

Item # 2 of #3



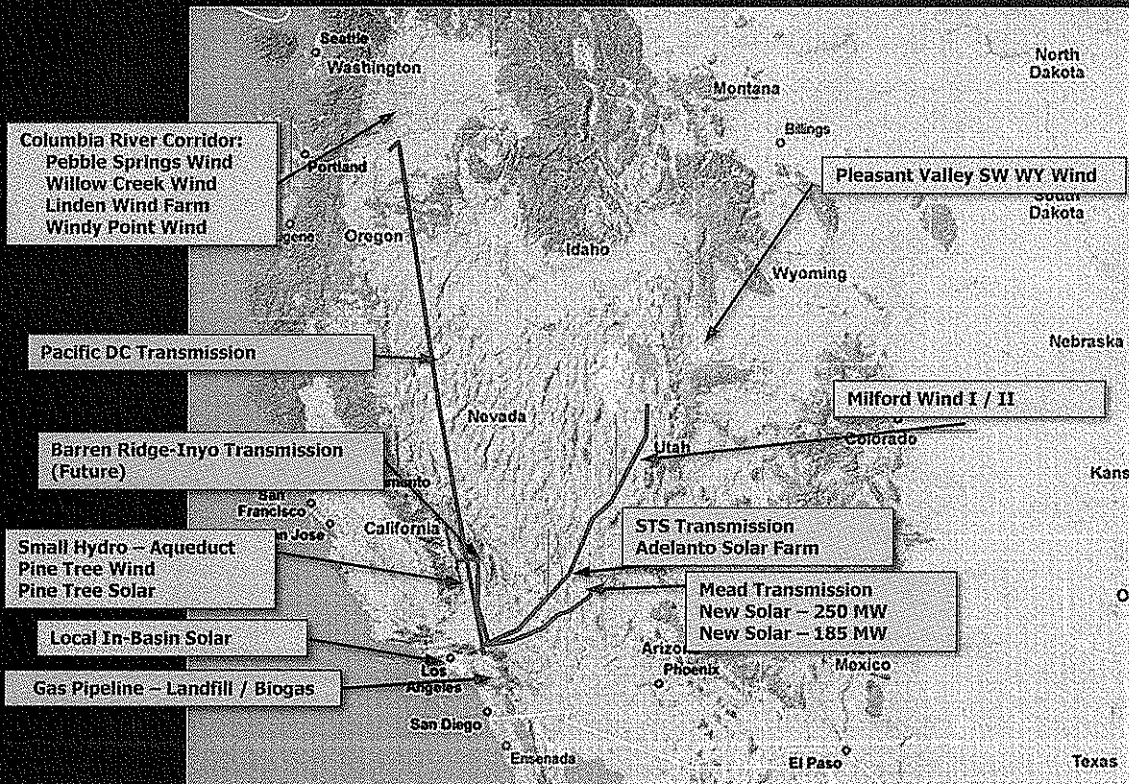
Department of Water and Power
City of Los Angeles

November 7, 2012



Sempra Copper Mountain 3 Solar Project – 250 MW & K Road Moapa Solar Project – 250 MW

Existing Renewable Projects Regional Map



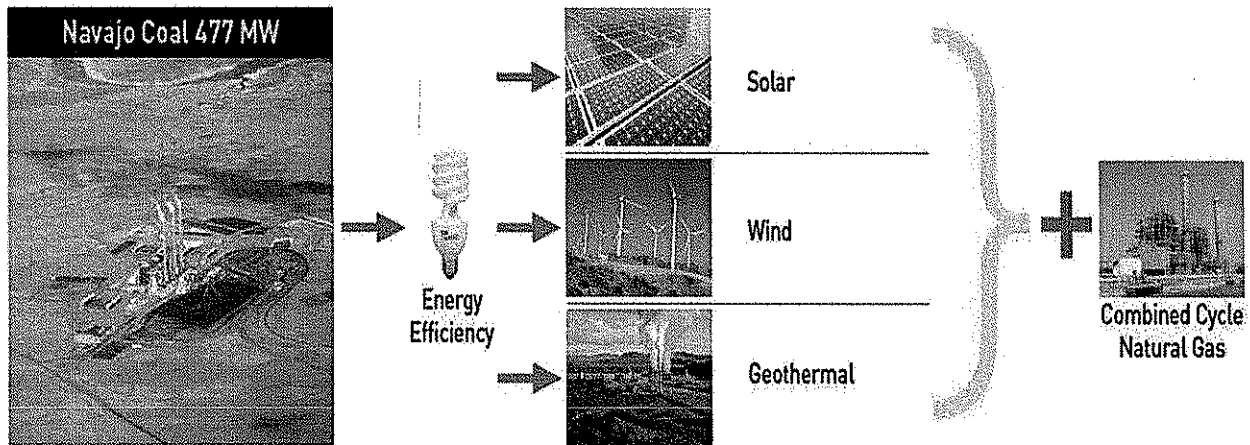
Date: 11-7-12
Submitted in: 12-16-12
Committee: 12-16-14

