FIT Coalition

The Right Policies for Renewable Energy Now

# Setting the Stage for Implementing a FIT

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# FIT Coalition Overview

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## Mission

**To identify and advocate for policies that will accelerate the deployment of cost-effective renewable energy in the United States**

## Board of Advisors

Jeff Anderson
*ED, Clean Economy Network*

Jeff Brothers
*CEO, Sol Orchard*

Patricia Glaza
*ED, Clean Technology & Sustainable Industries*

L. Hunter Lovins
*President, Natural Capitalism Solutions*

Jim Weldon
*CEO, Solar Junction*

R. James Woolsey
*Venture Partner, VantagePoint, Former Director, CIA*

# Key Initial Considerations

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- Goals
  - Economic stimulus (first mover advantage)
  - RPS/RES fulfillment
  - Emissions reductions
  - Price stability
  - Local generation & local self reliance
  - Avoiding transmission (existing costs & new build-outs)
  - Diversified ownership
- Available resources
  - Renewable sources (solar, wind, biomass/gas, CHP, etc)
  - Sites (rooftop, land, etc)
- Ratepayer impacts OVER TIME
  - FIT rates that attract development
  - Avoided costs
  - Ratepayer costs & savings

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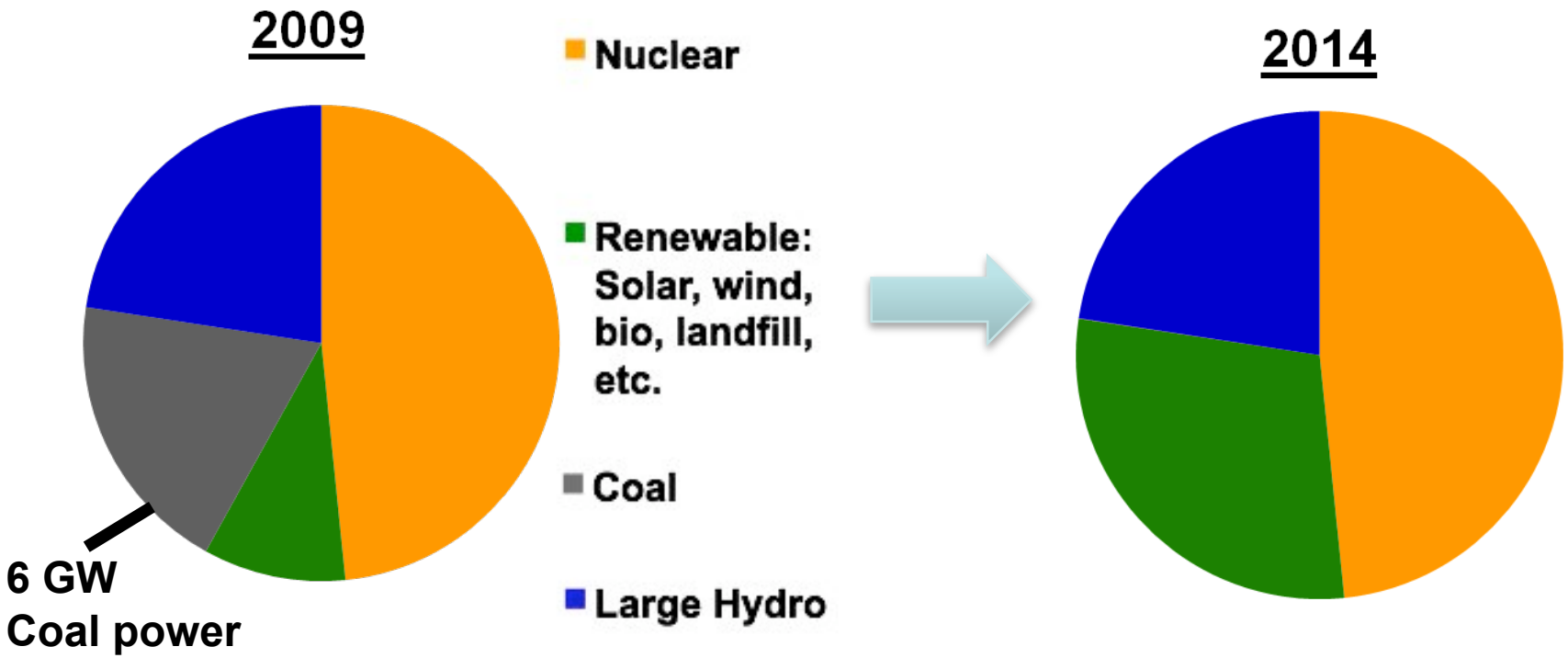
# Replace 100% of Coal Power by 2014




Note: The Canadian Province of Ontario had 31 GW of peak electric capacity in 2009.

6 GW of coal power on track to be replaced by renewables over 5 years

# FIT Program Boundary Conditions

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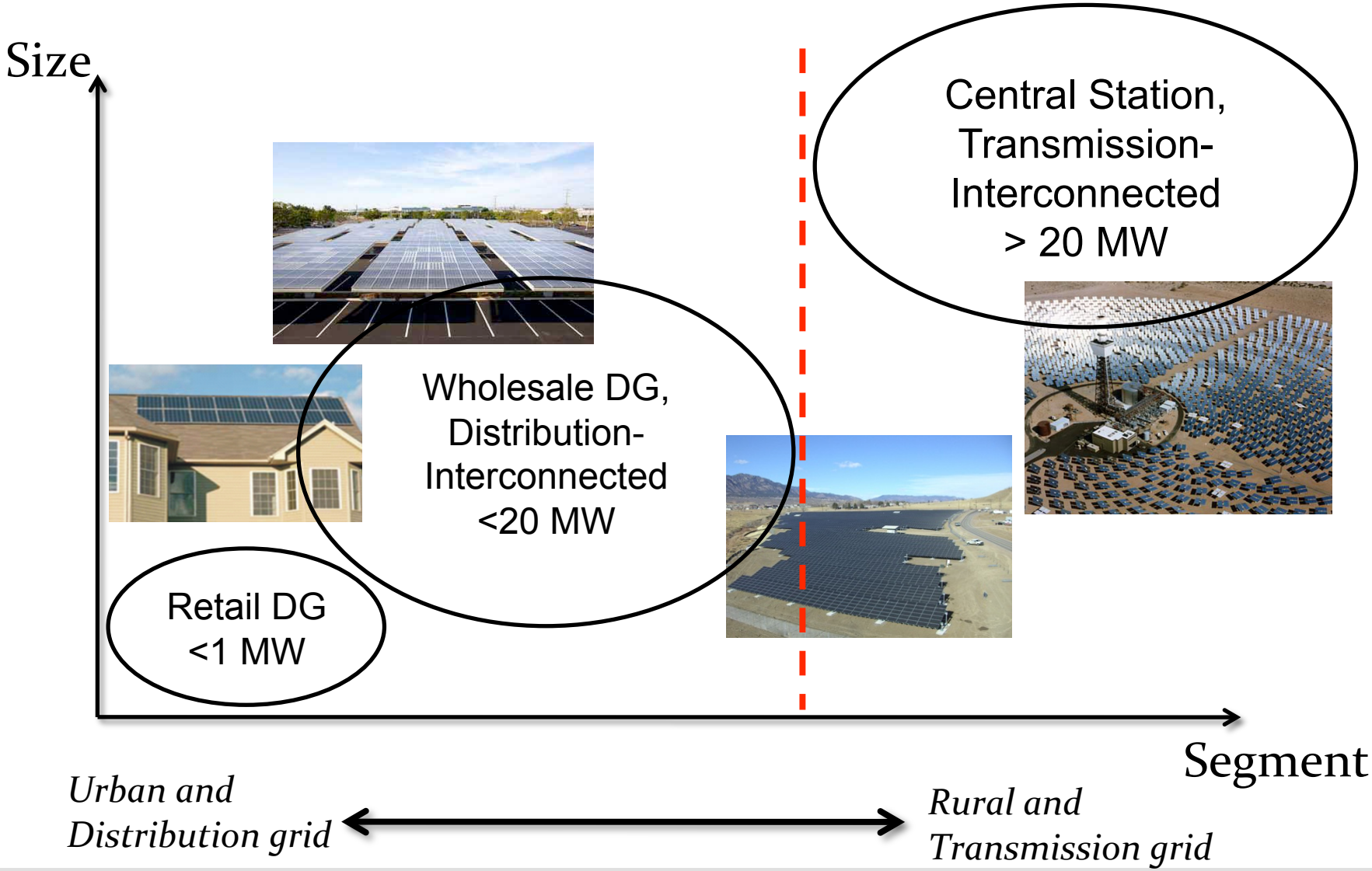

