



# Need for Feed-In Tariff (FIT) to stimulate Wholesale Distributed Generation (WDG) in California

Craig Lewis  
VP of Government Relations  
GreenVolts  
415-963-4249 office  
[craig.lewis@greenvolts.com](mailto:craig.lewis@greenvolts.com)

08-IEP-1

**DOCKET**

**03-RPS-1078**

DATE OCT 01 2008

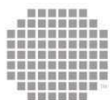
RECD. OCT 16 2008

1 October 2008

- ▶ 20% of retail electricity sales by 2010
  - ▶ Contracts do not satisfy the requirement
  - ▶ Achieving 20% by 2010 will guide the way to 33% by 2020
  
- ▶ Transmission represents a 7-8 year delay to most transmission-interconnected projects
  
- ▶ There is a significant programmatic gap in support for renewables in California
  - ▶ CSI/SGIP support 1MW-and-under, behind-the-meter
  - ▶ RPS is geared around large transmission-interconnected projects
  - ▶ No viable support for wholesale distribution-interconnected

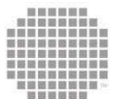
20% by 2010

The most urgent RPS challenge is achieving 20% of sales by 2010

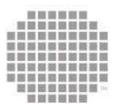
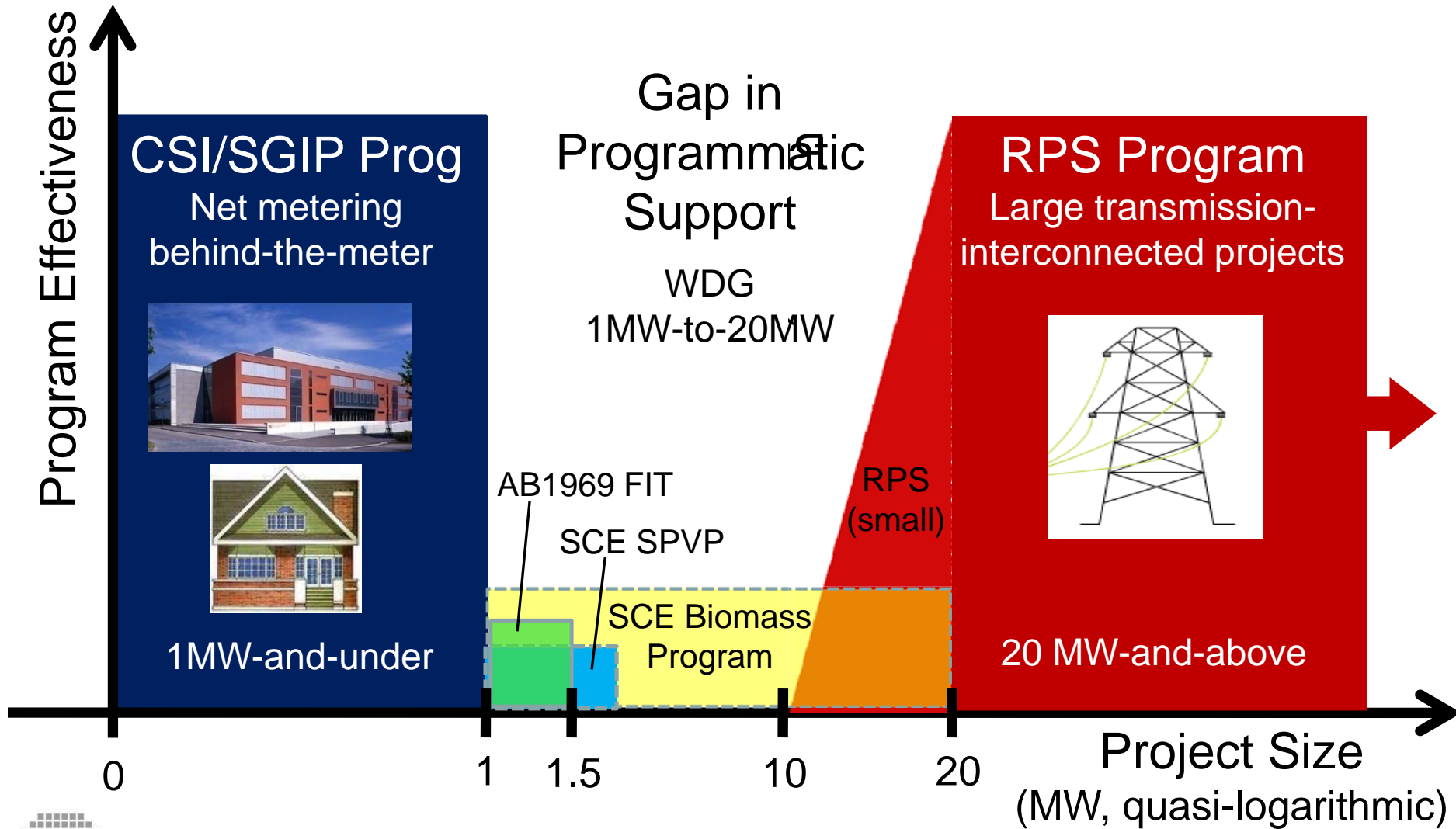