Navajo Coal Replacement by 2015

Part of the LADWP Power Supply Transformation

REPLACEMENT RESOURCES

NAVAJO REPLACED BY 2015



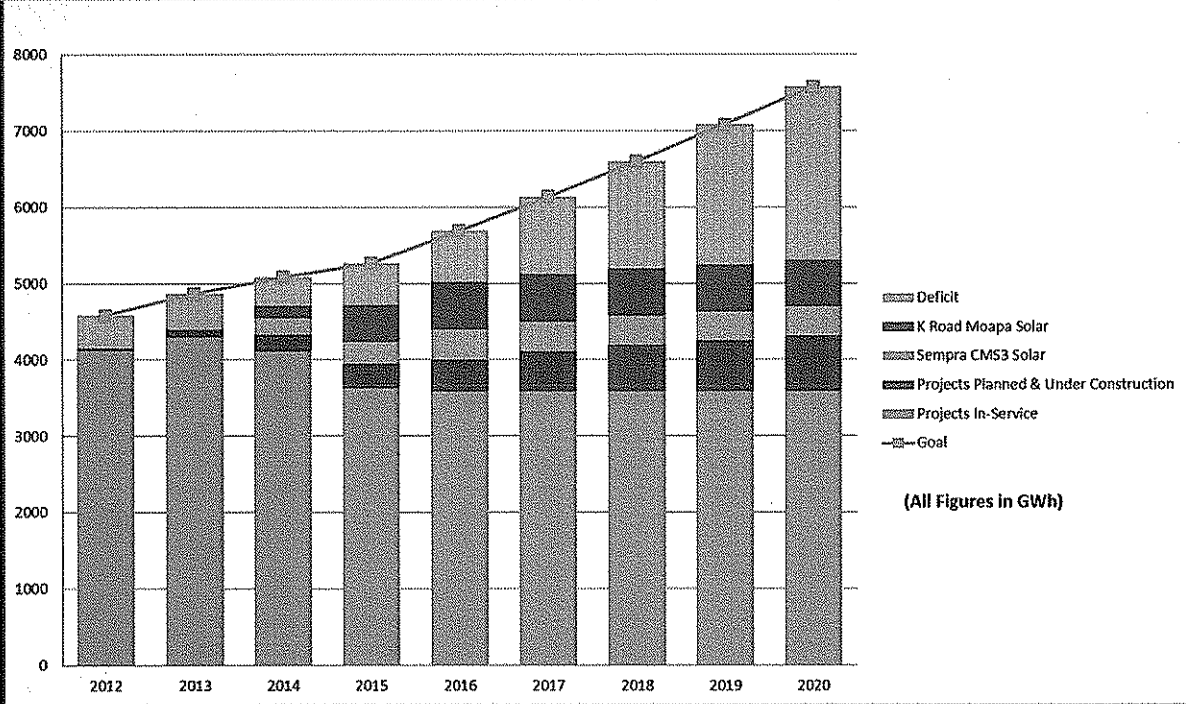
2

Solar Project Selection Background

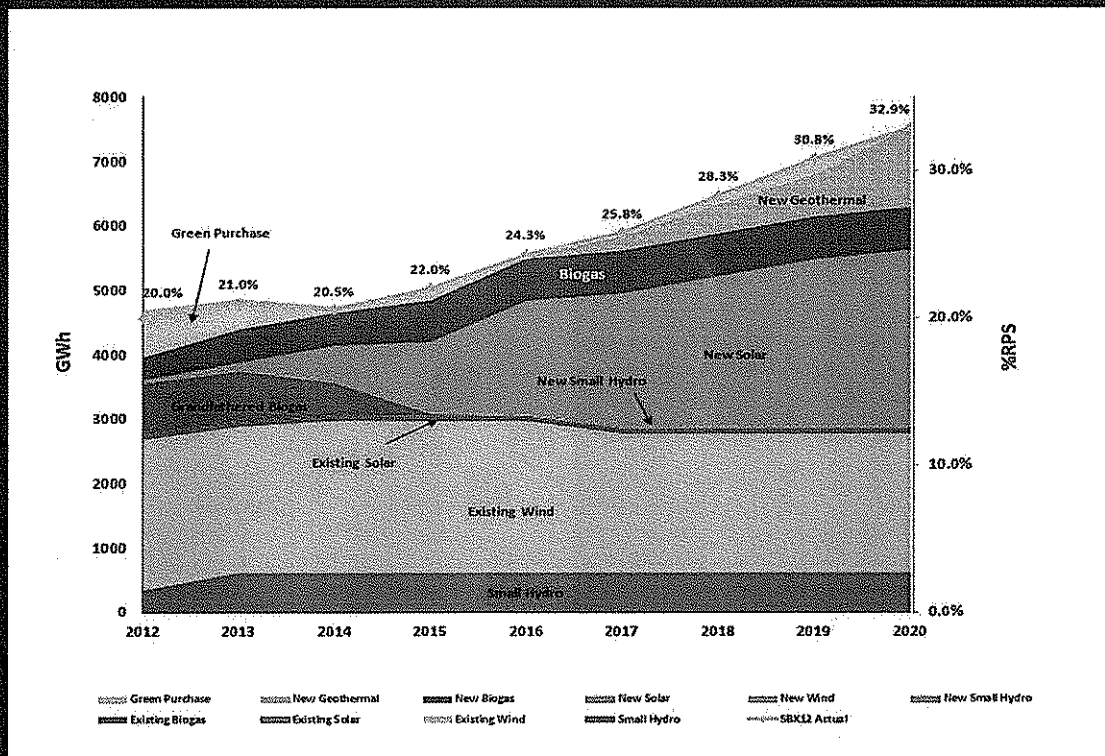
- In 2006 the Board of Commissioners approved the SCPPA Development Agreement, authorizing LADWP to participate with other members of SCPPA for the purpose of exploring new renewable resource options.
- SCPPA issued a RFP in January 2011 for the purchase of renewal energy resources. Over two hundred proposals were received.
- Project proposals were filtered and ranked using the RPS Principles, price and escalation, O&M costs, transmission-related costs, permitting status, developer experience and expertise, and qualified, trained labor.
- The projects proposed by Copper Mountain 3, LLC and K Road Moapa Solar, LLC are two of the proposals received and shortlisted by the SCPPA participants due to best value and best fit with RPS Procurement Principles.

