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"To enrich lives through effective and caring service"

June 3, 2015

To: Supervisor Michael D. Antonovich, Mayor
Supervisor Hilda L. Solis
Supervisor Mark Ridley-Thomas
Supervisor Sheila Kuehl
Supervisor Don Knabe

From: Dave Chittenden 
Chief Deputy Director

Subject: **REPORT BACK ON SOLAR PANEL PILOT PROJECT**

On November 25, 2014, your Board instructed the Internal Services Department (ISD) to work in conjunction with the Chief Executive Officer (CEO) and other appropriate departments to accelerate the County's adoption of solar to develop a pilot project to install solar panels on County buildings. The specific actions included:

1. Initiate a competitive contracting process to implement a Rooftop Solar Pilot Project to install solar panels on up to 15 County buildings;
2. Return to the Board of Supervisors with the proposed contract(s), no later than 120 days from today, together with an analysis of costs using a County-financing model, so that the Board of Supervisors can select one or both of these options;
3. Report back to the Board of Supervisors at appropriate intervals during the contracting and installation process, and again when the solar panels are completed, regarding ways in which the County can further improve the solar installation process on County buildings in the future and;
4. For the first year after installation of the solar panels, submit a report back to the Board of Supervisors, on a quarterly basis, on solar panel performance and savings in energy costs. After the first year, submit the report annually.

This memo is a status report to your Board on the specific actions taken to address the motion, close out the first two items and provide the Board with ISD's recommendations to comply with the additional reporting instructions during the contracting, installation and operations phases.

Executive Summary

Two solar models were solicited and evaluated against continuing business as usual (BAU) purchases of electricity from SCE. Both solar models provide economic and environmental improvements over business as usual. However, the solar power purchase agreement (PPA) model provides the most benefits to the County. Current solar market conditions are particularly attractive

due to tax and electric policies which will expire in 2016 so proceeding in a timely manner is imperative for the County to capture the benefits described in this memo.

Contracting Process

ISD conducted a competitive solicitation that requested proposals under two solar business models:

1. a power purchase agreement (PPA) model, under which the County would purchase the solar electricity produced by the installations from a 3rd party who installs, owns, operates and maintains the installations and;
2. a County-purchased model, under which the County would use long term financing to purchase the installations and would be responsible to operate, maintain and insure them.

On February 18, 2015, ISD released two (2) work order solicitations (WOS) for Rooftop and Canopy (parking lot coverage) Solar Pilot Projects for various County facilities under its Energy Efficiency Projects Master Agreement (EEPMA). The scope of the solar projects were for small installations (15 sites at less than 200kilo-Watts - solicitation number EEP131), and larger installations (11 sites at over 200 kilo-Watts - solicitation number EEP132). Eighteen qualified vendors under the EEPMA Renewable Resources and Distributed Generation category were notified of the solicitation opportunities. No more than 15 projects would have been awarded.

Eight (8) vendors attended the mandatory proposer's conference and job walks were held on February 26, 2015. There were no proposals received for EEP131; four (4) proposals were received for EEP132 by the March 31, 2015 deadline. The four (4) proposals were reviewed for compliance with the minimum requirements set forth in the WOS. The proposals were determined to be in compliance with the minimum requirements and an evaluation committee evaluated the responses in accordance with the evaluation criteria in the WOS. No bids were received for the smaller installations.

Contract(s) for the selected vendor(s) will be provided if your board provides direction for ISD to proceed with an award.

The solicitation process will continue with notifications to non-selected vendors, the protest process, negotiations, and work order award(s) based on your Board's direction.

Modeling and Results

The results from the solicitation provide firm pricing that would create both near and long term savings over the business as usual (BAU) model where the County purchases electricity from the utility, Southern California Edison (SCE). The PPA model provides a 1st year reduction in utility costs of 19% and a 20 year average reduction of 44%. The County financed purchase model provides sufficient utility bill savings compared to projected utility costs to cover debt service, insurance and maintenance costs and provide savings. In both solar models, the electricity generated by the solar installations is fixed for the 20 year term and provides a risk management hedge against rising utility rates.

This report analyzes the BAU model against the relative merits of the Solar PPA and County financed solar models and finds that the County receives the most benefits from the PPA model.

Summary Analysis

The table below summarizes the benefits and drawbacks of the two solar models.

