



3 P H A S E S
ENERGY SERVICES

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Buying and Selling Solar Renewable Energy Credits in California

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Who is 3 Phases Energy?

Our Vision:

3 Phases' vision is to create or stimulate the creation of 100% renewable energy in our lifetimes

Our Operations:

Offices in Los Angeles, San Francisco, and Portland OR
40 generation facilities in 15 states
25,000 customers in 26 states



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Who is 3 Phases Energy?

Our Services:

UTILITY PARTNERSHIPS

Utility Green
Power Program
Design and
Management

GREEN CERTIFICATES

Retail and
Wholesale Sales of
Green Certificates

GREEN DIRECT

Direct Access
100% Renewable
Retail Electricity
Sales

GREEN ONSITE

Onsite Renewable
Generation and
Efficiency
Programs

Preface: How are PV Projects Funded in CA?



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	<u>Private</u>		<u>Public</u>	
	\$	%	\$	%
Rebate	\$699,125	46%	\$699,125	46%
Tax Credits	\$ 82,838	5%	\$ -	0%
Depreciation	\$251,149	16%	\$ -	0%
Customer Cost	\$494,389	32%	\$828,375	54%
Simple Payback	10 years		20 years	
ROI	11%		4%	

Assumptions:

235 kWp/200 kWcec Project
 329 MWh Annual PV Production
 \$6.50/kWp Turnkey Cost
 0% Finance Cost
 \$3.50/Wcec Rebate
 2005 Federal & CA Tax Law
 \$.125 Medium Commercial Utility Rate



Preface: The CA PV Funding Challenge

- The CA rebate programs (especially the Self Generation Incentive Program and LADWP solar program) are struggling to support projects in the face of driving demand.
 - The incentive programs do not intend to support PV forever; transitions to pure markets are expected—and fairly soon.
 - Rebates ratcheted down
 - End of program dates to be set
- Existing technologies are unlikely to become 50% cheaper over the next 5-10 years.
- Module prices are climbing, installation costs will not drop substantially unless module efficiency increases.
- Barring fundamental shifts in technology, **new sources of funding must be found** to sustain and grow the PV market in CA.



Preface: What are RECs?

Renewable Energy Credit:

1 REC = 1 MWh (1,000 kWh) generated by a qualified renewable generating asset (wind, solar electric, biomass, biogas, small scale hydro, geothermal, etc.)

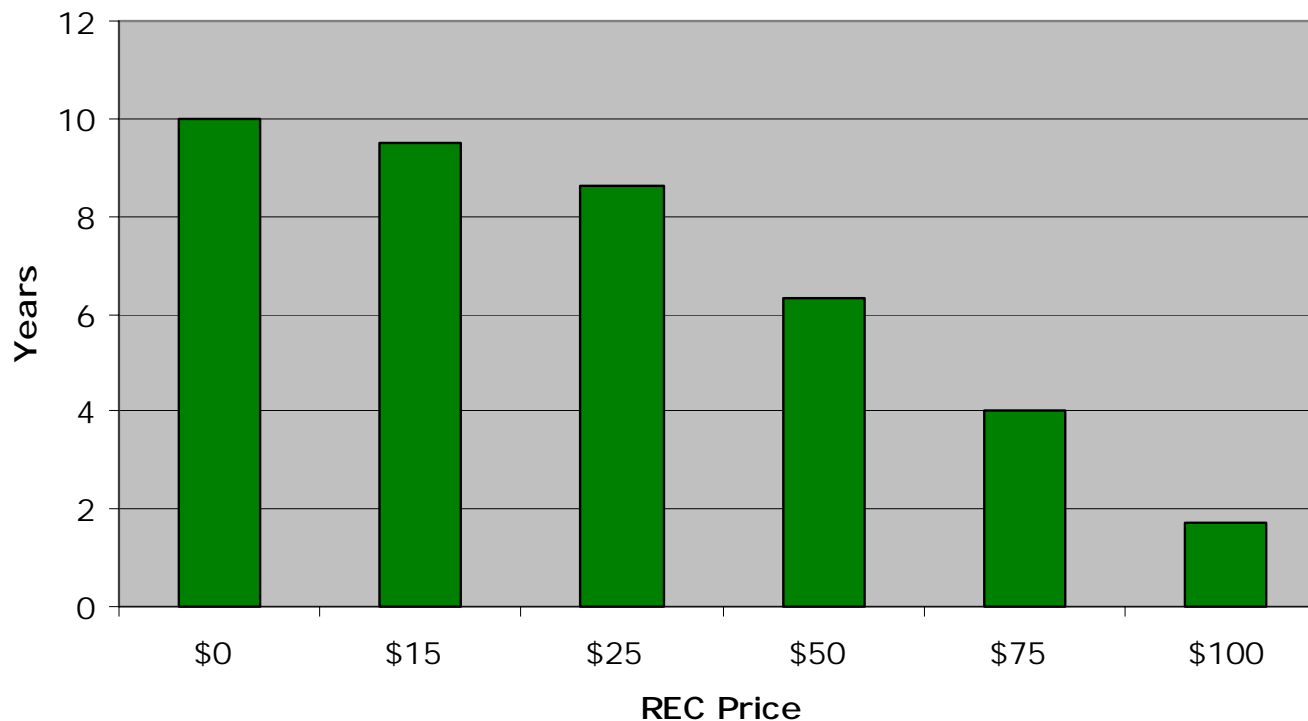
Also known as: tags, certs, Green Certificates, and tickets