# FIT Program Boundary Conditions

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- Technology
- Project size
  - Cost, capacity, and activity level considerations
  - Residential-scale inclusion?
- Program size
- Price setting
- Ratepayer impacts (costs and savings)
  - Residential-scale inclusion?
  - Degression metrics
- Project development timeframes
- Location/configuration constraints
  - Geographic limitations
  - Grid boundaries & interconnection location preferences
  - Rooftop, ground-based, etc

# Notes on Price Setting

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- The price needs to attract development
- The most common and sure approach is cost-based
  - Costs of deploying projects, by technology, and potentially by size and/or other criteria (rooftop vs ground, etc)
  - Prices are set by add a reasonable profit onto the costs
- Another approach is value-based
  - Results are uncertain
  - Generally speaking, the prices are set at the avoided cost levels to eliminate any ratepayer impacts (no extra cost and no potential savings)
- Solicitations are not FITs
  - This includes auctions
  - Auctions are a type of solicitation process and they suffer from all of the usual parasitic transaction costs and parasitic transaction time

# Auctions Drive Huge Failure Rates

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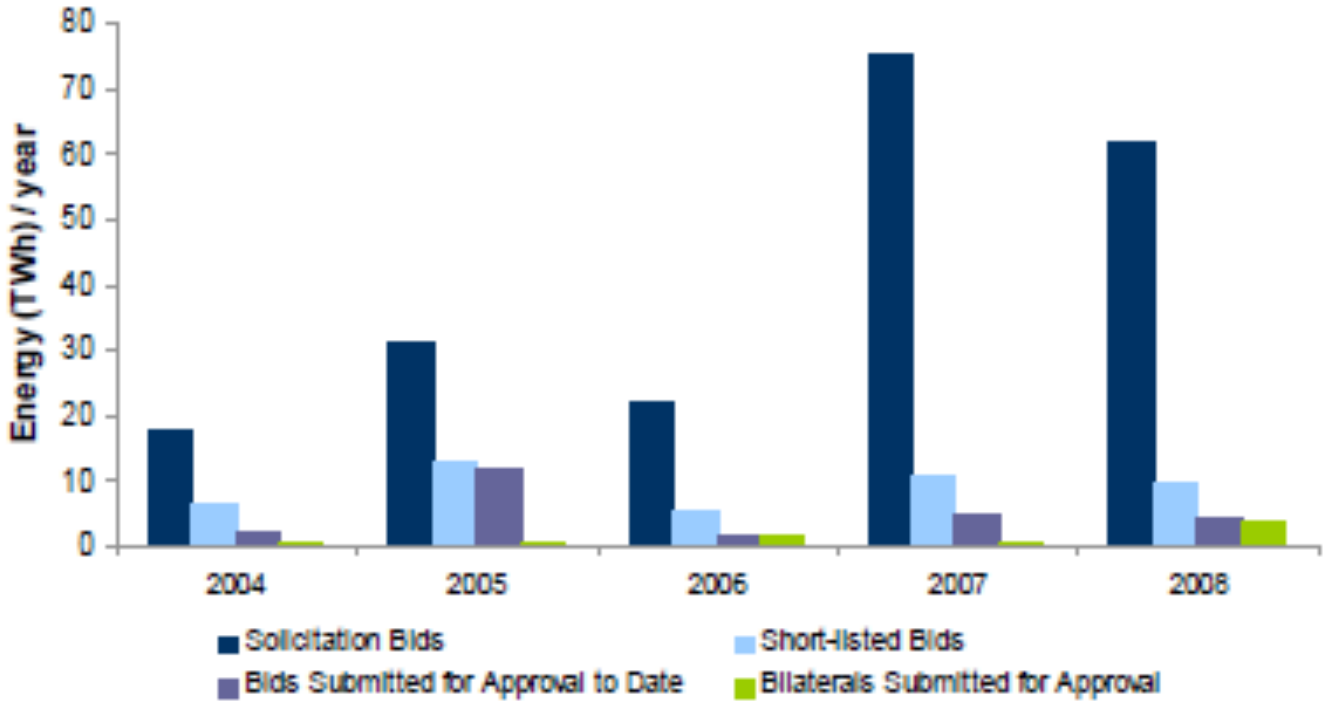
## California RPS Project Failure Rate is ~97%




Source: California Public Utilities Commission, 2nd Quarter 2009

FITs eliminate the massive parasitic costs associated with solicitations

# Only Profitable Projects get Built

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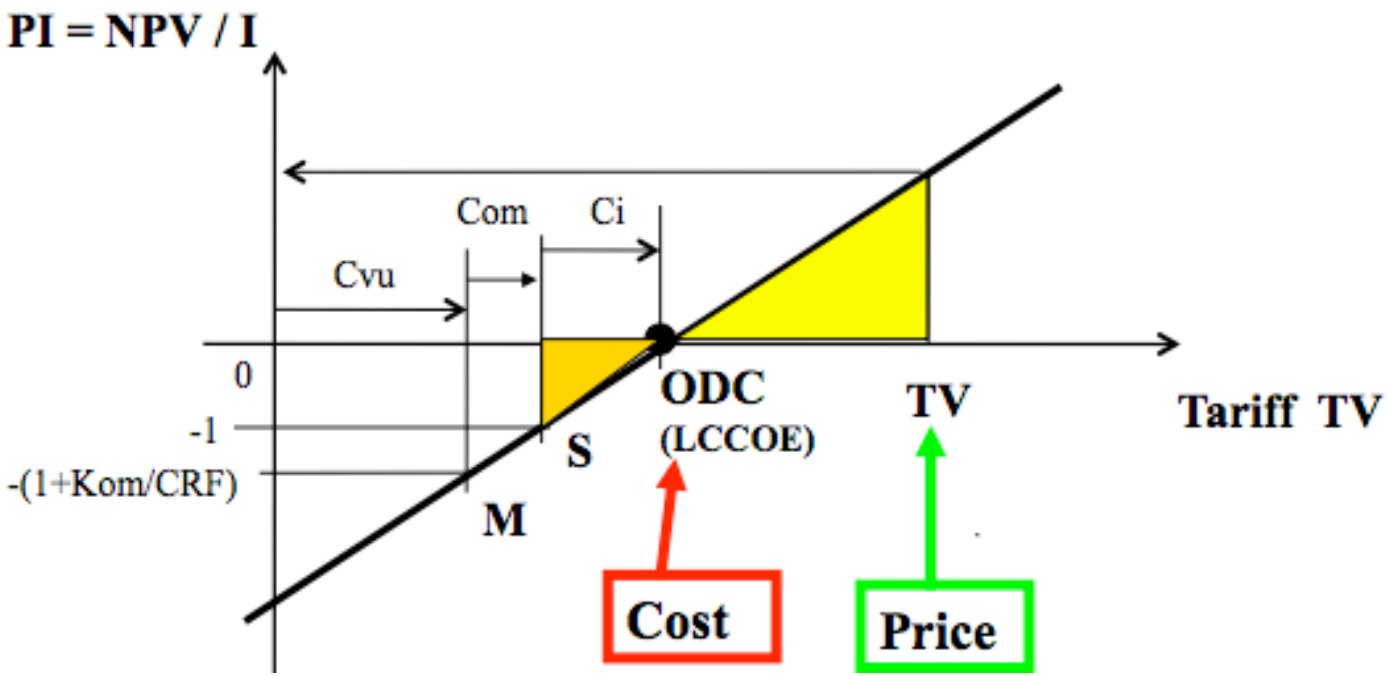


