PASADENA WATER AND POWER

City of Pasadena
Department of Water and Power
Renewable Portfolio Standard
Procurement Plan

Pursuant to the Enforcement Program
Adopted by the City Council on July 22, 2013

July 22, 2013

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Executive Summary

This Procurement Plan describes the intended strategy of the Pasadena Water and Power department ("PWP") to comply with the Renewable Portfolio Standard ("RPS") requirements of Senate Bill X1-2 ("SBX1-2") as detailed in the City's Program of Enforcement ("Enforcement Program") adopted by the Pasadena City Council on July 22, 2013. The Enforcement Program and this Procurement Plan incorporate the regulations established by the California Energy Commission ("CEC") regarding Public Utilities Code Section 399.30 (l), as such interpretations of the law are codified in the California Code of Regulations, Title 20, Division 2, Chapter 13, Sections 3200 through 3208, and in Title 20, Division 2, Chapter 2, Article 4, Section 1240. It is important to note that this Procurement Plan addresses not only California's State-wide RPS requirements, but Pasadena's own higher *voluntary* RPS goal, as established in the 2012 Integrated Resource Plan Update.

On March 05, 2012, the City Council approved PWP's updated Integrated Resource Plan, and reaffirmed the City's voluntary 40% RPS goal first established in 2009. However, in recognition of the slow economic recovery, the interim goals leading up to the 40% by 2020 goal were realigned and reduced. The new reduced interim goals still exceed the SBX1-2 interim targets, as can be seen in Figure 1. Under this Procurement Plan:

1. PWP intends to ramp up the percentage of projected retail sales supplied by renewable energy resources by 2.5% per year, from a starting point of 15% in Calendar Year 2010. By 2020, PWP will have attained its voluntary 40% RPS goal. This new linear increase will still exceed the interim goals mandated by the Program of Enforcement.

2. Current existing renewable energy resources will supply 19.3% of projected retail sales in 2020.

3. The Silverado project, recently approved by the Pasadena City Council, is expected to supply approximately 32 GWh[1] of renewable energy beginning in Calendar Year 2015. By 2020, the energy from this project is expected to supply approximately 2.9% of the City's retail load.

[1] GWh = gigawatt-hours, or one billion watt-hours.

4. On September 27, 2012, the Governor approved and implemented Assembly Bills 2196 and 1900 which defined rules for the use of biogas under the State's RPS. Based on the new clarifications included in the CEC's recently adopted 7th Edition of the RPS Eligibility Guidebook, Staff has included PWP's three existing bio-methane fuel contracts into the City's renewable portfolio mix as Portfolio Content Category ("Category") 1 resources, pending re-certification of the applicable facilities.

5. Another renewable energy contract currently in negotiations is expected to supply an additional 68 GWh beginning in CY 2017, which could represent an additional 6.2% of PWP's renewable energy requirements in 2020.

6. PWP participates in the Southern California Public Power Authority ("SCPPA")'s regular Request for Proposals process for renewable energy offers, from which one or more additional renewable projects will be selected and contracts negotiated for additional renewable energy, likely beginning in 2017. The energy can be provided from either an intermittent resource, such as solar, or base load energy, such as geothermal or landfill gas generation, or some combination of the two.

7. With purchases from the coal-fired Intermountain Power Project ("IPP") expected to be reduced by 35 MW in 2015, PWP will have the option to procure the output from either (or both) a renewable base-load or a renewable peaking plant, with an additional 120 GWh per year by 2020. These last contracts will allow PWP to attain the voluntary 40% RPS goal stated in the 2012 Updated Integrated Resource Plan.

8. Because long-term renewable energy projects require about 2 years to be developed, PWP expects to use short term Renewable Energy Credits ("RECs"), Tradable Renewable Energy Credits ("TRECs"), and short term bundled renewable energy purchases to fill in shortages during Compliance Period 2 (from Calendar Year 2014 through Calendar Year 2016).

PWP is required to purchase a minimum amount of Category 1 (bundled) products and no more than a maximum amount of Category 3 (RECs) in each Compliance Period. The CEC has relegated "grandfathered" resources to a new Category 0, rather than Category 1, as the City had classified them in its original Enforcement Program, which effectively resets PWP's progress toward its Category 1 procurement goals and forces the City to procure more Category 1 resources. However, pursuant to the City's revised Program of Enforcement, PWP may rely on Category 2 and Category 3 renewable energy to supply shortages in meeting the difference between the state mandated and the City's own voluntary targets during the interim years of the City's Plan.

The California Energy Commission has developed new Enforcement Procedures for the Renewables Portfolio Standard for Local Publicly Owned Electric Utilities[2], which specifies rules and procedures under SBX1-2. This Plan is consistent with the latest version of the CEC Enforcement Procedures.

The following tables and chart summarize the highlights of this plan:

Table 1
PWP's SBX1-2 Procurement Plan

Pasadena Water and Power

SBX1-2 Mandatory RPS Procurement Plan (by Calendar Year)

	Compliance Period 1			Compliance Period 2			Compliance Period 3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020+
	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Estimated PWP Electric Sales (Load)	1,140.3	1,140.1	1,129.7	1,133.4	1,128.5	1,120.8	1,110.1	1,099.5	1,088.8	1,078.2
SBX1-2 Mandatory RPS Procurement Requirement (%)		20%		20%	20%	25%	27%	29%	31%	33%
SBX1-2 Mandatory RPS Requirement for PWP (GWh)		682.0		226.7	225.7	280.2	299.7	318.8	337.5	355.8
PWP SBX1-2 RPS Already Met w/Current Contracts (% of Load)		22.3%		18.3%	21.3%	21.7%	18.3%	18.6%	18.9%	19.3%
PWP SBX1-2 RPS Already Met w/Current Contracts (GWh)		761.5		207.5	240.8	243.7	202.7	204.2	205.7	207.8
Portfolio Content Category 0 (GWh)	169.1	125.9	126.1	126.1	126.1	126.3	83.9	83.9	83.9	84.1
Portfolio Content Category 1 (GWh)	33.3	99.9	167.0	81.4	114.8	117.4	118.9	120.4	121.9	123.7
Portfolio Content Category 2 (GWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portfolio Content Category 3 (GWh)	14.7	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Future SBX1-2 Purchases (GWh)		0.0		19.2	0.0	36.5	97.0	114.6	131.8	148.0
Portfolio Content Category 1 (GWh)		0.0		0.0	0.0	0.0	43.0	55.9	68.4	80.1
Portfolio Content Category 2 (GWh)		0.0		4.1	0.0	13.4	32.4	35.2	38.1	40.8
Portfolio Content Category 3 (GWh)		0.0		15.1	0.0	23.1	21.6	23.5	25.4	27.2
Total SBX1-2 RPS Procurement GWh		761.5		226.7	240.8	280.2	299.7	318.8	337.5	355.8
Portfolio Content Category 0 (GWh)		421.0		126.1	126.1	126.3	83.9	83.9	83.9	84.1
Portfolio Content Category 1 (GWh)		300.2		81.4	114.8	117.4	161.9	176.2	190.3	203.8
Portfolio Content Category 2 (GWh)		0.0		4.1	0.0	13.4	32.4	35.2	38.1	40.8
Portfolio Content Category 3 (GWh)		40.3		15.1	0.0	23.1	21.6	23.5	25.4	27.2
SBX1-2 RPS Procurement Limits										
Portfolio Content Category 1 Minimum (GWh) ≥		130.5		65.4	64.8	100.0	161.9	176.2	190.3	203.8
Portfolio Content Category 3 Maximum (GWh) ≤	14.7	25.5	25.0	15.1	14.9	23.1	21.6	23.5	25.4	27.2