Preface: The Potential of Solar RECs as a Funding Mechanism



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Effect on Payback, REC Values



Assumptions:

Commercial customer

NPV of REC cash flow over 25 years at 6.5%



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Introduction

Solar RECs: Filling the CA Funding Gap (State of the Market, Challenges, and Opportunities)



CA REC Market Prices

- REC price varies based upon source
 - Highest to lowest (in general):
 - Solar
 - Wind
 - Biogas/Biomass/Geothermal
- Solar RECs are currently \$15-\$50 wholesale, based upon location, type of customer, and attractiveness of project.



Outlets for Solar RECs

- 3 Phases buys solar RECs on the market for 3 Phases utility green pricing program partnerships:
 - PaloAltoGreen (City of Palo Alto Utilities, CA)
 - *Santa Clara Green Power* (Silicon Valley Power/Santa Clara, CA)
 - Blue Sky (PacifiCorp, Oregon)
 - In discussions/negotiations/bidding with several others



- Solar RECs are sold in smaller quantities to a small number of retail customers.



Solar REC Value Drivers

- Proximity to “Customer” (Green Pricing Program Service Territory)
- Uniqueness/Overall Attractiveness of Project (Technology, Profile, etc.)
- Willingness to Facilitate PR/Marketing Initiatives (Press Release, Photography, Facility Information)
- Ease of Contracting (System Size, Experience of Vendor)
- Type of System Owner (Public vs. Private)



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PaloAltoGreen Program Overview