Model	Benefits	Drawbacks
Solar Power Purchase Agreement	<ul style="list-style-type: none"> • No capital costs • Operating budget directly leveraged to increase value of existing expenditures • Reduced project, performance & maintenance risks • No use of County borrowing capacity • No competition for scarce M+O resources • County still able to pledge its facilities where solar is installed 	<ul style="list-style-type: none"> • Parking lots must remain for 20 years • Site closure/relocation workarounds <ul style="list-style-type: none"> ○ Assignment ○ Buyout ○ Relocation ○ Off-site energy credits • Sites must accommodate a site easement for access
Solar County financed purchase	<ul style="list-style-type: none"> • Slightly more operational flexibility to close or relocate facilities or infrastructure • Low interest rate 	<ul style="list-style-type: none"> • County responsible for theft, vandalism, damage and system performance • Use of County borrowing capacity • Additional time required to comply with law to issue debt • New agreements with Depts. to repay bonds from utility budgets • Forfeit 30% tax credit • Additional M+O and insurance costs

Please see Attachment 1 for more detailed analysis of the solar models.

CONCLUSION

ISD’s analysis supports that either solar model provides both qualitative and quantitative benefits to the County. However, we believe that the PPA model provides the most benefits with fewer risks.

The current solar market conditions are shaped by several advantageous tax and electric rate provisions that will expire at or near the end of 2016. The expiration of these provisions are expected to temporarily increase the cost of solar installations making solar less competitive with current utility rates. These specific market conditions make expedient implementation an important criteria in evaluating solar models and potential installations at County facilities.

DC:JLG:HC
 Attachment

- c: ISD Board Deputies
- Executive Office, Board of Supervisor
- Chief Executive Officer
- County Counsel

Attachment 1 – Detailed Analysis

Identification of Viable Sites

Eleven (11) sites were selected by ISD for their potential as sites for larger (>200KW) solar installations. These sites were reviewed with CEO prior to publishing the solicitation. The installation types are primarily parking lot canopies and the proposed solar installations will offset between 15% and 80% of the site's current annual electrical requirements with the balance of the electrical requirements to be purchased from the local utility. The local utility would continue to provide power to these facilities, particularly at times when the solar installations are not generating electricity such as at night or on cloudy days.

Site >200KW	Address	Install type	Energy Offset
Century Regional Detention Facility	11705 S. Alameda St., Lynwood, CA 90262	Canopy	15%
ISD-C/D Building Automotive Services	1104 N. Eastern Ave., LA, CA 90063	Roof	20%
Ferguson Admin. Services Center	5555 Ferguson Dr., Commerce, CA 90022	Canopy	25%
Whittier Narrows Park	750 S. Santa Anita Ave., S. El Monte, CA 91733	Canopy	79%
Parks-Santa Fe Dam Parking Lot 4	15501 E. Arrow Hwy., Irwindale, CA 91706	Canopy	80%
Norwalk Library	12350 Imperial Hwy., Norwalk, CA 90650	Roof	70%
ISD Parking Lot Headquarters	1100-1104 N. Eastern Ave., LA, CA 90063	Canopy	31%
Palmdale Sheriff Station	750 E. Avenue Q, Palmdale, CA 93550	Canopy	80%
South Los Angeles Sheriff Station	1310 W. Imperial Hwy., Los Angeles, CA 90044	Canopy	80%
Walnut Sheriff	21695 E. Valley Road, Walnut, CA 91789	Canopy	80%
Lost Hills Sheriff Station	27050 W. Agoura Rd., Agoura Hills, CA 91301	Canopy	79%

Additionally, the end of term provisions of both solar models have similar benefits to the County. The PPA provides a procedure to determine the Fair Market Value and if the Fair Market Value is less than the cost to restore the site to its original condition, the PPA provider may elect to surrender the equipment and deliver clean title to the County for no consideration. Otherwise, the PPA provider shall restore the site to its original condition. Due to the age of the system and the costs to restore the site, we anticipate that the PPA would be likely to provide

title to the installation to the County, and that the County would be able to continue to operate the system and benefit from its remaining useful life of approximately 5 years. Similarly, in the County financed model, after the debt is retired the County would benefit from the electricity generated from the systems to offset costs of purchasing power from SCE.

Both solar models provide the County all of the renewable energy credits and environmental attributes crediting the County with reducing air and carbon pollution in the region.

The two solar business models were compared with the County's current BAU model which would continue the County's current practice of not installing on-site solar and purchasing all of the required electricity from the local utility company. See Attachment 2

Qualitative Analysis

BAU Model

If the County does not take action to install solar it would forgo the clean energy and environmental benefits of the proposed on-site solar and sites emissions from electricity would track the local utility's carbon emissions rate.