- ▶ WDG = Wholesale Distributed Generation
  - ▶ Wholesale
  - ▶ 20MW-and-under
  - ▶ Distribution-interconnected
  
- ▶ WDG provides significant Locational Benefits (LBs) value
  - ▶ On average in California, distribution-interconnected generation has a value boost of more than 35% over transmission-interconnected
    - ▶ Per detailed analysis from the CPUC-commissioned E3 Cost-Effectiveness Model
  
- ▶ RETI indicates hundreds of GWs of WDG available in California
  - ▶ RETI draft Phase 1B report identified 27.5GW of PV with significant constraints: 20MW PV projects only, co-located with distribution substations that had ample non-sensitive land available (160 acres per project)

**WDG provides an average value boost of at least 35% over MPR**



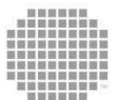
# Programmatic Coverage Gap



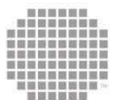
- ▶ Pricing that is fair to ratepayers and to developers
  - ▶ Value-based: MPR + Locational Benefits (LBs)
  - ▶ Cost-based: 10% IRR unlevered, pre-tax return at 70% resource level
  
- ▶ Standard-offer, must-take contract
  - ▶ This will save \$1 million in parasitic transaction costs per project by avoiding solicitation/proposing, negotiating, and contracting costs for both the developer and the utility
  
- ▶ Preempt mixing with CSI/SGIP
  - ▶ FIT facilities use a dedicated meter that is separate from a retail meter

**FIT for WDG**

**The perfect solution to the urgent RPS challenges**



# Reference



# Value boost of LBs to 2008 MPR

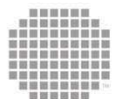
## Value boost of Locational Benefits to MPR (\$/MWh) (20-Year MPR Starting in 2009)

Issue	Fixed	Variable	Total	Increase*	% Change	Cumulative
<b>Adopted 2007 MPR</b>	\$27	\$70	\$97	NA	NA	NA
<b>Proposed 2008 MPR with GreenVolts Locational Adjustments</b>						
Avoided Distribution Line Losses (primary)	\$29	\$73	\$102	\$5	5%	5%
Avoided Distribution Investment	\$29	\$89	\$118	\$16	17%	22%
Avoided Transmission Investment	\$29	\$102	\$131	\$13	13%	35%
Avoided Transmission Congestion	(to be determined based on MRTU values)					

### Notes:

- 1) Increase in T&D avoided costs is based upon average of E3 model values for Edison's service territory. Solar profile values range from \$12.89 to \$13.27 per MWh for Transmission, and from \$9.79 to \$23.84 per MWh for Distribution.
- 2) Project assumptions include lifespan from 2008 - 2027, 2.5% inflation, 8.93% discount rate, and 2008 \$.
- 3) Avoided T&D are based on a solar photovoltaic (PV) output profile from a south-facing flat-plate PV system at a 38.5 degree tilt located in Sacramento, CA.
- 4) For SCE, primary voltages are 2kV to 50kV, and a QF interconnecting at primary voltage receives the primary WDAT loss factor, regardless of the specific location that it interconnects; as the loss factor is an average number over the entire primary distribution system. There is no calculation to determine exactly how a specific primary distribution loss compare to the average.

