



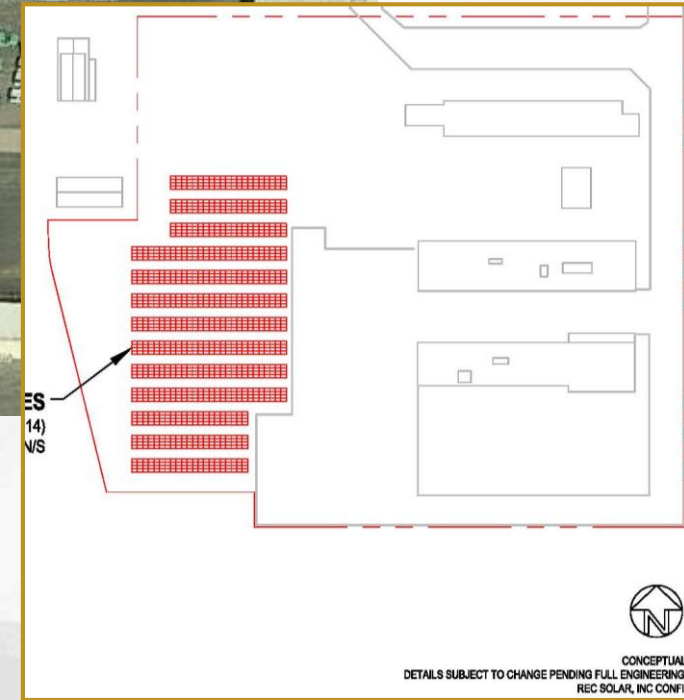
# San Dimas TDC Solar Project

John Handy, Federal Business Development Manager

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# Agenda

1. REC Overview
2. Project Objectives
3. Selection Criteria
4. Project as Bid and Constructed
5. Project Performance
6. What has changed since 2010
7. Recommendations