Table 2
PWP's Voluntary RPS Procurement Plan

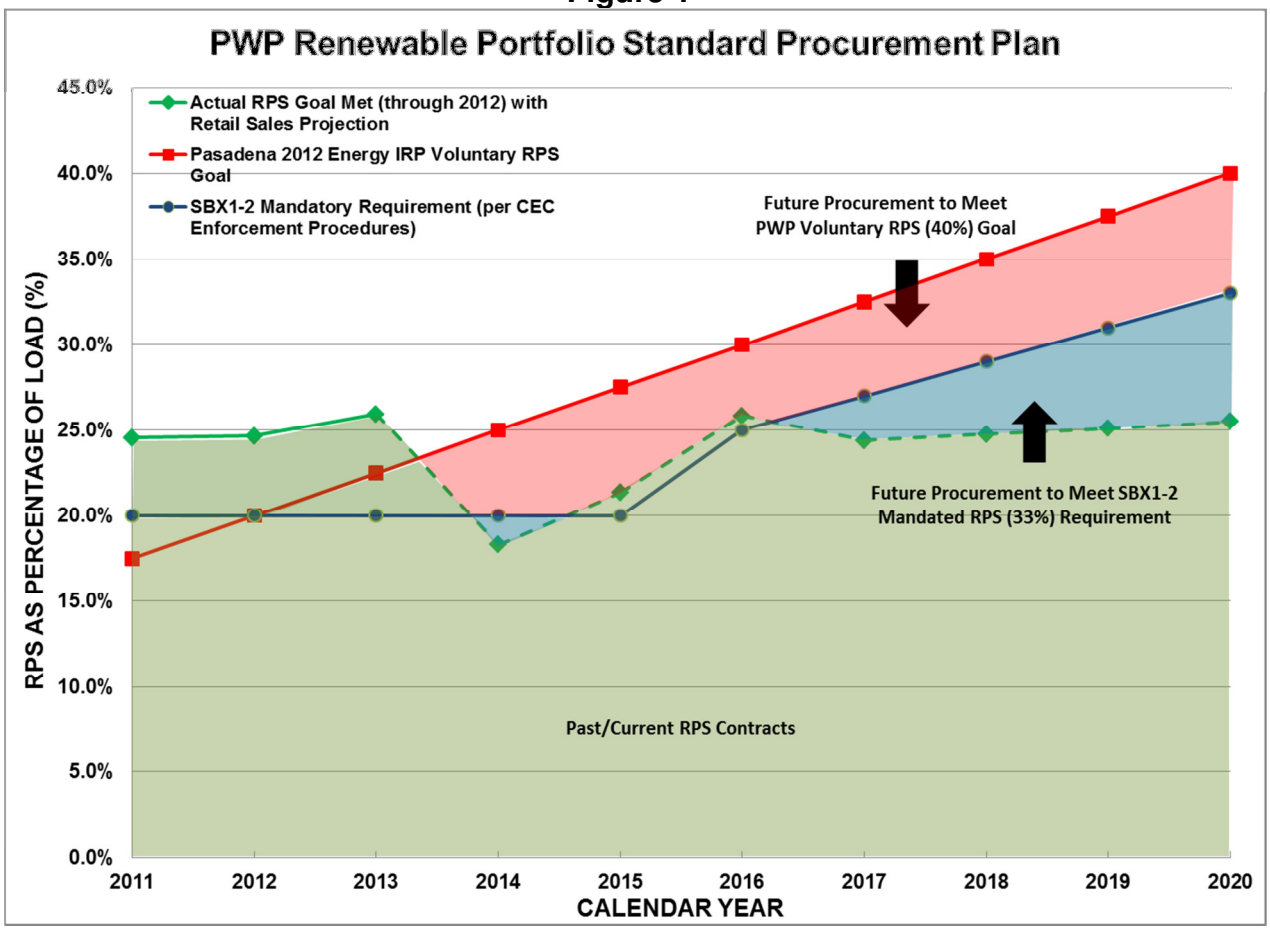
Pasadena Water and Power

Pasadena Voluntary RPS Procurement Plan (by Calendar Year)

	Compliance Period 1			Compliance Period 2			Compliance Period 3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020+
	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Estimated PWP Electric Sales (Load)	1,140.3	1,140.1	1,129.7	1,133.4	1,128.5	1,120.8	1,110.1	1,099.5	1,088.8	1,078.2
Procurement Plan to Meet PWP Voluntary RPS Target (%)	24.5%	24.6%	25.9%	26.0%	27.5%	30.0%	32.5%	35.0%	37.5%	40.0%
Pasadena Voluntary RPS Target (GWh)	279.7	280.8	293.1	294.7	310.3	336.2	361.0	385.0	408.8	431.4
PWP Voluntary RPS Already Met w/Current Contracts (% of Load)	24.5%	24.6%	25.9%	18.3%	21.3%	21.7%	18.3%	18.6%	18.9%	19.3%
PWP Voluntary RPS Already Met w/Current Contracts (GWh)	279.7	280.8	293.1	207.5	240.8	243.7	202.7	204.2	205.7	207.8
Required Future SBX1-2 Procurement (GWh)	0.0	0.0	0.0	19.2	0.0	36.5	97.0	114.6	131.8	148.0
Additional Future Purchases for PWP Voluntary RPS (GWh)	0.0	0.0	0.0	68.0	69.5	56.0	61.3	66.2	71.3	75.5
Total Voluntary RPS Procurement GWh	279.7	280.8	293.1	294.7	310.3	336.2	361.0	385.0	408.8	431.4