PI must be between 0.1 – 0.3 for sustainable economic interest

# Project Size is a Key Cost Driver

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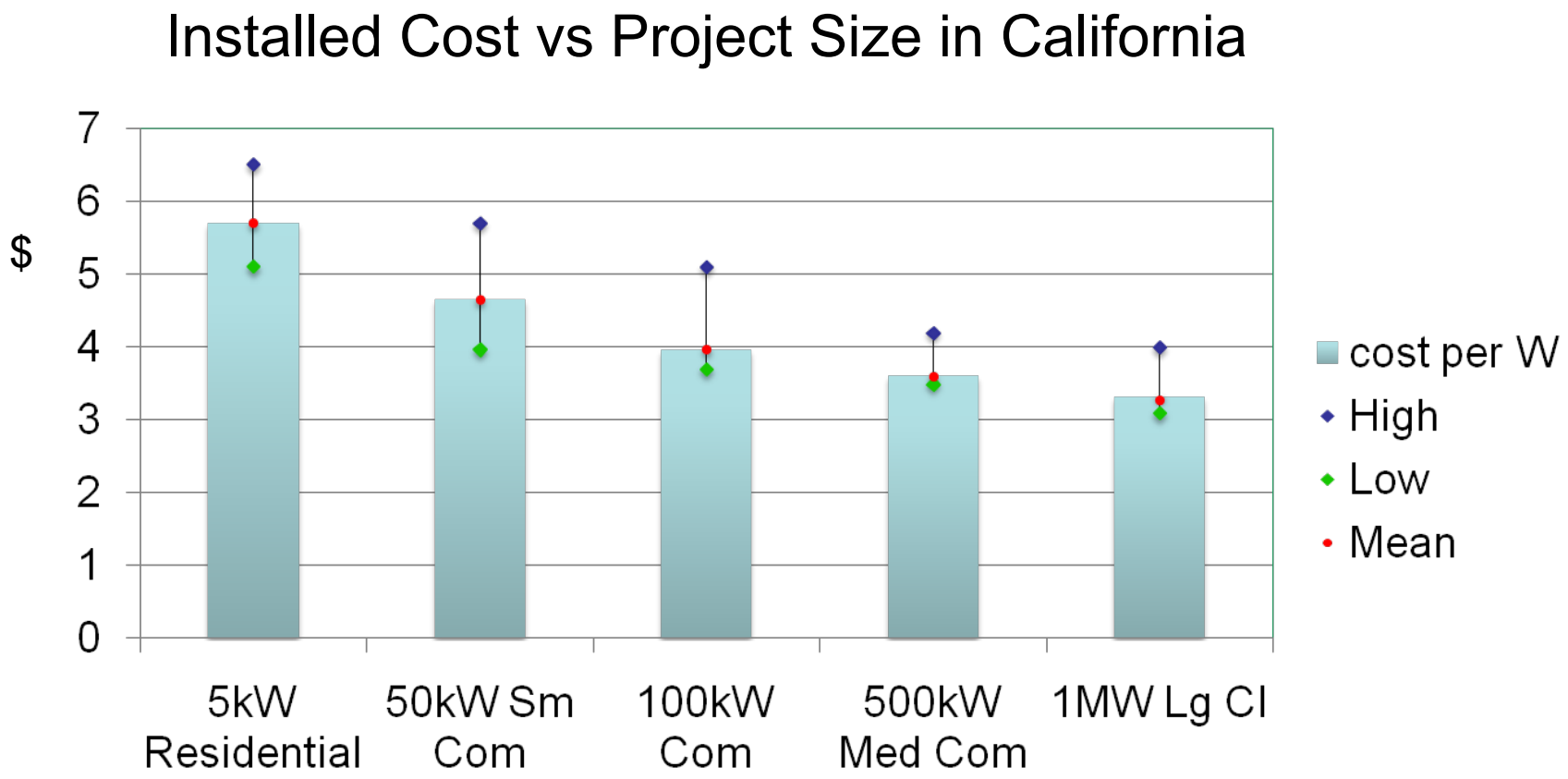


Source: FIT Coalition, July 2010

# Program Size Matters Too

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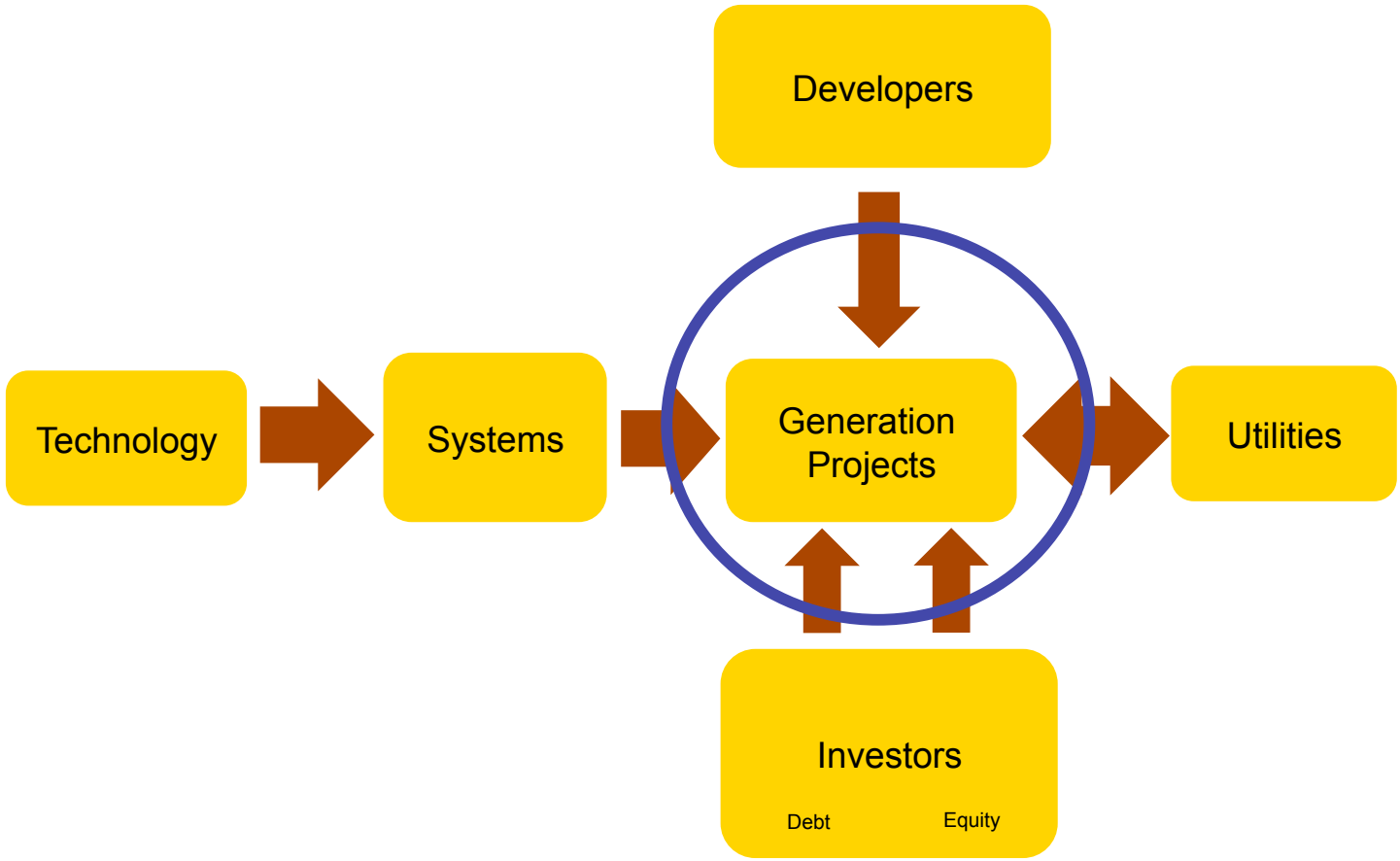