On average, in California, Distribution-interconnected generation is worth at least 35% more than Transmission-interconnected generation

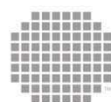


# Locational Benefits: Avoided T&D

## E3 Model T&D Values (Levelized 20-year in 2008\$)

Utility	Division	Transmission Distribution				Transmission				Distribution			
		Baseload Profile		Solar Profile		Baseload Profile		Solar Profile		Baseload Profile		Solar Profile	
		\$/kW-year	\$/MWh	\$/kW-year	\$/MWh	\$/kW-year	\$/MWh	\$/kW-year	\$/MWh	\$/kW-year	\$/MWh	\$/kW-year	\$/MWh
PG&E	Central Coast	\$46.07	\$5.26	\$35.70	\$24.60	\$1.55	\$0.18	\$1.20	\$0.83	\$44.51	\$5.08	\$34.50	\$23.77
	De Anza	\$58.67	\$6.70	\$46.95	\$32.35	\$1.55	\$0.18	\$1.24	\$0.86	\$57.11	\$6.52	\$45.71	\$31.49
	Diablo	\$55.62	\$6.35	\$44.51	\$30.67	\$1.55	\$0.18	\$1.24	\$0.86	\$54.06	\$6.17	\$43.27	\$29.81
	East Bay	\$11.57	\$1.32	\$8.97	\$6.18	\$1.55	\$0.18	\$1.20	\$0.83	\$10.02	\$1.14	\$7.77	\$5.35
	Fresno	\$48.24	\$5.51	\$37.08	\$25.55	\$1.55	\$0.18	\$1.19	\$0.82	\$46.68	\$5.33	\$35.89	\$24.72
	Kern	\$30.87	\$3.52	\$23.73	\$16.35	\$1.55	\$0.18	\$1.19	\$0.82	\$29.32	\$3.35	\$22.54	\$15.53
	Los Padres	\$46.82	\$5.34	\$37.47	\$25.81	\$1.55	\$0.18	\$1.24	\$0.86	\$45.26	\$5.17	\$36.23	\$24.96
	Mission	\$70.36	\$8.03	\$54.53	\$37.57	\$1.55	\$0.18	\$1.20	\$0.83	\$68.80	\$7.85	\$53.32	\$36.74
	North Bay	\$47.46	\$5.42	\$36.78	\$25.34	\$1.55	\$0.18	\$1.21	\$0.83	\$45.90	\$5.24	\$35.57	\$24.51
	North Coast	\$64.43	\$7.35	\$40.41	\$27.84	\$1.55	\$0.18	\$0.97	\$0.67	\$62.87	\$7.18	\$39.43	\$27.17
	North Valley	\$80.30	\$9.17	\$63.33	\$43.63	\$1.55	\$0.18	\$1.23	\$0.84	\$78.74	\$8.99	\$62.10	\$42.78
	Peninsula	\$20.90	\$2.39	\$16.19	\$11.16	\$1.55	\$0.18	\$1.20	\$0.83	\$19.34	\$2.21	\$14.99	\$10.33
	Sacramento	\$60.93	\$6.96	\$48.05	\$33.11	\$1.55	\$0.18	\$1.23	\$0.84	\$59.37	\$6.78	\$46.83	\$32.26
	San Francisco	\$16.89	\$1.93	\$13.09	\$9.02	\$1.55	\$0.18	\$1.20	\$0.83	\$15.34	\$1.75	\$11.89	\$8.19
	San Jose	\$44.65	\$5.10	\$35.74	\$24.62	\$1.55	\$0.18	\$1.24	\$0.86	\$43.10	\$4.92	\$34.49	\$23.76
Sierra	\$66.84	\$7.63	\$52.71	\$36.32	\$1.55	\$0.18	\$1.23	\$0.84	\$65.29	\$7.45	\$51.49	\$35.47	
Stockton	\$69.90	\$7.98	\$55.94	\$38.54	\$1.55	\$0.18	\$1.24	\$0.86	\$68.34	\$7.80	\$54.69	\$37.68	
Yosemite	\$42.73	\$4.88	\$34.20	\$23.56	\$1.55	\$0.18	\$1.24	\$0.86	\$41.18	\$4.70	\$32.96	\$22.70	
SCE	Dominguez Hills	\$45.91	\$5.24	\$32.93	\$22.69	\$26.09	\$2.98	\$18.71	\$12.89	\$19.82	\$2.26	\$14.21	\$9.79
	Foothills	\$59.90	\$6.84	\$42.96	\$29.59	\$26.09	\$2.98	\$18.71	\$12.89	\$33.80	\$3.86	\$24.24	\$16.70
	Santa Ana	\$55.19	\$6.30	\$39.58	\$27.27	\$26.09	\$2.98	\$18.71	\$12.89	\$29.10	\$3.32	\$20.87	\$14.38
	SCE Rural	\$72.95	\$8.33	\$53.87	\$37.11	\$26.09	\$2.98	\$19.27	\$13.27	\$46.86	\$5.35	\$34.60	\$23.84
	Ventura	\$57.57	\$6.57	\$41.29	\$28.45	\$26.09	\$2.98	\$18.71	\$12.89	\$31.48	\$3.59	\$22.58	\$15.56
SDG&E	SDG&E	\$114.15	\$13.03	\$84.35	\$58.11	\$13.84	\$1.58	\$10.23	\$7.05	\$100.31	\$11.45	\$74.12	\$51.07