[2] California Energy Commission (CEC): "Enforcement Procedures For The Renewables Portfolio Standard For Local Publicly Owned Electric Utilities," Proposed Regulations Title 20, Division 2, Chapter 13, Sections 3200 – 3208, Title 20, Division 2, Chapter 2, Article 4, Section 1240; Dated June 2013 - CEC-300-2013-002-SD

Figure 1



Legislative Background

Since 2003, the City of Pasadena has enthusiastically pursued a course to set an example of environmental stewardship among other municipalities and organizations. PWP's first long term renewable energy contract was executed in 2003, preceding Senate Bill X1-2 by almost a decade. The City also established and actively maintains: (i) Urban Accords Goals, a general plan that emphasizes environmental protection, (ii) RPS goals beyond the State's requirements, (iii) Energy Efficiency/Demand Response programs for power customers, and (iv) A Master Plan and Strategic Planning Goals that maintain fiscal responsibility and stability, and improve, maintain, and enhance public facilities, infrastructure and sustainable conservation. These goals support and promote quality of life and the local economy.

In 2003, the Pasadena City Council adopted its first RPS of 20% renewable energy by the year 2020. In anticipation of the State Legislature adopting a new, higher 33% RPS goal, the City of Pasadena adopted a 40% RPS on March 16, 2009. In 2011, PWP updated the Electric Integrated Resource Plan and found that the basic principles, policies, and assumptions of 2009 only needed minor adjustments including a realignment and reduction in the interim goals leading up to the City's voluntary 40% in 2020 RPS goal in recognition of the slow economic recovery. On March 05, 2012, the

City Council approved PWP's updated Integrated Resource Plan and reaffirmed the 40% RPS goal first established in 2009.

In 2011, SBX1-2, also known as the Renewable Energy Resources Act, was enacted and required all load serving entities in the State to serve 33% of retail sales load with renewable energy by the year 2020. SBX1-2 includes very specific requirements about the types of renewable resources which may be counted toward meeting the new RPS goal, and includes a timetable of interim goals by which the target must be attained. Additionally, SBX1-2 empowered the California Energy Commission ("CEC") to regulate Publicly Owned Utilities' RPS efforts to meet the 33% by 2020 RPS goal, enforceable through penalties levied by the California Air Resources Board as emissions violations under the Health and Safety Code. In addition to regulating the Publicly Owned Utilities, the CEC has been tasked with clarifying any issues that were left un- or under-defined in SBX1-2. As clarifications and revisions are adopted, the CEC publishes updates to the Renewables Portfolio Standard Eligibility and Overall Program Guidebooks. The CEC recently adopted the seventh edition of its RPS Eligibility Guidebook[3], under which this Plan was developed. The CEC also developed its Enforcement Procedures for The Renewables Portfolio Standard for Local Publicly Owned Electric Utilities. The Enforcement Procedures specify rules and procedures for enforcement of the RPS by the CEC with respect to Publicly Owned Utilities, and provides the targets for each Compliance Period and Category of renewable energy procurement.

The following categories of the renewable resources should be used to meet the statutory RPS procurement targets:

(i) **Portfolio Content Category Zero** ("**Category 0**"): Resources procured prior to June 1, 2010 are "grandfathered" and will "count in full" (i.e., be subtracted from the total RPS requirement without being classified into any of the other three Categories). The Total RPS requirement, minus the grandfathered Category 0 resources that count in full will result in a "Net" RPS requirement, against which the other Category percentages apply ("Net Procurement Requirement").

(ii) **Portfolio Content Category One** ("**Category 1**"): Eligible renewable energy resource electricity that meets the requirement of "in-state," or "out-of-state" resources scheduling power directly to a California balancing authority in accordance with Public Utilities Code section 399.16(b)(1);

(iii) **Portfolio Content Category Two** ("**Category 2**"): Resources that may be delivered at times or locations other than when the energy is actually produced, in accordance with Public Utilities Code Section 399.16(b)(2); and,

(iv) **Portfolio Content Category Three** ("**Category 3**"): Eligible renewable energy resource electricity products or any fraction of the electricity

[3] California Energy Commission: "Renewables Portfolio Standard Eligibility Seventh Edition Commission Guidebook," April 2013; CEC-300-2013-005-ED7-CMF

generated, including unbundled renewable energy credits that do not qualify under the criteria of Category 1 or 2, in accordance with Public Utilities Code Section 399.16(b)(3).

The "Net Procurement Requirement" shall be defined as the total RPS requirement minus the grandfathered Category 0 resources, which shall count in full. PWP shall assign eligible renewable energy resource electricity products to the appropriate Category consistent with Grandfathering provisions in Section F of this Enforcement Program and the CEC Enforcement Procedures, Section 3204.

Under the CEC's Enforcement Procedures, all publicly owned utilities must show an increasing annual renewable energy procurement to demonstrate reasonable progress towards reaching the mandated 33% RPS target by calendar year 2020. PWP must procure a minimum quantity of electricity products from eligible renewable energy resources, including renewable energy credits, as a specified percentage of total retail sales to achieve the following targets.

(i) **Compliance Period One** (January 1, 2011 through December 31, 2013): 20% Total RPS as an average for the period; not less than 50 percent of eligible renewable energy resources procured toward Net Procurement Requirement on or after June 1, 2010 shall be Category 1, and not more than 25 percent of the Net Procurement Requirement shall be Category 3. The remaining amount needed to meet the Net Procurement Requirement can be fulfilled by procuring Category 2[4] renewable energy resources;

(ii) **Compliance Period Two** (January 1, 2014 through December 31, 2016): 20% Total RPS by 2014 and 2015, and 25% Total RPS by December 31, 2016; not less than 65 percent of eligible renewable energy resources procured toward the Net Procurement Requirement on or after June 1, 2010 shall be Category 1, and not more than 15 percent shall be Category 3. The remaining amount needed to meet the Net Procurement Requirement can be fulfilled by procuring Category 2[5] renewable energy resources; and,

(iii) **Compliance Period Three** (January 1, 2017 through December 31, 2020): 27% Total RPS by 2017, 29% Total RPS by 2018, 31% Total RPS by 2019, 33% Total RPS by 2020, and 33% Total RPS each year thereafter. From January 1, 2017, not less than 75 percent of eligible renewable energy resources procured toward the Net Procurement Requirement on or after June 1, 2010 shall be Category 1, and not more than 10 percent toward the Net Procurement Requirement shall be Category 3. The remaining amount

[4] Where procurement of Category 2 or 3 is allowed, a higher Category may be substituted (i.e., Category 2 for Category 3, or Category 1 for Category 2 or Category 3).
[5] Where procurement of Category 2 or 3 is allowed, a higher Category may be substituted (i.e., Category 2 for Category 3, or Category 1 for Category 2 or Category 3).

needed to meet the Net Procurement Requirement can be fulfilled by procuring Category 2[6] renewable energy resources.