The entire renewable energy value chain depends on deployments

# Volume Drives Learning

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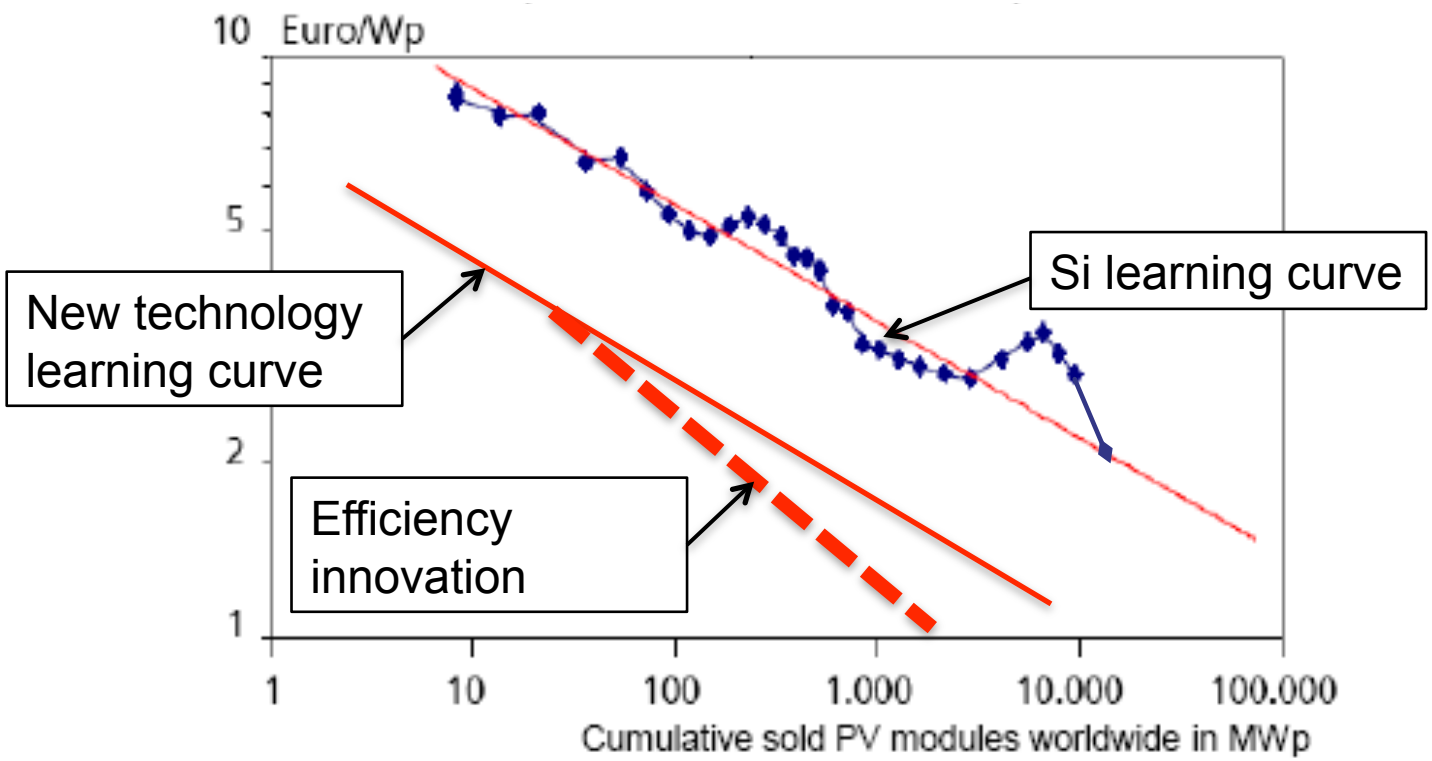
**Solar pricing is reduced by 20% for every doubling of deployed volume**




*Source: Prof. Luther/Solar Generation, PVPS 2006*

# Avoided Cost can be Surprising

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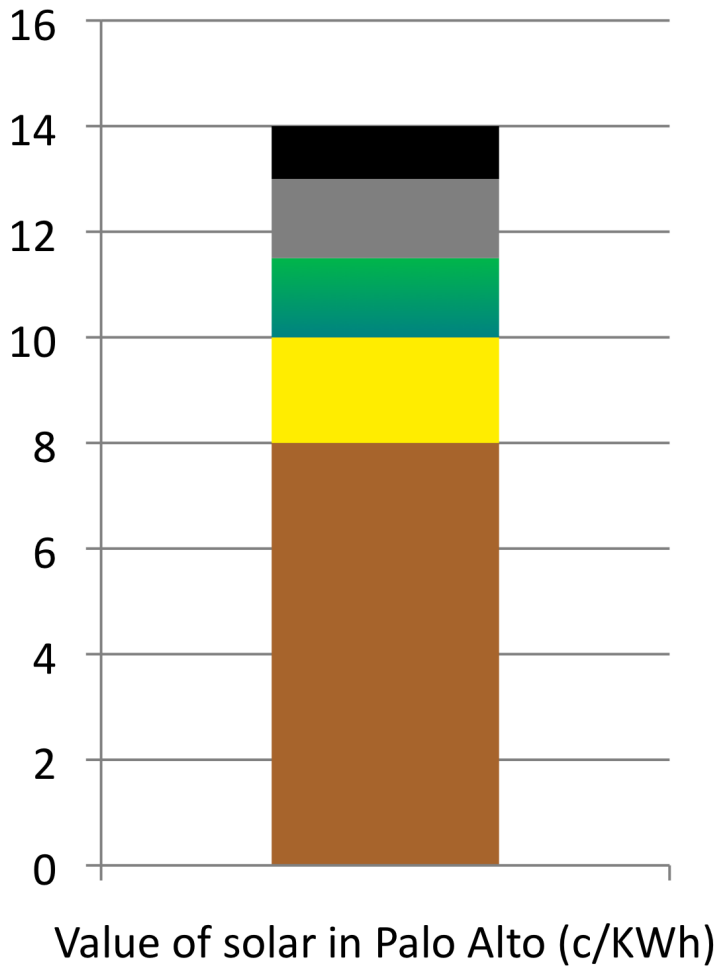


- 1 - Additional local value
- 1.5 - Avoided Transmission Access Charges (TACs)
- 1.5 - Renewable Energy Credits (RECs)
- 2 - Time-of-Delivery
- 8 - Brown energy cost

