LAS VIRGENES - TRIUNFO
JOINT POWERS AUTHORITY
AGENDA

4232 Las Virgenes Road, Calabasas, CA 91302

CLOSING TIME FOR AGENDA IS 8:30 A.M. ON THE TUESDAY PRECEDING THE MEETING. GOVERNMENT CODE SECTION 54954.2 PROHIBITS TAKING ACTION ON ITEMS NOT ON POSTED AGENDA UNLESS AN EMERGENCY, AS DEFINED IN GOVERNMENT CODE SECTION 54956.5 EXISTS OR UNLESS OTHER REQUIREMENTS OF GOVERNMENT CODE SECTION 54954.2(B) ARE MET.

5:00 PM August 1, 2016

PLEDGE OF ALLEGIANCE

1 CALL TO ORDER AND ROLL CALL

2 APPROVAL OF AGENDA

3 PUBLIC COMMENTS

Members of the public may now address the Board of Directors **ON MATTERS NOT APPEARING ON THE AGENDA**, but within the jurisdiction of the Board. No action shall be taken on any matter not appearing on the agenda unless authorized by Subdivision (b) of Government Code Section 54954.2

4 CONSENT CALENDAR

A Minutes: Regular Meeting of July 5, 2016 (Pg. 3)

Approve.

B Rancho Agitator No. 2 Conveyor Frame Replacement: Purchase Order (Pg. 9)

Authorize the Administering Agent/General Manager to issue a purchase order to BDP Industries, Inc., in the amount of $42,510, for the purchase of a new conveyor frame for Agitator No. 2.

C Rancho Las Virgenes Digester No. 1 Cleaning Project: Final Acceptance (Pg. 18)

Approve the execution a Notice of Completion and have the same recorded, and in the absence of claims from subcontractors and others, release the retention, in the amount of $5,798.52, within 30 calendar days after filing the Notice of Completion for the Rancho Las Virgenes Digester No. 1 Cleaning Project.

5 ACTION ITEMS

A Recycled Water Seasonal Storage: Selection of Preferred Alternative (Pg. 24)

Select Scenario No. 4, use of Las Virgenes Reservoir for indirect potable reuse, as

the preferred alternative for the Recycled Water Seasonal Storage Basis of Design Report; authorize staff to finalize the Basis of Design Report, identifying the preferred alternative; and direct staff to outline the proposed next steps at the JPA's September Board Meeting.

B State and Federal Legislative and Regulatory Advocacy (Pg. 48)

Accept the proposal from Best Best & Krieger LLP; authorize the Administering Agent/General Manager to execute a one-year professional services agreement, in the amount of $130,000, for state and federal legislative and regulatory advocacy services; and request a commitment from the JPA members to individually budget and authorize expenses for at least one Board Member and executive staff member to participate in advocacy trips.

C Consulting Services for Renewable Energy Projects (Pg. 54)

Accept the proposal from TerraVerde Renewable Partners, LLC; authorize the Administering Agent/General Manager to execute a professional services agreement, in the amount of $80,576; and appropriate the same amount to perform a Project Feasibility Assessment for expanded solar generation capacity and battery storage.

6 BOARD COMMENTS

7 ADMINISTERING AGENT/GENERAL MANAGER REPORT

8 FUTURE AGENDA ITEMS

9 PUBLIC COMMENTS

Members of the public may now address the Board of Directors **ON MATTERS NOT APPEARING ON THE AGENDA**, but within the jurisdiction of the Board. No action shall be taken on any matter not appearing on the agenda unless authorized by Subdivision (b) of Government Code Section 54954.2

10 CLOSED SESSION

11 ADJOURNMENT

Pursuant to Section 202 of the Americans with Disabilities Act of 1990 (42 U.S.C. Sec. 12132), and applicable federal rules and regulations, requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting, should be made to the Executive Assistant/Clerk of the Board in advance of the meeting to ensure availability of the requested service or accommodation. Notices, agendas, and public documents related to the Board meetings can be made available in appropriate alternative format upon request.

LAS VIRGENES – TRIUNFO
JOINT POWERS AUTHORITY
MINUTES
REGULAR MEETING

5:00 PM July 5, 2016

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance to the Flag was led by Dave Roberts.

1. CALL TO ORDER AND ROLL CALL

The meeting was called to order at **5:00 p.m.** by Chair Glen Peterson in the Board Room at Las Virgenes Municipal Water District headquarters at 4232 Las Virgenes Road in Calabasas, California. Josie Guzman, Clerk of the Board, conducted the roll call.

Present: Directors: Caspary, Iceland, Lewitt, Paule, Peterson, Renger, and Wall.
Absent: Directors: McReynolds (arrived at 5:05 p.m.), Orkney, and Polan (arrived at 5:08 p.m.)

2. APPROVAL OF AGENDA

Chair Peterson noted that the agenda was amended to move Item 10B (as amended) to Consent Calendar Item 4B.

Director Paule moved to approve the agenda as amended. Motion seconded by Director Lewitt.

Motion carried by the following vote:

AYES: Caspary, Iceland, Lewitt, Paule, Peterson, Renger, Wall
NOES: None
ABSENT: McReynolds, Orkney, Polan

3. PUBLIC COMMENTS

Acting Administering Agent/General Manager David Lippman introduced newly hired Resource Conservation Manager Dave Roberts.

4. CONSENT CALENDAR

A Minutes: Regular Meeting of June 6, 2016 and Special Meeting of June 21, 2016 - Approve

B Independent Auditor Services: Contract Amendment for Name Change

Authorize the Administering Agent/General Manager to execute an amendment to the agreement for auditing services to reflect a name change form Pun & McGeady, LLP to The Pun Group, LLP.

Director Caspary moved to approve the Consent Calendar. Motion seconded by Director Iceland.

Motion carried by the following vote:

AYES: Caspary, Iceland, Lewitt, Paule, Peterson, Renger, Wall
NOES: None
ABSENT: McReynolds, Orkney, Polan

5. ILLUSTRATIVE AND/OR VERBAL PRESENTATION AGENDA ITEMS

A Recycled Water Seasonal Storage Project Basis of Design Report: Status Update

Acting Administering Agent/General Manager David Lippman reported that he and Administering Agent/General Manager David Pedersen spoke with staff from the Los Angeles Department of Water and Power (LADWP) to discuss concerns regarding the use of the Encino Reservoir including: 1) LADWP's ability to use the Encino Reservoir as an emergency water source and whether the State Water Resources Control Board, Division of Drinking Water would require a "do not drink" or "do not use" order if LADWP needed to put the water into the system; 2) the volume available in the reservoir for runoff following significant rain events if additional recycled water was stored in the reservoir; and 3) LADWP's ability to complete the seismic study for the reservoir. He stated that an update would be provided at the August 1, 2016 JPA Board Meeting, including the results from The PFM Group's financial study and staff's recommendation on a preferred alternative. He also stated that stakeholders would be invited to attend the meeting to provide input on their preferred alternatives.

6. ACTION ITEMS

A Canyon Oaks Park Recycled Water Main Extension Project: Preliminary Design Report

Receive and file the Preliminary Design Report for the Canyon Oaks Park Recycled Water Main Extension Project.

Acting Administering Agent/General Manager David Lippman presented the report.

Director McReynolds arrived at 5:05 p.m.

Director Caspary moved to approve Item 6A. Motion seconded by Director Paule.

Acting Administering Agent/General Manager David Lippman responded to a question related to the possibility of extending the recycled water main to the Ventura County area by stating that this project would only be for the facilities at Canyon Oaks Park due to the shorter distance from the existing system. He also responded to a question related to providing recycled water service to Yerba Buena Elementary School.

Director Polan arrived at 5:08 p.m.

Motion carried by the following vote:

AYES: Caspary, Iceland, Lewitt, McReynolds, Paule, Peterson, Polan, Renger, Wall
NOES: None
ABSENT: Orkney

B Tapia Water Reclamation Facility Preliminary Clarifiers Nos. 2 and 3 Rehabilitation Project: Call for Bids

Acting Administering Agent/General Manager David Lippman presented the report.

Director Polan moved to approve Item 6B. Motion seconded by Director McReynolds.

Motion carried by the following vote:

AYES: Caspary, Iceland, Lewitt, McReynolds, Paule, Peterson, Polan, Renger, Wall
NOES: None
ABSENT: Orkney

7. BOARD COMMENTS

None.

8. ADMINISTERING AGENT/GENERAL MANAGER REPORT

Acting Administering Agent/General Manager David Lippman reintroduced Resource Conservation Manager Dave Roberts. He reported that the gauging station for Malibu Creek was registering approximately 3.29 cubic feet per second, requiring no augmentation to the flows.

Director Caspary referred to the Tapia Water Reclamation Facility Primary Clarifier Nos. 2 and 3 Rehabilitation Project and inquired whether consideration was made regarding the possibility of having to discharge for creek flows during construction. Mr. Lippman responded that there should be adequate treatment capacity and it was unlikely that discharge would be necessary.

9. FUTURE AGENDA ITEMS

None.

10. INFORMATION ITEMS

A 18-inch Recycled Water Pipeline Joint Bonding Repair Project: CEQA Determination and Construction Award

B Notification of Independent Audit Firm Name Change – (Item was amended and moved to Consent Calendar Item 4B)

11. PUBLIC COMMENTS

None.

12. CLOSED SESSION

A Conference with District Counsel – Existing Litigation (Government Code Section 54956.9(a)):

1. Las Virgenes - Triunfo Joint Powers Authority v. United States Environmental Protection Agency and Heal the Bay, Inc. v. Lisa P. Jackson (TMDL cases)
2. Las Virgenes – Triunfo Joint Powers Authority v. United States Environmental protection Agency (FOIA case)

The Board recessed to Closed Session at **5:11 p.m.** and reconvened to Open Session at **5:17 p.m.**

District Counsel Keith Lemieux announced there was no reportable action taken during the Closed Session.

13. ADJOURNMENT

Seeing no further business to come before the Board, the meeting was duly adjourned at **5:18 p.m**.

Glen Peterson, Chair

ATTEST:

Michael Paule, Vice Chair

August 1, 2016 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Rancho Agitator No. 2 Conveyor Frame Replacement: Purchase Order

SUMMARY:

In May 2016, the conveyor frame for Agitator No. 1 at the Rancho Las Virgenes Composting Facility was replaced due to rust and deterioration. The compost agitators are essential for mixing and moving compost within the bays of the reactor building. The conveyor frame is the base for the agitator's flights and chains. The conveyor frame for Agitator No. 2 also has sections with corrosion damage and extensive wear. Staff recommends its replacement to extend the useful life of the agitator.

RECOMMENDATION(S):

Authorize the Administering Agent/General Manager to issue a purchase order to BDP Industries, Inc., in the amount of $42,510, for the purchase of a new conveyor frame for Agitator No. 2.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds for the purchase are available in the adopted Fiscal Year 2016-17 JPA Budget under CIP Job No. 10601.

DISCUSSION:

The reliability of the agitator is crucial to plant operation. Agitator No. 2 has significant corrosion and wear on the conveyor frame. It is no longer possible to attach various parts to the frame. The plant has experienced increased mechanical breakdowns due to the condition of the agitator, and the frame has exceeded its useful life. Staff researched fabrication of a new frame, but initial estimates exceeded the cost of a factory replacement. This purchase

will extend the useful life of the agitator and increase plant reliability. Attached for reference are photographs showing the condition of the deteriorated agitator conveyor frame.
On November 30, 2015, the JPA Board authorized the replacement of the conveyor frame for Agitator No. 1, in the amount of $41,500. The work was completed in May 2016. Attached is a photo of Agitator No. 1 with the new conveyor frame.

Prepared by: Darrell Johnson, Facilities Maintenance Supervisor

ATTACHMENTS:

Agitator No. 2 - Photos of Deteriorated Conveyor Frame
Agitator No. 1 - Photo of New Conveyor Frame

August 1, 2016 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Rancho Las Virgenes Digester No. 1 Cleaning Project: Final Acceptance

SUMMARY:

On May 2, 2016, the JPA Board awarded a construction contract to MP Environmental Services, Inc., in the amount of $190,390, for the Rancho Las Virgenes Digester No. 1 Cleaning Project. The project consisted of removing and disposing of digested sludge, scum, grit, grease, rags and other debris, and pressure washing the interior surfaces of the digester. One change order, in the net amount of $5,789, was administratively approved. The work has been completed, and there are no outstanding issues to prevent acceptance of the project. As a result, it is appropriate to file the Notice of Completion and release the retention as stipulated in the contract documents.

RECOMMENDATION(S):

Approve the execution a Notice of Completion and have the same recorded, and in the absence of claims from subcontractors and others, release the retention, in the amount of $5,798.52, within 30 calendar days after filing the Notice of Completion for the Rancho Las Virgenes Digester No. 1 Cleaning Project.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

Sufficient funds for the project were included in the adopted Fiscal Year 2016-17 JPA Budget under CIP No. 10565. No additional appropriation is required.

DISCUSSION:

Change Order No. 1, in the net amount of $5,789, consisted of two items:

- First, an increase of $13,289 was required for the mobilization, rental and demobilization of 12 additional storage bins for dewatered sludge. The extra bins were necessary because shortly after the JPA Board awarded the contract, staff received feedback from Waste Management that the lab results submitted for approval to dispose of the dewatered sludge as a non-hazardous waste were rejected since the results were more than one year old and were not project specific. Staff arranged for special sampling after the digester cleaning project started; however, additional storage bins were temporarily needed to avoid delays to the contractor while waiting for the lab results.

- Second, a $7,500 credit, partially offsetting the cost of the additional bins, was received because delay days accounted for in the contract were not utilized.

Staff is planning an entry to perform an inspection of Digester No. 1 and will provide a comprehensive scope for any required repairs and/or rehabilitation before the digester is placed back into service.

Prepared by: John Zhao, P.E., Principal Engineer

ATTACHMENTS:

Change Order No. 1
Notice of Completion

CONTRACT CHANGE ORDER
No. 01

4232 Las Virgenes Road
Calabasas, California 91302-1994

Project Las Virgenes – Triunfo Joint Powers Authority Rancho Las Virgenes Digester No. 1 Cleaning

Project No. Acct. No. 10565.1880.505

Contractor MP Environmental Services, Inc.
Date July 21, 2016

CONTRACTOR CHANGE ORDER NO. 1 The Contractor is hereby authorized and directed to make the herein described changes from the Plans and Specifications or do the following work not included in the Plans and Specifications for the construction of this project.

This change requested by: MP Environemntal Services, Inc

DESCRIPTION OF CHANGES:

1) Provide 12 additional storage bins for a total increase in contract amount of $ 13,289.00 to reimburse for bin mobilization, rental and demobilization. The additional bins are needed for storage of dewater sludge while waiting for dewatered sludge lab texting results and subsequent approval from Simi Valley landfill for disposal.

INCREASES
TOTAL AT AGREED PRICES OR FORCE ACCOUNT **$13,289.00**
~~DECREASES~~

Attachment A

Contract Change Order No. 01 Project No. Acct. No. 10565-1880.505

Date July 21, 2016

(2) Estimate of ~~increases and/or~~ decreases in contract items at contract unit prices:

A. Bid Item No. 6 Daily Rate for a total of 3 days at $2,500/day

TOTAL NET DECREASE IN CONTRACT ITEMS AT CONTRACT UNIT PRICES **$7,500**

INCREASE

TOTAL COST OF THIS CHANGE ORDER $5,789.00

~~**DECREASE**~~

It is agreed 0 consecutive calendar days extension of time will be allowed by reason of this change.

Recommended by

John Zhao, P.E.
Principal Engineer

Departmental Approval

David R. Lippman
Director of Facilities and Operations

ACCEPTED:

MP Environemntal Services, Inc.

By:

Date: 7/25/16

APPROVED:

Las Virgenes Municipal Water District

By:

David Pedersen, P.E.
General Manager
Date: 07/26/16

Note: Attention is called to the sections of the Special Provisions and Standard Provisions on EXTRA, ADDITIONAL OR OMITTED WORK.

- THIS CHANGE ORDER IS NOT EFFECTIVE UNTIL APPROVED BY OWNER
- IF ACCEPTABLE TO THE CONTRACTOR, THIS CHANGE ORDER IS EFFECTIVE IMMEDIATELY

Attachment A

RECORDING REQUESTED BY

Las Virgenes Municipal Water District

AND WHEN RECORDED MAIL TO

Name Susan Brown
Street Address Las Virgenes Municipal Water District
City & State Zip 4232 Las Virgenes Road
Calabasas, CA 91302

T 420 LEGAL (9-94)

SPACE ABOVE THIS LINE FOR RECORDER'S USE

Notice of Completion

NOTICE IS HEREBY GIVEN THAT:

1. The undersigned is the owner of the interest or estate stated below in the property hereinafter described.
2. The full name of the undersigned is Las Virgenes Municipal Water Distric (NAME).
3. The full address of the undersigned is 4232 Las Virgenes Road, Calabasas, CA 91302
   (NUMBER AND STREET, CITY, STATE, ZIP).
4. The nature of the title of the undersigned is _____
   (E.G., owner in fee OR vendee under contract of purchase OR lessee OR OTHER APPROPRIATE DESIGNATION).
5. The full names and full addresses of all persons, if any, who hold title with the undersigned as joint tenants or as tenants in common are:

Names	Addresses
N/A	

6. The names of the predecessors in interest of the undersigned, if the property was transferred subsequent to the commencement of the work of improvement herein referred to are (OR IF NO TRANSFER WAS MADE, INSERT THE WORD "none"):

Names	Addresses
N/A	

7. A work of improvement on the property hereinafter described was completed on August 1st, 2016 (DATE).
8. The name of the original contractor, if any, for the work of improvement was MP Evironmental Services, Inc.
   (NAME OF CONTRACTOR, OR IF NO CONTRACTOR FOR THE WORK OF IMPROVEMENT AS A WHOLE, INSERT THE WORD "none"). [IF NOTICE COVERS COMPLETION OF CONTRACT FOR ONLY PART OF THE WORK OF IMPROVEMENT, ADD: The kind of work done or material furnished was _____
   (GIVE GENERAL STATEMENT, E.G., furnishing of concrete for sidewalks].
9. The property on which the work of improvement was completed is in the City of Calabasas, County of Los Angeles, State of California, and is described as follows: _____
   Rancho Las Virgenes Digester No.1 Cleaning Project
   (set forth description of jobsite sufficient for identification, using legal description if possible).
10. The street address of the said property is 3700 Las Virgenes Road, Calabasas, CA 91302
    (NUMBER AND STREET, OR, IF THERE IS NO OFFICIAL STREET ADDRESS, INSERT THE WORD "none".)

Dated: August 1, 2016.

_____ (SIGNATURE)

David Pedersen (TYPED NAME)

VERIFICATION

I, the undersigned, say:
I am the person who signed the foregoing notice. I have read the above notice and know its contents, and the facts stated therein are true of my own knowledge.

I declare under penalty of perjury that the foregoing is true and correct.

Executed at Calabasas, California, this 1st day of August, 2016.

_____ (SIGNATURE)

Charles Caspary, Secretary

DO NOT RECORD

Recommended Procedure in the Preparation of a Notice of Completion

A notice of completion must be filed for record *within* 10 *days* after completion of the work of improvement (to be computed exclusive of the day of completion), as provided in section 3093, Civil Code.