3

RPS Deficit with Both Solar Projects



Renewable Energy Breakdown



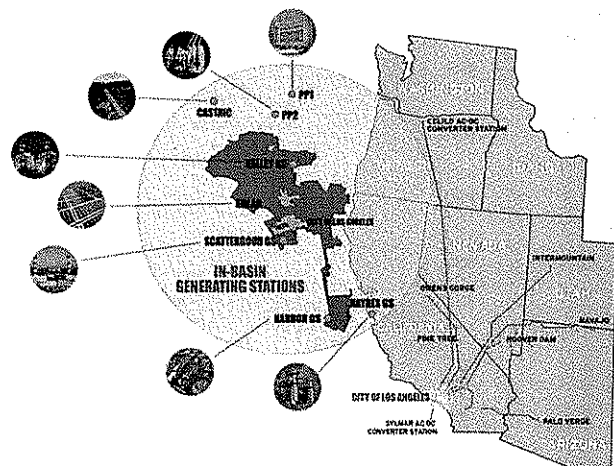
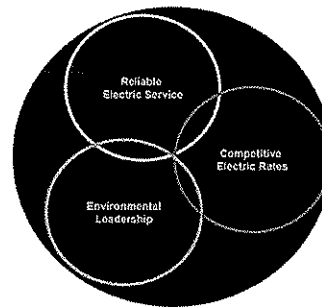
DWP Solar Programs

- Solar Incentive Program (SIP)(SB1 compliant)
 - 51 MW have been installed , 138 MW expected by 2017
- Feed-in Tariff Program
 - 10 MW Demo Program approved by Board on 4-17-12
 - 150 MW - exceeds SB 32 compliance levels
- Utility Built Solar Program
 - 11.6 MW of Solar currently operating, additional 8.5 MW expected operating by the end of 2012