# Avoided Cost Sensitivity

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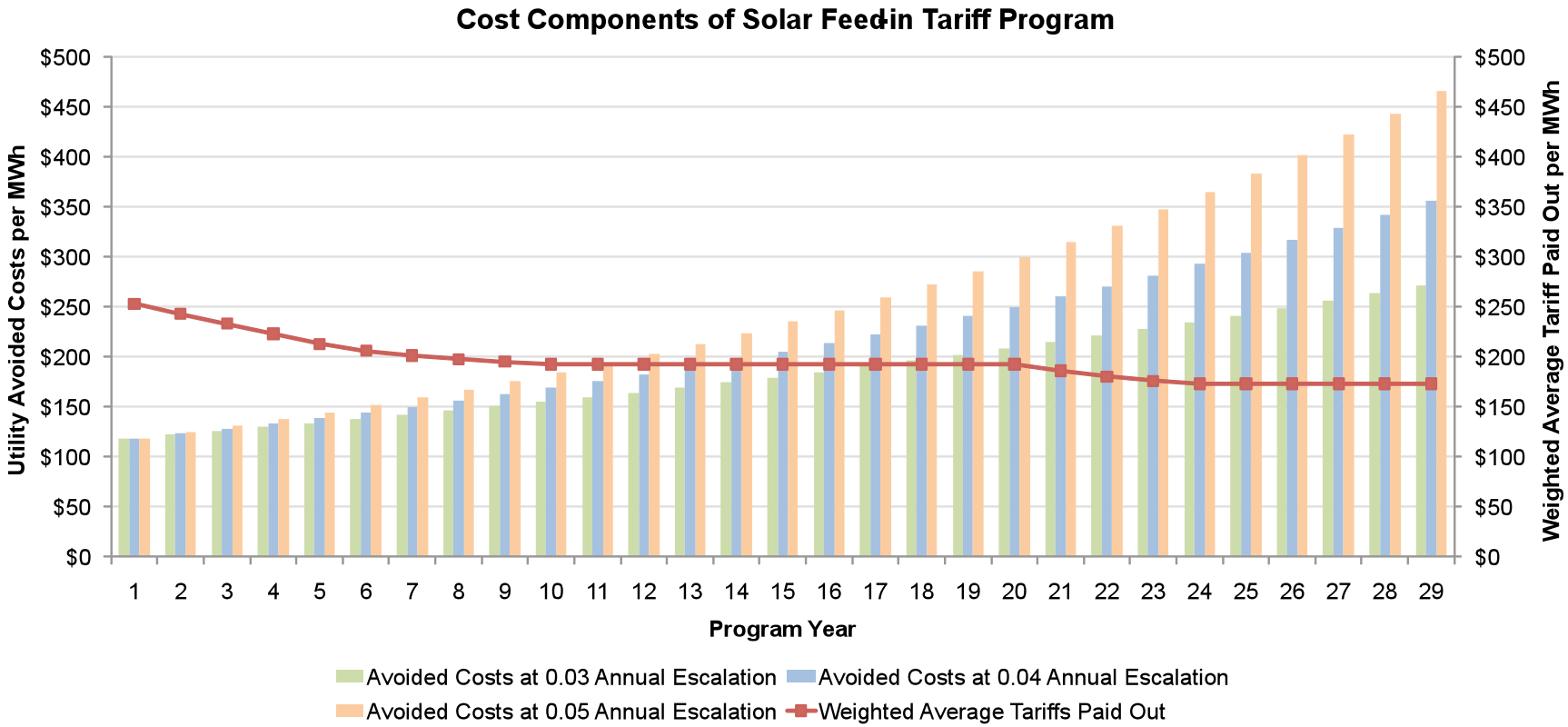


UCLA/LABC 2010

# Ratepayers SAVE Money

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## The REESA FIT in California delivers 5% in ratepayer savings while fulfilling the entire 33% RPS on schedule!!!

| FiT Rate ($/kWh) | Annual cap limit (%) | Avoided Cost ($/kWh) | Annual FIT rate degression (%) | Annual escalator for avoided cost (%) |
|---|---|---|---|---|
| $ 0.16 | 2 | $ 0.125 | 5 | 3 |

| Year | Total CA Electric Energy (GWh) | FIT Rate ($/kWh) | Cumulative Limit | Quantity (GWh) | FIT Fulfillment of RPS | FIT Cost ($mil) | Avoided Cost ($/kWh) | Avoided Cost ($mil) | Rates without FIT | Rates with FIT | Rate Differential baseline premium w/ FIT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | 267,665 | 0.160 | 2.00% | 5,353 | 2% | 857 | 0.125 | 669 | 0.138 | 0.139 | 0.51% |
| 2012 | 268,349 | 0.152 | 4.00% | 10,734 | 4% | 1,674 | 0.129 | 1,382 | 0.139 | 0.140 | 0.78% |
| 2013 | 268,960 | 0.144 | 6.00% | 16,138 | 6% | 2,455 | 0.133 | 2,140 | 0.141 | 0.142 | 0.83% |
| 2014 | 269,500 | 0.137 | 8.00% | 21,560 | 8% | 3,199 | 0.137 | 2,945 | 0.142 | 0.143 | 0.66% |
| 2015 | 269,969 | 0.130 | 10.00% | 26,997 | 10% | 3,907 | 0.141 | 3,798 | 0.143 | 0.143 | 0.28% |
| 2016 | 270,365 | 0.124 | 12.00% | 32,444 | 12% | 4,581 | 0.145 | 4,701 | 0.144 | 0.144 | -0.31% |
| 2017 | 270,690 | 0.118 | 14.00% | 37,897 | 14% | 5,223 | 0.149 | 5,656 | 0.145 | 0.144 | -1.10% |
| 2018 | 270,943 | 0.112 | 16.00% | 43,351 | 16% | 5,832 | 0.154 | 6,665 | 0.147 | 0.144 | -2.09% |
| 2019 | 271,124 | 0.106 | 18.00% | 48,802 | 18% | 6,411 | 0.158 | 7,728 | 0.148 | 0.143 | -3.29% |
| 2020 | 271,234 | 0.101 | 20.00% | 54,247 | 20% | 6,960 | 0.163 | 8,847 | 0.149 | 0.142 | -4.66% |

Source: CPUC, FIT Coalition

# Location Matters Too

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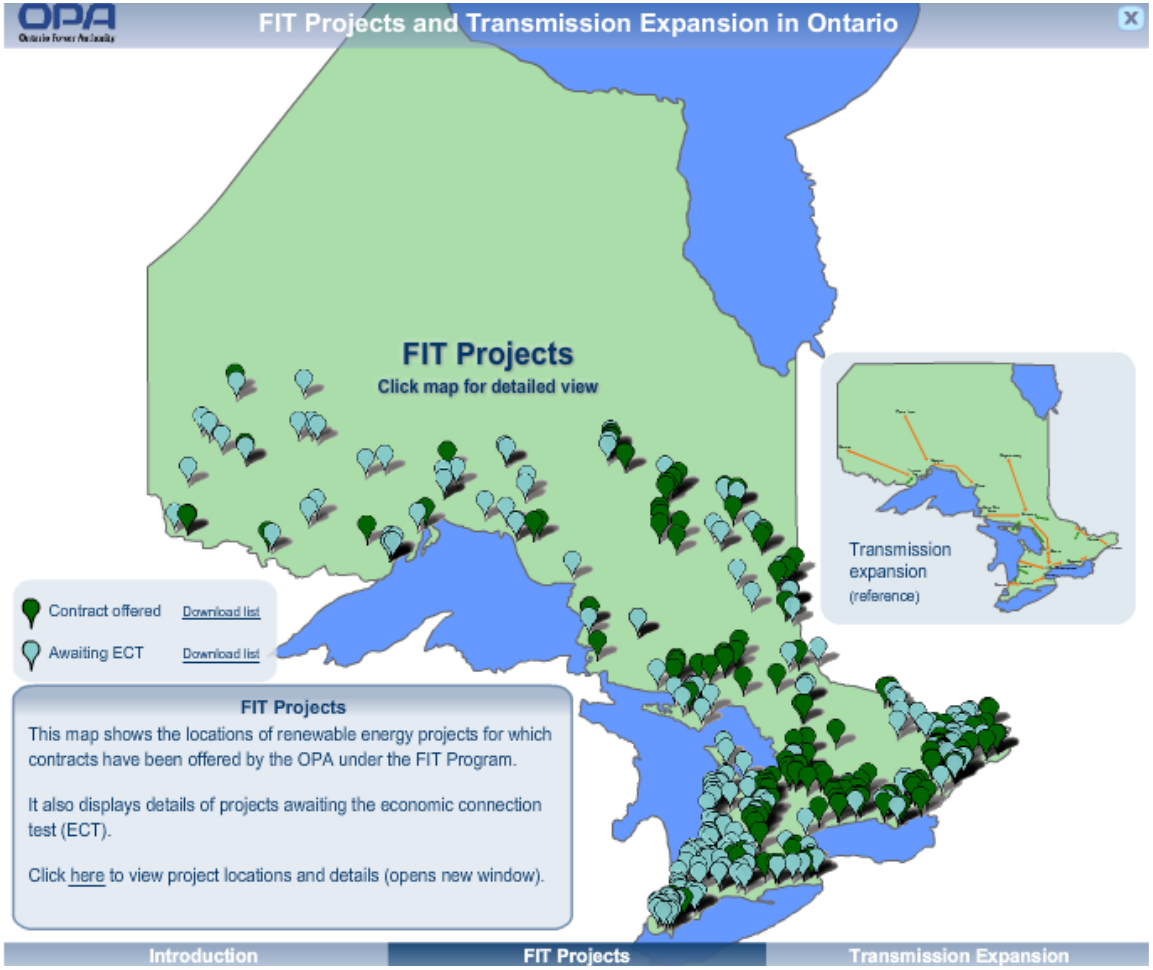
## Ontario FIT Program is Uncapped

