



Glendale Water & Power Renewable Portfolio Standard, Clean Energy, and Power Content Label

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Renewable Portfolio Standard and Clean Energy Overview

- California's Renewable Portfolio Standard Program Was Established in 2002 and Based on Percentage of Electricity Retail Sales Served By Renewable Resources
- California Energy Commission is Responsible For the Certification of Eligible Renewable Energy Resources and Adopting Enforcement Regulations
 - SB1078 (2002): 20% By 2017
 - SB350 (2015): 50% By 2030; Interim 3-Year Target Compliance Periods; 65% of RPS Procurement Derived from Long-Term Contracts of 10 or More Years
 - SB100 (2018): 60% By 2030; 100% Carbon-Free Resources By 2045



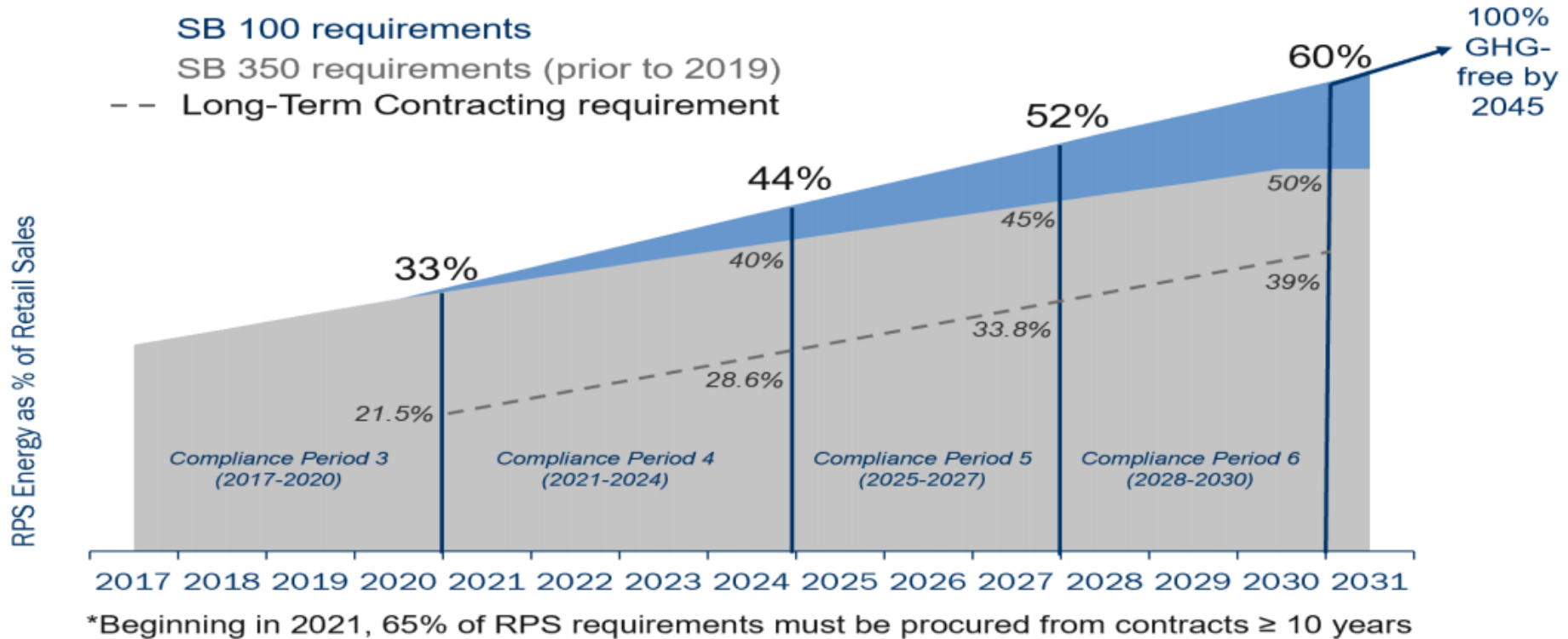
Renewable Energy Versus Clean Energy

What is the Difference Between Renewable Energy and Clean Energy?