The "owner" who must file for record a notice of completion of a building or other work of improvement means the owner (or his successor in interest at the date of notice is filed) on whose behalf the work was done, though his ownership is less than the fee title. For example, if A is the owner in fee, and B, lessee under a lease, causes a building to be constructed, then B, or whoever has succeeded to his interest at the date the notice is filed, must file the notice.

If the ownership is in *two or more persons as joint tenants or tenants in common,* the notice may be signed by any one of the co-owners (in fact, the foregoing form is designed for giving of the notice by only one co-tenant), but the names and addresses of the other co-owners must be stated in paragraph 5 of the form.

In paragraphs 3 and 5, the full address called for should include street number, city, county and state.

As to paragraph 6, insert the date of completion of the work of improvement *as a whole* if applicable. However, if the notice is to be given only of completion of a particular contract, where work of improvement is made pursuant to two or more original contracts, strike the words "a work of improvement" and insert a general statement of the kind of work done or materials furnished pursuant to such contract (e.g. "The foundations for the improvements").

If the notice is to be given as a notice of completion of the work of improvement *as a whole,* insert the name of the prime contractor, if any, in paragraph 7. No contractor's name need be given if there is no general contractor, e.g., on so-called "owner-builder jobs". However, if the notice is to be given only of completion of a particular contract, where work of improvement is made pursuant to two or more original contracts, insert the name of the contractor who performed that particular contract.

Paragraph 8 should be completed only where the notice is signed by a successor in interest of the owner who caused the improvement to be constructed.

In paragraph 9, insert the *full legal* description, not merely a street address or tax description. Refer to deed or policy of title insurance. If the space provided for description is not sufficient, a rider may be attached.

In paragraph 10, show the street address, if any, assigned to the property by any competent public or governmental authority.

NOTICE OF COMPLETION

CHICAGO TITLE COMPANY

WESTERN DIVISION HEADQUARTERS
245 S. LOS ROBLES AVENUE, SUITE 105
PASADENA, CALIFORNIA 91101-2820
(818) 432-7600

CHICAGO TITLE COMPANY

August 1, 2016 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Recycled Water Seasonal Storage: Selection of Preferred Alternative

SUMMARY:

On September 1, 2015, the JPA Board accepted a proposal from MWH Global (MWH) to prepare a Recycled Water Seasonal Storage Basis of Design Report (BODR). The BODR focuses on completing the preliminary engineering and investigations for Scenario No. 4, use of Las Virgenes Reservoir for indirect potable reuse, and Scenario No. 5, re-purposing of Encino reservoir for recycled water storage. The BODR addresses items such as hydraulics, regulatory compliance, schedule, estimated costs, implementation issues and potential fatal flaws. Three stakeholder workshops and one Board technical workshop were held for development of the BODR. At the workshops, stakeholders were briefed on the technical details of each scenario, identified risks associated with each and were polled on a preferred scenario based on the Board-adopted Guiding Principles, stakeholder-developed objectives and stakeholder-identified risks.

In addition to the BODR, the JPA Board approved funding for the development of a communication plan and outreach support, and staff engaged The PFM Group to provide a high-level funding and financing strategy. Further, staff continued to meet with stakeholders such as those from the Los Angeles Department of Water and Power (LADWP), City of Thousand Oaks, Calleguas Municipal Water District, Camrosa Water District, the Los Angeles Regional Water Quality Board (RWQCB) and the Division of Drinking Water of the State Water Resources Control Board. Most recently, staff met with high-level managers at LADWP who expressed three major concerns with the proposal to re-purpose Encino Reservoir for recycled water storage. The most impactful concern was LADWP's desire to complete a seismic study of Encino Dam before making a decision on the potential use of its reservoir for recycled water; the seismic study is not currently a priority for LADWP and would not be completed for several years.

Staff recommends selection of Scenario No. 4, the use of Las Virgenes Reservoir for indirect potable reuse, as the preferred alternative. The recommendation is based on the following major factors:

- Indirect potable reuse is visionary and forward-thinking, consistent the JPA Board-adopted Guiding Principles.
- Scenario No. 4 involves the best and highest use of the JPA's water resources and retains the full benefit of the resources for the JPA's customers.
- Potential risks, as identified by the stakeholders, are more effectively avoided with

Scenario No. 4.

- Stakeholder polling identified Scenario No. 4 as the preferred alternative.
- By offsetting the escalating cost to purchase imported water, Scenario No. 4 provides substantially greater long-term economic value to the JPA.
- Scenario No. 4 can be completed in sufficient time to achieve compliance with anticipated terms for implementation of the *2013 Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impacts*; whereas, timing for Scenario No. 5 remains uncertain.

RECOMMENDATION(S):

Select Scenario No. 4, use of Las Virgenes Reservoir for indirect potable reuse, as the preferred alternative for the Recycled Water Seasonal Storage Basis of Design Report; authorize staff to finalize the Basis of Design Report, identifying the preferred alternative; and direct staff to outline the proposed next steps at the JPA's September Board Meeting.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The selection of a preferred alternative does not commit the JPA to the cost of the project. However, the action does represent a step forward for the preferred alternative. Scenario No. 4 has an estimated total capital cost of $95.3 million with a net present worth cost of approximately $13.5 million. For comparison, Scenario No. 5 has an estimated total capital cost of $81.0 million with a net present worth cost of approximately $59.7 million.

The total cost to-date for the Plan of Action, BODR, outreach and financial analysis is $788,026, as summarized below. LADWP agreed to contribute $62,370 toward the cost to evaluate Scenario No. 5. Sufficient funds are available in the adopted JPA Budget for these expenses.

Plan of Action (MWH)	$ 174,716
Basis of Design Report (MWH)	$ 462,825
Basis of Design Report (MWH) Amendment 1	$ 17,000
Encino Reservoir Investigation (MWH & RMC)	$ 124,740
Outreach (Katz & Associates)	$ 41,115
Financial Consultant (PFM Group)	$ 30,000
LADWP Contribution	$ (62,370)
Total	**$ 788,026**

DISCUSSION:

Background:

The JPA first started developing the recycled water system in the 1970s. Since the initial installation of the Las Virgenes Valley system, the recycled water system has grown to provide service in both Los Angeles and Ventura counties. The amount of recycled water produced at the Tapia Water Reclamation Facility (Tapia) is fairly constant throughout the year. However, demands for recycled water fluctuate significantly during the year. Demands are high during the hot summer months, exceeding the supply from Tapia, and can drop to near zero during periods of rainfall in the winter. As a result, the JPA is challenged to balance the supply with fluctuating demands. During the summer months, potable water must be added to system to meet demands and during the winter months recycled water is discharged to Malibu Creek. To help guide the JPA in meeting this challenge, the Board adopted the attached Guiding Principles on June 2, 2014, creating a framework for developing solutions to maximize the beneficial reuse of recycled water.

Recycled Water Seasonal Storage:

Seasonal storage of recycled water has been considered in many planning documents, beginning with the 1973 Recycled Water Master Plan. In the simplest terms, the concept is to store excess recycled water produced in the winter for use in the summer when demands are the highest and exceed production. This approach requires not only seasonal storage but also increased demands. Seasonal storage has little or no value unless it is matched with demands to empty the reservoir in the summer to make room for winter excess. The approach would significantly reduce the need to discharge but cannot eliminate discharges altogether because of high flows into Tapia during rain events and a shrinking market for traditional “purple pipe” recycled water use. Non-traditional uses such as the rapidly evolving concept of indirect or direct potable reuse would eliminate the need for seasonal storage by leveraging existing infrastructure.

Implications for Regulatory Compliance:

Staff has met with RWQCB staff, including the Executive Officer, several times over the past months to discuss its plans for implementation of the *2013 Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impacts* and the renewal of Tapia's NPDES permit. At these meetings, staff shared information on the approved Plan of Action and draft BODR. The intent was to demonstrate to the RWQCB that either Scenario No. 4 or 5 could be an alternative to address the JPA’s compliance with the TMDL by significantly reducing its discharges to Malibu Creek[1]. The RWQCB staff were supportive of developing a implementation schedule with distinct milestones; however, they were uncertain if such a schedule could reasonably be developed with two significantly different scenarios under consideration by the JPA. Selection of a preferred scenario would effectively eliminate this concern. The final BODR, identifying the preferred alternative, would support the development of an implementation schedule with meaningful and achievable milestones. Based on the current discussions, the implementation schedule would provide up to 15 years for completion of the preferred scenario. Meetings with RWQCB staff are expected to continue in parallel with development of the preferred alternative.

Plan of Action:

On November 3, 2014, the Board approved a proposal from MWH to prepare a Recycled Water Seasonal Storage Plan of Action. The approach to develop the Plan of Action centered

on conducting individual interviews with the JPA Board members and engaging a broad cross-section of stakeholders in three public workshops. The workshops resulted in six conceptual scenarios, ranging from TMDL compliance with advanced nutrient removal at Tapia to a regional indirect potable reuse project to balance the constant supply of recycled water with fluctuating demands.

On April 6, 2015, the JPA Board considered stakeholder comments on the six conceptual scenarios and directed staff to develop the Plan of Action focused on Scenario No. 4, use of Las Virgenes Reservoir for indirect potable reuse, and Scenario No. 5, re-purposing of Encino Reservoir for recycled water seasonal storage. The Plan of Action, approved by the JPA Board on July 6, 2015, outlined the objectives, strategies and initial actions to move forward with both scenarios on a parallel path until a decision could be made to focus on one preferred scenario.

Basis of Design Report:

One of the initial actions called for in the Plan of Action was to complete a Basis of Design Report. The BODR develops Scenarios Nos. 4 and 5 through the various engineering and economic analyses. The work included hydraulic analyses for conveyance and pumping facilities, siting studies for new facilities, regulatory investigations and schedule and cost development. The Executive Summary of BODR is attached and the final document will be presented to the JPA Board for adoption at its September meeting. In addition to the analyses, three stakeholder workshops and one Board technical workshop were held. Attached is a list of the stakeholder organizations that were represented at the workshops.

At the first workshop, the stakeholders were briefed on the technical aspects of each scenario and participated in a PESTLE[2] exercise to identify the associated risks. A total of 159 risks were identified in the following PESTLE categories: Political - 35, Economic - 30, Social - 28, Technical - 29, Legal - 17 and Environmental - 20. At the second workshop, the stakeholders ranked 13 evaluation criteria based on relative importance using a remote voting system. Several technical questions were raised by Board members at this workshop. As a result, a JPA Board workshop was held to address the technical questions in greater detail. At the third stakeholder workshop, the participants were polled on how each scenario best matched the Board's adopted Guiding Principles, addressed stakeholder-developed objectives and avoided stakeholder-identified risks. Attached is a summary of the polling results.

Initial Public Outreach:

On January 4, 2016, the Board authorized the Administering Agent/General Manger to execute a professional services agreement with Katz & Associates for communication and outreach services. Staff negotiated a scope of work, at a cost of $41,115, that included developing a phased public outreach strategy, considering both the near- and long-term, once a preferred alternative was selected; preparing a communication plan and leave-behinds for elected officials at the federal, state and local levels; supporting staff in outreach and messaging; and conducting one-on-one interviews with community leaders. The interviews began during the week of July 25th, and preliminary results will be presented at the Board meeting. Attached for reference is a copy of the interview discussion guide.

Funding and Financing Strategy:

The Plan of Action also included an activity to engage a financial consultant to identify potential

funding sources and financing strategies for the preferred alternative. Staff accepted a proposal from The PFM Group, at a cost of $30,000, to prepare a report that will summarize the various state, federal and private funding options and evaluate the strengths, weaknesses, opportunities and threats (SWOT analysis) of each option. The report will also present best-case and worst-case funding scenarios and the impact of those scenarios on the retail and wholesale rate structures of each JPA member. A representative of The PFM Group will present the preliminary results at the Board meeting.

Preferred Option:

Staff recommends selection of Scenario No. 4, use of Las Virgenes Reservoir for indirect potable reuse, as the preferred alternative. The recommendation is based on the following major factors:

- *Indirect potable reuse is visionary and forward-thinking, consistent with the JPA Board-adopted Guiding Principles.*

  One of the six Guiding Principles adopted by the Board was to "Be forward thinking by considering the possibilities of ... indirect potable reuse". As the science, technology and public acceptance of indirect potable reuse rapidly evolve and water resources become increasingly scarce, solutions involving potable reuse represent visionary, forward-thinking options for the future.

- *Scenario No. 4 involves the best and highest use of the JPA's recycled water resource and retains the full benefit of the resource for the JPA's customers.*

  Opportunities for expanding the traditional uses of recycled water such as landscape irrigation are relatively limited. Indirect potable reuse allows excess recycled water previously discharged to Malibu Creek to be developed into a drought-proof local drinking water resource, reducing the demand for imported water supplies.

- *Potential risks, as identified by the stakeholders, are more effectively avoided with Scenario No. 4.*

  As a part of the third stakeholder workshop, participants were polled to identify the scenario that better avoided the risks identified in the first workshop. By nearly a two-to-one margin, stakeholders indicated that Scenario No. 4 more effectively avoided the identified risks.

- *Stakeholder polling identified Scenario No. 4 as the preferred alternative.*

  During the third stakeholder workshop, participants were polled to identify the scenario that was preferred when considering the JPA Board-adopted Guiding Principles, stakeholder developed objectives and stakeholder-identified risks. Overwelmingly, the stakeholders identified Scenario No. 4 as the preferred alternative. For example, 32 stakeholders preferred Scenario No. 4 with respect to consistency with the guiding principle for "be forward thinking"; whereas, only one stakeholder preferred Scenario No. 5 for this purpose. Also, 30 stakeholders thought Scenario No. 4 better addressed the objective to "reduce reliance on imported water"; whereas, only two identified Scenario No. 5 for this objective. Overall, Scenario No. 4 was found to be preferred by nearly a two-to-one margin when considering the Guiding Principles, objectives and risk avoidance.

- *By offsetting the escalating cost to purchase imported water, Scenario No. 4 provides substantially greater long-term economic value to the JPA.*

  Although Scenario No. 4 requires a large initial capital investment, its net present worth cost is approximately $13.5 million as compared to approximately $59.7 million for Scenario No. 5. The substantially lower present worth cost for Scenario No. 4 is due to larger offsets for the purchase of costly imported water.

- *Scenario No. 4 can be completed in sufficient time to achieve compliance with anticipated terms for implementation of the 2013 Malibu Creek and Lagoon TMDL for Sedimentation and Nutrients to Address Benthic Community Impacts; whereas, timing for Scenario No. 5 remains uncertain.*

  RWQCB staff has indicated that an Implementation Plan for TMDL will be presented for approval by its Board in November 2016, setting compliance milestones for the JPA. Based on initial discussion, RWQCB staff has been supportive of a 15-year timeframe for the JPA to complete it selected alternative for seasonal storage. Scenario No. 4 can be accomplished within 15 years. The timing for Scenario No. 5 remains uncertain and hinges on addressing the following three LADWP concerns with re-purposing Encino Reservoir for recycled water seasonal storage: (1) effect of recycled water in the reservoir on LADWP's ability to use the stored water as an emergency supply, (2) ability to manage runoff of stormwater tributary to the reservoir, and (3) completion of a seismic stability study of Encino Dam. LADWP representatives have indicated that the seismic study will not be completed for several years because other higher priority dams need attention first.

Selection of Scenario No. 4 as the preferred alternative would not preclude future consideration of other options, including Scenario No. 5, if an insurmountable obstacle or challenge develops with the preferred alternative. The purpose of selecting a preferred alternative at this time is to allow the JPA to focus its limited efforts and resources on one alternative, particularly to better position the JPA to compete for available funding.

Next Steps:

At the September JPA Board meeting, staff will propose detailed next steps that will include preparation of an outreach plan focused on the preferred scenario, “re-naming” of the project, development of a demonstration project, additional financial and technical studies, plans for stakeholder involvement and preparation the required environmental documents for compliance with California Environmental Quality Act and National Environmental Policy Act.

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[1] Discharge would still be necessary for flow augmentation and during significant storm events. Compliance with the TMDL under these conditions is still uncertain, but a constructive dialog with RWQCB is underway.

[2] PESTLE is a technique used to categorize a wide variety of possible risks considering: Political, Economic, Social, Technical, Legal and Environmental categories.

Prepared by: David R. Lippman, P.E., Director of Facilities and Operations

ATTACHMENTS:

Recycled Water Seasonal Storage Guiding Principles
Executive Summary for Basis of Design Report
List of Stakeholder Organizations
Summary of Polling Results
Interview Discussion Guide

Recycled Water Seasonal Storage Project Guiding Principles

The Las Virgenes-Triunfo Joint Powers Authority (JPA) considers recycled water a valuable resource to be beneficially reused. The JPA produces recycled water at its Tapia Water Reclamation Facility (Tapia) by treating wastewater flows from its service area to meet strict state and federal water quality standards. The amount of recycled water produced at Tapia is relatively constant throughout the year. However, customers' needs or "demands" for recycled water fluctuate significantly during the year. Demands are very high during the hot summer months, exceeding the supply from Tapia, and can drop to near zero during periods of rainfall during the winter.

As a result, the JPA is challenged to balance the constant supply of recycled water with fluctuating demands throughout the year. During the summer months, potable water must be added to the recycled water system to meet the high demands. Conversely, during the winter months, excess recycled water must be released to Malibu Creek and the Los Angeles River or applied to the JPA's sprayfields. Releases to Malibu Creek are subject to ever increasing regulatory requirements, which will likely be cost-prohibitive to meet in the near future.

A seasonal storage reservoir for recycled water would allow the JPA to balance supply and demands. Excess recycled water could be placed in the reservoir during the winter months for use during the high demand summer period. Additional demands for recycled water would need to be developed to ensure that the reservoir could be drawn down each year, making room for needed storage in the wintertime. A seasonal storage reservoir has been envisioned since the first Recycled Water Master Plan was completed in the 1970s. In 2012, the JPA completed a Recycled Water Seasonal Storage Feasibility Study. This study evaluated the technical and economic feasibility of three alternatives for the reservoir.

The JPA desires to fully and beneficially reuse its recycled water by moving forward with investigation of seasonal storage. This investigation will be guided by the following principles.

1. ***Maximize Beneficial Reuse by:***
   - 1.1. Being an environmental steward
   - 1.2. Reducing existing potable water use
   - 1.3. Reducing discharge to Malibu Creek and Los Angeles River
   - 1.4. Encouraging infill use in both service areas
   - 1.5. Providing regional benefits
   - 1.6. Creating water supply reliability

2. ***Seek Cost Effective Solutions by:***
   - 2.1. Seeking funding from grants, matching funds and partnerships
   - 2.2. Engaging permitting and regulatory agencies early and often
   - 2.3. Each partner sharing in outside funding
   - 2.4. Each partner funding their share
   - 2.5. Being on time, on schedule and within budget
   - 2.6. Analyzing impacts and benefits of the project from each partners perspective

3. Seek Partnerships beyond the JPA by:

3.1. Considering multiple uses such as;

3.1.1. Recreation

3.1.2. Education

3.1.3. Creation of open space

3.2. Engaging stakeholders early and often

3.3. Considering additional partners that will purchase recycled water

4. Gain Community Support by:

4.1. Engaging and educating the public and stakeholders

4.2. Being transparent

4.3. Establishing public safety as a top priority

5. Govern with a Partnership by:

5.1. Using the JPA Agreement as a guiding document

5.2. Communicating openly and frequently

5.3. Being committed to the project

5.4. Equitably allocating costs and sharing benefits from both partners perspective

6. Be Forward Thinking by considering the possibilities of:

6.1. Expanding the recycled water system beyond the JPA service area

6.2. Exterior residential reuse

6.3. Exterior and interior use for new and remodeled commercial projects

6.4. Indirect potable reuse

6.5. Direct potable reuse

Joint Powers Authority
Las Virgenes Municipal Water District
Triunfo Sanitation District

Basis of Design Report

July 2016

Executive Summary

1.1 INTRODUCTION

The objective of the Basis of Design Report is to conduct parallel evaluations of two seasonal recycled water storage scenarios to help maximize the beneficial reuse of recycled water for the Las Virgenes-Triunfo Joint Powers Authority (JPA). With the assistance of the JPA and other agencies, available information has been collected and reviewed on the facilities and operational parameters affecting the two scenarios. From this information, detailed investigations have been conducted to determine, with the help of the JPA staff, the viability of both the Las Virgenes Reservoir Indirect Potable Reuse (Scenario 4) and Encino Reservoir Recycled Water Storage (Scenario 5) options.