### Only limitation is interconnection availability



# Ontario Guides on Location Viability

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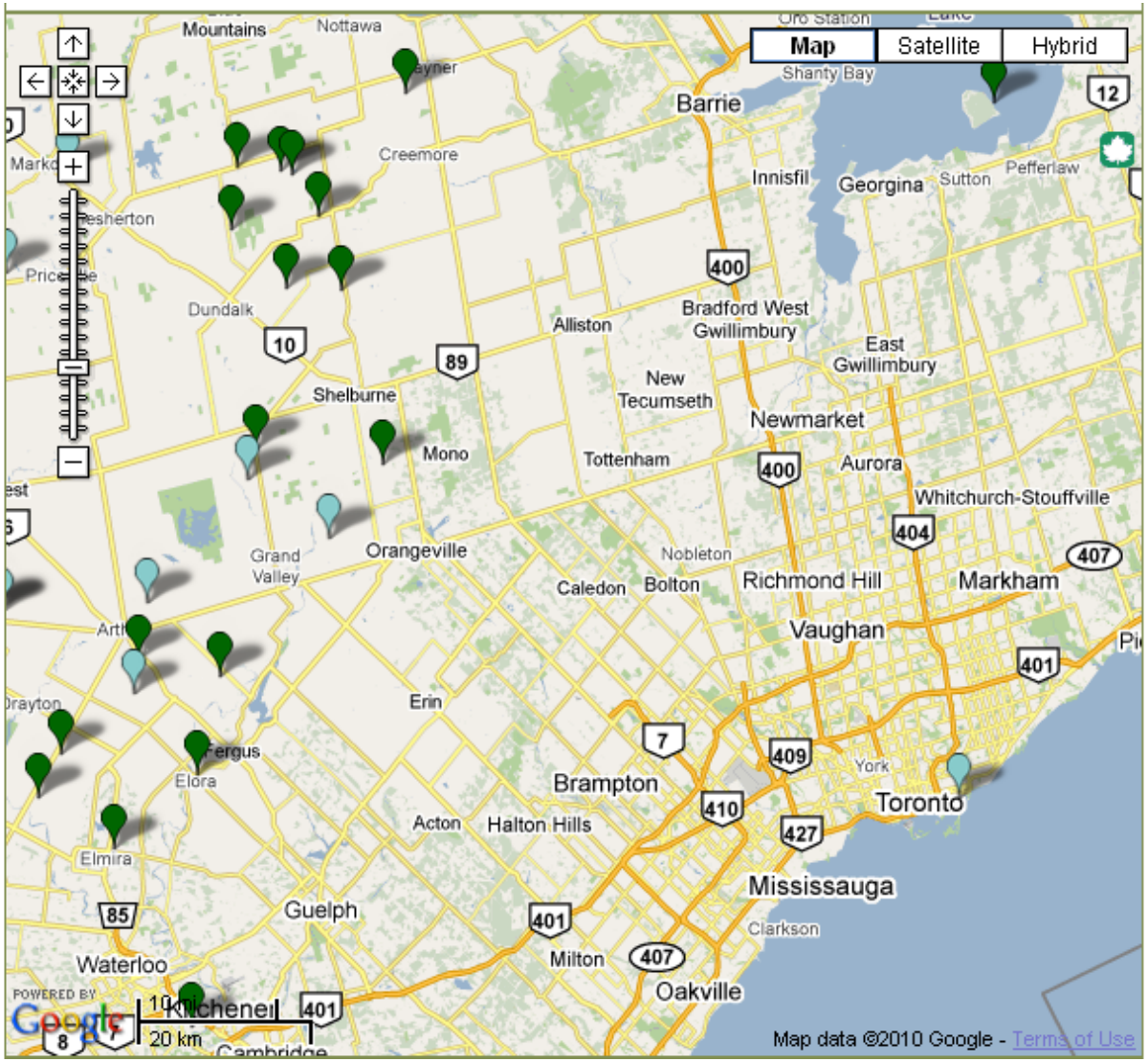

# So Does Los Angeles…

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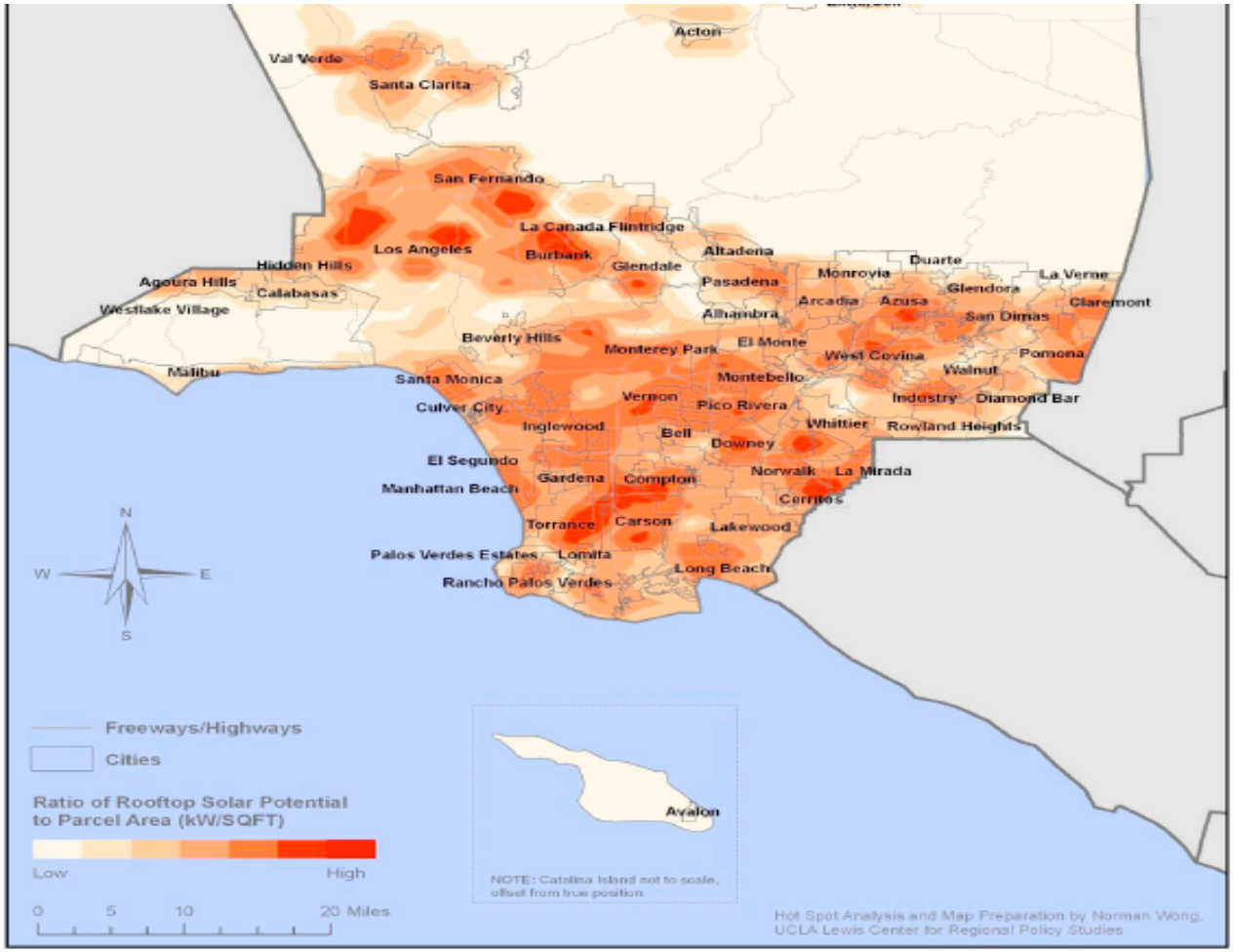
## Rooftop Solar Capacity in LA