- Renewable Energy is Energy That Comes From Resources That Are Naturally Replenished Such as Sunlight, Wind, Water, Biogas (e.g., Scholl Canyon), and Geothermal Heat
- Clean Energy is Carbon-Free Energy That Creates Little to No Greenhouse Gas Emission.
 - Nuclear Power and Large Hydropower Are Not Considered Renewable By California Regulations



RPS Compliance Periods



City of Glendale

Power Content Percentage 2008-2019

City of Glendale				Compliance Period 1			Compliance Period 2			Compliance Period 3		
Calendar Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Eligible Renewable	14%	22%	21%	15%	19%	28%	45%	34%	47%	37%	36%	36%
Biomass and Biowaste	7%	7%	4%	1%	7%	13%	15%	10%	12%	15%	11%	20%
Geothermal	2%	2%	2%	2%	1%	0%	4%	1%	2%	2%	2%	2%
Eligible Hydroelectric	1%	<1%	2%	3%	3%	2%	3%	3%	8%	3%	6%	2%
Solar	<1%	<1%	<1%	<1%	<1	0%	<1	0%	0%	0%	2%	0%
Wind	4%	8%	8%	9%	8%	12%	24%	20%	26%	17%	15%	12%
Coal	36%	38%	30%	37%	24%	29%	10%	4%	5%	6%	4%	3%
Large Hydroelectric	9%	5%	5%	5%	5%	6%	5%	5%	10%	13%	9%	9%
Natural Gas	34%	31%	35%	23%	30%	26%	31%	37%	29%	27%	29%	33%
Nuclear	6%	7%	7%	7%	8%	8%	8%	7%	7%	7%	6%	8%
Other	<1%	2%						0%	1%	5%	6%	0%
Unspecified Sources of Power			7%	13%	14%	5%		13%	1%	5%	10%	10%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

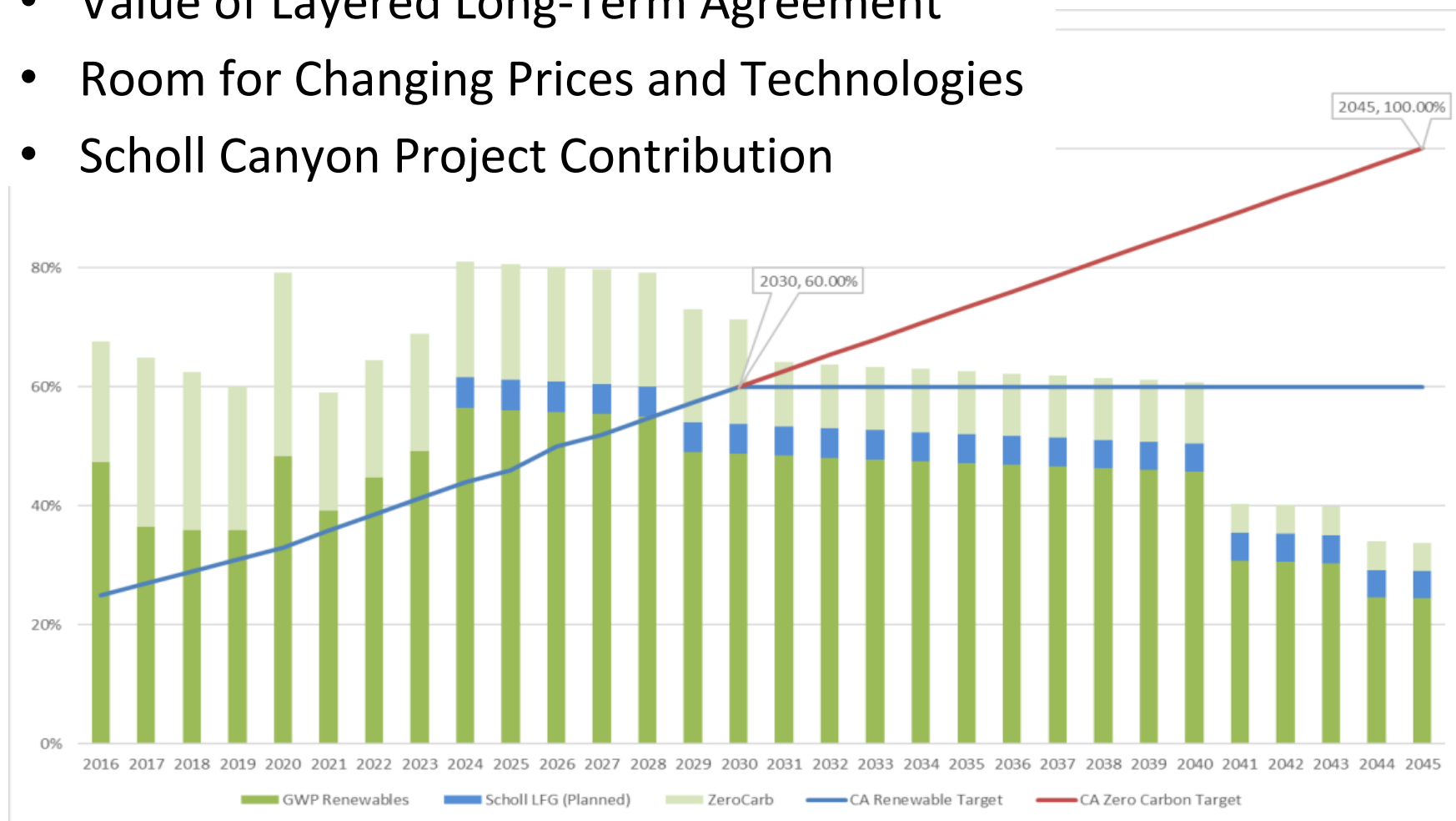
Compliance Period III	RPS Procurement Target %	Applied to Compliance
2017	27%	27.0%
2018	29%	29.4%
2019	31%	32.3%
2020	33%	33.6%

