Small Hydro)	Eligible Hydro < 30MW	49.5	91.8		0.0	0.0	0.0				
PV (Utility Scale + PVP 1)	Solar	3.8	2.3	2.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
SB-1 PV	Solar	20.4	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Solano (Phases 1 & 2A + 2B)	Wind	214.7	234.4	239.4	239.4	239.4	239.4	239.4	239.4	239.4	239.4
PPM Highwinds Project (75 MW)	Wind	167.5	175.6	190.0	190.0	87.8	0.0	0.0	0.0	0.0	0.0
Patua Phase 1	Geothermal		0.0	61.7	225.8	225.8	226.5	225.8	225.8	225.8	226.5
Patua Phase 2a	Geothermal	0.0	0.0	0.0	37.8	75.5	75.8	75.5	75.5	75.5	75.8
Patua Phase 2b	Geothermal	0.0	0.0		0.0	75.5	75.8	75.5	75.5	75.5	75.8
Patua Phase 2c	Geothermal	0.0	0.0		0.0	37.8	75.8	75.5	75.5	75.5	75.8
Patua Phase 3	Geothermal	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kiefer 1	Biogas	68.3	68.8	69.1	69.1	0.0	0.0	0.0	0.0	0.0	0.0
Tollenaar Hosteins Dairy	Biogas	0.2	0.4	0.6	0.8	0.8	0.8	0.8	0.8	0.3	
Cal Expo	Solar	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Solar Shares (enXco)	Solar	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7

Note: Values in this table are subject to change.

Section 6: Additional Committed Category Resources

SMUD continued to develop and procure renewable supply after June 1, 2010. In late 2009, SMUD released a Feed-In Tariff (FIT) solicitation for eligible renewable energy resources and qualifying combined heat and power installations up to 5 MW each. Contracts from the successful bidders were signed in the last half of 2010, and nearly 100 MW of PV systems have since been constructed under the FIT.

SMUD signed a biomethane contract (Timberline) with a project expected to come on-line prior to April 2014 to provide additional renewable biomethane to the Cosumnes Power Plant (CPP), and also extended and expanded the previous biomethane contract (Shell) serving CPP. In 2011, SMUD also constructed a biogas cleanup facility near the Sacramento Regional County Sanitation District's (SRCSD) wastewater treatment plant and began injecting the cleaned biogas into SMUD's dedicated pipeline for combustion at CPP. In addition, the "Enhanced Digestion" project, a co-digestion project adding regional fats, oils, and greases (FOG) to the wastewater digesters at SRCSD was commissioned in early 2013, increasing the available biogas from this source.

Also, in 2012, SMUD expanded its Solano Wind Facility in the Rio Vista area. SMUD completed construction of Solano Phase III, adding 128 MW of capacity to the existing 102 MW, totaling 230 MW overall. In 2013, SMUD supported the construction of three local renewable energy projects with grant funding from the US Department of Energy and the California Energy Commission. The Van Warmerdam Dairy Digester project was completed in the second quarter of 2013. The New Hope Dairy Digester was completed shortly afterwards.

The third project is the Enhanced Digestion project at SRCSD described previously. All three projects are in SMUD's service territory.

All of these additional resources are classified as PCC 1 resources. Table 4 provides information on the actual and expected generation from SMUD's PCC 1 resources.

Table 4: SMUD's PCC 1 Resources

PCC1 (GWh)	Resoruce Type	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
CPP - (Biogas sources: SRCSD)	Biogas	17.2	24.3	77.8	86.3	87.2	88.1	88.1	88.1	88.1	88.1
CPP - (Biogas sources: Shell amendment)	Biomethane		178.0	317.4	328.4	338.6	350.1	365.0	375.6	385.2	387.2
CPP - (Biogas sources: Timberline)	Biomethane		0.0	0.0	238.1	247.0	256.4	266.5	277.2	288.5	300.5
Solano Wind 3 (128 MW @ 35% CF = 392 GWh)	Wind		285.0	375.4	375.4	375.4	375.4	375.4	375.4	375.4	375.4
Feed-In Tarif PV Projects (2010 FIT)	Solar	0.8	151.0	194.7	194.7	194.7	195.2	194.7	194.7	194.7	195.2
New Hope Diary	Biogas			1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Van Warmerdam Diary	Biogas			1.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Note: Values in this table are subject to change.

In addition, SMUD implemented a SB-1 solar roof-top incentive program. Under this program, SMUD currently has some PCC 3 resources. The amount of PCC 3 generation represented is a fraction of the PCC3 maximum in the CEC regulations. SMUD does not have any PCC 2 resources at this time, but may consider PCC 2 offers in the future.

Section 7: Future Procurement

Since meeting its RPS goal for 2010, SMUD continues to conduct activities to procure renewable energy. Activities include the following:

- SMUD staff has released a Solar Request for Offers (RFO) seeking bids for solar projects up to 200 MW. Proposals have been received. Staff is in the process of evaluating the proposals.
- SMUD staff is also seeking bids for solar projects to supply an expansion of its Solarshares offering to customers.
- SMUD staff is currently negotiating for property that has the potential to support up to 60 MW of wind turbine capacity, producing 180 GWh annually.
- SMUD may also consider adding solar to the existing Solano wind area.
- SMUD staff is also in negotiations with entities to procure additional renewable energy including geothermal resources, biomass (both in-state and out-of-state) and in-state biomethane.
- SMUD is also in negotiations with entities with which SMUD has current renewable contracts, to possibly extend and/or modify these contracts.
- SMUD in partnership with Renovitas received a grant from the California Energy Commission Geothermal Resources Development Account Program. The goal of the project was to assess the geothermal development potential at Wilbur Hot Springs in Colusa County. The project was completed in spring 2013, showing a promising resource.
- SMUD in partnership with Conergy and the City of Sacramento is deploying a 1.5 MW PV system located at the Sutter's Landing Regional Park. This project is receiving grant funding from the DOE Community Renewable Energy Deployment program and the California Energy Commission. The project is expected to be completed in early 2014.

- SMUD was recently awarded grant funding from the US Department of Energy to design and consider constructing a Concentrating Solar Power Steam Augmentation to CPP.
- SMUD is also examining the potential for receiving RPS procurement credit from incremental hydro efficiency improvements to the larger power plants in the Upper American River Project.
- SMUD is considering a new small hydro facility near the current Slab Creek project.
- SMUD staff is currently partnering with and supporting the development of a new local dairy digester project at the Van Steyn Diary, the fifth dairy digester in SMUD's service territory. SMUD is contributing funds for this project from the sale of California Air Resources Board's (ARB) carbon emission allowances, provided to SMUD under the California Cap-and-Trade program. The project is expected to be online by December 2014.
- Finally, staff is also working to develop a local 3 MW biomass wood gasification project—the first in SMUD's service territory—also using funds from the sale of ARB carbon emission allowances.

These planned activities and other future procurement may also contribute to meeting SMUD's RPS compliance requirements, along with existing resources and committed projects. In addition, they will add to SMUD's renewable fuel diversity and contribute toward SMUD's longer term carbon reduction goals. Figure 5 provides an estimate of SMUD's RPS procurement through 2020 including some of these uncommitted resources.

Figure 5

RPS Resources & RPS Compliance Req. Goal: 33% in 2020