1.2 BACKGROUND

The JPA considers recycled water a valuable resource to be beneficially used. The JPA produces recycled water at its Tapia Water Reclamation Facility (Tapia WRF) by treating wastewater flows from its service area, with surplus recycled water discharged to Malibu Creek. Increasing regulatory and environmental requirements, especially reduced Total Maximum Daily Loads (TMDLs) on nitrogen and phosphorus, are making continued seasonal stream discharges to Malibu Creek problematic. At the same time, imported drinking water supplies are increasingly unreliable and costly due to drought. To avoid more stringent future discharge regulations and promote beneficial reuse, the JPA has decided to pursue a project that beneficially reuses the surplus recycled water.

On June 2, 2014, the JPA Board of Directors (Board) adopted a set of guiding principles, creating a framework for the next steps in maximizing beneficial reuse. Because of the complexity of the project, a Plan of Action was created on June 19, 2015 to create a clearer road map after a yearlong Plan of Action study. The study considered six different scenarios for maximizing beneficial reuse of the JPA's surplus recycled water. After four stakeholder public workshops and greater analysis, the JPA selected Scenario 4 and 5 as the alternatives for further investigation and the basis of the Plan of Action.

The two selected conceptual scenarios, Scenarios 4 and 5, consist of indirect potable reuse (IPR) through surface water augmentation at Las Virgenes Reservoir, and re-purposing Encino Reservoir for seasonal storage of recycled water, respectively. The Plan of Action outlined the objectives, strategies, and initial actions to move forward on a parallel path for both scenarios until a decision could be made on a preferred alternative.

The Basis of Design Report (BODR) is one of the initial steps to develop Scenarios 4 and 5 through various engineering and economic analysis, and serves as the record of the parallel investigation of the two scenarios. The analyses include developing reservoir management strategies for both Encino and Las Virgenes Reservoir; hydraulic analysis for conveyance and pumping facilities; siting studies for new facilities; regulatory investigation; and detailed schedule and cost development. The study identifies potential issues in their implementation and possible fatal flaws. Four additional workshops conducted at regular Board meetings are part of the BODR

development in order to keep the Board fully informed of the progress, issues, and flaws of the two scenarios as well as continue to engender the input of the stakeholders during scenario development.

1.3 SUPPLY AND DEMAND

The parameters of both scenarios are determined by the supply and demand of recycled water and the projected availability into the future. Supply analysis included looking at fifteen years of historical flows at Tapia WRF. Recycled water production has trended downward in the last fifteen years, with a significant decrease in production over the last 3 years due to drought conditions and increased conservation of water.

Recycled water demand analysis also included historical recycled water sales of the JPA to customers in the LVMWD and TSD service areas. Recycled water sold includes the water produced at the Tapia WRF (which includes treated wastewater and well water supplement) as well as the potable supplement added to the recycled water system from the JPA's imported water connections. Supplement from the wells and the imported potable water connection are used to augment the recycled water supply during peak months when there is not enough supply to satisfy demand. The JPA has typically seen an increase in recycled water sales each year as the recycled water network and customer base expand. There is a high level of seasonal variability in recycled water sales; demand in December and January is typically low, then sharply escalates during summer months as temperatures increase.

Figure ES-1 presents the supply versus demand for 2013 through 2015, which shows the summer surplus and winter deficit of supply relative to demand.

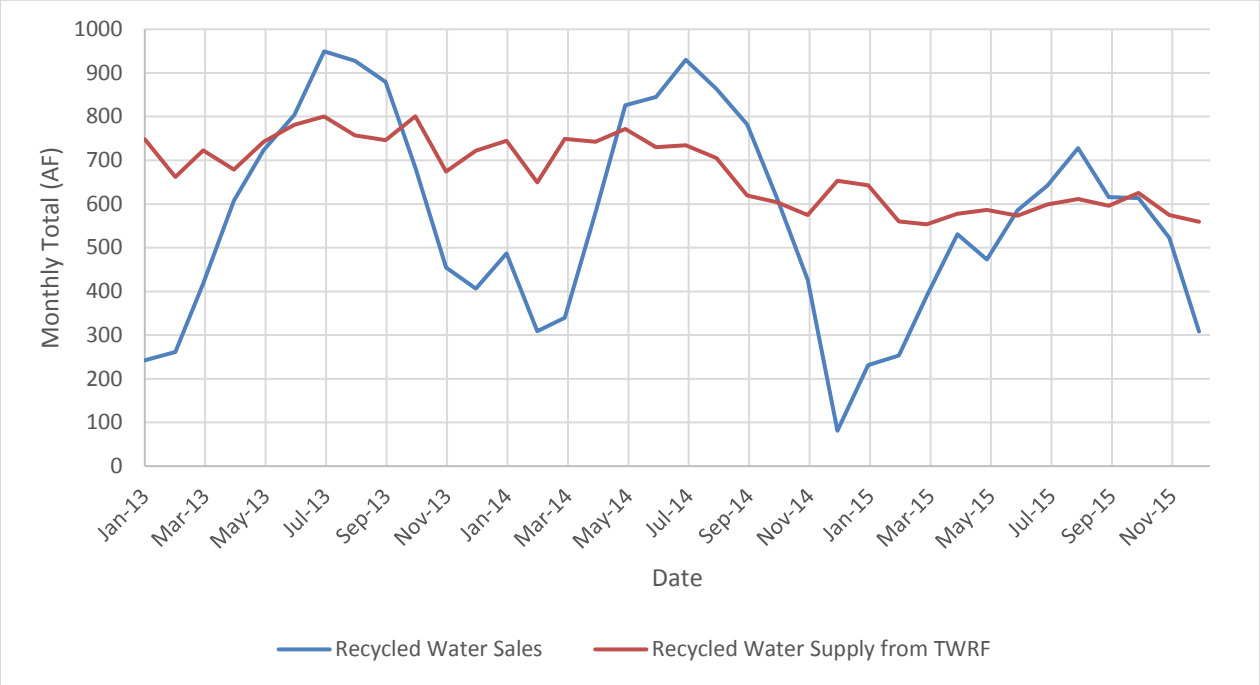

Figure ES-1
Recycled Water Supply versus Sales

Future supply and demand conditions are necessary in both scenarios to predict future plant sizing, reservoir operations, costs, and project viability. In order to predict future flow conditions, a supply and demand forecast was developed.

Table ES-1 shows the projected supply from 2016 to 2035. Two methods of projections are used. The first method assumes 2016 flows remain at the same level as 2015 and are projected forward based on the *2014 Sanitation Master Plan* applying economic, drought, and I&I factors. The second method assumes 2016 flows return to the fifteen year average of 9,361 AF and are projected forward using the same factors, but without a drought recovery factor. The two methods result in a "low" and "high" projected range. An average of these two methods is used in the analysis.

Table ES-1
Projected Supply

Year	Low Range		High Range		Average	
	Flow (MGD)	Volume (AF)	Flow (MGD)	Volume (AF)	Flow (Used for future cost) (MGD)	Volume (Used for future cost) (AF)
2015	6.3	7,060	6.3	7,060	6.3	7,060
2016	6.3	7,060	8.3	9,361	-	9,361*
2035	9.5	10,590	11.0	12,320	10.3	11,460

*Based on Historical Average from 2001-2015

Future recycled water demands will vary for each scenario. Scenario 4 assumes no additional growth in the recycled water system, as there is no longer an incentive to sell surplus water at a recycled water rate. Thus, the historical average demand of 6,547 AFY will remain constant from 2016 into the future for Scenario 4. For Scenario 5, growth in recycled water demand is beneficial and a total of 2,395 AFY of demand growth is projected by 2035, for a total demand of 8,942 AFY.

Based on the future projections for both supply and demand, the gross available storage for each scenario in 2035 was calculated. **Table ES-2** shows the gross available water for each scenario considering both the low and high range for available water in 2016 and 2035.

Table ES-2
Available Recycled Water Projections for Scenario 4 and 5

Scenario 4				
Year	**Supply**	**Supply plus Average Calculated Imported Supplement (AF)**	**Demand**	**Gross Surplus Recycled Water**
2016	7,060 – 9,361	7,349 – 9,650	6,547*****	802 – 3,102
2035	10,590 – 12,320	10,879 – 12,609	6,547*****	4,332 – 6,062
Scenario 5				
Year	**Supply**	**Supply plus Average Calculated Imported Supplement (AF)**	**Demand***	**Gross Surplus Recycled Water**
2016	7,060 - 9,361	7,349 – 9,650	6,547*****	802 – 3,102
2035	10,590 – 12,320	10,879 – 12,609	8,942	1,937 – 3,667

* Based on fifteen year average of RW demand

1.4 SCENARIOS

1.4.1 Scenario 4

In Scenario 4, surplus recycled water produced at the Tapia WRF will be conveyed to a new advanced water treatment (AWT) facility that will further treat and pump the water to Las Virgenes Reservoir for indirect potable reuse (IPR) by surface water augmentation. Once the water is treated and stored in Las Virgenes Reservoir with the requisite detention time, mixing, and dilution, it will be equivalent in use to stored imported water. When treated through the Westlake Filtration Plant (FP), it can be used to meet potable and/or recycled water supplement demands. This scenario is based on draft regulations for surface water augmentation. Review and consultations with the Department of Drinking Water (DDW) has concluded that Scenario 4 appears to be in general compliance with all aspects of the draft regulations.

Figure ES-2 below illustrates a flow schematic for Scenario 4, with new facilities highlighted in yellow. Scenario 4 will require construction of (1) a new AWT facility, (2) new intake piping into the AWT facility, (3) new piping to connect the AWT facility to Las Virgenes Reservoir, and (4) new piping for a new brine discharge line from the AWT facility to the point of disposal. The lengths of these pipelines will vary depending on the final site of the AWT facility and brine disposal option selected.

A viable means of brine disposal is a critical element of Scenario 4. The construction of a brine line will hinge on an agreement with either Calleguas Municipal Water District (MWD) for disposal of brine to the Salinity Management Pipeline (SMP), or the City of Thousand Oaks for disposal of brine through the Hill Canyon Wastewater Treatment Plant. Without an agreement, there is no viable alternative for disposal of the brine and advanced treatment of the recycled water would not be possible. Discussions with Calleguas MWD and City of Thousand Oaks on this and other issues are on-going.

The proposed AWT facility will treat effluent from the Tapia WRF and will be sized to produce up to 6 MGD of advanced treated recycled water to be sent to the Las Virgenes Reservoir. AWT processes have been selected to comply with draft IPR surface water augmentation regulations. The AWT treatment train includes membrane filtration (MF), 3-stage reverse osmosis (RO) for high recovery (85%), and UV advanced oxidation (UV/AOP), before it is stabilized and chlorinated prior to pumping to the Las Virgenes Reservoir, then dechlorinated prior to discharge.

Eight locations have been investigated for the two acre AWT facility site and research has been conducted to determine ownership, property type, and preliminary pros and cons of each. However, additional sites may be considered at a later date. For a final selected AWT site location, the length and alignment of the new inlet, outlet, and brine pipelines would need to be adjusted in order to accommodate the preferred site.

Coordination with various State and Local Agencies will be required to implement Scenario 4. This coordination may involve regulatory approval, encroachment permits, negotiation of agreements to provide services, and other items from the following agencies: Calleguas MWD, City of Thousand Oaks, DDW, Regional Water Quality Control Board, City of Westlake Village, Camrosa Water District, Department of Transportation (CalTrans).

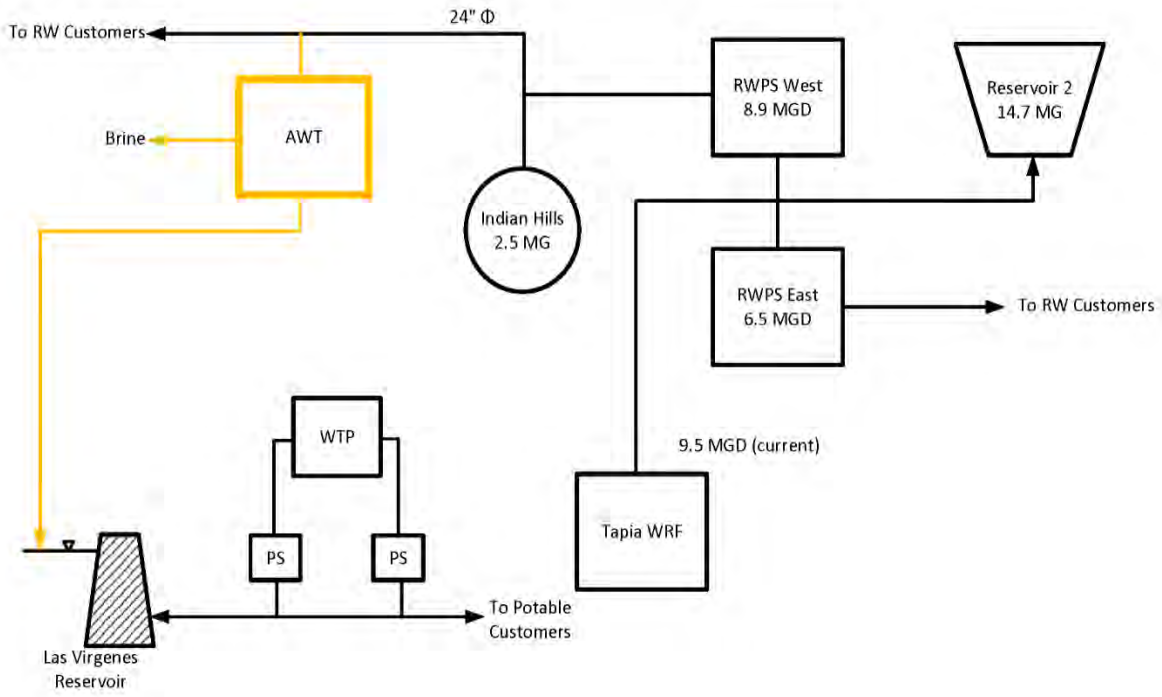

Figure ES-2
Scenario 4 Schematic

1.4.2 Scenario 5

In Scenario 5, surplus recycled water produced at the Tapia WRF will be pumped to Los Angeles Department of Water and Power's (LADWP's) Encino Reservoir for seasonal storage. Some of this water will be pumped back to supplement summertime recycled water demands, while the remainder is either stored for future use, used to meet demand from new recycled water customers, or potentially delivered to LADWP.

As shown in the schematic diagram presented in **Figure ES-3**, Scenario 5 will require construction of approximately 15 miles of new 24-inch pipeline extending east from RWPS East to Encino Reservoir. The existing RWPS East must be expanded and a new 12 mgd pump station will need to be constructed at Encino Reservoir to return recycled water to the distribution system. Additional improvements at Encino Reservoir will also be required to maintain water quality.

An agreement with LADWP for use of the Encino Reservoir facility is the critical element of Scenario 5. Without an agreement, there is no available alternative for storage of seasonal recycled water. The willingness to agree will depend in large part on LADWP's position on maintaining the reservoir for emergency water storage, concerns regarding capacity for storm water runoff, and the need to conduct a seismic study of the dam. Discussions with LADWP on this and other issues are on-going.

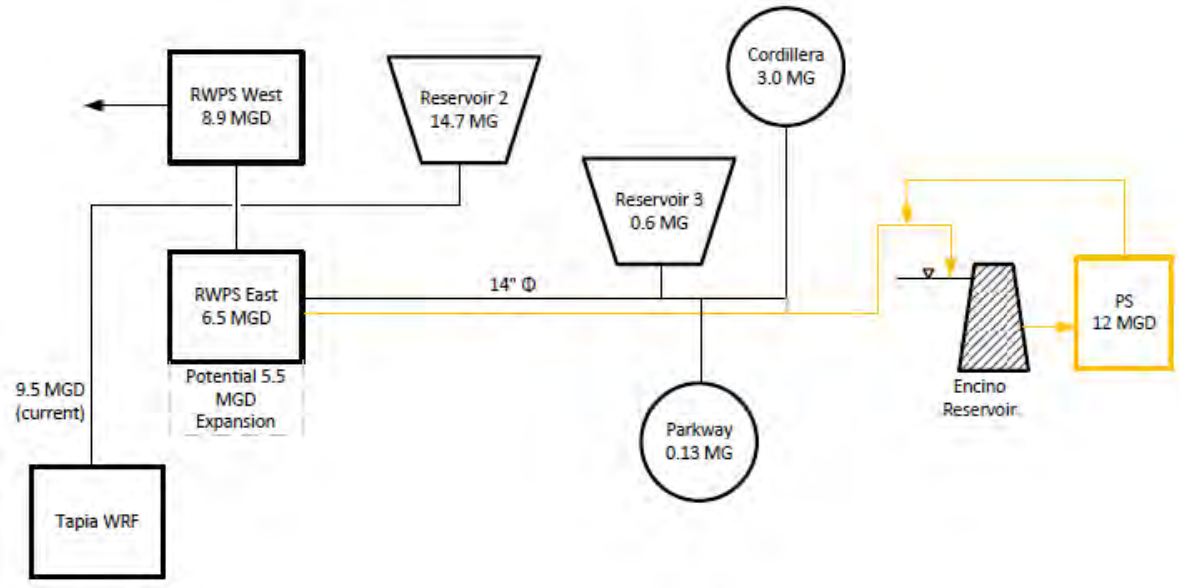

Figure ES-3
Scenario 5 Schematic

Coordination with various State and Local Agencies will be required to implement Scenario 5. This coordination may involve regulatory approval, encroachment permits, negotiation of agreements to provide services, and other items. The following agencies will require coordination in order to successfully implement Scenario 5: Regional Water Quality Control Board, Los Angeles Department of Water and Power, City of Calabasas, Los Angeles County Department of Public Health, Los Angeles Sanitation, Division of Safety of Dams.

1.5 COSTS

1.5.1 Capital Costs

Scenario 4

Capital costs were calculated for the AWT facility, recycled water pipelines, brine discharge pipeline and the mixing system at the reservoir and are presented in **Table ES-3**. The capital cost of the AWT facility is a sum of the costs needed for land acquisition, process equipment, equipment installation, pumping and storage and the plant building itself. Additionally, contingencies were added for contractor overhead and profit, scope and estimating, and engineering and administrative fees.