# Available Rooftop Area in LA

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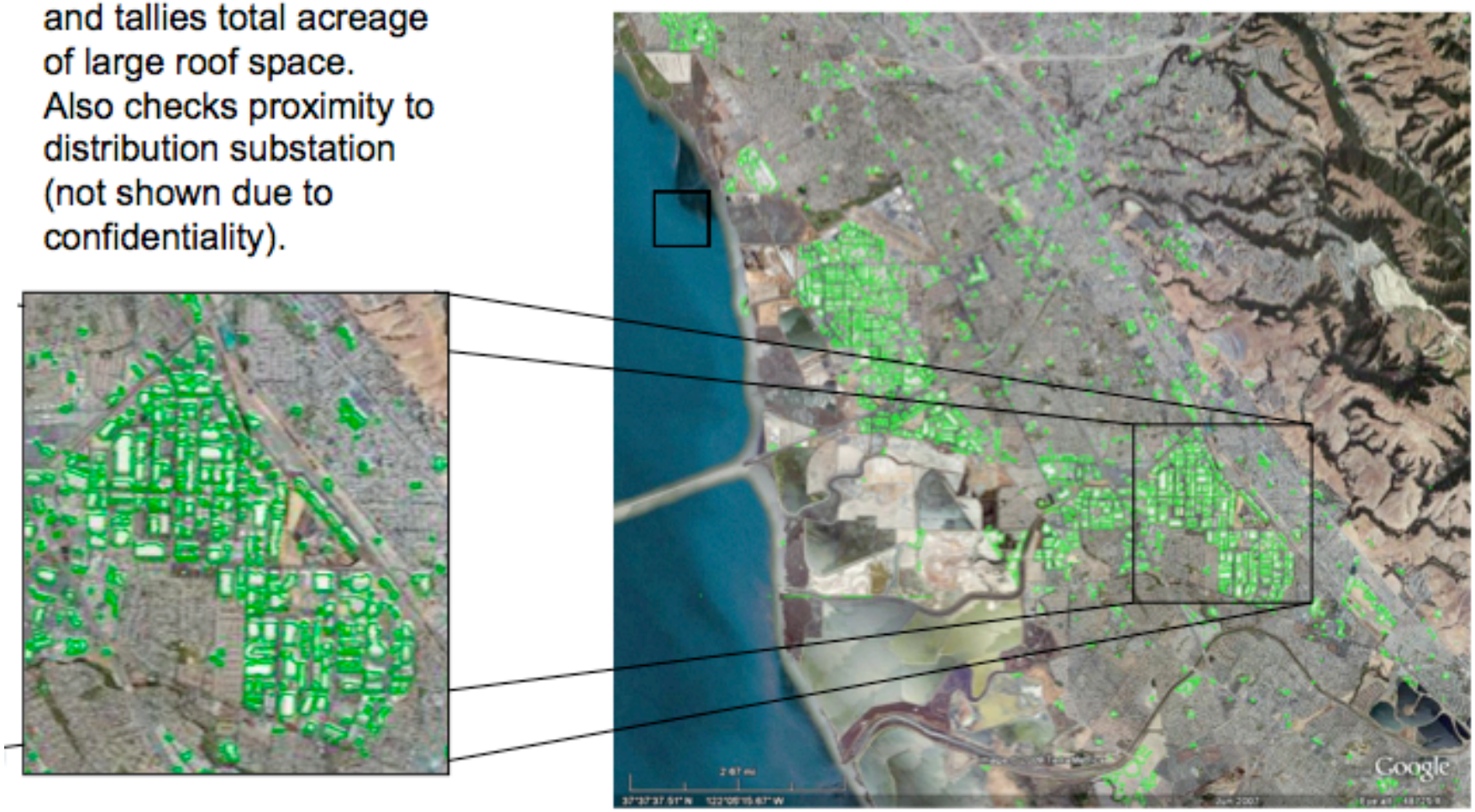
Analysis automates the counting of roof space and tallies total acreage of large roof space. Also checks proximity to distribution substation (not shown due to confidentiality).




E3, 2010 & Google Earth

# 25 Largest Commercial Projects in LA

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| Rank | Potential Size (kW) | Address | Description |
|---|---|---|---|
| 1 | 6,987 | 300 WESTMONT DR | Warehousing, Distribution, Storage |
| 2 | 6,296 | 3880 N MISSION RD | Warehousing, Distribution, Storage |
| 3 | 4,797 | 400 WESTMONT DR | Warehousing, Distribution, Storage |
| 4 | 4,524 | 20525 NORDHOFF ST | Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts |
| 5 | 4,402 | 2501 S ALAMEDA ST | Warehousing, Distribution, Storage |
| 6 | 3,771 | 4544 COLORADO BLVD | Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts |
| 7 | 3,629 | 1800 N MAIN ST | Warehousing, Distribution, Storage |
| 8 | 3,597 | 5500 CANOGA AVE | Heavy Manufacturing |
| 9 | 3,596 | 20333 NORMANDIE AVE | Food Processing Plants |
| 10 | 3,366 | 8500 BALBOA BLVD | Heavy Manufacturing |
| 11 | 3,351 | 6600 TOPANGA CANYON BLVD | Shopping Centers (Regional) |
| 12 | 3,313 | 401 WESTMONT DR | Warehousing, Distribution, Storage |
| 13 | 3,052 | 9301 TAMPA AVE | Shopping Centers (Regional) |
| 14 | 2,806 | 11428 SHERMAN WAY | Warehousing, Distribution, Storage |
| 15 | 2,703 | 3820 UNION PACIFIC AVE | Heavy Manufacturing |
| 16 | 2,693 | 1601 E OLYMPIC BLVD | Warehousing, Distribution, Storage |
| 17 | 2,673 | 9120 MASON AVE | Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts |
| 18 | 2,672 | 12745 ARROYO ST | Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts |
| 19 | 2,431 | 5525 W IMPERIAL HWY | Heavy Manufacturing |
| 20 | 2,430 | 8201 WOODLEY AVE | Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts |
| 21 | 2,404 | 8900 DE SOTO AVE | Heavy Manufacturing |
| 22 | 2,201 | 3410 N SAN FERNANDO RD | Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts |
| 23 | 2,171 | 12820 PIERCE ST | Warehousing, Distribution, Storage |
| 24 | 2,149 | 4024 RADFORD AVE | Motion Picture, Radio & Television |
| 25 | 2,126 | 3020 E WASHINGTON BLVD | Heavy Manufacturing |

# 25 Largest Gov Non Profit Projects

FIT Coalition

| Rank | Potential Size (kW) | Address | Description |
|---|---|---|---|
| 1 | 1,311 | 7833 S VERMONT AVE | Colleges, Universities (Private) |
| 2 | 1,158 | 1200 N STATE ST | Government Parcel |
| 3 | 971 | 15101 SAN FERNANDO MISSION | Schools (Private) |
| 4 | 957 | 1050 N PACIFIC AVE | Hospitals |
| 5 | 721 | 6041 CADILLAC AVE | Hospitals |
| 6 | 675 | 6067 WILSHIRE BLVD | Government Parcel |
| 7 | 634 | 1200 GETTY CENTER DR | Government Parcel |
| 8 | 609 | 6920 VAN NUYS BLVD | Government Parcel |
| 9 | 607 | 11600 ELDRIDGE AVE | Hospitals |
| 10 | 607 | 15031 RINALDI ST | Hospitals |
| 11 | 601 | 4550 W SUNSET BLVD | Hospitals |
| 12 | 601 | 18300 ROSCOE BLVD | Hospitals |
| 13 | 552 | 23450 CALABASAS RD | Hospitals |
| 14 | 545 | 103 S HAMEL RD | Hospitals |
| 15 | 534 | 13652 CANTARA ST | Hospitals |
| 16 | 533 | 5450 VESPER AVE | Homes For Aged & Others |
| 17 | 528 | 13653 CANTARA ST | Hospitals |
| 18 | 522 | 3602 CRENSHAW BLVD | Churches |
| 19 | 499 | 13248 ROSCOE BLVD | Churches |
| 20 | 474 | 1600 CAMPUS RD | Colleges, Universities (Private) |
| 21 | 453 | 14061 ROSCOE BLVD | Schools (Private) |
| 22 | 452 | 19800 DEVONSHIRE ST | Schools (Private) |
| 23 | 448 | 9825 WOODLEY AVE | Schools (Private) |
| 24 | 438 | 21000 PLUMMER ST | Schools (Private) |
| 25 | 438 | 22622 VANOWEN ST | Clubs., Lodge Halls, Fraternal Organizations |