PPA model

PPAs are an industry standard approach to financing the implementation of solar electric installations using existing utilities budget appropriations to pay for the electric output from these installations, eliminating the need and some of the risks of a capital investment. Under a PPA, the County executes a license agreement for a particular site to a solar provider for 20 years. The provider then constructs, owns, operates and maintains the system; selling the solar electricity to the County at a price lower than it would have paid to the local utility providing utility budget savings and on-site, clean, renewable electricity.

This model is anticipated to be the most expedient and have the lowest schedule, maintenance, insurance and operations risks. The PPA model also keeps the solar pilot projects from competing for scarce resources with core County functions while still providing significant benefits to the County.

County Financed Cash model

This model for installing solar involves the County purchasing the PV system itself and financing the purchase over time by issuing long term (20 year) tax exempt bonds. The electricity generated by the PV system would reduce the amount of electricity required to be purchased from the local utility, resulting in avoided costs which are sufficient to fund the system costs, including debt service, insurance and maintenance. However, if actual energy production was below expectation due to system damage, weather or other reasons the avoided costs may not materialize. The cost of repairs and equipment replacement will be the County's responsibility.

This model introduces new risks to the County such as the use of borrowing capacity, additional accounting complexity between capital and operating budgets, performance and schedule risks. The schedule risks may cause the County to miss the window of opportunity for the current advantageous solar market conditions. This model also requires the forfeiture of any value from the 30% investment tax credit of which only private companies may take advantage.

Quantitative Analysis

BAU Model

The BAU model results in a 20 year average annual utility cost of **\$2.36M** across the identified 11 sites for purchasing the quantity of electricity that could be offset by the solar installations. This is the most expensive option in every year of the 20 years analyzed. This model includes a conservative projection of 4% annual utility rate increases based on historical data.

PPA model

The 20 year average cost of solar electricity under a PPA is projected to be **\$1.33M**. The average annual savings is **\$1.03M** with no upfront costs, low risks and significant economic benefits. This option provides fixed price, renewable power and shaded parking for 44% less than what the County's would otherwise pay buying electricity from the utility. Additionally, the first year annual fiscal benefit from the PPA is estimated to be \$250K¹.

County Financed Cash model

The 20 year average annual financial cost (debt service, maintenance and insurance expenditures) of solar electricity under this model is projected to be **\$1.28M**. This cost when combined with electric rates results in an annual cost of **\$1.58M**. This model is projected to provide **\$780K** of 20 year average annual savings when compared to business as usual. This model is less financially attractive than the PPA model even when using low interest rates available under the Qualified Energy Conservation Bond program.

Additional quantitative details on the results of the solicitations and the net benefits to the County are described in the body of this letter and in Attachment 2.

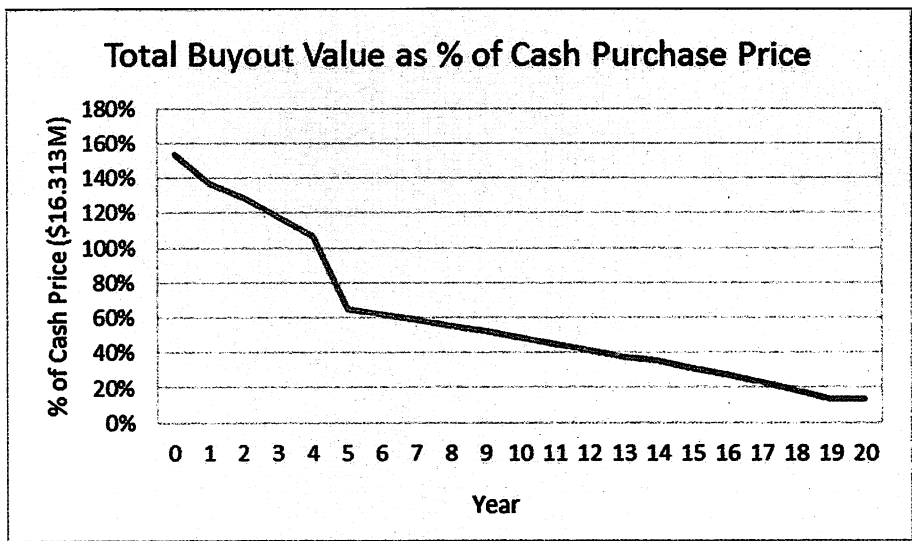
Long-term operational flexibility

The PPA model obligates the County to purchase the solar electric output for up to 20 years. This entails potential risks to the County. However, provisions in the PPAs incorporated into this solicitation are able to mitigate these risks.