The following costs also assume that the brine will be discharged to the SMP. Capital costs for the pipeline extension to the SMP include construction for a discharge facility, per Calleguas MWD requirements. Due to seasonal stratification in the reservoir, a mixing system will be required and is assumed as a lump sum cost, as the exact type of mixing system would require a more detailed analysis. The total capital cost of Scenario 4 is estimated at approximately $95,313,000.

Scenario 5

Scenario 5 capital costs were calculated for expansion of the RWPS East, new conveyance pipelines, Encino Reservoir Pump Station, strainers and chlorination system, and reservoir mixing system. To accommodate future growth, a capacity of 12 mgd will the required at both the RWPS East and the new Encino Reservoir Pump Station to convey peak seasonal flows. No capital cost is included for the JPA's use of LADWP's Encino Reservoir or for any seismic studies that are required for its continued use. The total capital cost of Scenario 5 is estimated at approximately $80,962,000.

Table ES-3
Capital Costs

Description	Scenario 4	Scenario 5
Estimated Total Capital Costs (rounded)	**$95,313,000**	**$80,962,000**

1.5.2 O&M Costs

Scenario 4

Table ES-4 presents the O&M costs for Scenario 4 and 5 for the first year of operation. O&M costs include operation of the AWT facility, RWPS West Pump Station, Westlake Filtration Plant, mixing system, and the brine discharge facility and associated brine discharge fees. Based on these assumptions, O&M costs for the first year of operation are estimated to be approximately $2,663,000. However, the advanced treated water discharged into the reservoir decreases the need to buy imported water from MWDSC resulting in estimated savings of $2,373,000. After incorporating the imported water savings, the net O&M cost for the first year of operation is approximately $290,000.

Unit costs per acre foot were also calculated for each scenario during the first year of operation assuming the 2001 – 2015 calculated surplus average. For Scenario 4, the unit cost per acre foot incorporates an annualized capital cost, first year O&M, and imported water savings. The unit cost per acre foot for Scenario 4 is approximately $1,720.

Scenario 5

O&M costs for Scenario 5 include the operation of the RWPS East, Encino Pump Station, mixing system, strainers, and chlorination system. Based on these costs, the estimated O&M for the first year of operation is approximately $910,000. It is assumed there is no O&M cost for the JPA to use LADWP's Encino Reservoir. Scenario 5 would result in increased recycled water sales, as increased supply would be available. Implementation of this scenario would decrease the amount of potable supplement purchased, resulting in an imported water savings in the first year of operation of $260,000. Recycled water sales to the Woodland Hills Extension and El Caballero Country Clubs is also assumed to occur within the first year of operation, resulting in a savings of $454,000. The imported water savings and savings due to increased recycled water sales total $714,000. The net O&M, after incorporating savings, for the first year of operation is approximately $196,000.

The unit cost per acre foot calculated for Scenario 5 incorporates an annualized capital cost, first year O&M costs, as well as both imported water savings and savings due to recycled water sales. The unit cost per acre foot for Scenario 5 in its first year of operation assuming the 2001 – 2015 calculated surplus average is approximately $1,410.

Table ES-4
O&M Costs

Description	Scenario 4 O&M	Scenario 5 O&M
Estimated Total O&M (rounded)	**$2,663,000**	**$910,000**
Imported Water Savings	($2,373,000)	($714,000)
Net Total O&M (rounded)	**$290,000**	**$196,000**

Present Worth

A present worth analysis was conducted for both scenarios. The following parameters were used in calculating the present worth analysis:

- 30 year analysis period
- 2% per annum inflation rate applied to O&M costs
- 7% per annum escalation rate of MWDSC imported water rate and recycled water rate, composed of a 2% inflation rate and 5% increase of rates
- 5% discount rate of future values to determine present value, composed of a 2% inflation rate and 3% interest rate.

For each scenario and in each future year, the annual cost used in calculating present worth is the sum of the *cost* of O&M in that year less the *savings* generated from the reuse of the surplus recycled water in that year. In either scenario, the value of water escalates at a greater rate than O&M costs, and the savings soon exceed the costs. This results in a net savings in annual costs. The results of both present worth analyses are shown in **Table ES-5.**

The present worth of Scenario 4 annual operations results in a savings of $80,685,000. After subtracting this amount from the capital cost of $95,313,000, the net present worth is approximately $13,504,000.

In Scenario 5, the present worth of the annual operations over the 30 year period results in a savings of $21,309,000. This annual savings is a result of both the savings generated from the elimination of the recycled water supplement and increased sale of recycled water to new customers. No value is associated with excess water stored in Encino Reservoir as it currently does not have a customer. With a capital cost of $80,962,000, the net present worth of Scenario 5 is estimated at $59,653,000.

Table ES-5
Present Worth Comparison

	Scenario 4	Scenario 5
Capital Cost	$95,313,000	$80,962,000
Present Worth of Annual Costs (Savings)	($80,685,000)	($21,309,000)
Net Present Worth (Rounded)	**$13,504,000**	**$59,653,000**

1.6 SCHEDULE

Preliminary schedules for both scenarios are presented in **Figure ES-4**, illustrating the various tasks and sequence required to implement this project. No start or end dates have been defined but the schedule does provide indication of the minimum time required to implement each scenario, assuming no delays beyond the JPA's control. The schedule also does not account for securing funding sources or regulatory deadlines related to TMDL compliance.

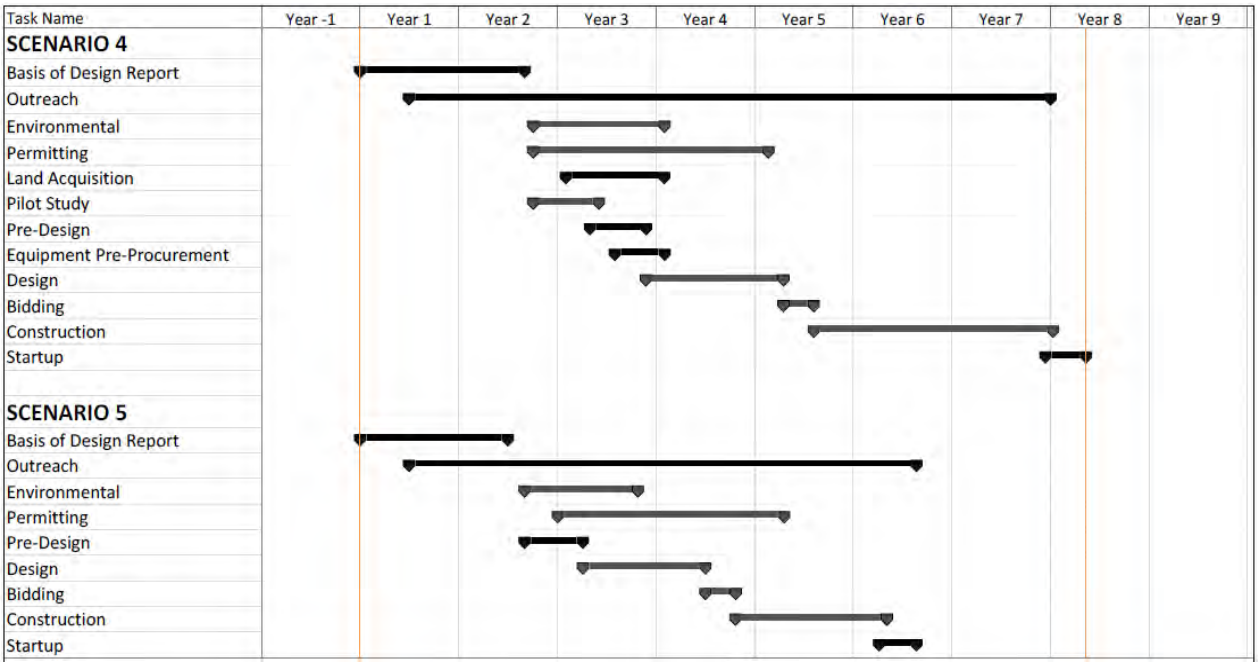

Figure ES-4
Scenario Schedules

1.7 RECOMMENDATION

Both scenarios offer value to the JPA for addressing the objectives of this project. However, Scenario 4 embodies the following compelling advantages:

- Certainty of value of all surplus water
- Greater control of project implementation and the resulting surplus recycled water
- Stakeholder support of Scenario 4 in fulfilling the guiding principles and meeting established objectives.

It is recommended that the JPA select Scenario 4 as the preferred project.

STAKEHOLDER ORGANIZATIONS

Representatives of the following organizations actively participated in the stakeholder process:

- Senator Fran Pavley's Office
- Supervisor Sheila Kuehl's Office
- Heal the Bay
- Los Angeles Waterkeeper
- National Park Service
- California State Parks
- City of Calabasas
- City of Thousand Oaks
- Malibu Creek MS4 Watershed Management Committee
- Mountains Restoration Trust
- Santa Monica Mountains Conservancy
- Resource Conservation District of the Santa Monica Mountains,
- Santa Monica Mountains Fund,
- Los Angeles Department of Water and Power
- Calleguas Municipal Water District
- Camrosa Water District
- Metropolitan Water District of Southern California

BODR Workshop # 4 Polling Results

	Totals	
	Scenario 4	Scenario 5
Guiding Principles		
Maximize Beneficial Reuse	22	5
Seek Cost Effective Solutions	22	11
Seek Partnerships beyond JPA	15	12
Gain Community Support	23	5
Govern with a Partnership	14	10
Be Forward Thinking	32	1
Subtotal	**128**	**44**
Average	**21**	**7**
Objectives		
Reuse 100% of Our Water	25	7
Regional Partnerships	12	15
Public Support for Project	16	14
Cost/Benefit	21	9
Beneficial to Water Users Including Rate Payers	25	6
Maximize Funding Sources	16	12
Public Perception and Acceptance	12	18
Eliminate Unreasonable Use and Waste of Water	20	8
Transparency	18	6
Seasonal and Diurnal Equalization	17	8
Balance of Supply and Demand (Right Balance)	26	4
Reduce Reliance on Imported Water	30	2
Regulatory Constraints and Framework	7	19
TMDL Compliance in Malibu Creek and Santa Monica Bay	14	6
Regulations	9	18
Sustainability	26	5
Siting of Reservoirs and other Infrastructure	16	11
Protecting Beneficial Uses in Malibu Creek	16	4
Environmental Stewardship and Leadership	23	3
Subtotal	**349**	**175**
Average	**18**	**9**
Risk Concerns		
NIMBY	19	7
Agency Coordination	25	5
Project Costs	8	21
Demand	27	3
Water Quality	25	6
Drinking Water Standards	20	11
YUCK (Public Perception)	15	18
Brine Disposal	14	18
CEQA	18	6
Politics	21	5
Right of Way/LAND	17	10
Subtotal	**209**	**110**
Average	**19**	**10**

Grand Total	**686**	**329**
n	**36**	**36**
Average	**19**	**9**

Las Virgenes Municipal Water District
Recycled Water
Stakeholder One-on-One Meeting Discussion Guide

Name:

Organization:

Date:

Interviewer:

Introduction:

Thank you very much for taking time to talk with me today. I am working on behalf of Las Virgenes – Triunfo Joint Powers Authority and they have asked me to speak with key community leaders and stakeholders like you. The JPA is exploring ways to maximize the beneficial uses of the region's recycled water. A stakeholder-driven process has resulted in identifying two options that can all but eliminate discharges of recycled water into Malibu Creek.

The purpose of this conversation is to gain an understanding of your knowledge about the JPA, to tell you about the efforts underway to maximize recycled water use, and to hear about your thoughts and questions, as well as identify how we can best communicate with you and your colleagues as these efforts move forward.

As background, the Tapia Water Reclamation Facility – operated by the JPA – cleans up to nine million gallons of wastewater a day so that it meets tertiary recycled water standards. All of this recycled water is used for irrigation during the summer, but when demand is low, the surplus recycled water is discharged to Malibu Creek or when discharge to Malibu Creek is not possible, it is pumped for discharge to the L.A. River. The JPA is currently evaluating two plans to beneficially use this "surplus" recycled water so that it will not need to be discharged into the creek or river.

The JPA also has a goal of improving the health of the Malibu Creek Watershed. This has required a multi-pronged approach to address stringent USEPA water quality standards. However, compliance with standards has proven to be expensive and impactful to sewage treatment rates for our customers, without fully protecting the creek or the species that live there. The District and JPA have expressed their commitment to creek stewardship, but with common sense solutions to water quality issues.

For our conversation today, I will ask you a series of high-level questions, and will be taking detailed notes as we move along. My notes will be compiled and summarized for the JPA, but I will not attribute statements to a specific person. I respect your time and busy schedule, and promise not to keep you longer than 45 minutes. Do you have any questions before we begin?

Discussion Questions:

1. Before we requested time to meet with you, had you heard anything about ways to maximize recycled water use in the region? If yes, then what and how?

2. Are you familiar with the services provided by (Las Virgenes Municipal Water District) (Triunfo Sanitation District / Oak Park Water District)? etc.? Please tell me any services you think are particularly important.

3. What do you think (Las Virgenes MWD) (Triunfo Sanitation District / Oak Park Water District) does the best? What do you think the District needs to work on or improve?

4. In relation to your organization/members/business, what are your biggest interests or concerns associated with these services and about recycled water in general?

5. Are you familiar with environmental issues related to Malibu Creek? Which issues are you or your organization most interested in? What about regulatory issues and decisions that impact the JPA's ability to discharge recycled water? What about the cost to achieve environmental requirements in the creek?

6. What is your sense of the quality of water in Malibu Creek? How about Malibu Lagoon?

7. Are you familiar with recycled water? What concerns or questions do you have about recycled water use?

8. One of the options being evaluated is storage of recycled water in Encino Reservoir, which would require – among other things – the construction of a lengthy pipeline through urbanized areas. What questions or concerns do you have about this concept?

9. Another option is to construct an advanced water treatment plant to further clean the recycled water and convey it through a pipeline to the Las Virgenes Reservoir where it will blend with other water that is sent to a drinking water treatment plant. This option would also require construction of a pipeline in an urbanized area, and result in augmenting our drinking water with this highly treated recycled water. Also known as indirect potable reuse, this option would ensure a local water supply for the region. What questions or concerns do you have about this concept?

10. How do you stay up-to-date about current events related to your community? (Word of mouth, email, newspapers, newsletters, television, radio, direct mail, social media, etc.) What about issues related to water or water supply? How about Malibu Creek and the watershed?

a. Would you be interested in receiving updates from the District or the JPA regarding recycled water progress, regulatory issues related to the creek or related topics and projects in the future?

b. How often would you like to receive information?

c. Do you have any other suggestions about how we can communicate with stakeholders, residents and businesses in this area?

d. Do you have regular meetings where we could make a presentation about this topic? How can we get on your schedule? Do you send electronic or written communications to your membership? Can we include a written article about beneficial recycled uses, stewardship of Malibu Creek, or projects that might result from a decision to move forward with one of these projects?

11. Who and/or what do you think are the most trusted sources of public information in your community?

12. The District and the JPA are committed to raising awareness and working more closely with the community including [name organization type]. What suggestions do you have that can help them achieve this goal?

13. Who else do you think we should meet with to discuss the options to maximize recycled water use for this region or related issues?

14. Are there any other issues you want to discuss or suggestions as we continue this outreach effort?

August 1, 2016 JPA Board Meeting

TO: JPA Board of Directors

FROM: General Manager

Subject : State and Federal Legislative and Regulatory Advocacy

SUMMARY:

With substantial progress on the Recycled Water Seasonal Storage effort, the JPA must begin to secure funding for the project, which could require up to $95 million in initial capital. In June 2016, the JPA hired The PFM Group to develop a funding and financing strategy for the project. The strategy is largely dependent on the JPA's success in securing federal and/or state funding to partially offset the project costs. Currently, there are funding opportunities at both the federal and state level. Staff recommends hiring Best Best & Krieger to provide state and federal legislative and regulatory advocacy services to support the JPA's efforts to secure funding for the project.

Additionally, staff recommends that the JPA member agencies commit to budgeting and authorizing expenses for at least one Board Member and executive staff member to participate in advocacy trips to Washington D.C. and Sacramento.

RECOMMENDATION(S):

Accept the proposal from Best Best & Krieger LLP; authorize the Administering Agent/General Manager to execute a one-year professional services agreement, in the amount of $130,000, for state and federal legislative and regulatory advocacy services; and request a commitment from the JPA members to individually budget and authorize expenses for at least one Board Member and executive staff member to participate in advocacy trips.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

Yes

FINANCIAL IMPACT:

The total annual cost of the services is estimated to be $130,000, consisting of $60,000 for federal services, $60,000 for state services and up to $10,000 for reimbursement of travel

expenses required to brief the JPA on progress. Sufficient funds are available for the services in the adopted Fiscal Year 2016-17 JPA Budget under CIP Job No. 10587, Recycled Water Storage. The cost of the work would be allocated 70.6% to Las Virgenes Municipal Water District and 29.4% to Triunfo Sanitation District.

DISCUSSION:

Background and Historical Perspective:

From September 2005 to December 2010, the JPA contracted with Patton Boggs for advocacy services to support the JPA's legislative and regulatory priorities. The scope of work included representing the JPA's interests in Washington D.C. on water and wastewater matters; exploring opportunities for federal participation in the construction of JPA projects; providing representation for the JPA's relations with federal agencies such as the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation; and developing working relationships with key Congressional representatives. The total cost of the services for the five-year period was approximately $650,000.

The investment in federal advocacy services resulted in substantial benefits to the JPA. In November 2007, the Water Resources Development Act of 2007 (WRDA) was signed into law including a $3 million authorization for the JPA's "Malibu Creek Watershed Restoration Project," which was for municipal wastewater and recycled water related to seasonal storage. On August 20, 2009, the JPA received a $1.8 million grant from the Bureau of Reclamation, through the American Recovery and Reinvestment Act of 2009 (ARRA), for construction of a 24-inch recycled water pipeline from the Tapia Water Reclamation Facility to Mulholland Highway. Also, the JPA strengthened its presence in Washington D.C. and developed valuable relationships with its Congressional representatives. On a local level, the JPA received assistance and support for the renewal of the Tapia NPDES permit in 2005 and 2010.

In November 2010, the U.S. House of Representatives adopted a ban on earmarks that applied to the 112th Congress and remains in place today. The action, among others, prompted the JPA to reconsider the cost of its on-going investment in federal advocacy services. As a result, the JPA discontinued the services in December 2010.

Current Need and Opportunities:

With substantial progress on the Recycled Water Seasonal Storage effort, the JPA must begin to secure funding for the project, which could require up to $95 million in initial capital. In June 2016, the JPA hired The PFM Group to develop a funding and financing strategy for the project. The strategy is largely dependent on the JPA's success in securing federal and/or state funding to partially offset the project cost.

Although the federal earmark ban remains, Congress has shown some progress to establish an alternative means for project-specific authorizations. The Water Resources Reform and Development Act of 2014 (WRRDA) included language that allowed the Secretary of the Interior to recommend a list of projects for authorization subject to approval by Congress. The process involves delegating more authority to the administrative agencies of the Executive Branch and effectively sidesteps the concern with earmarks. Similar language for the Commissioner of the Bureau of Reclamation to recommend authorization for Title XVI projects

was proposed in Senator Dianne Feinstein's Drought Relief Bill (S.2533), which specifically mentioned Las Virgenes Municipal Water District. The 2014 WRRDA Bill also established the Water Infrastructure Finance and Innovation Act (WIFIA) Program, which provides low-interest loans for water and wastewater projects.