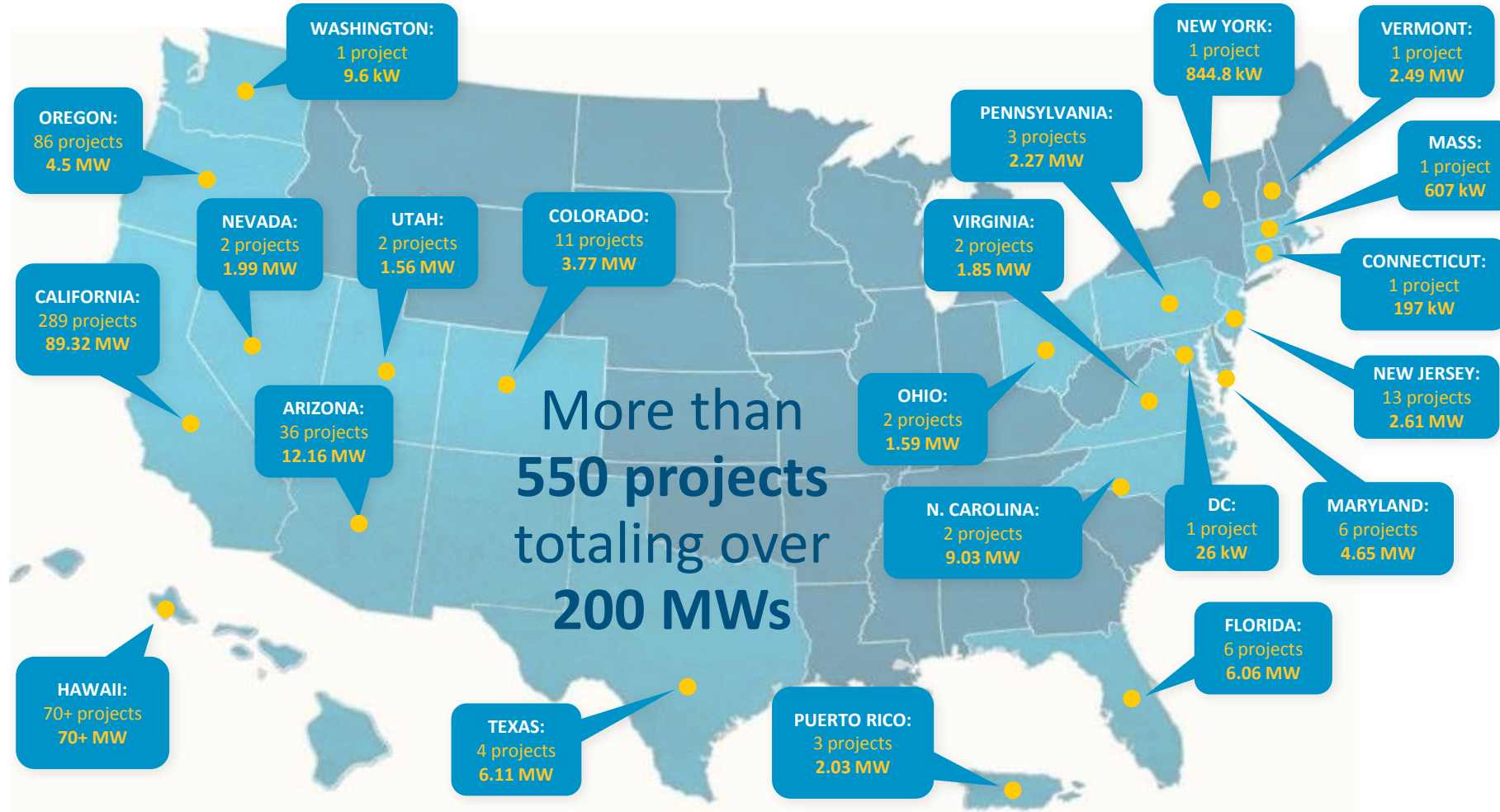
CONCEPTUAL DESIGN  
DETAILS SUBJECT TO CHANGE PENDING FULL ENGINEERING DESIGN  
REC SOLAR, INC CONFIDENTIAL

# REC Solar: What We Do

End-to-end turnkey commercial solar energy solutions.

Financing	Development	Engineering	Procurement	Construction	O&M
<p>Tailored Financing Solutions and modeling:</p> <ul style="list-style-type: none"><li>• PPA</li><li>• Lease</li><li>• Cash</li></ul>	<ul style="list-style-type: none"><li>• Market and Policy Research</li><li>• Site Evaluation and Preliminary Design</li><li>• Energy Usage and Rate Analysis</li></ul>	<ul style="list-style-type: none"><li>• Electrical Design</li><li>• Civil Design</li><li>• Mechanical Design</li><li>• Permit and Record Plan Sets</li><li>• Utility and Local Jurisdiction coordination</li></ul>	<ul style="list-style-type: none"><li>• Material Selection</li><li>• Subcontractor Management</li><li>• Material Flow</li><li>• Logistics</li></ul>	<ul style="list-style-type: none"><li>• Project Management</li><li>• Site Supervision</li><li>• System Types:<ul style="list-style-type: none"><li>• Ground</li><li>• Roof</li><li>• Carports</li><li>• Trackers</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Full in-house O&amp;M</li><li>• Warranty Administration</li><li>• Asset Management</li><li>• System Upgrades</li><li>• Performance Guarantees</li></ul>

# 19 Years of Expertise



# Continual Innovation in Energy Services

As the energy ecosystem evolves, we invest in ongoing R&D to enhance our customers' solutions and increase their return on investment.