The County and your Board reserve the right to make real estate decisions such as the sale of a property or closure and/or relocation of County operations to another site.

¹ This is the difference between the SCE rate and the PPA rate times the annual electricity production with an adjustment for specific electric rate components.

- In the event that your Board decides to sell a site, the PPA provides for assignment to a new owner and the approval of the assignment cannot be unreasonably withheld by the solar provider.
- In the event, that your Board decides to close or relocate County operations at a particular site, the PPA provides a pre-defined buyout schedule for the County to purchase the equipment. The chart below shows the percent of cash price over the 20 year period. Additionally, in the event of a temporary closure of a facility for renovation an electricity rate option permits the County to temporarily credit another site with the solar generated at reasonably cost effective rates.



- The final option, in the event of a site closure the county has an option to pay to relocate the solar equipment to a new facility. This option must be weighed against the above provisions and would be unlikely to be cost effective but remains an option to preserve flexibility with real estate decision-making.

Budget impacts

BAU Model

No structural changes would be required to the budget process to continue current practice.

PPA model

The approval of the PPAs will reduce SCE electricity costs for the subject facilities as soon as the solar panels begin generating electricity. These SCE electricity costs savings will be used to pay the PPA provider for the solar electricity generated. The solar PPA costs are fixed for 20 years and are estimated to be 19% less expensive than business as usual in year 1. As the solar projects generate lower cost energy, ISD will reduce the Services & Supplies appropriation in the future fiscal year budget submittals for the Utilities budget based upon actual cost information. There is adequate appropriation in the current and next fiscal year (FY15-16) budgets for the PPA costs.

County Financed Cash model

Unlike the PPA model, the County Financed model would establish a long-term debt service obligation to repay the upfront capital costs as well as annual operating, maintenance and insurance costs which would need to be funded. The cheaper-than-utility solar electricity generated would result in avoided costs which should be sufficient to cover these costs.

The County financed model would require inter-departmental agreements bridging between capital budget expenditures and reductions in Utility budgets to service the debt which would require new processes and procedures and additional agreements between departments and CEO. This has the potential to delay the solar projects and cause the County to miss the window of opportunity with the current solar market conditions.

Environmental

The proposed Project is statutorily and categorically exempt from the provisions of the California Environmental Quality Act (CEQA). Section 21080.35 of the Public Resources Code establishes a statutory exemption from CEQA for solar energy systems installed on an existing rooftop or at an existing parking lot. The Project, which consists of execution of a PPA which will include, among other things, the installation of solar panels on existing buildings and existing parking lots, which is also within certain classes of projects that have been determined not to have a significant effect of on the environment in that it meets criteria set forth in Section 15303 and 15311 of the State CEQA Guidelines and Class 3(b) and Class 11 of the County's Environmental Document Reporting procedures and Guidelines, Appendix G. These classes include construction and location of small new equipment and facilities as well as minor accessory structures. The eleven project sites, identified in Attachment 2 of this memo are not located in sensitive environments and there are no cumulative impacts, unusual circumstances or other limiting factors that would make the exemption inapplicable based on the project records.

Upon your Board's approval of the proposed Project, ISD will file a Notice of Exemption with the County Clerk in accordance with Section 15062 of the State CEQA Guidelines.