# Sacramento Guides on Location too…

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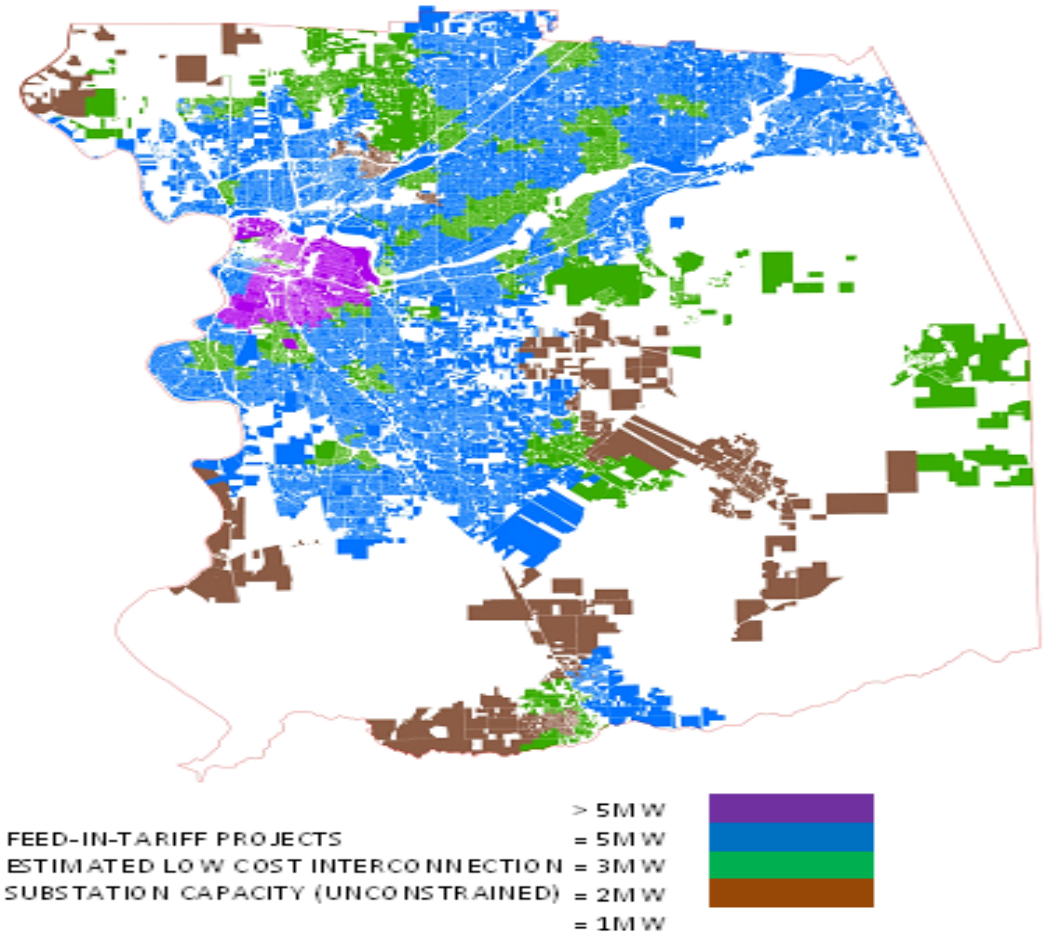
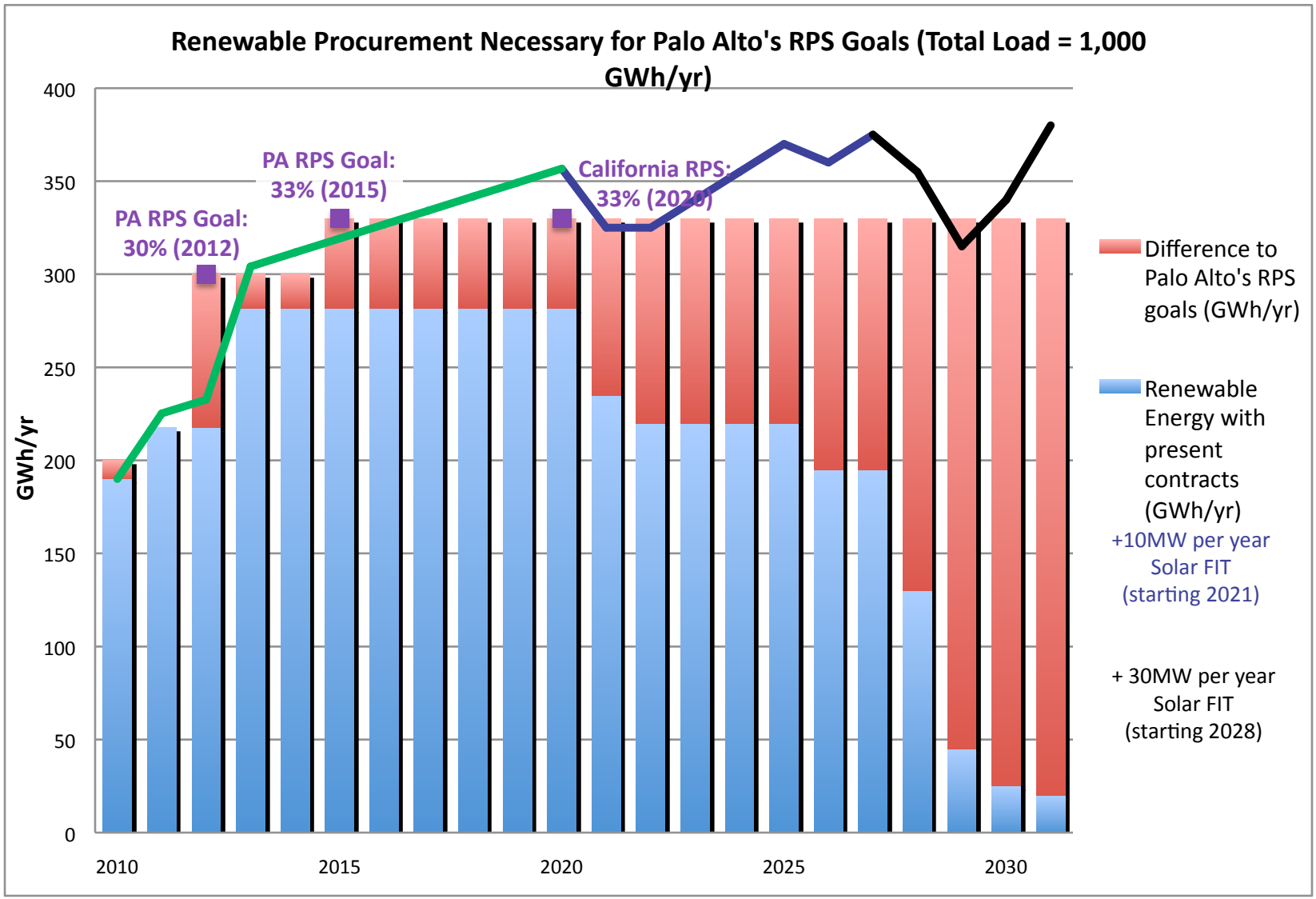
## SMUD Color Codes Show Interconnect Viability



# Putting it Together in Palo Alto

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