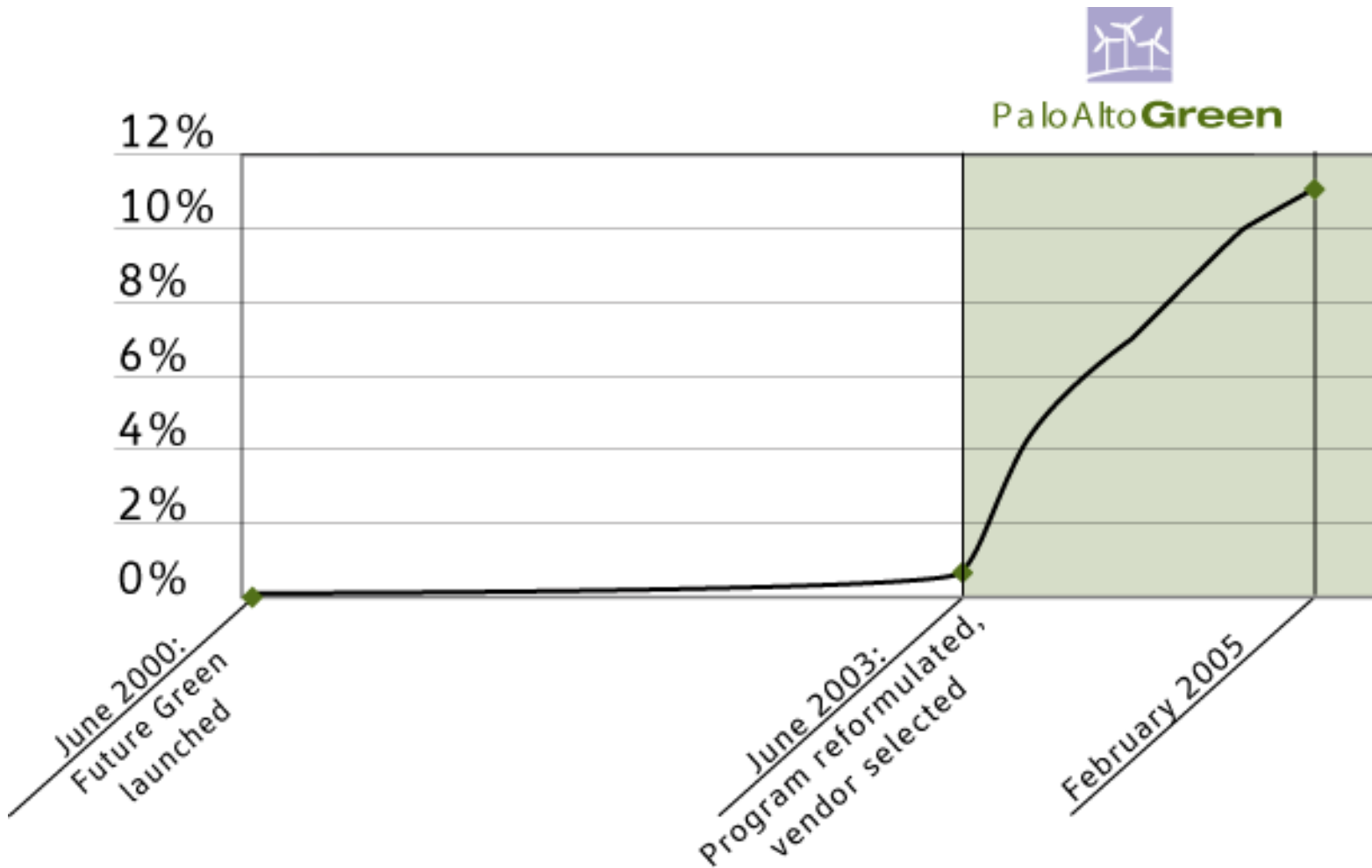


PaloAltoGreen Program Overview

- Where does the Renewable Energy Come From?
 - Wind (97.5%) and Solar Power (2.5%)
 - Wind: Newly-constructed wind turbine facilities within the Oregon and Washington;
 - Solar: New solar power sources within California, ideally in or near Palo Alto
 - 100% New Resources, Green-e Certified
- Availability
 - Available to all CPAU residential, commercial, industrial, and institutional customers
- Cost
 - Residential Pricing for the Average Palo Alto Household, \$15 per MWh = \$9.75 premium per month (650 kWh), the cost of a medium pizza
- History
 - Future Green Launch (Earth Day 2000): 200 Participants
 - Reformulate and Partner: City of Palo Alto Utilities and 3 Phases Energy
 - PaloAltoGreen Launched: June 2003 (20 months ago)



PaloAltoGreen Participation



Select Projects Supported by Solar RECs



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- In CA:
 - Alameda County Fairgrounds (1 MW)
 - Former PVUSA test center (800 kW)
 - Small commercial customer in East Bay (54 kW)
 - Escondido Elementary, Palo Alto (20 kW)*
 - Haman Elementary, Santa Clara (5 kW)
- In Oregon:
 - Pepsi of Klamath Falls, Oregon (172 kW)
 - Jackson County Amphitheater (20 kW)*
 - Selma Community (6 kW)*
 - Montessori School of Beaverton (6 kW)*

*Under construction or development.



Logistics

- Contract for purchase and sale
- Payments made up-front or ongoing
- Average term three years
- Green-e Generator Attestation form quarterly
- Photography and marketing support materials



Growing the Solar REC Market

- While by far the leading outlet for CA solar RECs, 3 Phases trades a small percentage of the total potential solar REC market
 - Market support in single digit % of *new* solar capacity, small fraction of total solar capacity
- Future market growth to come from:
 - RPS with solar content requirement (none for CA, unlike other states)
 - States with solar RPS have brisk solar tag markets with values multiples of CA (NJ)
 - Green pricing programs
 - Community choice aggregation
 - Direct Access



The CA Ownership Challenge

- For RECs to be viable, the issue of ownership must be resolved once and for all.
 - Currently in question in CA at the CPUC level for SGIP projects.
 - IOUs argue that they own the RECs, *but*
 - SGIP contracts do not transfer REC ownership from the system owner to any other party.
- Should REC purchases from system owners become illegal, 3 Phases will modify its practices for supporting solar in California.
- This issue needs to be clearly resolved ASAP.



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Closing and Questions



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