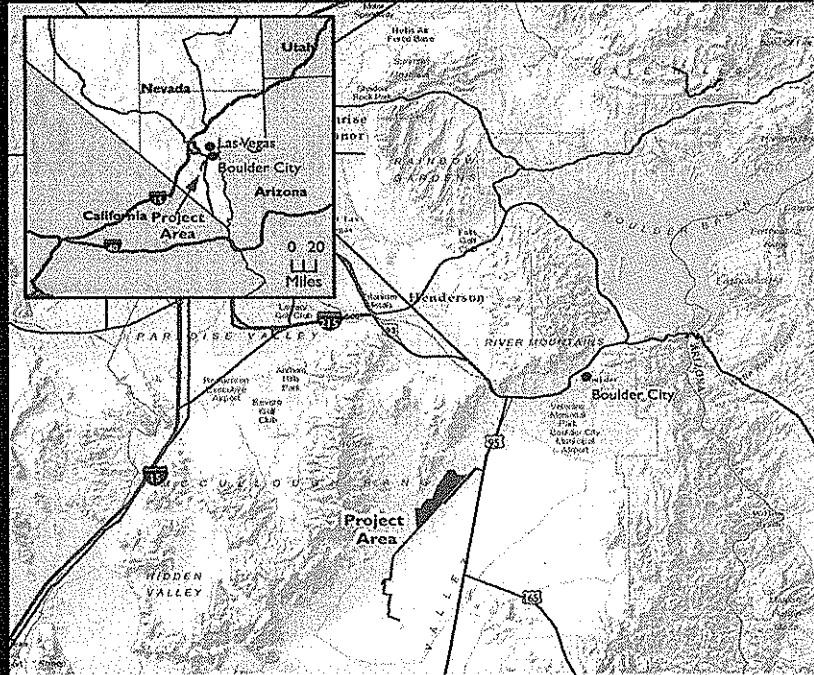


RPS Project Selection Principles

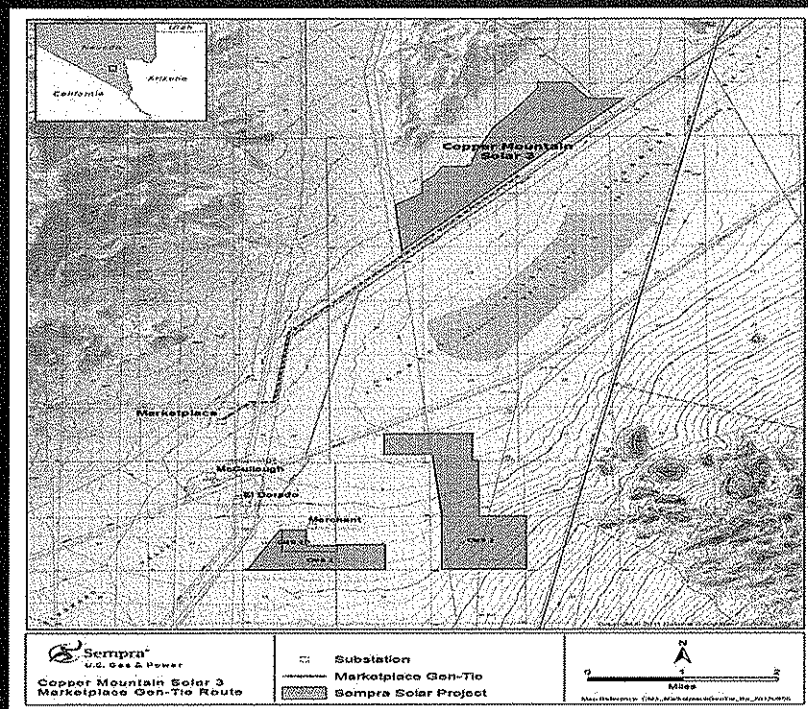
- Geographic Diversity of projects is important
- Maximize use of existing LADWP transmission & land
- Maintain options/flexibility
- Regionally “cluster” renewable projects to achieve efficient operation and maintenance
- Ownership of projects using proven technology



Copper Mountain 3 Solar Project Location



Copper Mountain 3 Solar Project Transmission Interconnection



Copper Mountain 3 Solar Project Company Profile – Sempra U.S. Gas and Power



- Sempra U.S. Gas & Power is a subsidiary of Sempra Energy, a Fortune 500 energy services holding company that is focused on the development of solar, wind, and low-emission natural gas plants with the latest technology.
- Sempra Energy companies has 13,800 employees worldwide and provide energy related products and services to more than 29 million consumers around the world.
- Sempra U.S. Gas & Power has 58MW of solar in operation, 300MW in construction, and 1050MW in development pipeline
- In the Eldorado Valley, Sempra Energy owns and operates Copper Mountain 1 (58MW in-service) and 2 (64MW in-service, 86MW in construction, total 150MW).

10

Copper Mountain 3 Solar Project Summary

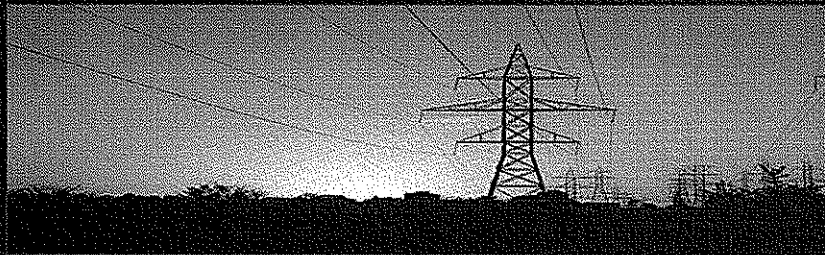
- Location: Boulder City, Nevada
- Full Commercial Operation Date ("Full COD"): December 31, 2015
- Technology: Fixed-axis polycrystalline panels
- Capacity Factor: 25 percent Cost: \$95.75/MWh Flat
- Total Generation Capacity: 250 MW Total Annual Energy Output: 539 GWh in the first year
- SCPPA Participant Shares: LADWP: 210 MW, Burbank: 40 MW
- LADWP's Total Annual Share of Expected Output: Up to 453 GWh in the first year
- Renewable Goals: The purchase of the project will enable LADWP to meet approximately 1.9 % of the LADWP's resource requirements.
- Ownership: Power Purchase Agreement (PPA) with an ownership option. SCPPA has the option to purchase the project at either the tenth, fifteenth, or twentieth anniversary of the full commercial operation date.
- Term: 20-year PPA
- Lease: Term of lease is 30 years with option to renew for two additional ten-year periods

11

Copper Mountain 3 Solar Project Summary (Continued)

Transmission Plan

- The project will interconnect at the 500 kV bus of Marketplace switching station in Boulder City, Nevada. A new 8-mile gen-tie line would be constructed to connect to the existing 500kV substation at Marketplace.
- The Marketplace switching station will need to be expanded by 2014 in order to accommodate the Copper Mountain 3 Solar Project.
- LADWP will use its existing capacity on the Marketplace-Adelanto 500kV line to deliver energy from the Marketplace Switching Station into Los Angeles.