The following table summarizes the renewable energy procurement requirements under the CEC Enforcement Procedures and Pasadena's own Enforcement Program.

Table 3: Renewable Resource Categories and RPS Requirements

Pasadena Water & Power CEC-Compliant Procurement Plan Requirements by Calendar Year										
	Compliance Period 1			Compliance Period 2			Compliance Period 3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020+
SBX1-2 RPS Mandatory Procurement Requirement (% of Retail Load) [1]	20%			20%	20%	25%	27%	29%	31%	33%
Category 0:	No constraint									
Category 1 Minimum:	≥50% of Net Procurement Requirement			≥65% of Net Procurement Requirement			≥75% of Net Procurement Requirement			
Category 2: Maximum [2]**:**	≤50% of Net Procurement Requirement			≤35% of Net Procurement Requirement			≤25% of Net Procurement Requirement			
Category 3 Maximum:	≤25% of Net Procurement Requirement			≤15% of Net Procurement Requirement			≤10% of Net Procurement Requirement			

[1] As imposed by the CEC Guidebook, 7th Edition and proposed CEC Enforcement Procedures. SBX1-2 does not include specific interim targets in Compliance Period 3, just obligation to make "reasonable progress."
[2] The Category 2 constraint is not specified by law, but is derived logically as the maximum residual given the Category 1 constraint.

Details of the above requirements can be found in the CEC's Enforcement Procedures for Local Publicly Owned Utilities.

Procurement Plan

Background – Supply vs. Load

This Plan follows the renewable energy procurement guidelines recommended by the PWP 2012 Electric Integrated Resource Plan Update which was in effect on the date this Plan was adopted. The Integrated Resource Plan Update was designed to strike a balance between environmental regulatory compliance and system reliability while maintaining stable and minimal retail electric rates. The 2012 Integrated Resource Plan Update projects that PWP's retail sales load will remain flat or grow at a rate less than 1% due initially to the weak economic recovery and increasing implementation of demand response and energy efficiency programs going into the future, as shown in Figure 2.

[6] Where procurement of Category 2 or 3 is allowed, a higher Category may be substituted (i.e., Category 2 for Category 3, or Category 1 for Category 2 or Category 3).

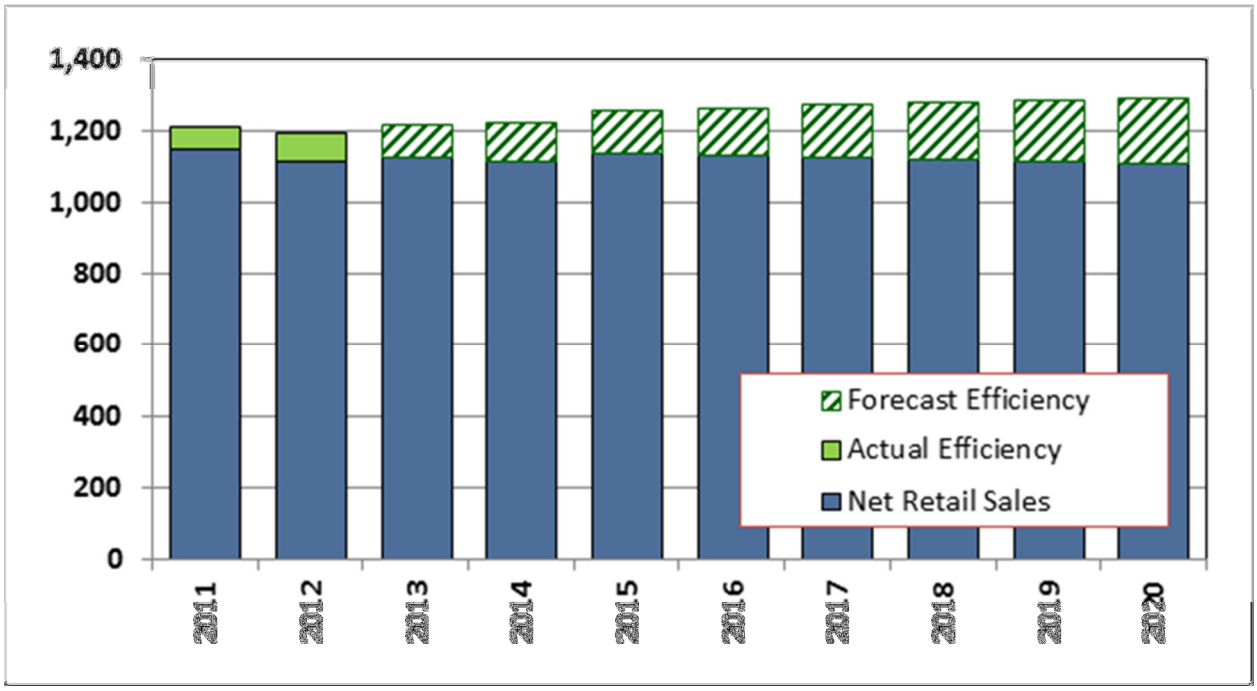


Figure 2
Load Projection

Having weathered three major energy crises since 1970, PWP's first priority until recently was to maintain system resources reliability. As a result, PWP can generally be considered fully resourced as shown in Figure 3 from the 2012 Integrated Resource Plan. The shift in policy, both internally and globally, towards environmental stewardship has put PWP in an awkward position of being required to purchase renewable resources to meet the State requirement of up to 33% of retail sales with renewable resources in excess of the City's retail load as shown by the green bars in Figure 3. Although a sizeable portion of this additional renewable energy can be accommodated through tighter management of current long term resource contracts and reductions in short term energy purchases, some of the new renewable resources are still in excess of the City's needs. As a result, the Integrated Resource Plan Update also includes a recommendation to displace 35 MW of purchases from the coal-fired Intermountain Power Project in 2015. Displacement of the Intermountain Power Project contract will help reduce coal energy in PWP's power portfolio used for serving retail load and, not incidentally, create room for additional renewable resources. PWP will be in position to have an option to procure either or both base load or peaking renewable energy contracts. This can be seen in Figure 3, by the drop in coal power (black bars) in 2016. The Intermountain Power Project coal contract will terminate in the year 2027 and the shortfall in capacity and energy can be fulfilled with additional renewable energy resources.