As Congress considers the next WRDA Bill and potential drought relief legislation, opportunities will likely arise for the JPA to secure funding for its project. At a minimum, the JPA will want to protect its existing WRDA authorization, which will likely be subject to deauthorization due to inactivity (an appropriation was never received). Further, the U.S. Environmental Protection Agency is just now launching the WIFIA Program and the JPA will want to consider it as a potential funding source for seasonal storage. At the state level, opportunities will develop for the JPA to compete for Proposition 1 funding and weigh in on important regulatory processes such as those for potable reuse.

The Best Best & Krieger Team:

The Government Relations practice for Best Best & Krieger (BB&K) is lead by John D. Freshman and includes Syrus Devers, Annick Miller Rivera and other support staff. Mr. Freshman has over 30 years of experience working on complex public policy issues in Washington D.C., including all of the major federal environmental legislation. He previously served as Special Advisor to the Administrator of the U.S. Environmental Protection Agency. Mr. Devers has more than 20 years of experience in state government affairs, including 10 years as legislative staff serving the State Senate and Assembly. He previously served as the principal consultant for the Senate Natural Resources Committee. Ms. Rivera holds a Master's Degree in public policy and previously served as legislative staff to the Chair of the House Natural Resources Committee.

The BB&K Team offers a unique combination of expertise in legislative and regulatory advocacy services on both the federal and state level. The team has a proven track record of achieving results for their clients and is eager to support the JPA on its Recycled Water Seasonal Storage effort. Additionally, the team can provide support for the JPA on the renewal of Tapia's NPDES permit.

Proposed Services and Cost:

The services provided by BB&K to the JPA would include state and federal advocacy on legislative and regulatory matters associated with water and wastewater. Specifically, the work would include:

1. Identifying and assisting to secure funding for seasonal storage.
2. Supporting or opposing legislation and regulations based on the JPA's priorities.
3. Building relationships and coalitions in Washington D.C. and Sacramento.

Additionally, BB&K would provide a limited amount of advocacy services, as needed, to support individual priorities of Las Virgenes Municipal Water District and/or Triunfo Sanitation District, provided the priorities are not in conflict with those of the JPA. The total annual cost of the work is expected to be $130,000, which consists of $5,000 per month for federal services, $5,000 per month for state services and $10,000 for reimbursement of travel expenses incurred to brief the JPA Board on the work.

Attached for reference is a copy of the proposal from BB&K.

JPA Board and Staff Participation in Advocacy Efforts:

The success of the BB&K Team in achieving the JPA's objectives is largely dependent on the active participation of JPA Board Members and staff in advocacy efforts. Participation would likely involve making two trips annually to both Washington D.C. and Sacramento. To this end, staff recommends that the JPA member agencies, Las Virgenes Municipal Water District and Triunfo Sanitation District, individually budget and authorize expenses for at least one Board Member and executive staff member to participate in advocacy trips on behalf of the JPA.

Prepared by: David W. Pedersen, Administering Agent/General Manager

ATTACHMENTS:

Proposal from BB&K

Indian Wells
(760) 568-2611
Irvine
(949) 263-2600
Los Angeles
(213) 617-8100
Ontario
(909) 989-8584

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Syrus Devers
(916) 329-3681
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John D. Freshman
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john.freshman@bbklaw.com

March 29, 2016

David W. Pedersen
Las Virgenes - Triunfo Joint Powers Authority
4232 Las Virgenes Road
Calabasas, CA 91302-1994

Re: Proposal for federal and state lobbying services for the Las Virgenes - Triunfo Joint Powers Authority

Dear Dave:

Thank you for the time you and your staff spent with us on Monday. We appreciated learning about your needs and are providing a response for assisting the Las Virgenes - Triunfo Joint Powers Authority (JPA). This response encompasses state and federal services Best Best & Krieger (BB&K) provides. We will work with the JPA to develop a dynamic strategic plan that identifies its funding and policy goals and concerns on both state and federal issues. A summary of services are listed below:

1. **Identify and Assist with Funding Opportunities**: Utilize our unique relationships to monitor federal and state grant programs, and other funding opportunities with a special focus on grants. At the federal level, this process has undergone a dramatic upheaval in the last several years. We have developed a specialized process to cope with the new rules and the new order while pursuing traditional routes that remain available. At the state level, upcoming Proposition 1 grants present opportunities for addressing the complex needs of the District. BB&K attorneys are directly involved in the Water Commission's process to develop draft regulations.

2. **Advocacy and Updates**: Represent the JPA before Congress, the state legislature, federal and state agencies. Support and oppose legislation according to the interests of the JPA. Keep the JPA informed of current events through updates and reports to ensure that the JPA has the information it needs to advance its legislative priorities. Effective advocacy is the result of a comprehensive plan of action that takes place all year long. This includes activities such as drafting background papers, letters of support or opposition, and being prepared to attend and testify at legislative hearings.

3. **Relationship and Coalition Building**: Set meetings with key decision-makers, and build coalitions as called for in the JPA's strategic plan. BB&K has a strong network within the Capitol in D.C. and in Sacramento, we can utilize these connections to help build relationships and coalitions.

Consolidated Cost Proposal:

This proposal is for $10,000.00 per month. This covers a fee of $5,000.00 for state services per month, and $5,000.00 for federal services per month. The annual total would therefore be $120,000.00 and would include everything except specially requested travel by the JPA to the District. We acknowledge that we are beginning an effort with short-, mid-, and long-term objectives and costs may change as we move forward. Currently, however, we believe this is an appropriate costs. We very much look forward to the opportunity to work with the Las Virgenes - Triunfo Joint Powers Authority.

Sincerely,

John D. Freshman
for BEST BEST & KRIEGER LLP

Syrus Devers
for BEST BEST & KRIEGER LLP

August 1, 2016 JPA Board Meeting

TO: JPA Board of Directors

FROM: Facilities & Operations

Subject : Consulting Services for Renewable Energy Projects

SUMMARY:

In 2014, the JPA completed a one-megawatt (MW) solar array in the North Canyon of the Rancho Las Virgenes Farm. The solar array was connected to the JPA's Recycled Water Pump Station (RWPS) using a Net Energy Metering (NEM) tariff. Since its inception, the array has produced 5.2 million kilowatt-hours of power, or 42% of the consumption at the RWPS, saving the JPA approximately $175,000.

There is a potential to expand the JPA's solar generating capacity, increasing the cost-savings and decreasing greenhouse gas production. A four- to five-MW solar array could be installed in the lower portion of the North Canyon using a Renewable Energy Self-Generation Bill Credit Transfer tariff (RES-BCT). The RES-BCT tariff allows for the transfer of energy savings from a renewable source, or "generating account," to multiple “benefiting accounts.” Based on an initial pro-forma, the JPA could achieve a cost-savings of approximately $10 million over a 25-year period.

In addition to utilization of the RES-BCT tariff, a new Net Energy Metering 2.0 (NEM 2.0) tariff could be used to allow more solar energy to further offset demands at the RWPS, decreasing its utility load and increasing overall cost-savings. Further, solar generation battery storage could also provide additional savings. The batteries would discharge during times of peak demand, reducing peaking loads and the associated charges.

A variety of possible combinations of RES-BCT, NEM 2.0 and battery storage installation could result in significant cost-savings to the JPA. A complex analysis is warranted to determine the potential savings and recommend the optimal project. TerraVerde Renewable Partners provided a proposal, in the amount of $80,576, to perform the analysis.

RECOMMENDATION(S):

Accept the proposal from TerraVerde Renewable Partners, LLC; authorize the Administering Agent/General Manager to execute a professional services agreement, in the amount of $80,576; and appropriate the same amount to perform a Project Feasibility Assessment for expanded solar generation capacity and battery storage.

FISCAL IMPACT:

Yes

ITEM BUDGETED:

No

FINANCIAL IMPACT:

The total cost of the work is $80,576, which would be allocated 70.6% to LVMWD and 29.4% to Triunfo Sanitation District. An appropriation is required for the work because it was not included in the adopted Fiscal Year 2016-17 JPA Budget.

DISCUSSION:

Energy is the second largest single line item in the JPA Budget. In Fiscal Year 2016-17, approximately $2.4 million was budgeted for energy, which is about 15% of total JPA expenses. The JPA has implemented a number of projects and programs to reduce its energy costs. The projects include a one-MG solar array, co-generation at the Rancho Las Virgenes Composting Facility and energy efficiency programs such as those involving pump testing or lighting retrofits. The programs also reduce the JPA's dependence on Southern California Edison (SCE) and the JPA's carbon footprint. Staff has recently identified additional opportunities that would achieve cost-savings and further reduce the JPA's carbon footprint.

The first opportunity would involve the addition of a four- to five-MW solar generating array in the lower portion of the North Canyon. While these fields have traditionally been used for Tapia effluent disposal during the discharge prohibition period, the use of the 005 (Los Angeles River) discharge point, reduced excess recycled water and the long-term potential for elimination of the majority of creek discharge render the fields potentially available for certain alternative uses.

The capacity of the JPA's original solar generating facility was maximized because there was a one MW limit for the use of the NEM tariff. However, there are several other tariffs that could potentially be used for a new, larger solar array. The RES-BCT tariff provides savings from a generating account, in this case the small irrigation pump station in the North Canyon, to offset generation charges at up to 25 benefiting accounts. The attached initial pro-forma provided by TerraVerde estimates a potential savings to the JPA of approximately $10 million over 25 years with Tapia Water Reclamation Facility receiving the largest benefit[1].

Another option for a new solar array would be the NEM 2.0 tariff, which is expected to become available in SCE's territory in early 2017. NEM 2.0 allows for net metering but without the one MW capacity limitation currently applicable for the NEM tariff. Additional solar energy could further offset demands at the RWPS. Also, there is a potential to combine the benefits of several tariffs. For example, a new solar array could be sized to maximize the NEM 2.0 benefits to completely offset demands at the RWPS, and a separate array could be used to take advantage of the RES-BCT tariff.

Finally, there is an opportunity is to consider battery storage at both Tapia and Rancho. The concept would involve reducing peak loads, and significant demand-related charges, by discharging energy stored in batteries discharging during peak periods. The batteries would charge during off-peak periods and be available for the next peak period or during an

interruption of power. Coupled with solar energy, significant savings can be realized by using battery storage.

TerraVerde Renewable Partners is an independent renewal energy and energy efficiency consulting firm that focuses on California public agencies. In April 2016, TerraVerde provided the JPA with a proposal, at a cost of $140,797, to assess the technical and financial feasibility of implementing a solar project of up to five MWs using the RES-BCT tariff. The proposal consisted of six phases, positioning the JPA to prepare and release a request for proposals for the project. After reviewing the proposal, staff requested a revised proposal to consider both the RES-BCT and NEM 2.0 tariffs, as well as battery storage. The proposal, at a cost of $80,576, includes Phase 1, Project Feasibility Assessment Due Diligence and Data Gathering, and Phase 2, Project Feasibility Analysis. The result of this analysis will provide the JPA with information to make a determination on moving forward with a project and scoping the project (i.e. a combination of the RES-BCT and NEM 2.0 tariff). A representative from TerraVerde will attend the Board meeting to present the proposal and answer questions.

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[1] Please note that some of the benefiting accounts shown on the pro-forma are "Las Virgenes only" facilities to ensure that all energy generated by the potential facility could be utilized to offset generation charges for a benefiting account. The assessment would take into account the differences in costs and benefits for Las Virgenes only facilities and JPA facilities, and all savings would be appropriately accrued to the JPA.

Prepared by: David R. Lippman, P.E., Director of Facilities and Operations

ATTACHMENTS:

TerraVerde June 2016 Proposal
TerraVerde April 2016 Proposal
TerraVerde January 2016 Pro-Forma

TerraVerde Renewable Partners

Proposal: Consulting Services for Solar Energy Project Feasibility Assessment and Project Development (LVMWD Phase 2 Solar PV)

June 27, 2016

Prepared for: **Las Virgenes Municipal Water District**

Attention: David Lippman

Director, Facilities & Operations

4232 Las Virgenes Road, Calabasas, CA 91302

CONTENTS

EXECUTIVE SUMMARY

We would like to thank Las Virgenes Municipal Water District (LVMWD) for the opportunity to submit our updated proposal for professional consulting services to support LVMWD's Phase 2 solar energy project implementation plan.

This revised proposal includes scope changes requested by LVMWD on June 22nd to TerraVerde's original proposal dated April 12, 2016. These changes include:

- Remove Phase 3 through Phase 6 tasks from the current proposal, and update the associated level of effort cost tables (Phases 3 through 6 will be considered as follow-on work once LVMWD has reviewed the results of Phase 1 and 2).
- Add the optional NEM 2.0 analysis for the District's existing 1MW solar energy PPA project, and integrate this optional scope into the primary Scope of Work, Phase 1 and Phase 2 tasks (see Section A).
- Add the optional Battery Storage financial analysis for all District operations/sites to provide standalone demand charge reduction savings projections, and integrate this optional scope into the primary Scope of Work, Phase 1 and Phase 2 tasks (see Section A) with applicable discounts associated with TerraVerde's ACWA member marketing program launched on June 13th.

The level-of-effort estimate has been updated, and the table re-formatted to include these changes (see Section B). TerraVerde offers to perform the proposed scope of services and deliverables for a not-to-exceed price of $80,576.

As LVMWD is already aware, TerraVerde is the leading independent renewable energy and energy efficiency consulting firm focused exclusively on California public agencies, and is highly experienced in providing the complex feasibility analysis required to properly evaluate solar energy and energy storage project opportunities. Please reference our Statement of Qualifications (SOQ) that was included in our April 12th proposal.

We trust the District will find our industry leading experience, capabilities, and knowledge to be an excellent fit in evaluating and advising on this project. We look forward to assisting Las Virgenes Municipal Water District in the next chapter of their renewable energy master plan. In good faith, TerraVerde is prepared to initiate project development due diligence tasks with a Letter of Intent (LOI) from the District to enter into a consulting services agreement. If you have any questions please feel free to contact me.

Sincerely,

Kevin Ross
TerraVerde Renewable Partners, LLC.
520 E. Avenida Pico #3793
San Clemente, CA 92674-9998
949-212-6555 Kevin.Ross@tvrpllc.com

SECTION A. SCOPE OF WORK

TerraVerde's staff works closely with clients in a coordinated team-oriented fashion, running parallel tracks for development of the technical and financial components of multi-site/multi-system feasibility assessments quickly and efficiently. In support of our project planning, development, and implementation management service model, TerraVerde has developed proprietary software, documents, templates, and methods specific to California public agency operations, and energy-centric contracting. The result is an efficient, comprehensive set of services that fully support the best practices of turnkey project development, transparent competitive bidding, and effective design/build management carefully aligned with the District's goals and requirements.

The following scope of work description is based on the District's desire to enter into a consulting services agreement for the purposes of assessing the financial, technical and physical feasibility of implementing solar energy project(s) of up to 5MW in capacity at a designated district-owned property: the North Canyon Irrigation Spray Field site on Las Virgenes Road near District headquarters. The potential solar energy project(s) is to be evaluated for implementation under SCE's Renewable Energy Self-Generation Bill Credit Transfer tariff (RES-BCT), which is a non-NEM, "export energy" tariff that allows public agencies to install a grid-connected renewable energy generation system of up to 5MWs capacity on property owned or leased by the agency, and receive monetary bill credits for the energy generated by the system and sent to the grid. The bill credits can be applied to one or more (up to 50) SCE accounts/meters (benefitting accounts), and their value is determined by the energy generation portion of the host site's TOU rate schedule.

The feasibility assessment scope will include two (2) phases; each phase consisting of a group of tasks that must be completed to progress to the next phase. There are defined deliverables for each phase (see the Description of Deliverables table below), and the deliverables schedule also defines the proposed fee payment milestones (see Section C).

In addition to the RES-BCT project feasibility analysis and project development, LVMWD has requested a NEM 2.0 cost/benefit analysis and feasibility assessment to determine the potential for added energy cost savings at the interconnection point of the District's existing 1MW PPA project. The existing PV system currently has a SCE NEM 1.0 agreement in place, which limits the system capacity to 1MWac.

LVMWD understands the transition from NEM 1.0 to NEM 2.0 (expected to occur in SCE territory in early 2017) will trigger changes in NEM credit valuation (ie: no credit for non-bypassable charges) and presents potential new opportunities associated with un-capped system size for future NEM projects under NEM 2.0 (per meter/per site). Given the significant electrical load that exists at the remote pump station (the PV system interconnection point) the District desires to know the financial benefits, costs and technical feasibility of increasing the capacity of the existing system to provide additional energy and billing offset under the new NEM 2.0 tariff. In addition, the District desires to evaluate the cost/benefit and feasibility of utilizing the available North Canyon spray field property to support an optimally sized NEM 2.0 project, and a separate RES-BCT project co-located at the same site.

Per the District's request, the original scope of work has been revised to integrate the proposed NEM cost/benefit analysis and feasibility assessment into the RES-BCT project feasibility assessment scope,

including the deliverables and project milestones which have been revised to include the NEM 2.0 analysis and feasibility assessment reports (see Section C).

The District is also interested in understanding the potential energy cost savings benefits of Battery Storage for demand (kW) reduction, and associated demand charge reduction for the District's operations/sites where energy storage may provide financial benefits using a Shared Savings Agreement financing strategy.

Per the District's request, the Phase 1 & Phase 2 scope of work has been revised to integrate the proposed Battery Storage financial feasibility assessment.

Phase 1 – Project Feasibility Assessment Due Diligence & Data Gathering

1. Project Kickoff meeting to establish goals, objectives, expectations, communication and data collection protocols, roles/responsibilities, Phase 1 Plan of action and milestone schedules. Review TerraVerde's RFI list, and set expectations for data collection. The Account Manager and/or Project Development Manager (PDM) will meet with designated District staff on at least a monthly basis during the feasibility study process to review data collection progress/issues, share initial feasibility conclusions, present project development progress reports and schedule updates, discuss questions/issues regarding site logistics/operations and future operations/master plans, address any questions/concerns the District may have, and review next steps in the study process. The PDM will keep notes for each meeting and distribute to designated District staff after the meeting. Project schedule updates will be provided by the Account Manager on a twice monthly basis.
2. Review District operations, and operating profiles (monthly electricity use/cost for all applicable SCE accounts/meters), and identify initial SCE accounts to include in the project development scope (site-specific RES-BCT generating account and district-wide benefitting account portfolio).
3. Review District's Facility Master Plans (as applicable), and acquire the District's preferences for designated PV array layout areas.
4. Acquire and review 24 months of 15-minute interval electricity use & billing data for all accounts/meters to be evaluated for project consideration (based on an initial review of load profiles and current rate schedules), perform QC checks on all data received, and prepare data for loading into TerraVerde's energy profile modeling tool.
5. Using the "cleaned" interval data, perform an initial RES-BCT tariff bill credit match analysis to determine initial system capacity (kW), and benefitting accounts portfolio. Also perform NEM 1.0 and NEM 2.0 credit matching analysis to determine the potential for adding generation capacity at LVMWD's existing NEM solar project site. And, perform an initial battery storage sizing and demand reduction analysis. Share pro-forma results with the District for each tariff and technology analysis.
6. Collect and review all available site-specific data and drawings, including but not limited to: site plans, facilities drawings, parcel maps, easement definitions, electrical designs & Single Line Diagrams (electrical infrastructure for the generating acct meter #256000-169208), underground utilities diagrams if available, civil engineering and geotechnical reports and/or soils tests if available, CEQA study reports and associated mitigation records as applicable, ALTA Survey data and title reports if available, FEMA/ACOE flood zone maps and wind zone maps as applicable. (RFI list to be presented during Task 1). In addition, for the NEM 2.0 project analysis, perform a technical review of the existing system and its interconnection agreement.