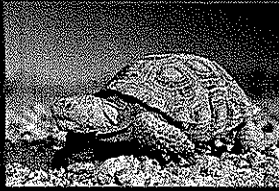
12

Copper Mountain 3 Solar Project Environmental Status

- Environmental Assessment expected to be finalized in December 2012.
- Project subject to the National Environmental Policy Act (NEPA).
- The Bureau of Land Management issued a Record of Decision for Copper Mountain 3 Solar Facility on February 9th, 2012 completing the NEPA process.
- Permits for construction are still pending or will be applied for prior to the commencement of construction activities.

13

Copper Mountain 3 Solar Project Issues



- Environmental Risks
 - Desert Tortoise Relocation
- Transmission
 - Large Generation Interconnection Agreement
 - Right of Way on BLM Corridor
 - Marketplace switching station expansion
- Financial Structure Stability
 - Required Credit Rating for Performance Security of the qualified issuer to be at least A by S&P.
 - Sempra U.S. Gas & Power investment grade BBB+
 - Sempra Energy Parent Guarantee
- Impact on Rates
 - Up to \$0.0012 per kilowatt-hour
 - Monthly Cost Impact on a typical 500 kilowatt-hour household is \$0.60.
- Project Details
 - Performance Security
 - Change in Law Protection
 - Curtailments



14

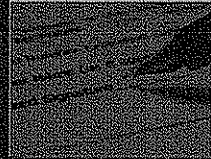
Copper Mountain 3 Solar Major Milestones

- PPA must be approved by December 31, 2012 to not impact COD
- Construction Start date must be prior to June 1, 2013
- Partial COD is December 31, 2014, which marks the completion of 125MW
- Full COD is December 31, 2015

15

Copper Mountain 3 Solar Project Power Sales Agreement

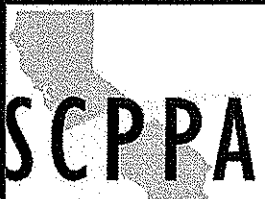
- Through separate power sales agreements between SCPPA and each Participant, SCPPA will sell all of the renewable energy received from the Project and will pass through to each Participant in accordance with its respective output entitlement share, the rights, benefits, and obligations provided under the PPA.
- Under the PSA, LADWP contractually agrees to mutual covenants and agreements in order to pay SCPPA for its costs of 84 percent share of the energy and capacity of the Project, which:
 - Identifies the roles and obligations of SCPPA and LADWP
 - Establishes a Coordinating Committee
 - Establishes a payment mechanism
 - Encompasses other agreements and obligations of SCPPA and LADWP to deliver energy, capacity, environmental attributes, and to exercise purchase options.



16

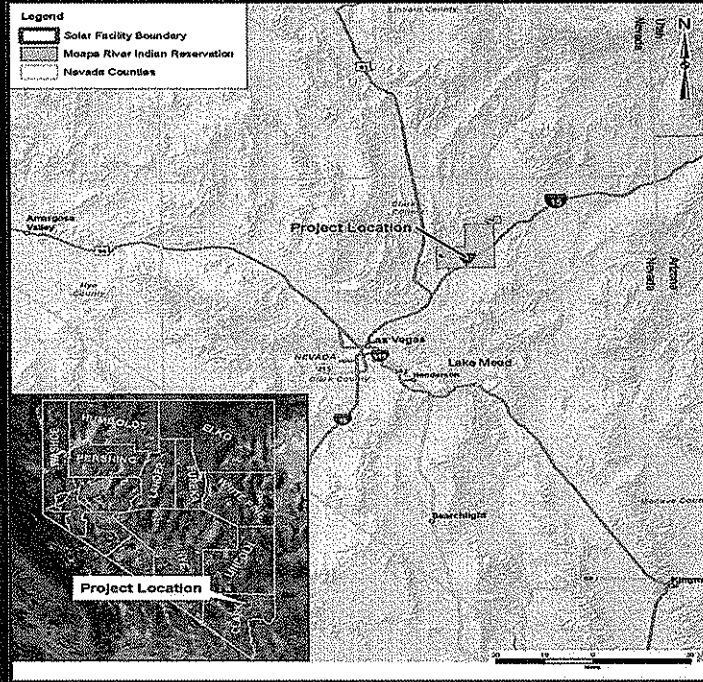
Copper Mountain 3 Solar Project Agency Agreement

- Provides for the designation of LADWP as the Project Manager to administer and manage the Project on behalf of SCPPA and for the benefit of all Participants.
- Since LADWP is the largest Participant in these projects, LADWP will act as SCPPA's agent for Project management and administration, including the management of fiscal matters associated with the bond financing.
- LADWP will charge SCPPA for this service, and SCPPA will charge the Participants, including LADWP, for the cost of this service based on their entitlement shares.