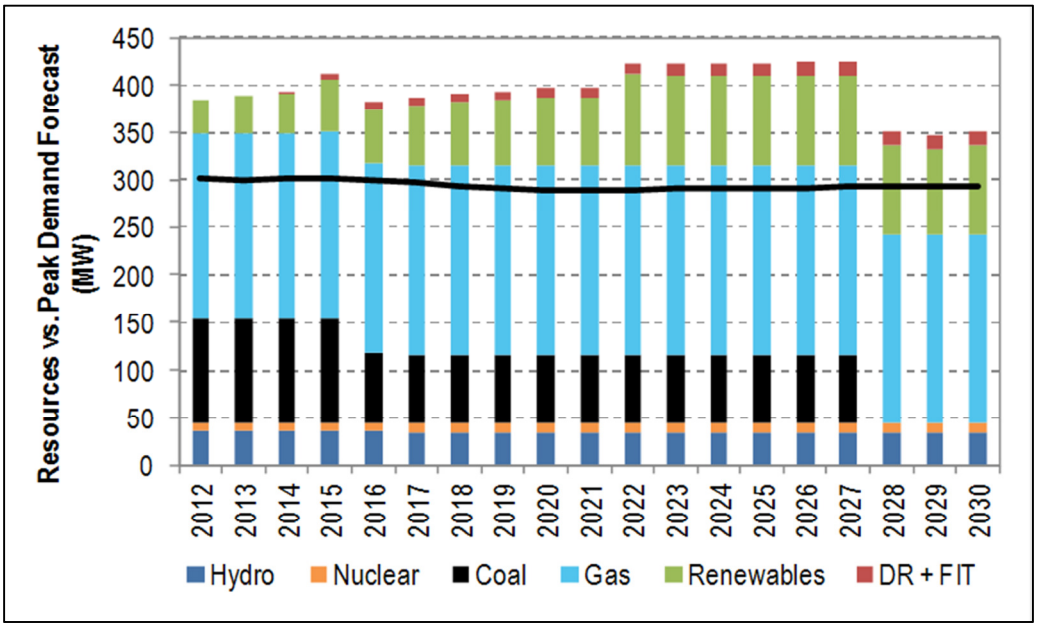


Figure 3
Projected Portfolio of Long Term Contracts and Generation
(DR = Demand Response and FIT = Feed-In Tariff)

Original Enforcement Program

In addition to mandating specific resource types and timing as described above in the Legislative Background Section, SBX1-2 granted the Pasadena City Council authority to determine and adopt a Program of Enforcement through which the City Council would direct PWP's renewable resources procurement. Pursuant to Section F of the City's Program of Enforcement, on November 21, 2011, the City Council originally voted to designate all contracts for energy from renewable resource projects approved by the City Council prior to June 1, 2010, and listed in Table 4 below, as Category 1 renewable energy for the duration of their terms:

Table 4
Long Term Renewable Electric Energy Contracts
Executed Prior to June 1, 2010

Counterparty	Project	Technology	State	Contract Number	Date Signed	Term
Azusa Hydro	Azusa Hydro	Small Hydro	CA	Deed of Trust	Apr 16, 1905	Life of facility
Iberdrola Renewables	Solano Wind Project	Wind	CA	18242	Aug 15, 2003	20 years
Ormat	Heber South	Geothermal	CA	18802	Jun 23, 2005	25 years
Fortistar	West Covina LLC - Unit 1	LFGTE	CA	19237	Nov 20, 2006	10 years
Fortistar	West Covina LLC - Unit 2	LFGTE	CA	19238	Nov 20, 2006	10 years
Fortistar	Tulare Energy LLC	LFGTE	CA	19239	Nov 20, 2006	10 years
Ameresco	Chiquita Landfill	LFGTE	CA	18405	Mar 16, 2004	20 years
UPC Wind I	Milford I Wind	Wind	Utah	19488	Oct 01, 2007	20 years
Glendale Landfill	Scholl Canyon Landfill	LFGTE	CA	15609	May 05, 2010	1 year

** Landfill Gas to Energy*

Furthermore, on November 21, 2011, the City Council voted to designate all contracts for energy from renewable resource projects approved by the City Council from May 31, 2010 through December 5, 2011, as Category 1 renewable energy for the duration of their terms in accordance with the Program of Enforcement, as shown in Table 5.

Table 5
Agreements Executed Between June 1, 2010 and December 5, 2011

Counterparty	Project	Technology	State	Contract Number	Date Signed	Term
EDF Trading North Americ	Dos Rios	Biomethane Gas	TX	20655	May 26, 2011	10 years
Shell Q3 2011	La Rosita and High Desert	LFGTE	CA	15609	Jun 29, 2011	3 months
Sequent	Meadow Branch	Biomethane Gas	TN	20706	Jul 22, 2011	10 years
WMRE of Ohio-American,	Long Term	Biomethane Gas	OH	20707	Aug 15, 2011	10 years
WMRE of Ohio-American,	Short Term	Biomethane Gas	OH	20707	Sep 29, 2011	4 months

Regulatory Change

In its Sixth Edition of the Guidebook, the CEC recognized that renewable resources contracts executed prior to June 1, 2010 could be grandfathered and designated by local regulatory bodies as Category 1. Under the CEC's new procurement requirements, grandfathered renewable resources fall under a new "Category 0" category. Renewable resources categorized under the new Category 0 "count in full" towards fulfilling the RPS goals set in SBX1-2, and are subtracted from the total RPS requirement prior to splitting out the allocation to the other three Categories defined in SBX1-2. Only renewable resources procured after June 01, 2010 to fill the difference between the grandfathered resources and the remaining RPS goals (the remaining obligation herein referred to as the "Net Procurement Requirement") count towards meeting the specific Category 1 through 3 requirements. The effect on the City of Pasadena, which took early action to procure renewables prior to June 01, 2010, is that all of the contracts in Table 4 above must be transferred from Category 1 to Category 0, which will increase PWP's obligation to procure Category 1 resources. Category 1 resources are typically more expensive than alternative resources that might otherwise be available. However, in order to protect PWP ratepayers from possible non-compliance penalties assessed by the California Air Resources Board, PWP will continue to procure Category 1 renewable energy through both long and short term contracts to mitigate any risk of failing to comply with SBX1-2 as enforced by the CEC through the California Air Resources Board.