7. Initiate interconnection strategy development process: review SCE DER maps, conduct field audits, prepare and submit SCE pre-applications for the RES-BCT project and NEM 2.0 project, as applicable. LVMWD to pay Pre-application submittal fees ($300 per submittal).
8. Conduct engineering audits of site conditions for the site including, but not limited to: site operations, site access points, physical structures, security fencing, topography, drainage, habitat, orientation, vegetation / trees, potential shading elements, soils composition and stability, property zoning or re-zoning requirements, flood zones, Utility lines and easements, known underground utilities/pipelines, cell towers, electrical infrastructure (District's equipment, and SCE equipment), near-by SCE distribution lines and substations, landfills and/or known site contamination, community impact (nearby residential developments) and view-shed issues. Assemble site audit notes and photos and deliver a copy to the District.

Phase 2 – Project Feasibility Analysis

9. Using data collected in Task 6, assess the site(s) for land use issues, environmental sensitivities, and/or major logistical limitations that may limit or prevent solar PV array layouts and/or installations.
10. Generate solar array location plans and initial layouts to assess area/location constraints, if any for each site.
11. Run shading analysis for the site using site audit data and the Helioscope program, and adjust array layout/location assumptions as needed.
12. Based on the results of the initial SCE Pre-application interconnection request(s) generate a rough interconnection cost estimate for the site(s). Advise District on any significant impediments to achieving interconnection at the site(s).
13. Determine all applicable AHJ approval requirements for the site(s).
14. Generate project cost estimates inclusive of all project design/build costs using audit findings, interconnection scope, current market data for labor, equipment, materials, cost of capital and PPA investor internal rates of return (IRRs), and generate expected PPA rates & escalators. Provide similar project design/build cost estimates and SSA (Shared Savings Agreement) terms for the proposed Battery Storage sites.
15. Provide guidance on project financing and ownership options as required, and provide comparative financial analysis using 25yr cash flow pro-formas for all applicable financing structures.
16. Run full financial model (review all assumptions with District) for each proposed site/project, and confirm economic viability using the District's preferred financing/ownership options. Deliver analysis results to the District along with initial array layouts, shading analysis results, and pre-app interconnection results.

Note: Because Phase 3 and 4 are not included in the revised proposal, a formal feasibility study report is not included as a Phase 2 deliverable. However, TerraVerde will provide a "Summary of Findings" based on the analysis completed during Phase 1 and 2 and present this summary along with other specified deliverables to the District.

Description of Deliverables and Milestones

Task #	Description of Deliverable
5	Initial energy data use/cost/rate analysis results (financial pro-formas)
8	Copy of site audit notes
16	Summary of findings and updated financial pro-formas

SECTION B. FEE PROPOSAL

Per the District's request we offer a traditional level-of-effort fee structure based on our standard hourly rates (see rate table below, which includes the ACWA member 10% discount), and the scope of work described in Section A.

TerraVerde Hourly Rate Table

Resource Classification	Hourly Rate	ACWA Discounted Rate
Principal, Technical Advisor	$225	$203
EVP Structured Finance	$210	$189
Engineering Director	$205	$185
Sr. Engineer, Project Developer	$195	$176
Account Manager	$190	$171
Project Manager	$185	$167
Energy Engineer / Audit Mgr	$165	$149
Energy / Financial Analyst	$155	$140
Data Administrator	$80	$72

Travel expenses, materials, supplies, incidentals billed separately

Level of Effort Estimate

LVMWD Project Feasibility Study (RES-BCT & NEM 2.0 Analysis, plus Battery Storage Analysis)

Resource	Rate/Hr	Phase1	Phase2	TotalHrs	Cost
Principal, Technical Advisor	$ 203	6	5	11	$ 2,233
EVP Structured Finance	$ 189	5	8	13	$ 2,457
Engineering Director	$ 185	15	17	32	$ 5,920
Sr. Engineer, Project Developer	$ 176	96	55	151	$26,576
Account / Project Manager	$ 171	92	48	140	$23,940
Energy Engineer / Audit Mgr	$ 149	31	24	55	$ 8,195
Energy / Financial Analyst	$ 140	28	23	51	$ 7,140
Data Administrator	$ 72	48	32	80	$ 5,760

Total Hours per Phase:	321	212	533	
Cost per Phase (w/o expenses):	$49,561	$32,660		$82,221
Estimated Expenses:	$ 2,974	$ 1,960		$ 4,933
Total Cost:	$52,535	$34,620		$87,154

Discount for Energy Storage Analysis Marketing Program for Water Districts: - $6,578

Total NTE Cost: $80,576

Expenses are estimated. Actual expenses will be billed at cost.

Note: For solar energy PPAs and/or battery storage Shared Savings Agreements (SSAs), 100% of TerraVerde's fee can be folded into the PPA/SSA financing, which allows the District to be reimbursed by the PPA provider during the design/build and commissioning process for the fee payments to achieve a true no-capital cost PPA project implementation.

SECTION C. PROJECT SCHEDULE & FEE PAYMENT MILESTONES

The following schedule is based on the scope of work described in Section A. A detailed schedule with critical milestones will be presented at the kick-off meeting.

Project Scope Phase	Work Schedule Duration	Fee Payment Milestones
Phase 1 Tasks	9 weeks	Task 8 Deliverables
Phase 2 Tasks	7 weeks	Task 16 Deliverables
Total:	16 weeks	

SECTION D. OPTIONAL AND FUTURE SCOPES TO CONSIDER

Feasibility Assessment Phase 3 - Confirm Project Feasibility and Financial Viability

Feasibility Assessment Phase 4 – Prepare Feasibility Study Report and Review with LVMWD

Feasibility Assessment Phase 5 - Develop Project Implementation Plan

Feasibility Assessment Phase 6 – Pre-RFP Project Development Tasks

Please see our original proposal from April 14, 2016 for detailed description of these scope phases. If the District is interested in pursuing any of the follow-on phases, TerraVerde will update the tasks/descriptions to include NEM 2.0 and Battery Storage as applicable.

Comprehensive RFP Process:

TerraVerde maintains template RFP documents and client-sided PPA & SLA contracts (and EPC contracts) that have been accepted by the California public sector PPA market in the recent past for large school district and water district solar PPA projects. These documents can be quickly customized to fit the District's requirements and project-specific specifications, and integrated into our RFP package. This capability allows for expedited contracting when necessary to meet specific milestones or deadlines.

TerraVerde proposes to leverage the Phase 5 and 6 work products to assemble a comprehensive RFP package, and acting as the District's representative, run a highly transparent and competitive RFP process, and then assist the District with proposal evaluations, contractor selection, value engineering, contract negotiations, and hand-off to the design/build management team. This service will allow the District to achieve absolute best value and highest quality.

Owner's Rep Project Management Services:

As described in greater detail in our SOQ, TerraVerde provides turnkey owner's rep design/build project management services, which helps reduce district staff overhead associated with the project management role, and mitigates the possibility of project scope/cost creep. Projects are managed as if TerraVerde were an integral part of the District's in-house staff, and our project management role facilitates resolution of issues quickly and effectively, driving a well-defined process (see SOQ), that in turn pushes contractors to meet all contract requirements, resulting in on-schedule and on-budget project execution.

TerraVerde also offers comprehensive project commissioning management and performance validation (commissioning specifications available upon request) and follow-on asset management services (AMS) conducted by in-house employees to ensure the systems meet projected energy production, projected energy cost savings, and that the PPA provider/contractor meets all of the terms/conditions of the Performance Guarantee and PPA contract. In addition, our AMS operation has amassed a substantial database of factors that affect system performance, including specific equipment performance and reliability metrics that we then use in the systems design and specification phase of new projects to assure optimum system reliability, performance, and operability.

TerraVerde Renewable Partners

Proposal: Consulting Services for Solar Energy Project Feasibility Assessment and Project Development (SCE RES-BCT Tariff Basis)

LAS VIRGENES MUNICIPAL WATER DISTRICT

April 12, 2015

Prepared for: Las Virgenes Municipal Water District

Attention: David Lippman

Director, Facilities & Operations

4232 Las Virgenes Road, Calabasas, CA 91302

CONTENTS

EXECUTIVE SUMMARY

TerraVerde Renewable Partners (TerraVerde) applauds Las Virgenes Municipal Water District's (LVMWD's) commitment to its renewable energy goals and energy master plan, and its recent implementation of a 1 megawatt solar energy generation system. We would also like to thank the District for the opportunity to submit our proposal for professional consulting services that directly addresses LVMWD's next phase of solar energy project implementation: A RES-BCT tariff based solar energy project feasibility assessment at LVMWD's North Canyon Irrigation Spray Field site (3810 Las Virgenes Rd).

With the constantly changing landscape of utility rate tariffs, TOU cost structures, solar energy and energy storage incentive programs, policy and regulations, project financing and ownership structures, renewable energy technology/product developments, equipment costs, and market conditions, we understand the unique challenges water districts face in developing renewable energy implementation plans that must stand the test of time.

While the District has recently become familiar with net metered (NEM) solar energy project implementation, the landscape has shifted again, allowing the District to take advantage of new and evolving programs and tariffs that require specific expert knowledge and resources to properly evaluate the potential opportunities that may yield additional energy cost savings for the District.

As LVMWD is already aware, TerraVerde is the leading independent renewable energy and energy efficiency consulting firm focused exclusively on California public agencies, and is highly experienced in providing the complex feasibility analysis required to properly evaluate these opportunities. Please see Appendix 1 of this proposal for information about TerraVerde's experience, capabilities and references.

After completing a cursory review of LVMWD's SCE account/meter portfolio and energy use profiles, and advising the District on potential (pro-forma) project opportunities, we are in an excellent position to immediately launch a comprehensive technical and financial feasibility assessment at the target sites for the District. The scope of the feasibility study contained in this proposal has been crafted explicitly for the unique requirements of a 3 to 5MW RES-BCT tariff based solar project, with a level-of-effort fee structure matching the resource requirements to complete the many tasks associated with generating an investment grade feasibility study report (described in Scope of Work Section A).

We trust the District will find our industry leading experience, capabilities, and knowledge to be an excellent fit for evaluating and advising on this project opportunity; and will consider some of the added scope of services options described in the proposal that can provide substantial upside benefits to the District. We look forward to assisting Las Virgenes Municipal Water District in the next chapter of their renewable energy master plan. In good faith, TerraVerde is prepared to initiate project development due diligence tasks with a Letter of Intent (LOI) from the District to enter into a consulting services agreement. If you have any questions please feel free to contact me.

Sincerely,

Kevin Ross
TerraVerde Renewable Partners, LLC.
520 E. Avenida Pico #3793
San Clemente, CA 92674-9998
949-212-6555
Kevin.Ross@tvrpllc.com
www.tvrpllc.com

SECTION A. SCOPE OF WORK

TerraVerde's staff works closely with clients in a coordinated team-oriented fashion, running parallel tracks for development of the technical and financial components of multi-site/multi-system feasibility assessments quickly and efficiently. In support of our project planning, development, and implementation management service model, TerraVerde has developed proprietary software, documents, templates, and methods specific to California public agency operations, and energy-centric contracting. The result is an efficient, comprehensive set of services that fully support the best practices of turnkey project development, transparent competitive bidding, and effective design/build management carefully aligned with the District's goals and requirements.

The following scope of work description is based on the District's desire to enter into a consulting services agreement for the purposes of assessing the technical and financial feasibility of implementing a solar energy project(s) of up to 5MWac in capacity on district-owned property: the North Canyon Irrigation Spray Field site on Las Virgenes Road near District headquarters. The potential solar energy project(s) is to be evaluated for implementation under SCE's Renewable Energy Self-Generation Bill Credit Transfer tariff (RES-BCT), which is a non-NEM, "export energy" tariff that allows public agencies to install a grid-connected renewable energy generation system of up to 5MWs capacity on property owned or leased by the agency, and receive monetary bill credits for the energy generated by the system and sent to the grid. The bill credits can be applied to one or more (up to 50) SCE accounts/meters (benefitting accounts), and their value is determined by the energy generation portion of the host site's TOU rate schedule.

The feasibility assessment scope includes six (6) phases; each phase consisting of a group of tasks that must be completed to progress to the next phase. There are defined deliverables for each phase (see the Description of Deliverables table below), and the deliverables schedule also define the proposed fee payment milestones (see Fee Proposal Section).

Phase 1 – Project Feasibility Assessment Due Diligence & Data Gathering

1. Project Kickoff meeting to establish goals, objectives, expectations, communication and data collection protocols, roles/responsibilities, Phase 1 Plan of action and milestone schedules. Schedule updates during Phase 1 to be provided by the Account Manager on a weekly basis. The Account Manager and Project Development Manager (PDM) will meet with designated District staff on at least a monthly basis during the feasibility study process to review data collection progress/issues, share initial feasibility conclusions, present project development progress reports and schedule updates, discuss questions/issues regarding site logistics/operations and future operations/master plans, address any questions/concerns the District may have, and define next steps in the study process. The PDM will keep notes for each meeting and distribute to designated District staff after the meeting.
2. Review District operations, and operating profiles (monthly electricity use/cost for all applicable SCE accounts/meters), and identify initial SCE accounts to include in the project development scope (site-specific RES-BCT generating account and district-wide benefitting account portfolio).
3. Acquire the District's preferences for designated PV array layout area at the site.

4. Acquire and review 24 months of 15-minute interval electricity use & billing data for all accounts/meters to be evaluated for project consideration (based on load profiles and current rate schedules), perform QC checks on all data received, and prepare data for loading into TerraVerde's energy profile modeling tool.
5. Using the "cleaned" interval data, perform an initial RES-BCT tariff bill credit match analysis to determine initial system capacity (kW), and benefitting accounts portfolio. Share pro-forma results with the District.
6. Collect and review all available site-specific data and drawings, including but not limited to (see RFI list): site plans, facilities drawings, parcel maps, easement definitions, electrical designs & Single Line Diagrams (electrical infrastructure for the generating acct meter # 256000-169208), underground utilities diagrams if available, civil engineering and geotechnical reports and/or soils tests if available, CEQA study reports and associated mitigation records as applicable, ALTA Survey data and title reports if available, FEMA/ACOE flood zone maps and wind zone maps as applicable.
7. Initiate interconnection strategy development process: review SCE DER maps, conduct field audits, prepare and submit SCE pre-applications (3). LVMWD to pay Pre-application submittal fees ($300 per submittal).
8. Conduct in-depth engineering audits of site conditions for the site including, but not limited to: site operations, site access points, physical structures, security fencing, topography, drainage, habitat, orientation, vegetation / trees, potential shading elements, soils composition and stability, property zoning or re-zoning requirements, flood zones, Utility lines and easements, known underground utilities/pipelines, cell towers, electrical infrastructure (District's equipment, and SCE equipment), near-by SCE distribution lines and substations, landfills and/or known site contamination, community impact (nearby residential developments) and view-shed issues. Assemble site audit notes and photos and deliver a copy to the District.

Phase 2 – Project Feasibility Analysis

9. Using data collected in Task 6, assess each site for land use issues, environmental sensitivities, and/or major logistical limitations that may limit or prevent solar PV array layouts and/or installations.
10. Generate solar array location plans and initial layouts to assess area/location constraints, if any for the site.
11. Run shading analysis for each site using site audit data and the HelioScope program, and adjust array layout/location assumptions as needed.
12. Based on the results of the initial SCE Pre-application interconnection, generate a rough interconnection cost estimate for each site. Advise District on any significant impediments to achieving interconnection at the site.
13. Determine all applicable AHJ approval requirements for the site.
14. Generate project cost estimates inclusive of all project design/build costs using audit findings, interconnection scope, current market data for labor, equipment, materials, cost of capital and PPA investor internal rates of return (IRRs), and generate expected PPA rates & escalators.
15. Provide guidance on project financing and ownership options as required, and provide comparative financial analysis using 25yr cash flow pro-formas for all applicable financing structures.
16. Run full financial model (review all assumptions with District) for the proposed site/project, and confirm economic viability using the District's preferred financing/ownership options. Deliver analysis results to the District along with initial array layouts, shading analysis results, and pre-app interconnection results.

Phase 3 - Confirm Project Feasibility and Financial Viability

17. Confirm PV system sizing for RES-BCT tariff using bill credit matching analysis from Task #5 and site assessment conclusions. Solicit the District's guidance/knowledge of relevant known Capital Improvements and/or Facility Expansion Plans, and estimated increases/decreases in future energy consumption and TOU period use changes, and update the analysis inputs as needed. Adjust system size(s) if necessary, re-run financial pro-formas as needed and present to the District.
18. Note: If not enough data is available for to determine initial site-specific feasibility, TerraVerde will advise the District and identify the proper course of action (scope and cost estimate) to obtain the necessary information (for example: conduct soils testing if no geotechnical data exists). Prepare a memo for the District with conclusions, and next step recommendations.
19. Confirm proposed system generation profile(s), and use the 8760 solar energy generation data tables and most recent SCE TOU rate schedules (URG components) to confirm bill credit value on an interval basis. Confirm any recommended post-solar installation rate tariff changes for the generating account with the District.
20. Confirm individual bill credit absorption % allocations for the benefitting accounts (required for SCE RES-BCT application form).
21. Fine tune 25yr cash flow pro-forma inputs based on updated data from tasks #17 & #19, as needed. Review with District and determine the preferred financing/ownership scenarios to be included in the final financial report.
22. Update array layouts if necessary, and create electrical single line diagrams (SLD) for the selected system(s)/site(s) required for the Interconnection Application.
23. Prepare the SCE RES-BCT Rule 21 Interconnection Application and submit on-line (LVMWD to pay $800 application fee).

Phase 4 – Prepare Feasibility Study Report and Review with LVMWD

24. Assemble the Project Feasibility Study Report and Project Financial Report consisting of the site ranking analysis and recommendations (if more than one site is under consideration), site audit findings, energy use/cost analysis results, due diligence summary, technical feasibility assessment, and financial analysis including energy cost savings cash flow pro-formas, and deliver to the District.
25. Meet with the District to review the Feasibility Study Report and respond to any questions or concerns. Make updates to the report as required, and re-issue to the District.

Phase 5 - Develop Project Implementation Plan

26. Once the District approves the Project Feasibility Study Report, prepare a Project Implementation Plan for the selected project(s), which shall include: Overview of data collection and energy profile analysis, overview of site/project selection methodology and feasibility assessment process, overview of individual project scopes (design/build), overview of proposed solar PV and battery storage technologies/products as applicable, overview and comparison of financing options, overview of Feasibility Report findings, project budget estimate, summary 25yr energy cost savings analysis (with detailed pro-formas contained as appendixes), summary of financial assumptions used in the analysis, summary of project benefits (monetary and environmental – GHG offsets, RECs, Carbon footprint reduction), overview of the RFP process and contractor selection methodology best practices, proposed (template) contract terms, pro-forma project schedule, overview of the

design/build process, overview of the Rule 21 interconnection process, summary of potential project risks, and all relevant maps, drawings and analysis results backup.