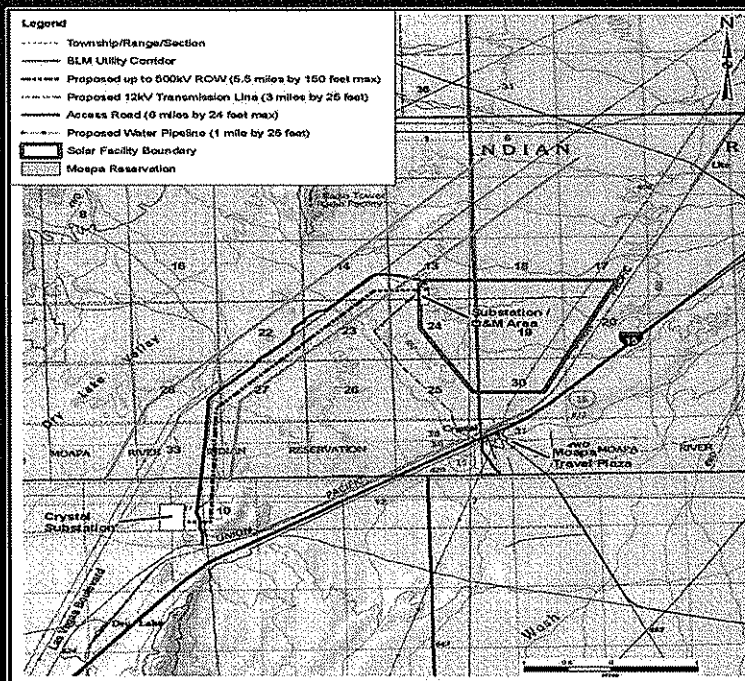


17

K Road Moapa Solar Project Location



K Road Moapa Solar Project Transmission Interconnection



Company Profile – K Road Moapa Solar, LLC

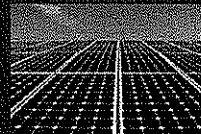
k Road Power

- K Road Moapa Solar, LLC is a wholly owned subsidiary of KRM Holdings LLC which is an intermediate holding company owned by K Road Solar Power LLC, which is the parent entity.
- K Road Solar Power, LLC has three fully permitted utility scale solar power projects in three regions around the United States totaling nearly 450 MWs, of which 25 MWs are in operation. In addition, 2350 MWs worth of projects are in various stages of development.

20

K Road Moapa Solar Project Summary

- Location: 30 miles north of Las Vegas, Nevada on the Moapa Indian Reservation
- Guaranteed Commercial Operation Date (“GCOD”): December 31, 2015
- Technology: Fixed tilt or single axis tracking photovoltaic solar
- Capacity Factor: up to 32 percent
- Price: \$91.69/MWh flat
- Total Generation Capacity: up to 250 MW
- Total Annual Energy Output: up to 706 GWh
- Renewable Goals: The purchase of the project will enable LADWP to meet up to 2.95 % of the LADWP’s resource requirements.
- Ownership: Power Purchase Agreement (PPA) with an ownership option within six months after the tenth, fifteenth, twentieth, or twenty-fourth anniversary of the guaranteed commercial operation date.
- Term: 25-year PPA
- Lease Term: 50 years



21

K Road Moapa Solar Project Summary (Continued)

Transmission Plan:

- A new 6 mile transmission line will be constructed to connect to the existing 500 kV substation at Crystal.
- Before Guaranteed Commercial Operation Date, K Road will sell to the LADWP approximately 5.5 miles of 500 kV transmission line located in the BLM Utility Corridor on Moapa Tribe land and on BLM land outside Moapa tribe land.
- The cost will not exceed \$18 million.
- LADWP will use its existing capacity on the Crystal-McCullough-Victorville 500 kV line to deliver energy to the customers in Los Angeles.



22




K Road Moapa Solar Project Environmental Status

- Environmental Impact Study Finalized on March 15, 2012.
- Project subject to the National Environmental Policy Act (NEPA).
- The United State Department of Interior, The Bureau of Indian Affairs, and the Bureau of Land Management issued a Record of Decision for K Road Moapa Solar Generation Facility on June 21st, 2012 completing the NEPA process.
- Permits for construction are still pending or will be applied for prior to the commencement of construction activities.