Compliance Strategy

PWP starts with a projected load forecast based on 2012 actual load, assuming modest load growth and projected energy efficiency savings. The PWP RPS Procurement Requirement is calculated by multiplying the load forecast for each year (in GWh[7]) by the required annual RPS percentage for that year to come up with the amount of

[7] GWh = Gigawatt-hours = one billion watt-hours

renewable energy (in GWh) required by year (the annual "RPS Total Procurement Requirement").

To be conservative, PWP will generally target a procurement amount that is approximately two percent higher than the calculated minimum RPS Procurement Requirement to protect against deviations in forecasted load and variable renewable resource performance. This extra two percent is not reflected in the following tables, which show only the ***MINIMUM*** RPS Procurement Requirement.

Next we subtract from the annual RPS Total Procurement Requirement the amount of energy that has already been procured by PWP by Category and Compliance Period. First are the existing, grandfathered contracts in Category 0. The resulting number is the RPS "Net Procurement Requirement."

PWP believes that its existing long-term biogas contracts, listed above in Table 5, continue to meet the criteria for Category 1 under the CEC regulations, e.g.:

- The contracts were executed after June 1, 2010;
- The electricity product is associated with generation from an eligible renewable energy resource that met the CEC's RPS eligibility requirements (rules) that were in effect when the original procurement contract or ownership agreement was executed by PWP;
- The associated RECs will be retired within 36 months of the date the electricity product is generated;
- The source(s) and the amount of biomethane under the biomethane procurement contract were reported to the Energy Commission before March 29, 2012 in connection with the application for RPS certification or precertification of the designated electrical generation facility.[8]

In addition to long term contracts, the 2012 Integrated Resource Plan Update also recommends that PWP purchase short term Renewable Energy Credits (RECs) as needed to meet the State's RPS requirements as well as the City's voluntary RPS goals. Thus far, PWP has relied minimally upon RECs as shown in Table 6. RECs fall into Category 3. PWP does not currently have any existing contracts that fit into the Category 2 category.

[8] See CEC "Renewables Portfolio Standard Eligibility Seventh Edition Commission Guidebook," April 2013, CEC-300-2013-005-ED7-CMF, Section IIC – Eligibility – Biomethane (pg. 10)

Table 6
RECs Purchases

Counterparty	RECs (MWh)[9]	Delivered Date	Term
Grey K Renewable Energy Ltd.	40,000	Dec 15, 2011	CY 2011
Lakeview Green Energy	22,426	Apr 05, 2012	CY 2011
Falls Creek H.P., L.P.	14,914	Apr 09, 2012	CY 2011
Falls Creek H.P., L.P.	15,045	Dec 05, 2012	CY 2012
Farmers Irrigation District, Hood River	16,683	Dec 05, 2012	CY 2012
Central Oregon Irrigation District	23,272	Dec 05, 2012	CY 2012

Balanced Portfolio

After determining the amount of energy already procured in each year and in each Category or bucket, PWP must determine the amount of RPS Procurement still required in each Category and year. This requires a calculation of the RPS procurement constraints reflected in Table 3: Category 1 Minimums and Category 3 Maximums (percentages multiplied by Net Procurement Requirement), and a comparison of annual energy procurement against these constraints to determine if future compliance will require additional purchases of Category 1 resources, or will limit purchases of Category 3 resources. The final calculation for SBX1-2 compliance is the net short evaluation: If the sum of existing contracts is less than the total required RPS Net Procurement Requirement energy for the year, the difference is the amount that must be procured, and allocated to the Categories according to the constraints.

In addition to balancing between Categories and Compliance Periods, PWP must consider the right mix of resources to fit PWP's portfolio and load as it evaluates RPS proposals. This means determining whether to select base-load projects, such as geothermal and landfill gas, or variable/peaking projects such as wind and solar. It also means weighing the right mix of contract terms (long vs. short) and counterparties to diversify and spread the risk of contract expiration and potential contract failure to ensure the best product and value for our ratepayers.

Because PWP is a relatively small municipal utility, it solicits most of its long-term renewable resources through open Requests for Proposals conducted by its joint powers authority, SCPPA[10]. This allows PWP (and other SCPPA members) to purchase the output of portions of multiple diverse projects and gain economies of scale, rather than limit the projects that they would be capable of participating in due to the comparatively small demand of most of the individual utilities. PWP anticipates dividing its outstanding RPS procurement between base-load and peaking renewable resources,

[9] MWh = Megawatt-hour = one million watt-hours
[10] SCPPA = Southern California Public Power Authority, which includes the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles Dept. of Water & Power, Pasadena, Riverside, Vernon, and the Imperial Irrigation District.

and seeking some long- and some mid-term contract lengths. In this case, PWP defines long-term as most likely twenty years or longer, and mid-term as five to ten years. PWP may also procure some RECs and/or Category 2 products with shorter tenures. These last products may be tied to market indices, whereas the other products are typically fixed-priced.

PWP's Voluntary Integrated Resource Plan RPS Strategy

Above and beyond the mandatory RPS Procurement amount required under SBX1-2, PWP's target of 40% by 2020 dictates the additional procurement of renewables. This incremental amount does not need to be in any particular Category. PWP looks for opportunities to procure incremental renewable resources that are economical, reliable, and a good fit for our portfolio of resources. PWP tends to favor resources that, all else being equal, are located within the State of California and CAISO SP15[11].

Summary of Procurement Plan

Table 7 displays PWP's Procurement Plan for meeting the SBX1-2 goals, assuming the resource designations (Categories) required under the CEC Enforcement Procedures. Table 8 displays PWP's plan for procuring incremental renewable resources to meet the City's voluntary RPS goal. These tables include the grandfathered (Category 0) resources listed in Table 4, the additional existing contracts listed in Table 5 (Category 1) and the short term REC purchases shown in Table 6 (Category 3). In addition to the executed transactions shown in the three tables above, PWP is in the midst of negotiating another future renewable energy project whose details cannot be disclosed at this stage of negotiations. However, a placeholder entry is included to demonstrate the project's effect on PWP's RPS goals.