27. Assist District staff with in-process presentations to Committees and Board workshops as needed.

Phase 6 – Pre-RFP Project Tasks

28. Oversee the SCE RES-BCT Rule 21 Interconnection application(s) review process, as applicable, including: Initial SCE Screen Review process, respond to all RFIs, and attend all meetings/calls. Prepare a report of screen review findings, update the interconnection cost estimate as needed, and deliver to the District.
29. Prepare a set of template contract documents consisting of TerraVerde's template PPA, Site License Agreement (SLA), and/or EPC contracts, Performance Guarantee, deliver to the District, and participate in review/comments meetings with LVMWD and the District's Legal Counsel, as required (these documents should be included in any future RFP process; examples available upon request).
30. Assist District's CEQA consultant with all relevant project scope/technical details as needed, and assist District with MND filing and public comment period as applicable.
31. Prepare detailed scope of work description(s) for design/build implementation (examples available upon request).
32. Prepare detailed performance specifications and system commissioning requirements (examples available upon request).

Description of Deliverables and Milestones

Task #	Description of Deliverable
5	Initial energy data use/cost/rate analysis results (financial pro-formas)
8	Copy of site audit notes
16	Initial array layouts, shading analysis, SCE pre-app results, financial pro-formas
21	Updated financial pro-formas for preferred ownership structure
24	Feasibility Study Report draft
26	Implementation Plan for selected project/site(s)
Phase 6	Interconnection application screen review, template contracts, project SOW, performance specifications and commissioning requirements documents

Financial Modeling Capability

TerraVerde's proprietary modeling platform has designed-in flexibility to address client requirements and preferences, or variations in scope and financing options that may be relevant to the District's core objectives. For example, once audit results are incorporated into the model, the scope (and project cost estimates) can be finalized based on the District's weighting of different factors and priorities. Typically, these consist of the following elements:

- Changes in future energy use profiles (potential increases or decreases) directly and indirectly related to changes in site operations, capital improvement projects, plant capacity expansions, process retrofits, phase outs, or implementation of energy conservation measures (ECMs).

- Compatibility with site operations, and/or compliance to the District's Facilities Master Plan.
- Components of site feasibility assessment, including: physical site conditions, land use issues, tree removal and shading issues, entitlements review, topography, ACOE flood plain maps, habitat mitigation requirements, existing electrical infrastructure, Utility distribution network review, and interconnection scope.
- Anticipated changes in Utility rate schedules.
- Project finance and funding options.
- Timing of project implementation relative to District site operations/plans.
- Availability of financial incentives (NEM, SGIP, 30% Federal ITC, etc.).

Adjustments to the model can be easily made if the District desires to add other qualitative factors into the equation, such as existing or future energy generation systems (i.e.: the District's existing solar PV systems, and/or other renewable energy technologies). Or, other factors such as local needs and requirements above and beyond straight financial return; for example, quantify the future value of RECs, or the added value of parking lot shade canopies during summer heat and winter rains.

We look forward to leveraging the flexibility of our modeling platform to address the District's specific goals and requirements, even if those goals and requirements shift during the feasibility assessment process.

Additional Scope Options for Consideration

Comprehensive RFP Process:

TerraVerde maintains template RFP documents and client-sided PPA & SLA contracts (and EPC contracts) that have been accepted by the California public sector PPA market in the recent past for large school district and water district solar PPA projects. These documents can be quickly customized to fit the District's requirements and project-specific specifications, and integrated into our RFP package. This capability allows for expedited contracting when necessary to meet specific milestones or deadlines. In several cases TerraVerde has completed project development for certain priority sites/projects and released a comprehensive RFP package that leaves nothing left to chance or interpretation within 90 days of executing a Services Agreement.

TerraVerde proposes to leverage the Phase 5 and Phase 6 work products to assemble a comprehensive RFP package, and then acting as the District's representative, run a highly transparent and competitive RFP process, followed by qualitative & quantitative proposal evaluations and findings report delivered to the District, and follow-on guidance for contractor selection, value engineering, contract negotiations, and hand-off to the design/build management team. This service will allow the District to achieve absolute best value and highest quality.

It is important to note there is an important distinction between a RFP process that is based on a completed project feasibility assessment (see Scope of Work Section), which truly defines/confirms project scope & cost, and a RFP process that has very little due diligence behind it (where project development and site-by-site feasibility is left up to design/build contractors to figure out during the bid period). Many large, multi-site projects fail, or must be restarted if the RFP process is allowed to

commence without first performing all of the relevant due diligence, confirming project feasibility, including interconnection viability and cost, completing initial designs, and drafting detailed scope of work descriptions, comprehensive specifications and general conditions. A RFP process without this up-front work completed, drastically increases the risk of delays and will result in non-comparable bid proposals.

Follow-on Rule 21 Interconnection Feasibility Assessment (advanced Study by SCE):

If required (as determined by SCE's Interconnection Application review process), TerraVerde will oversee the SCE RES-BCT Rule 21 Interconnection Supplemental Review process, Electrical Independence Test for Distribution System process, and if necessary, the detailed study process for the District (District to pay SCE Impact Study fee of $10,000), and prepare summary of findings, scope and cost estimate updates, and project budget updates, if necessary. Note: the time duration associated with the Supplemental Review process can take up to 3 months, while a detailed study process typically takes 6 to 9 months.

Energy Storage Project Development & Feasibility Analysis:

TerraVerde has substantial experience in evaluating and developing battery storage projects for public agencies in conjunction with solar energy project development (using either Shared Savings Agreements or Capital purchase). We have completed several large multi-site battery storage developments for school districts and City governments that integrate solar energy kWh savings (and ECM kWh savings as applicable), plus the proposed battery storage demand reduction savings to yield the most accurate energy storage capacity analysis possible. Where applicable, we integrate the battery storage scope into the solar energy project development tasks so that the RFP process includes energy storage for all applicable sites for maximum savings benefit.

It is also worth noting that TerraVerde has substantial near term experience with the SGIP program (rebate application creation, submittal and tracking process). To date, we have processed over 112 SGIP applications for districts in PG&E and SCE territories (with a total value of over $10M), and are prepared to initiate SGIP applications for LVMWD's battery storage projects (once development/feasibility is initiated, and based on SCE SGIP funding availability).

Based on the escalating cost of SCE TOU rate demand charges, TerraVerde recommends the District give serious consideration to pursing a comprehensive district-wide demand savings analysis and feasibility assessment using battery storage systems. We are prepared to offer the District an initial demand savings analysis for select sites at no cost so that the District can better evaluate the potential cost savings benefits. In addition, an energy storage feasibility study could easily be integrated into the Solar PV RES-BCT project feasibility assessment scope, resulting in a more cost effective study process than if contracted separately.

NEM 2.0 Project Development Analysis:

With the near term transition from NEM 1.0 to NEM 2.0 comes changes in NEM credit valuation (the proposed NEM 2.0 credit formula does not include non-bypassable charges and other fixed cost portions of the rate schedules, that were included under NEM 1.0), and potential opportunities associated with un-capped NEM projects (per meter/per site). For example, the existing 1MW NEM 1.0 solar energy PPA that supports the Recycled Water Pump Station (JPA) currently offsets approximately 30% of the energy consumption at this high demand meter. The District may want to consider increasing the capacity of this system to provide additional energy and billing offset under NEM 2.0 (NEM 1.0 is limited to 1MW per meter, but the proposed NEM 2.0 does not have a cap). TerraVerde has implemented the proposed NEM 2.0 tariff rules into our energy modeling platform, and is prepared to assist the District in evaluating this cost/benefit scenario.

Comprehensive Project Management Services:

As described in greater detail in our Statement of Qualifications (see Appendix 1), TerraVerde provides turnkey owner's rep design/build project management services, which helps reduce district staff overhead associated with the project management role, and mitigates the possibility of project scope/cost creep. Projects are managed as if TerraVerde were an integral part of the District's in-house staff, and our project management role facilitates resolution of issues quickly and effectively, driving a well-defined process (see SOQ), that in turn pushes contractors to meet all contract requirements, resulting in on-schedule and on-budget project execution.

TerraVerde also offers comprehensive project commissioning management and performance validation (commissioning specifications available upon request) and follow-on asset management services (AMS) conducted by in-house employees to ensure the systems meet projected energy production, projected energy cost savings, and that the PPA provider/contractor meets all of the terms/conditions of the Performance Guarantee and PPA contract. In addition, our AMS operation has amassed a substantial database of factors that affect system performance, including specific equipment performance and reliability metrics that we use in the systems design and specification phase of new projects to assure optimum system reliability, performance, and operability.

Local support: TerraVerde maintains an Orange County based office that provides dedicated local support and account management for clients located in Southern California. We plan to grow this office in the future as our client base is projected to increase within the region.

Solar PV System Asset Management Services – Operations & Administrative Oversight of LVMWD's Existing Solar Energy PPA Project:

TerraVerde can provide an asset management services program for oversight of the District's existing 1MW PV system (SolarCity PPA project), which can provide improved monitoring, performance management, contract management (performance guarantee terms), and accurate financial reporting. A typical oversight scope may include:

- Comprehensive review all relevant data, drawings, specs, contracts, guarantees, production projections, savings projections, maintenance logs, warranty claims, performance reports, etc. associated with the project. And, field inspections as needed.

- Use data review findings to tailor scope of support specific to the District's needs.
- Conduct historical performance assessment. This will include a review of all Provider reports as well as all production and weather data available from the monitoring portal.
- Monitor system performance daily through TerraVerde's platform, or Provider's portal to ensure that all issues are caught immediately. Confirm provider is aware of and effectively communicating about open cases.
- Ensure that warranty and corrective maintenance work is performed according to timelines specified in the contracts. Enforce timeframe obligations to perform warranty support, preventive maintenance and repairs as needed.
- Verify that all contractual obligations are being met by service providers.
- Validate Project Developer's/Provider's weather-adjusted expected energy calculations going back to project PTO/COD.
- Validate and enforce Performance Guarantees to their contractual levels of production, and oversee process for short fall reimbursement, as applicable.
- Provide updated savings and bill projections based on 2015/2016 energy use profiles and 2016 SCE TOU rate schedules.
- Provide annual savings report by back-calculating savings based on 15 minute interval data at each site. This provides a more accurate view as compared to simply applying an avoided cost calculation to all production (sample report available upon request).
- If Provider is contractually obligated to provide monthly reports. TerraVerde will review and validate these reports. If not, TerraVerde can provide these reports.
- Confirm module washing is being performed properly, evaluate timing of cleaning, and perform cost/benefit analysis to determine if additional cleanings would add value at each site.
- Validate PPA billing. Confirm that Provider's billed kWh matches production values in the monitoring system.
- Complete the green-e certification process to increase the value of the District's Renewable Energy Credits (RECs).
- Perform PPA buyout analysis, oversee fair market value assessment, and assist District in negotiations for ownership transfer, as applicable.

SECTION B. FEE PROPOSAL

Per the District's request we offer a traditional level-of-effort fee structure based on our standard hourly rates (see rate table below, which includes the ACWA member 10% discount), and the scope of work described in Section A.

Since the level-of-effort table represents our best estimate of the resources and hours required to complete the scope, we typically suggest the fee table be updated following the completion of the Phase 1 tasks, to reflect a more refined scope of work based on level of effort to complete the remaining phases (assuming the project has passed the initial feasibility assessment phase).

TerraVerde Hourly Rate Table

Resource Classification	Hourly Rate	ACWA Discounted Rate
Principal, Technical Advisor	$225	$203
EVP Structured Finance	$210	$189
Engineering Director	$205	$185
Sr. Engineer, Project Developer	$195	$176
Account Manager	$190	$171
Project Manager	$185	$167
Energy Engineer / Audit Mgr	$165	$149
Energy / Financial Analyst	$155	$140
Data Administrator	$80	$72

Travel expenses, materials, supplies, incidentals billed separately

Level-of-Effort Fee Proposal

		Hours							
Resource	Rate/Hr	Phase1	Phase2	Phase3	Phase4	Phase5	Phase6	TotalHrs	Cost
Principal, Technical Advisor	$ 203	4	3	3	4	4	3	21	$ 4,263
EVP Structured Finance	$ 189	4	8	4	3	3	2	24	$ 4,536
Engineering Director	$ 185	15	8	6	8	8	10	55	$ 10,175
Sr. Engineer, Project Developer	$ 176	72	40	35	32	28	46	253	$ 44,528
Account / Project Manager	$ 171	84	34	32	40	36	55	281	$ 48,051
Energy Engineer / Audit Mgr	$ 149	25	20	7	5	3	2	62	$ 9,238
Energy / Financial Analyst	$ 140	22	18	5	4	2	0	51	$ 7,140
Data Administrator	$ 72	30	22	8	3	3	2	68	$ 4,896

Total Hours per Phase:	256	153	100	99	87	120	815	
Cost per Phase (w/o expenses):	$40,344	$23,539	$16,426	$16,852	$14,886	$20,780		**$132,827**
Estimated Expenses:	$ 2,421	$ 1,412	$ 986	$ 1,011	$ 893	$ 1,247		**$ 7,970**
Total Cost:								**$140,797**
Schedule Duration (in weeks):	8	5	3	3	3	4	26	

Expenses are estimated. Actual expenses will be billed at cost.

Note: For solar energy PPAs and/or battery storage Shared Savings Agreements, 100% of TerraVerde's fee can be folded into the PPA financing, which allows the District to be reimbursed by the PPA provider during the design/build and commissioning process for the fee payments to achieve a true no-capital cost PPA project implementation.

SECTION C. PROJECT SCHEDULE & FEE PAYMENT MILESTONES

The following project schedule estimate is based on the scope of work described in Section A. A detailed schedule with critical milestones will be presented following the kick-off meeting.

Project Scope Phase	Work Schedule Duration	Fee Payment Milestones
Phase 1 Tasks	8 weeks	Task 8 Deliverables
Phase 2 Tasks	5 weeks	Task 16 Deliverables
Phase 3 Tasks	3 weeks	Task 21 Deliverables
Phase 4 Tasks	3 weeks	Task 25 Deliverables
Phase 5 Tasks	3 weeks	Task 27 Deliverables
Phase 6 Tasks	4 weeks	Completion of Phase 6
Total:	26 weeks	

SECTION D. PROJECT TEAM

Team Member	Title	Responsibility	Years at TerraVerde
Kevin Ross	VP Development	Account Manager & Local Project Manager	2 Years
Rick Brown, PhD	President	Energy Policy Expert & Technical Advisor	7 Years
Ali Chehrehsaz, P.Eng.	EVP Engineering	Engineering Director	6 Years
Charles Monk	EVP Finance	Financial Analysis and PPA Structuring	7 Years
Jen Petherick, PE	Senior Project Developer	Project Development & RFP Process Manager	1.5 Year
Jayant Patil	Sr. Energy Engineer	Site Audit Manager & Energy Data QC	2 Years
Michael Franzonello	Product Development Manager	Develop/maintain software tools for energy analytics	1.5 Year
Ashley Dimas	Energy Data Analyst	Energy Data Collection and Data QA/QC	3 Years

* Resumes available upon request

Kevin Ross, VP Business Development: Kevin is responsible for account management, local renewable energy project development, and overall project management in Southern California, focusing on Water Districts, School Districts and Municipalities. During the past eleven years he has developed and implemented dozens of large commercial solar PV projects in California and Colorado, representing over 60 megawatts of renewable energy capacity. Since 2006 Kevin has been an active associate of ACWA, during which time he assisted 27 member water districts and municipalities implement successful solar energy projects using a variety of financing methods and rate tariffs, including NEM, NEM-A, RES-BCT and ReMAT. References available upon request.

Kevin will be the primary contact for LVMWD, and will lead the project planning process, project development efforts (see Scope of Work Section), and will be responsible for leading the preparation and delivery of the project feasibility assessment report and implementation plan, and assisting LVMWD staff with Committee presentations and Board study sessions as needed. If LVMWD decides to retain TerraVerde for a follow-on RFP process for the project, Kevin will remain the primary contact for the competitive bidding phase, proposal evaluations, contractor(s) selection, contract negotiations, SCE

GIA implementation, CEQA assistance, 4217 Code resolutions, PPA terms & conditions, scheduling, Board approvals, and Community outreach campaigns as needed.

Jen Petherick, PE, Senior Project Developer: Jen manages solar PV project development, RFP processes and contract specifications for TerraVerde's project team. She has many years of experience developing commercial and utility-scale solar PV projects, and in managing the implementation of battery storage projects and multi-MW PV systems, including: 7.5 MW and 7.0 MW SDG&E solar energy PPA projects in Valley Center and Ramona, CA, respectively (CODs, Dec 2013), several SMUD solar energy PPA projects in the Sacramento area (a 21.9 MW project, and two separate 3.6 MW projects, all with CODs of Dec 2011). In addition, Jen has worked on large utility solar PPA projects in New York and Puerto Rico (totaling 78MWs). She brings substantial experience and knowledge of equipment and material specifications, EPC and PPA contract terms, and medium & high voltage distribution system interconnection design.

Her role will include technical support for site assessments: electrical infrastructure evaluations, interconnection strategy development, confirmation of solar PV array and battery storage system sizing, geotechnical review, civil engineering and land use requirements, CEQA guidance, and initial 30% designs. If the district decides to retain TerraVerde for the RFP process Jen will also lead creation of the RFP package, including all technical specifications, general conditions, template contracts, and detailed SOW descriptions; and will conduct the RFP process, perform qualitative & quantitative bid response analysis, proposal scoring, shortlist interviews, value engineering, contracts review, 4217 Code compliance, design/engineering review & approval, and handoff to Construction Management.

Charles Monk, Executive VP of Finance and Development: Using his extensive expertise in renewable energy and energy efficiency project financing, Charles works closely with our clients' Financial Advisors and Underwriters to help secure the most cost effective financing solutions available, including: Power Purchase Agreements ("PPAs"), Shared Savings Agreements, Tax-exempt Lease Products, CEC Loans, CREBs, State Revolving Funds, On-bill Financing, Prop 39 Funding, G.O. Bonds, C.O.P.s, QSCBs, QZABs. He is responsible for overseeing development of financial analyses and quality control of savings pro-formas. He also works closely with client's Finance and Legal Counsel during negotiation of PPAs and design/build contracts.

Charlie's experience as a PPA developer/financier in a previous company gives TerraVerde unique expertise to negotiate with PPA providers on behalf of our clients. Having "switched sides" to now represent the client's interests in PPA transactions, Charlie brings a substantial commercial finance background to validate and structure PPA proposals, and to optimize savings and minimize risk for our clients through his contracting experience.

Ali Chehrehsaz, Executive VP of Engineering: Ali brings an in-depth understanding of the technical, regulatory and design/construction aspects of energy efficiency measures, solar PV systems, and energy storage technologies for every facet of project assessment/feasibility, procurement, implementation and long-term asset management. A certified Project Management Professional (PMP), and Director of TerraVerde's Engineering group, he is responsible for resource allocation and scheduling for all projects, and overall QA/QC of all aspects of our site auditing process, feasibility assessments, RFP process, and design/build project management. Leading the Engineering team, Ali has brought dozens of clients through our comprehensive RFP process and supported construction of many commercial scale projects.