23

K Road Moapa Solar Project

- Environment risks
 - Desert Tortoise Relocation 
- Transmission
 - Large Generation Interconnection Agreement
 - Right of Ways on Indian Reservation and in BLM Corridor 
 - Crystal Switching Station Interconnection
- Financial Structure Stability
 - Required Credit Rating for qualified issuer to be at least A- by S&P
 - Equity Partner is Barclays Natural Resource Investments a division of Barclays Capital 
- Impact on Rates
 - Up to \$0.0016 per kilowatt-hour
 - Monthly Cost Impact on a typical 500 kilowatt-hour household is \$0.80
- Project Details
 - Performance Security
 - Change in Law Protection
 - Curtailments

24

K Road Moapa Solar Major Milestones

- PPA must be approved by December 31, 2012 to not have an immediate 6 month delay on GCOD.
- Notice to Proceed with the construction of the Solar Facility must be no later than 12 months prior to GCOD.
- K Road will have installed at least a 20 MW increment no later than 6 months prior to the GCOD.
- The last Milestone is GCOD which is December 31, 2015.

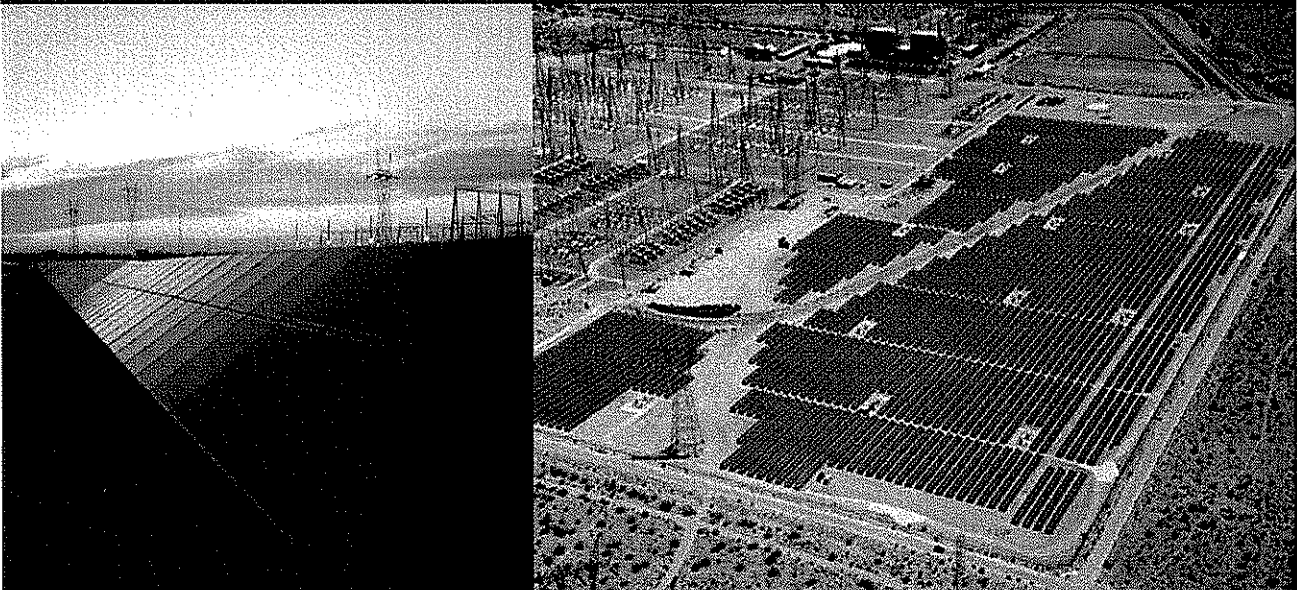
25

Summary

- Semptra Copper Mountain 3 and K Road Moapa Solar projects are consistent with 2010 IRP
- Provides best value in accordance with strategic RPS Principles
- Supports coal replacement strategy
- Utilizes existing transmission rights.
- Consistent with financial plan presented to the Board of Commissioners



Questions or Comments?



ITEM 3

KroadMopaSolar11072012

William Ernest Schenewerk, PhD, P.E. 323 257 6672 wschenewerk@msn.com
 5060 San Rafael Avenue, Los Angeles California, 90042-3239
 10:30 September 12, 2012 Los Angeles DWP Board meeting -appeared
 10:00 September 25, 2012 City Council: 12-1504- mistake: left early.
 14:00 October 03, 2012 Environmental Committee 12-1096 Scattergood 3 repower
 10:00 October 10, 2012 200 N Spring City Council Item (29) 12-0002-s48
 Coal Hollow mine in Alton Utah expansion. Referred to Environmental Committee.
 14:00 October 17, 2012: Environmental Committee 12-1515
 Perrin Ranch Wind Project Generator Interconnection Agreement: 10 USD/person
 14:00 November 07, 2012 200 N Spring Room 1010, Environmental Committee 12-1615 CMS3
 14:00 November 07, 2012 200 N Spring Room 1010, Environmental Committee 12-1614 KRMS