Compliance Period 3
With 33% Required RPS
Target

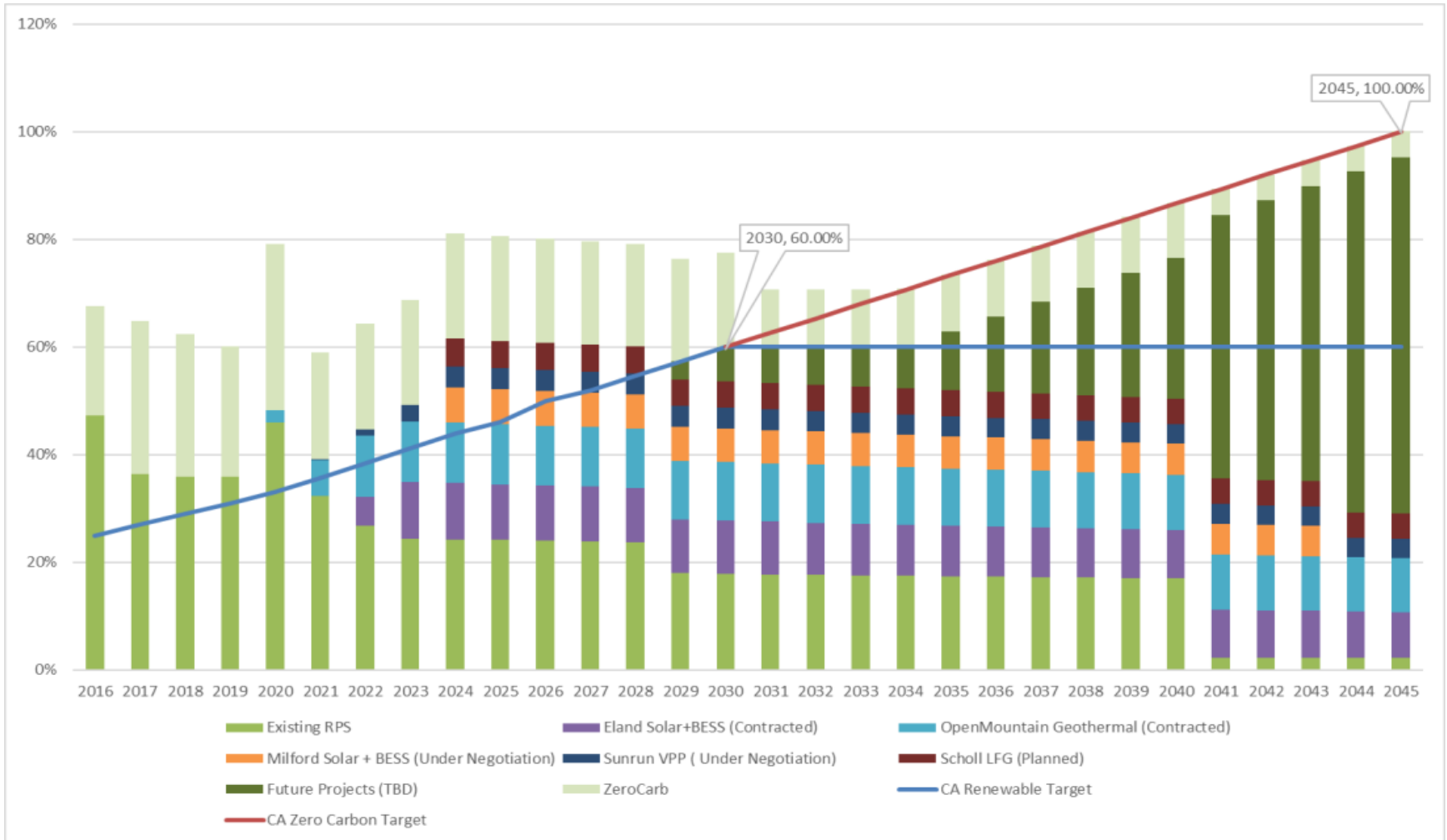


Renewable and Clean Resources

- Value of Layered Long-Term Agreement
- Room for Changing Prices and Technologies
- Scholl Canyon Project Contribution