Attachment 2 – Quantitative Analysis

Site	Address	Solar Capacity (DC)	Install type	Solar Production (kWh)	Utility BAU Analysis		Power Purchase Agreement (PPA) Analysis			County Financed Purchase Analysis				
					Avg SCE \$/kWh	Average Annual Utility expense (20 yrs)	PPA fixed price	Average Annual PPA Expense (20 yrs)	Average PPA Savings per year	Cash price	Annual Debt Service	Annual Maintenance & Insurance Expense	Financed solar costs total	Average Annual Savings (20 year)
Century Regional Detention Facility	11705 S. Alameda St., Lynwood, CA 90262	679	Canopy	969,191	\$ 0.1304	\$ (195,717)	\$ 0.1065	\$ (131,365)	\$ 64,352	\$ 1,673,914	\$ (103,395)	\$ (26,978)	\$ (130,373)	\$ 37,199
ISD-C/D Building Automotive Services	1104 N. Eastern Ave., LA, CA 90063	1,122	Roof	1,676,547	\$ 0.1447	\$ (375,555)	\$ 0.0805	\$ (183,650)	\$ 191,905	\$ 1,874,450	\$ (115,782)	\$ (37,436)	\$ (153,217)	\$ 173,650
Ferguson Admin. Services Center	5555 Ferguson Dr., Commerce, CA 90022	1,120	Canopy	1,651,072	\$ 0.1275	\$ (326,010)	\$ 0.1042	\$ (219,990)	\$ 106,020	\$ 2,656,360	\$ (164,079)	\$ (43,650)	\$ (207,729)	\$ 70,333
Whittier Narrows Park	750 S. Santa Anita Ave., S. El Monte, CA 91733	294	Canopy	425,588	\$ 0.3304	\$ (217,717)	\$ 0.1128	\$ (60,366)	\$ 157,351	\$ 799,212	\$ (49,366)	\$ (12,269)	\$ (61,635)	\$ 143,723
Parks-Santa Fe Dam Parking Lot 4	15501 E. Arrow Hwy., Irwindale, CA 91706	539	Canopy	786,418	\$ 0.1726	\$ (210,203)	\$ 0.1045	\$ (105,019)	\$ 105,184	\$ 1,347,921	\$ (83,259)	\$ (21,555)	\$ (104,813)	\$ 82,552
Norwalk Library	12350 Imperial Hwy., Norwalk, CA 90650	256	Roof	384,281	\$ 0.1595	\$ (94,903)	\$ 0.0863	\$ (44,323)	\$ 50,579	\$ 490,962	\$ (30,326)	\$ (9,052)	\$ (39,378)	\$ 44,365
ISD Parking Lot Headquarters	1100-1104 N. Eastern Ave., LA, CA 90063	1,120	Canopy	1,653,443	\$ 0.1447	\$ (370,380)	\$ 0.1042	\$ (220,306)	\$ 150,074	\$ 2,691,561	\$ (166,253)	\$ (43,932)	\$ (210,185)	\$ 112,178
Palmdale Sheriff Station	750 E. Avenue Q, Palmdale, CA 93550	532	Canopy	759,646	\$ 0.1340	\$ (157,600)	\$ 0.0935	\$ (93,088)	\$ 64,512	\$ 1,296,330	\$ (80,072)	\$ (21,019)	\$ (101,092)	\$ 34,447
South Los Angeles Sheriff Station	1310 W. Imperial Hwy., Los Angeles, CA 90044	630	Canopy	899,351	\$ 0.1299	\$ (180,966)	\$ 0.1065	\$ (121,899)	\$ 59,067	\$ 1,548,836	\$ (95,669)	\$ (24,998)	\$ (120,667)	\$ 34,181
Walnut Sheriff	21695 E. Valley Road, Walnut, CA 91789	404	Canopy	588,368	\$ 0.1436	\$ (130,866)	\$ 0.1065	\$ (79,748)	\$ 51,118	\$ 1,033,745	\$ (63,853)	\$ (16,348)	\$ (80,201)	\$ 33,578
Lost Hills Sheriff Station	27050 W. Agoura Rd., Agoura Hills, CA 91301	346	Canopy	516,479	\$ 0.1307	\$ (104,522)	\$ 0.1036	\$ (68,506)	\$ 36,016	\$ 899,604	\$ (55,567)	\$ (14,116)	\$ (69,683)	\$ 19,840
Totals		7,042		10,310,384	\$ 0.1589	\$ (2,364,438)	\$ 0.1008	\$ (1,328,259)	\$ 1,036,179	\$ 16,312,895	\$ (1,007,620)	\$ (271,352)	\$ (1,278,972)	\$ 786,046

total w/ Demand charges
\$ (1,578,392)

The parameters used to calculate NPV of the business models are provided below:

1. SCE's rates are conservatively projected to escalate at 4% annually
2. The PPA rate is fixed (*i.e.*, not escalated) over the 20 year life of the PPA
3. The amount of electricity produced annually by the solar installations was calculated using National Renewable Energy Lab's (NREL) solar modeling tools that project solar performance, orientation of the panels, system design and geographic location.
4. County secured financing assumed 2% interest rate for a term of 20 years with a 1% origination fee.
5. The level cost per energy unit or kilo-Watt hours (kWh) for the cash purchase models used NREL's level cost calculator.

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