**For example, we are working with other Duke Energy companies to build an integrated energy solution that combines solar, storage and data management.**



# San Dimas Project Objectives

- **To generate enough on-site to provide for the majority of the electrical needs**
- **Additional power can be produced within the budget**
- **Excess power may be purchased by Southern California Edison**
- **Currently use is approximately 371,000 kWh/year**

# Selection Criteria (Best Value)

Not necessarily the highest technically-ranked or proposing the largest PV system

- **Design Concept**
- **Ability to complete the work by December 15, 2010**
- **Past performance & experience**
- **Output in kWh & System size in kW**
- **Ability to provide a Performance Data Provider**

**Available budget of \$1,435,587.00**

# System Specifications

## As Proposed

- 302.7 kW DC
- 250 kW AC
- Proposal July 14, 2010.
- 105-calendar day timeline
- Completion Dec, 2010
- 594,091 kWh within the first year.
- \$1,435,587 (\$4.74 / Watt)

## As Built

- 302.7 kW DC
- 250 kW AC
- Awarded July 2010.
- Timeline extended due to Mods
- Completed January 14, 2011
- 532,333 kWh the first year.
- \$1,484,863.49 (\$4.905/Watt)
- 9 MODS

**First year credit to SDTDC and National Forest SCE accounts of more than \$13,000**



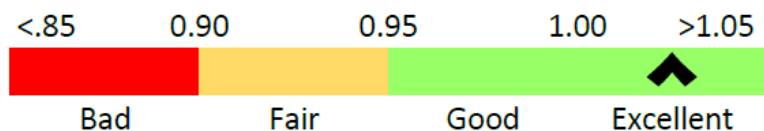


# Contract Modifications

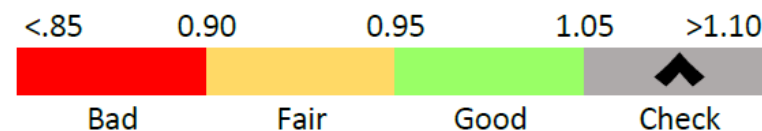
MOD	Price Changes	Time extension	Reason
1	0	none	Additional Funding as previously described
2	\$20,450	Not stated	Upgrade Security System
3		240	SCE Interconnection Discussions – USFS & SCE
4		90	SCE Interconnection Discussions – USFS & SCE
5			SCE Interconnection Discussions – USFS & SCE
6	0	180	SCE Interconnection Discussions – USFS & SCE
7	\$21,715.00	Not stated	SCE interconnection Upgrades
8	\$7,111.49	30	Install 400MCM wire per SCE direction
9	0		Extend period of performance to July 22, 0213

# Current State

System Performance\*



System Health\*\*



Year of Operation	Budgeted Energy (kWh)	Actual Energy (kWh)	Production Vs. Budget	Expected Energy (kWh)*	Actual Energy (kWh)	Performance Index
1	476,971	531,958	111.5%	419,343	531,958	1.27
2	474,586	537,589	113.3%	426,364	537,589	1.26
3	472,213	501,759	106.3%	407,675	501,759	1.23
4	469,852	429,055	91.3%	348,864	429,055	1.23
Total-Lifetime	1,893,623	2,000,361	<b>105.6%</b>	1,602,245	2,000,361	<b>1.25</b>

\* The system performance is Actual Energy/ Budget Energy. The Budgeted Energy comes from an engineering model of the PV system and does not factor for real time weather conditions.

\*\* The System Health is Actual Energy/Expected Energy. Expected Energy is Predicted Energy corrected for actual, real-time, weather conditions.

# What Has Changed in 6 years

- **Cost – comparable system is \$3.12 / Watt a 37% drop**
- **Module efficiency is incrementally improved**
- **Utility rates are generally higher**
- **Sources of Funding**
- **O&M department has expanded from 2 to 21 employees**

# Recommendations

- **Contractor responsible for the interconnection application**
- **Validate the proposal data against the attachments**
- **Consider an O&M contract**
  - **Washing array when performance meets a minimum threshold**
  - **Active system health monitoring**
  - **Can be wrapped with a performance guarantee**
  - **Insures data platform is kept current**



# Thank You

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