Note: assumes 2008 - 2027 project lifespan, 2.5% inflation, 8.93% discount rate, and 2008 \$





# Example MPR & TOD

## Adopted 2007 Market Price Referents<sup>1</sup> (Nominal - dollars/kWh)

Resource Type	10-Year	15-Year	20-Year
2008 Baseload MPR	0.09271	0.09383	0.09572
2009 Baseload MPR	0.09302	0.09475	0.09696
2010 Baseload MPR	0.09357	0.09591	0.09840
2011 Baseload MPR	0.09412	0.09696	0.09969
2012 Baseload MPR	0.09518	0.09844	0.10139
2013 Baseload MPR	0.09605	0.09965	0.10275
2014 Baseload MPR	0.09722	0.10107	0.10430
2015 Baseload MPR	0.09872	0.10274	0.10606
2016 Baseload MPR	0.10053	0.10466	0.10804
2017 Baseload MPR	0.10269	0.10685	0.11143
2018 Baseload MPR	0.10478	0.11016	0.11489
2019 Baseload MPR	0.10818	0.11370	0.11720
2020 Baseload MPR	0.11172	0.11603	0.11954

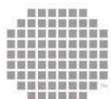
## 2007 MPR (CPUC)

<sup>1</sup>Note: using 2008 as the base year, Staff calculates MPRs for 2008-2020 that reflect different project online dates.

## 2007 TOD (SCE)

### Time of Use Periods ("TOU Periods")

TOU Period	Summer Jun 1 <sup>st</sup> – Sep 30 <sup>th</sup>	Winter Oct 1 <sup>st</sup> – May 31 <sup>st</sup>	Applicable Days
On-Peak	Noon – 6:00 p.m.	Not Applicable.	Weekdays except Holidays.
Mid-Peak	8:00 a.m. – Noon	8:00 a.m. - 9:00 p.m.	Weekdays except Holidays.
	6:00 p.m. – 11:00 p.m.		Weekdays except Holidays.
Off-Peak	11:00 p.m. – 8:00 a.m.	6:00 a.m. – 8:00 a.m.	Weekdays except Holidays.
		9:00 p.m. – Midnight	Weekdays except Holidays.
	Midnight – Midnight	6:00 a.m. – Midnight	Weekends and Holidays
Super-Off-Peak	Not Applicable.	Midnight – 6:00 a.m.	Weekdays, Weekends and Holidays



# 2007 MPR Formula

**Table 5 – 2007 MPR in Simple Terms (20-year contract starting in 2008)**

Line	Component	Cost	Calculation
1	Levelized Gas Price	8.64 / MMBtu	
2	Effective Heat Rate	6,964 Btu/kWh	
3	Fuel Cost	\$60.19 / MWh	1 x 2
4	Variable O&M	\$2.87 / MWh	
5	Line Loss Factor	98.0%	
6	Variable Cost at Load Center	\$64.33 per MWh	(3+4)/5
7	Collateral Requirement	\$0.34 per MWh	
8	Greenhouse Gas Mitigation	\$4.26 per MWh	
9	Total Variable Cost (including externalities)	\$68.94 per MWh	6+7+8
10	Fixed Cost	\$26.79 per MWh	
11	Total MPR Price	\$95.73 per MWh	9+10

2007 MPR = ~\$95 per MWh x TOD factor (~1.4 for GV profile on SCE)