[11] SP15 is the California Independent System Operator's South of Path 15 zone, where resources that are deliverable to Pasadena load, with the least congestion and losses, and the highest probability of providing local area reliability capacity, are most likely to be located. Assuming price parity, such resources would be the most valuable to PWP.

Table 7
PWP's SBX1-2 Procurement Plan

Pasadena Water and Power
SBX1-2 Mandatory RPS Procurement Plan (by Calendar Year)

	Compliance Period 1			Compliance Period 2			Compliance Period 3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020+
	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Estimated PWP Electric Sales (Load)	1,140.3	1,140.1	1,129.7	1,133.4	1,128.5	1,120.8	1,110.1	1,099.5	1,088.8	1,078.2
SBX1-2 Mandatory RPS Procurement Requirement (%)		20%		20%	20%	25%	27%	29%	31%	33%
SBX1-2 Mandatory RPS Requirement for PWP (GWh)		682.0		226.7	225.7	280.2	299.7	318.8	337.5	355.8
PWP SBX1-2 RPS Already Met w/Current Contracts (% of Load)		22.3%		18.3%	21.3%	21.7%	18.3%	18.6%	18.9%	19.3%
PWP SBX1-2 RPS Already Met w/Current Contracts (GWh)		761.5		207.5	240.8	243.7	202.7	204.2	205.7	207.8
Portfolio Content Category 0 (GWh)	169.1	125.9	126.1	126.1	126.1	126.3	83.9	83.9	83.9	84.1
Portfolio Content Category 1 (GWh)	33.3	99.9	167.0	81.4	114.8	117.4	118.9	120.4	121.9	123.7
Portfolio Content Category 2 (GWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Portfolio Content Category 3 (GWh)	14.7	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Future SBX1-2 Purchases (GWh)		0.0		19.2	0.0	36.5	97.0	114.6	131.8	148.0
Portfolio Content Category 1 (GWh)		0.0		0.0	0.0	0.0	43.0	55.9	68.4	80.1
Portfolio Content Category 2 (GWh)		0.0		4.1	0.0	13.4	32.4	35.2	38.1	40.8
Portfolio Content Category 3 (GWh)		0.0		15.1	0.0	23.1	21.6	23.5	25.4	27.2
Total SBX1-2 RPS Procurement GWh		761.5		226.7	240.8	280.2	299.7	318.8	337.5	355.8
Portfolio Content Category 0 (GWh)		421.0		126.1	126.1	126.3	83.9	83.9	83.9	84.1
Portfolio Content Category 1 (GWh)		300.2		81.4	114.8	117.4	161.9	176.2	190.3	203.8
Portfolio Content Category 2 (GWh)		0.0		4.1	0.0	13.4	32.4	35.2	38.1	40.8
Portfolio Content Category 3 (GWh)		40.3		15.1	0.0	23.1	21.6	23.5	25.4	27.2
SBX1-2 RPS Procurement Limits										
Portfolio Content Category 1 Minimum (GWh) ≥		130.5		65.4	64.8	100.0	161.9	176.2	190.3	203.8
Portfolio Content Category 3 Maximum (GWh) ≤	14.7	25.5	25.0	15.1	14.9	23.1	21.6	23.5	25.4	27.2

Table 8 – PWP's Voluntary RPS Procurement Plan

Pasadena Water and Power
Pasadena Voluntary RPS Procurement Plan (by Calendar Year)

	Compliance Period 1			Compliance Period 2			Compliance Period 3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020+
	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Estimated PWP Electric Sales (Load)	1,140.3	1,140.1	1,129.7	1,133.4	1,128.5	1,120.8	1,110.1	1,099.5	1,088.8	1,078.2
Procurement Plan to Meet PWP Voluntary RPS Target (%)	24.5%	24.6%	25.9%	26.0%	27.5%	30.0%	32.5%	35.0%	37.5%	40.0%
Pasadena Voluntary RPS Target (GWh)	279.7	280.8	293.1	294.7	310.3	336.2	361.0	385.0	408.8	431.4
PWP Voluntary RPS Already Met w/Current Contracts (% of Load)	24.5%	24.6%	25.9%	18.3%	21.3%	21.7%	18.3%	18.6%	18.9%	19.3%
PWP Voluntary RPS Already Met w/Current Contracts (GWh)	279.7	280.8	293.1	207.5	240.8	243.7	202.7	204.2	205.7	207.8
Required Future SBX1-2 Procurement (GWh)	0.0	0.0	0.0	19.2	0.0	36.5	97.0	114.6	131.8	148.0
Additional Future Purchases for PWP Voluntary RPS (GWh)	0.0	0.0	0.0	68.0	69.5	56.0	61.3	66.2	71.3	75.5
Total Voluntary RPS Procurement GWh	279.7	280.8	293.1	294.7	310.3	336.2	361.0	385.0	408.8	431.4