Road Map to 100% Clean



Mitigation and Compliance Strategy

1. Meet Compliance Period Soft Targets
2. Meet Integrated Resource Plan (IRP) Goals
3. Enter Into Long-Term Renewable and Clean Energy Agreements
 - Executed Projects
 - Future Projects (Type of Resource)
4. Manage Excess RECs
5. Utilize PowerSimm Modeling Tool
6. Continual Portfolio Analysis and Studies
7. Virtual Power Plant



Risks and Concerns

- Regulatory Changes and Maintaining Culture of Compliance
- Excess Procurement Unused
- Substitute Energy Uncertainty
- Transmission Limitations/Lack of
- Retail Load Uncertainty
- Over/Under Renewable/Clean Energy Procurement (Cost/Penalties)
 - \$50 Per Out of Compliance REC; \$250K Penalty For 5000 MWh Shortfall
- Clean Energy Programs Unreliable
- Scholl Canyon Renewable Project Completion Rate



City of Glendale

Power Content Label 2018/2019

2018 POWER CONTENT LABEL		
City of Glendale		
ENERGY RESOURCES	Power Mix	2018 CA Power Mix**
Eligible Renewable	36%	31%
Biomass & Biowaste	11%	2%
Geothermal	2%	5%
Eligible Hydroelectric	6%	2%
Solar	2%	11%
Wind	15%	11%
Coal	4%	3%
Large Hydroelectric	9%	11%
Natural Gas	29%	35%
Nuclear	6%	9%
Other	6%	<1%
Unspecified sources of power*	10%	11%
TOTAL	100%	100%

* "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources.

** Percentages are estimated annually by the California Energy Commission based on the electricity generated in California and net imports as reported to the Quarterly Fuel and Energy Report database and the Power Source Disclosure program.

2019 POWER CONTENT LABEL		
City of Glendale		
ENERGY RESOURCES	Power Mix	2019 CA Power Mix
Eligible Renewable¹	35.9%	31.7%
Biomass & Biowaste	20.2%	2.4%
Geothermal	1.9%	4.8%
Eligible Hydroelectric	1.5%	2.0%
Solar	0.0%	12.3%
Wind	12.3%	10.2%
Coal	3.3%	3.0%
Large Hydroelectric	9.1%	14.6%
Natural Gas	32.9%	34.2%
Nuclear	8.4%	9.0%
Other	0.1%	0.2%
Unspecified sources of power²	10.3%	7.3%
TOTAL	100%	100%
Percentage of Retail Sales Covered by Retired Unbundled RECs³	2.2%	