2 (1X) (SB2 [1X]: POU RPS requirement: 25% by 2016 and 33% by 2020
 KRMS 12-1614 http://clkrep.lacity.org/onlinedocs/2012/12-1614_RPT_CAO_10-31-12.pdf
 Miguel A. Santana, City Administration Officer BP 12-017, 10/10/2012
 KRMS http://clkrep.lacity.org/onlinedocs/2012/12-1614_RPT_BWP_10-11-12.pdf
 LADWP Board of Commissioners 10/11/2012
 K Road Moapa Solar Project (KRMS) PSA-BP 12-017 and purchase project from KRMS LLC.
 Authorized DWP purchase of 5.5 sm 500 kv transmission line not to exceed 18 MUSD.
 DWP buyout option: +/- 10%, (nth year + 6 month)/MUSD: 10/368; 15/290; 20/150 24/122
 250 MW PPA from KRMS is 2.9% DWP renewable energy, not replacing base load supply.
 2500 acre KRMS expected output 760 Gwh/a, 0.35 utilization. 20 Mwh required early
 2015, 93.19 USD/Mwh. Expected 25 a term PPA and environmental attribute buy
 expected to total 1.6E+09 USD. Investment Tax Credits value to DWP is 0.325E+09 USD.
 KRMS: 58 - 64.8 MUSD/a (225 MW to 250 MW nameplate) @ 91.69 USD/Mwh including wires.
 DJ Palo Verde on-peak 2016 "Brown Energy" Rate: ~45.16 USD/Mwh. 20 a contract cost:
 $\frac{\$}{a}$ at 420 Gwh/a = $Gwh/a * (91.69 USD/Mwh - 45.16 USD/Mwh) * 1000 M/G$
 $= 21.2E+06 USD/a = 0.424$ billion USD additional cost over 20 year contract.
 Alan S. Brown "DOE Creates its Own Solar X-Prize" Mechanical Engineering, November
 2012, page 22: 2010 Commercial Solar 4.6 USD/w; 2015 DOE Goal: 1.25 USD/w, Tracking
 PV output relative to nontracker: 1-axis = +1.25; 2-axis: +1.40. Measure B nontrack,
 16:00 local time peak, Mid-August: 15 degrees South of Due West and 45 degree tilt.
 17% utilization. 2-axis tracker adjustment: $0.17 * 1.4 = 0.24$ utilization
 Baroness Nicholson: Solar Cost of high-risk capital: ~9%/a. Full-boat: 1% land rent
 + 1.5% property tax + 1.5% insure + 2% maintenance + 5% depreciate + 9% \$ = 20%/a
 PV tracker 4000 USD/kw * 0.2/a / (8766 h/a * 0.35 * 0.9 ohm/transformer) = 0.3 USD/kwh

I am William Ernest Schenewerk. I did solar energy research in graduate school.
 I am a licensed nuclear engineer, mechanical engineer and FAA A&P.
 August 2012, FERC* requests suspension of California's Carbon Cap-and-trade plan.
 It is not too hard to extrapolate that AB32 will be just as unenforceable as is
 Carbon cap-and-trade: Merchant generators will refuse to participate. Future
 "Renewable energy" investments may collapse, K Road Moapa Solar (KRMS), included.
 Assuming 4 USD/w and 15% utilization, KRMS will need 3%/a cash flow just to keep the
 junk man away. 3%/a uses up 92 USD/Mwh contracted power price. Nothing left for
 dept service, rent and property taxes.
 If AB32 is cancelled, renewable mandate may end, resulting in KRMS bankruptcy.
 SCPPA may takes over crumbling 1 billion USD solar PV plant, or LADWP loses 210 Mwe.
 Taking over KRMS means LADWP needs ~100 million USD Up-front cost at ~10 million/a
 bonding cost and ~50 million/a operating cost. LADWP undispachable busbar cost:
 $60E+06 USD/a / (250 MW * 0.35 utilization * 8766 h/a * 0.9) = 87 USD/Mwh, \sim 2 * Brown.$
 Or LADWP stays out and loses 250 Mwe solar. Junk man hauls 1 billion dollar CMS3
 hardware. 250 Mwe of Scattergood runs most of the time, negating "fast start" mods.
 250 Twh at 40 USD/Mwh cost difference is ~3000 USD/person. 4 X Transfer Payments.
 LADWP 2102 IRP 10/11/2012 presentation uses hydro for peak. Suggest reconfiguring
 PV for 16:00 instead of 13:00. Airplane motors cost 0.1 USD/w-a, implying 0.5 USD/w
 capital cost, page M-6 12/22/2012 LADWP 2011 Final IRP: Buy KRMS Chap 11 ~0.5 USD/w

WES 11/07/12
 Signed: William Ernest Schenewerk, PhD, 11/07/2012 Date: 11-7-12
 *FERC document <http://www.ferc.gov/about/com-mem/moe11er/moe11er-08-06-12.pdf>
 Submitted in 688 Committee
 Council File No: 12-1614
 Item No.: 3
~~Copy:~~ From: PUBUC