Table 9 – PWP RPS Contract Details

Pasadena Water and Power Procurement Plan (by Calendar Year)	Compliance Period 1			Compliance Period 2			Compliance Period 3			
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020+
	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
Portfolio Content Category 0 - Grandfathered										
Executed Energy Contracts										
Azusa Hydro	10.4	4.5	4.5	4.5	4.5	4.5	4.47	4.47	4.47	4.48
Iberdrola High Winds	14.2	14.0	14.1	14.1	14.1	14.1	14.05	14.05	14.05	14.09
Minnesota Methane LFG	46.8	42.4	42.2	42.2	42.2	42.2				
Ormat Heber South Geothermal	16.9	16.4	16.4	16.4	16.4	16.4	16.37	16.37	16.37	16.42
Milford Wind Phase 1	10.4	11.4	11.4	11.4	11.4	11.5	11.43	11.43	11.43	11.46
Short Term Contracts(Glendale LFG)	34.8									
Chiquita Canyon LFG (Ameresco)	35.6	36.7	37.1	37.1	37.1	37.2	37.05	37.05	37.05	37.16
Windsor Reservoir Solar		0.4	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Subtotal:	169.1	125.9	126.1	126.1	126.1	126.3	83.9	83.9	83.9	84.1
Percentage of Load:	15%	11%	11%	11%	11%	11%	8%	8%	8%	8%
Portfolio Content Category 1										
Biomethane (GWh equivalent)										
EDF	7.7	13.0	12.5	12.8	13.2	13.5	13.8	13.8	13.8	13.8
Sequent	0.5	22.3	25.4	27.7	28.8	31.1	32.6	34.3	35.9	37.7
Waste Management	10.1	39.6	40.9	40.9	40.9	41.0	40.9	40.9	40.9	41.0
Silverado Solar					31.9	31.8	31.6	31.4	31.3	31.2
Future Electric Energy										
Contracts in Negotiations						45.7	68.0	67.6	67.3	67.2
Other				0.0	0.0	0.0	0.0	0.0	1.1	12.9
Short Term Contracts	15.0		31.0							
Short Term Purchases										
Glendale			14.8							
EDF		21.4	22.0							
Other		3.7	20.4							
Subtotal:	33.3	99.9	167.0	81.4	114.8	163.1	186.8	188.0	190.3	203.8
Percentage of Load (adjusted for PCC0):	3%	10%	17%	8%	11%	16%	18%	19%	19%	20%
Percentage of Procurement Req.	15%	44%	74%	36%	51%	58%	62%	59%	56%	57%
Portfolio Content Category 2										
Future Purchases				4.1	0.0	13.4	32.4	35.2	38.1	40.8
Portfolio Content Category 3										
RECs and/or TRECs										
Grey K Rec	40.0									
LW RECS	22.4									
FC RECS	14.9	15.0								
Farmers Irrigation District, Hood River		16.7								
Central Oregon Irrigation District		23.3								
Future Purchases			0.0	15.1	0.0	23.1	21.6	23.5	25.4	27.2
Subtotal:	77.3	55.0	0.0	15.1	0.0	23.1	21.6	23.5	25.4	27.2
Percentage of Load (adjusted for Category 0):	8%	5%	0%	1%	0%	2%	2%	2%	3%	3%
Percentage of Procurement Req.	34%	24%	0%	7%	0%	8%	7%	7%	8%	8%

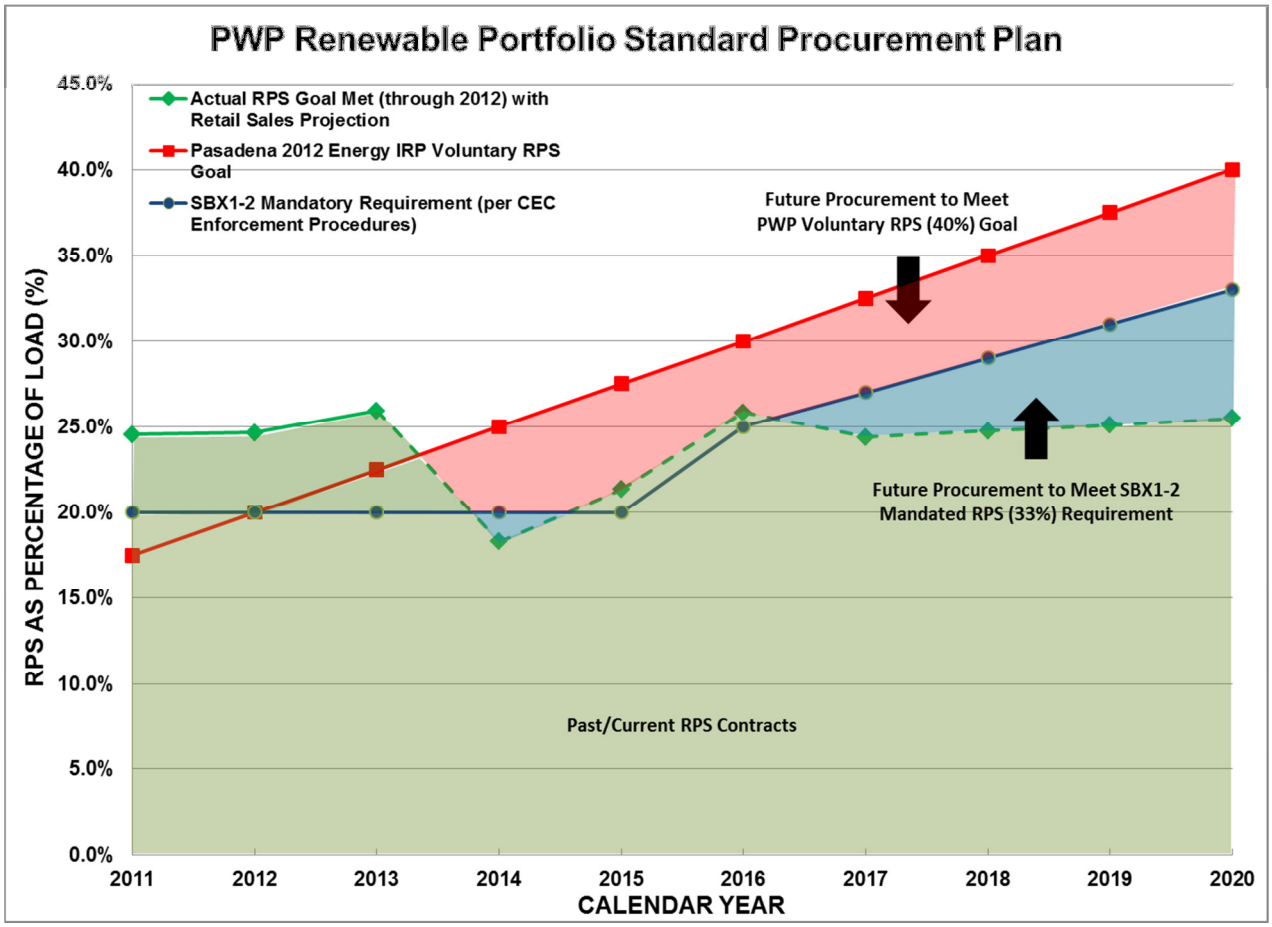


Figure 4
Projected RPS Procurement

Procurement Plan Limitations and Relief

Section G of the City's Program of Enforcement recognizes that situations beyond PWP's control may arise and prevent PWP from fulfilling the goals of SBX1-2 in a timely, economic, and/or socially responsible manner, or at all. However, this Plan meets the four criteria of Section G, as listed below:

1. Adequate transmission is available to comply with this Plan;
2. System reliability is maintained;
3. Incorporates PWP's best efforts to procure adequate supplies of renewable energy; and
4. Retail electric rates meet PWP's revenue requirements and are equal to, or below, rates approved by the City Council.

This Plan does not include a recommendation for cost limitations at this time. Should conditions change such that any of these criteria cannot be met, staff will return to the City Council with an adjusted Procurement Plan for consideration.