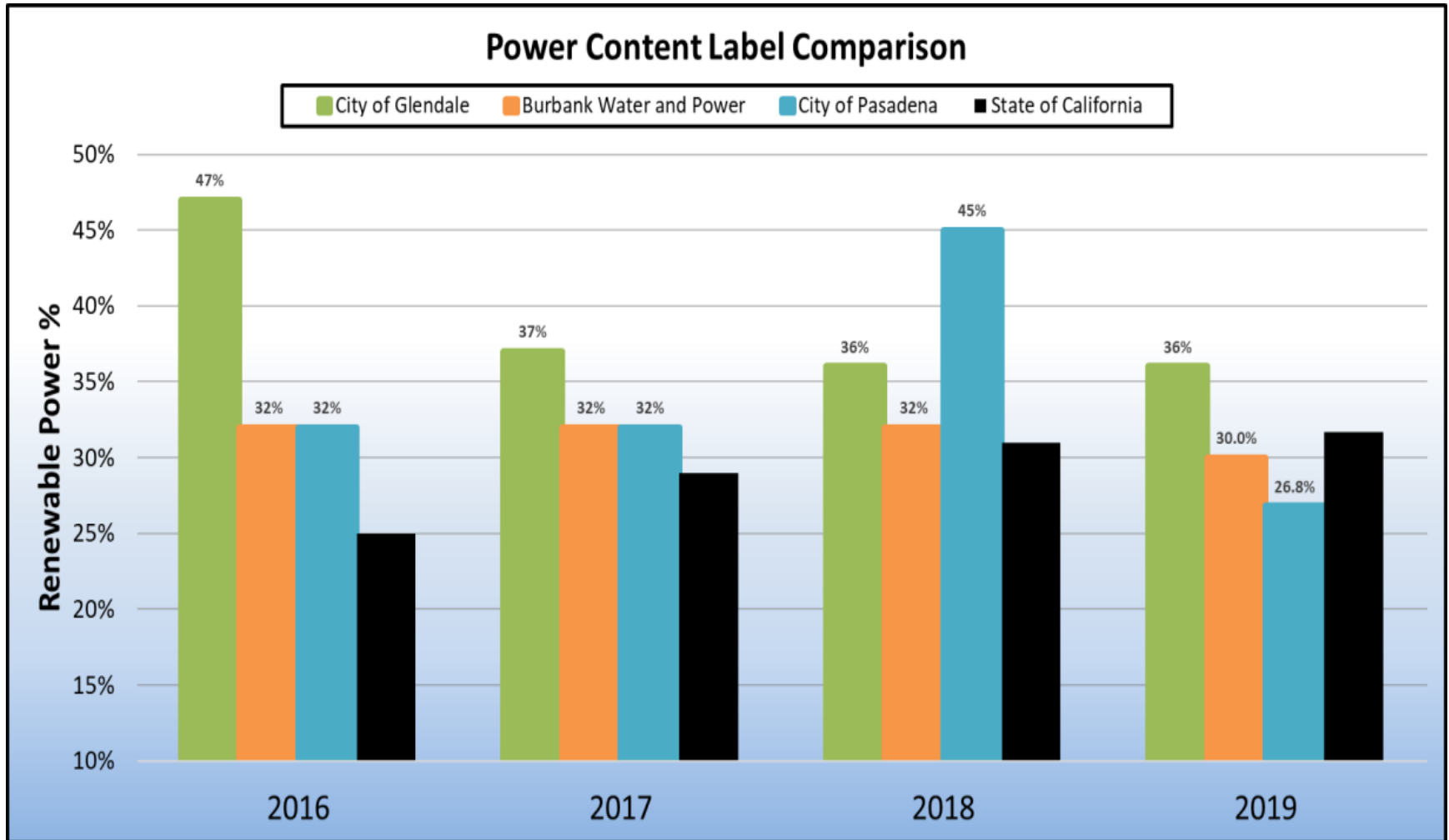
¹The eligible renewable percentage above does not reflect RPS compliance, which is determined using a different methodology.

²Unspecified power is electricity that has been purchased through open market transactions and is not traceable to a specific generation source.

³Renewable energy credits (RECs) are tracking instruments issued for renewable generation. Unbundled renewable energy credits (RECs) represent renewable generation that was not delivered to serve retail sales. Unbundled RECs are not reflected in the power mix or GHG emissions intensities above.



City of Glendale and Neighbors



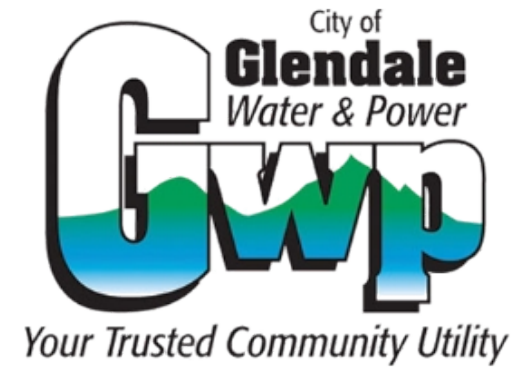
City of Pasadena

Power Content Label 2016-2019

City of Pasadena					
Calendar Year	▼ 2016	▼ 2017	▼ 2018	▼ 2019	▼
Eligible Renewable	32%	32%	45%	26.8%	
Biomass and Biowaste	16%	2%	13%	6.9%	
Geothermal	2%	3%	2%	1.0%	
Eligible Hydroelectric	1%	3%	6%	0.0%	
Solar	5%	12%	10%	9.4%	
Wind	8%	12%	14%	10.3%	
Coal	40%	31%	33%	41.4%	
Large Hydroelectric	4%	3%	3%	4.5%	
Natural Gas	12%	11%	7%	11.4%	
Nuclear	7%	6%	6%	8.5%	
Other	0%	0%	0%	0.0%	
Unspecified Sources of Power	5%	11%	6%	7.4%	
Total	100%	100%	100%	100%	
% of Retail Sales Covered by Retired Unbundled RECs				7.7%	

- Pasadena Utilized Renewable Energy Credits (PCC3) in 2018 Resulting in Increase Renewable Percentage. It was Excluded From the Power Mix Calculation in 2019. PCC3 RECs Provides an Economical Compliance Mechanism as Part of the Renewable Portfolio Standard.





Thank You!