Dr. Rick Brown, President and Founder: Having worked with many public agencies as a strategy and leadership consultant for over twenty-five years, and having served as a School Board Trustee for six years, Rick is particularly sensitive to the governance and budgetary challenges California public agencies face in implementing innovative energy conservation strategies. His ongoing leadership in energy policy at State and local levels has resulted in positive legislative outcomes for the private and public sector in California. He will serve as a Technical Advisor for this project, interfacing directly with the TerraVerde project team, as needed. In addition, as directed by the District, he will advocate on the District's behalf regarding energy program or policy issues/opportunities at the CPUC and State legislature levels.

Michael Franzonello, Energy Modeling Platform Manager: Michael heads up project underwriting, performing detailed financial analysis, and creating accurate and insightful financial pro-formas for clients that depict expected savings cash flows and ROIs associated with solar energy, battery storage and Prop 39 EEP projects. He is also responsible for providing guidance on securing funding and financing for client's projects and helps drive policy changes to benefit customers. His team maintains TerraVerde's energy modeling platform and tariff optimization simulation tools, and customized user interfaces for clients.

He will perform all necessary utility billing data analysis (electricity use profiles) for LVMWD sites/operations under consideration, and provide initial solar PV systems sizing analysis and associated rate tariff optimization, including RES-BCT tariff bill credit matching analysis and recommended benefitting accounts allocations and detailed savings cash flow pro-formas for all requested financing scenarios.

Jayant Patil, Energy Engineer: Jayant has extensive experience in performing site and equipment audits for commercial building systems such as operations electrical infrastructure, HVAC, motors, pumps, compressors, variable frequency drives, cooling towers, chillers, building envelopes, control systems, energy efficient lighting systems, energy management systems, data centers, and server virtualization. He has also worked on cutting edge research projects for the CPUC and other State Utility Commissions around the country. He is responsible for evaluating all relevant energy and site audit data, and fact checking project due diligence information. He also manages engineering analyses and development of Prop 39 ECMs and EEP scenarios, EEP submittals to the CEC, CEC approval tracking, and assisting in the development of equipment performance specifications for bid documents and PV system design layouts.

Ashley Dimas, Energy Data Analyst: Ashley manages Utility interval data collection for all relevant accounts/meters, data quality checks, communication with the customer's Utility representative, and preparation of the data for upload into TerraVerde's analysis tools. She also leads SGIP administration for all proposed battery storage projects, processing SGIP applications, and tracking review/approval by the Utility (SCE) to secure all applicable rebates (to date, in excess of $10M in SGIP rebates processed).

Dan Rosenberg, Director of Asset Management: Dan is responsible for monitoring and maintaining solar PV and energy storage systems for TerraVerde's clients (to date, over 90 projects representing of 17+ MW of installed capacity). This scope includes 24/7 system monitoring, conducting annual system inspection and preventive maintenance, analyzing system performance, maintaining TerraVerde's reporting platform, diagnosing equipment issues/failures (inverters, modules, combiners, current transducers, etc.) via remote monitoring systems, and administrating compliance to warranties and performance guarantees. Prior to working for TerraVerde, he developed programmatic methods for

identifying underperformance in solar PV arrays through work with Locus Energy. He has a BS in Electrical and Computer Engineering and Computer Science from Duke University as well as an MS in Civil and Environmental Engineering and an MBA in Entrepreneurship from Carnegie Mellon University.

APPENDIX 1: ABOUT TERRAVERDE (STATEMENT OF QUALIFICATION)

A. Executive Summary

TerraVerde Renewable Partners ("TerraVerde") is the leading independent renewable energy and energy efficiency consulting firm focused exclusively on California public agencies. Our client-focused partnerships, substantial knowledge base, and unique set of consulting services and owner's rep services has lead industry organizations like the California Association of School Business Officials (CASBO) to select TerraVerde as its Strategic Alliance Partner for its members seeking energy conservation and renewable energy project solutions.

TerraVerde is also an Associate member of the Association of California Water Agencies (ACWA), an active participant in ACWA's Energy Committee, and is presently engaged in assisting several ACWA member districts develop and implement solar energy and energy storage projects.

Over the past six years, TerraVerde's team of experienced project development engineers and project managers have developed and implemented hundreds of energy efficiency measures and solar energy projects for school districts, water districts, and municipalities throughout California, representing a total investment of $160 million across 46 districts and cities. These projects include: large, multi-site/multi-megawatt solar PV projects using NEM, NEM-A, and RES-BCT tariffs, advanced energy storage projects up to 360kW (multi-site solar PV + battery storage, and stand-alone battery storage projects), traditional energy conservation measures (LED lighting & controls, HVAC systems, EMS & BMS, VFDs, solar thermal, retro-commissioning, building envelope upgrades), demand response strategies, and Utility rate tariff optimization. Individually and collectively, TerraVerde's principals and staff have been involved in developing and financing over 150MWs of solar energy projects, as well as 112 energy storage projects.

TerraVerde is not an ESCO or a performance contractor. We are a client-side, independent energy consultant, providing turnkey technical, financial, and energy program development services. By precisely modeling the cost/benefit of renewable energy generation systems and energy demand/cost reduction, within the context of changing rate structures and alternative financing scenarios, TerraVerde is able to assist our clients in executing projects that generate significant savings in a highly informed and transparent manner.

TerraVerde is perhaps the only renewable energy consulting firm that specializes in distribution level (Rule 21) interconnection feasibility assessment, validation, turnkey design/implementation management services, including assistance with GIA negotiations with the Utilities (SCE, PG&E, SDG&E), and regulatory policy tracking (CPUC proceedings).

Most all other firms rely on solar project design/build contractors to perform interconnection feasibility assessments and GIA administration. This represents project risk and potential excess cost to the District since interconnection feasibility and cost would not normally be known until after a contractor was selected and paid to pursue the interconnection request process as part of the design/build scope. Now with TerraVerde under consideration by ACWA to be their Preferred Provider for Renewable Energy Projects Interconnection Services, ACWA member agencies have the ability to know the true feasibility and cost of their renewable energy projects, including the scope and cost of interconnection before committing capital and entering into design/build or PPA contracts.

To better understand to value of this capability, TerraVerde encourages LVMWD to contact Rancho California Water District (Andy Webster, webstera@ranchowater.com), who retained TerraVerde to perform turnkey interconnection services for a complex 5MW SCE grid-tie RES-BCT Rule 21 interconnection (in addition to complete project development and implementation management services – please see the References Section of our SOQ). By utilizing TerraVerde to perform detailed feasibility assessment and GIA negotiations with SCE, RCWD was able to save considerable cost and time in implementing their 5MW solar energy PPA project (currently in construction, and scheduled to receive the SCE permit to operate in May 2016).

TerraVerde's development process is highly refined over years of practice, and informed by a deep understanding of local Utility regulations and rate tariffs (SCE), Federal and State energy policies, incentive/rebate programs, CPUC proceedings, California's water/energy nexus and the unique energy use requirements of water districts. We provide in-house engineering, advanced analytical capabilities, financial analysis and guidance on project financing options, turnkey RFP process and contracting assistance, comprehensive project management services (design/build/commission), and follow-on asset management programs (O&M, warranty support, performance monitoring, data management, and financial reporting) that deliver high value results. Please see TerraVerde's SOQ for information about our comprehensive project development process and consulting service offerings.

In addition, TerraVerde's Operations Group offers comprehensive asset management services (AMS) to support installed solar PV and energy storage systems that yield substantial added value for new installations, as well as existing operational systems. The track record of client projects managed by our Operations Group: 93 sites, 17+ MWs, with plus/minus 2% of projected savings demonstrates the quality of our front end design work, project management and asset management services.

B. Company Information

Office locations:

Headquarters / Northern California Office
TerraVerde Renewable Partners, LLC.
1100 Larkspur Landing Circle, Suite 155
Larkspur, CA 94939
888-316-2597

Southern California Office
TerraVerde Renewable Partners, LLC.
520 E. Avenida Pico #3793
San Clemente, CA 92674-9998
949-212-6555

Legal form of entity: Limited Liability Corporation

Number of years engaged in energy efficiency & renewable energy consulting: 7 Years

Number of full time employees: **15**

Evidence Firm is authorized to conduct business in the State of California: **See our SOQ for Secretary of State Documentation**

Evidence of financial capacity: **Audited company financials are available upon request**

A brief history of the company: **Founded in 2009, for the past 7 years TerraVerde's principals have leveraged their diverse backgrounds in project development/management, project finance, and regulatory policy to assist in the development and implementation of large scale energy efficiency and renewable energy projects for CA public schools and other public agencies. TerraVerde started out by advising K-12 school districts interested in energy conservation and solar energy project development, and then added Proposition 39 Energy Expenditure Plan (EEP) development services and owner's rep project management and follow-on M&V services to support our many school district clients.**

TerraVerde is one of the leading experts in California energy policy, procedures, and regulations. Dr. Rick Brown, President of TerraVerde regularly provides testimony to the legislature and the CPUC on an on-going basis, and was pivotal in the creation of the CEC's Proposition 39 Guidelines. In support of Prop 39 program efforts in the past two years we have secured over $48M in Prop 39 funding for 22 school districts through the CEC's approval process, with many more under review by the CEC. Please reference our SOQ document for additional information.

Claims & Litigation history: **TerraVerde Renewable Partners, in its entire history, has never filed any claims or lawsuits, or been connected with any such actions against any public agencies or any other parties, for any reason. Likewise, TerraVerde has never been the subject of a claim or lawsuit by any of its clients. Nor has TerraVerde ever experienced any of the following legal issues:**

- ***Had a contract terminated for cause or convenience.***
- ***Debarment (of either the Firm or any of its principal officers or owners) by any Federal, State, county, municipal or other local agency.***
- ***Involvement as a party in any litigation, arbitration or mediation associated with an energy project; or filed any claims and/or lawsuits against any public agencies in connection with any contracts.***
- ***Any convictions (of the Firm or any of its principal officers or owners) for violation of any Federal or State antitrust law (e.g.: bid rigging, collusion, or otherwise restricting competition between bidders) or other law relating to bidding or performance of public works.***
- ***Determination by any public authority that the Firm or any of its principal officers or owners: (i) knowingly concealed any deficiency in the performance of any contract or project; (ii) falsified any information or made deceptive or fraudulent statements in connection with any contract or project; or (iii) willfully disregarded applicable laws, regulations, rules or contractual requirements in connection with any contract or project.***

C. Experience, Capabilities and References

1. Experience

The following table lists clients for whom TerraVerde has completed solar energy and battery storage projects. Our scope of services for these projects is the same/similar to our standard multi-

phase approach for turnkey project development and implementation management (see Scope of Services Summary). The tables also include clients with whom we are currently under contract to perform renewable energy project development and/or renewable Energy Master Plans.

NEM Solar Projects

Client	Project Location	System Size (kW)	System Type	Financing	Solar Total Project Cost	Project Status	Install Date	AMS Services
Petaluma City Schools	Petaluma, CA	1060.32	Shade Structure	40/60 Cash/Debt (BABS)	$ 5,408,540	Completed	Feb-11	TerraVerde
Big Pine USD	Big Pine, CA	198.24	Shade Structure	Cash	$ 1,100,000	Completed	Jan-13	
Fowler USD	Fowler, CA	843.75	Ground Mount & Shade Structure	Cash	$ 4,772,520	Completed	Jun-12	
Firebaugh Las-Deltas USD	Firebaugh, CA	909.52	Ground Mount & Shade Structure	QSCB	$ 3,995,000	Completed	Jun-12	TerraVerde
Golden Valley USD	Madera, CA	1829.3	Ground Mount & Shade Structure	50/50 CASH/Debt (CEC Loan)	$ 5,985,000	Completed	Jun-12	TerraVerde
Wright ESD	Santa Rosa, CA	528	Shade Structure & Roof Mount	Cash	$ 2,380,898	Completed	Oct-13	TerraVerde
Clovis USD	Clovis, CA	5832.96	Shade Structure	Cash	$ 25,085,000	Completed	Nov-13	TerraVerde
Monterey PUSD	Monterey, CA	818.2	Ground Mount & Shade Structure	Cash/Debt (CEC Loan)	$ 3,728,610	Completed	Nov-13	TerraVerde
Visalia USD	Visalia, CA	2349.55	Shade Structure	Cash	$ 10,025,174	Completed	Sep-13	TerraVerde
Corcoran USD	Corcoran, CA	1326.6	Ground Mount & Shade Structure	PPA	$ 4,065,000	Completed	Jan-14	TerraVerde
Inyo County	Inyo, CA	430.5	Shade Structure	Cash/Debt (CEC Loan)	$ 2,005,128	Completed	Sep-13	TerraVerde
Rancho California WD	Temecula, CA	5000	Ground Mount	PPA	$ 12,375,000	In Construction	Mar-16	
Burton SD	Porterville, CA	1537	Shade Structure	PPA	$ 5,800,000	Completed	Feb-15	TerraVerde
Sanger USD	Sanger, CA	4078*	Ground Mount & Shade Structure	Debt (CREBS)	$ 12,090,000	In Design	TBD	
YMCA	Santa Rosa, CA	273	Shade Structures	PPA	$ 1,250,000	Completed	Mar-11	
Tulare City SD	Tulare, CA	2538	Shade Structures	Cash/Debt (CEC Loan)	$ 10,700,000	Completed	Oct-14	TerraVerde
West Park Elementary	Fresno, CA	181*	Shade Structure	Cash	$ 500,000	In Design	TBD	
Westside Elementary	Five Points, CA	161*	Ground Mount	PPA	$ 600,000	In Design	TBD	
Washington Unified	Fresno, CA	TBD	TBD	PPA	TBD	In Development	TBD	
Sierra Unified	Prather, CA	TBD	TBD	PPA	$ 1,500,000	In Development	TBD	
Mendota Unified	Mendota, CA	TBD	TBD	PPA	$ 3,800,000	In Development	TBD	
Tulare Joint Union High	Tulare, CA	TBD	TBD	TBD	TBD	In Development	TBD	
Golden Plains Unified	San Joaquin, CA	TBD	Ground Mount & Shade Structure	PPA	$ 3,200,000	In Development	TBD	
Orinda Union Elementary	Orinda, ca	638*	Shade Structure	Debt (CREBS)	$ 3,500,000	In Design	TBD	
City of Bishop	Bishop, CA	207	Ground Mount	Cash	$ 656,000	In Construction	Mar-16	
Eastern Sierra CSD	Bishop, CA	110	Ground Mount	Cash	$ 327,000	In Construction	Mar-16	
City of Lathrop	Lathrop, CA	1030	Ground Mount & Shade Structure	PPA	$ 4,000,000	In Construction	Mar-16	
City of Woodland	Woodland, CA	2470	Ground Mount & Shade Structure	PPA	$ 9,300,000	In Construction	Jun-16	
St. Helena USD	St. Helena, CA	30	Shade Structure	Cash	$ 650,000	Completed	Jun-14	

*Estimated

The following table lists the clients for whom we have performed energy project consulting services, where the end result of our project development scope and RFP process was the execution of Energy Service Agreements or PPAs between the client and a qualified design/build

contractor or PPA provider. All of these projects also included TerraVerde's owner's rep services for design/build project mgmt.

Table 2: Energy Service Agreements				Installation Type Count			
Client	TVRP Role	Project Type	Solar Date of Agreement	Ground Mount	Shade Structure	Roof Mount	Energy Conservation Measures Date of Agreement
Petaluma City Schools	Consultant/ Owner's Rep/ Project Manager	Solar	5/20/2010		2		10/1/2015
Big Pine USD	Consultant/ Owner's Rep/ Project Manager	Solar	9/10/2010		1		N/A
Firebaugh Las-Deltas USD	Consultant/ Owner's Rep/ Project Manager	ECM & Solar	12/20/2010	2	1		9/1/2015
Fowler USD	Consultant/ Owner's Rep/ Project Manager	ECM & Solar	11/3/2011	3	3		4/9/2015
Golden Valley USD	Consultant/ Owner's Rep/ Project Manager	Solar	1/17/2012	5	2		10/1/2015
Corcoran USD	Consultant/ Owner's Rep/ Project Manager	ECM & Solar	6/12/2012	4	4		10/1/2015
Clovis USD	Consultant/ Owner's Rep/ Project Manager	Solar	10/25/2012		22		N/A
Monterey PUSD Phase I & II	Consultant/ Owner's Rep/ Project Manager	Solar	12/21/2012	4	4		N/A
Wright ESD	Consultant/ Owner's Rep/ Project Manager	ECM & Solar	3/22/2013		3	1	10/1/2015
Visalia USD Phase I	Consultant/ Owner's Rep/ Project Manager	Solar & Battery Storage	4/30/2013		12		7/22/2015
Visalia USD Phase II	Consultant/ Owner's Rep/ Project Manager	Solar	7/7/2015		6		8/10/2015
Burton SD	Consultant/ Owner's Rep/ Project Manager	Solar & Battery Storage	9/26/2014		10		9/26/2014
Tulare City SD	Consultant/ Owner's Rep/ Project Manager	ECM & Solar & Storage	10/15/2014		17		10/15/2014
Monterey PUSD Phase III	Consultant/ Owner's Rep/ Project Manager	Solar	2/20/2015		5		N/A
Sanger USD	Consultant/ Owner's Rep/ Project Manager	ECM & Solar	9/1/2015	1	13		8/1/2015
Kerman Unified	Consultant/ Owner's Rep/ Project Manager	ECM& Solar	10/1/2015	TBD	TBD	TBD	6/30/2015
Yosemite Unified	Consultant/ Owner's Rep/ Project Manager	ECM & Solar	10/1/2015		3		6/30/2015
Rancho California WD	Consultant/ Owner's Rep/ Project Manager	Solar RES-BCT	6/19/2015	1			N/A
City of Bishop	Consultant/ Owner's Rep/ Project Manager	Solar NEM-A	6/26/2015	4			N/A
Eastern Sierra SCD	Consultant/ Owner's Rep/ Project Manager	Solar NEM-A	7/8/2015	4			N/A
Hemet USD	Consultant/ Owner's Rep/ Project Manager	Solar & Battery Storage	10/1/2015		6		6/7/2015

* Additional Solar RES-BCT projects under contract for development/project mgmt: City of Woodland and City of Lathrop

Please Note: TerraVerde is currently in the midst of various phases of RFP processes, proposal evaluations, contractor selection, and contract negotiations with nine districts for numerous solar PV projects, energy conservation measures, and energy storage projects. We have not included the Energy Services Agreements (ESAs) that will come about from RFP processes we are currently administering. The total capacity of these solar energy and energy storage projects is: Solar PV - 10.6MWs, and Battery Storage - 10,820 kWh (representing 96 separate energy storage projects/sites). A list of these clients and projects is available upon request.

2. Capabilities

Recognized Energy Analysis and Modeling capability: TerraVerde's proprietary approach to energy conservation modeling has been recognized as highly accurate by the California Energy Commission (CEC) and the California Public Utilities Commission (CPUC). We were one of only two firms who were asked by the CEC to develop solar energy PPA and Battery Storage Calculators for the CEC's Proposition 39 program guidelines for schools; and we have subsequently developed additional custom calculators for unique ECMs that have been approved and adopted by CEC Staff.

The CPUC used TerraVerde's analysis of PG&E's A6 rate tariff structure and called on Dr. Brown to testify on TerraVerde's tariff modeling in this proceeding (resulting in the successful continuation of this "solar friendly" rate structure for PG&E customers). The CPUC is also using TerraVerde's analyses in the current net metering proceedings that will impact IOU solar tariffs in years to come. TerraVerde's Burton School District Battery Storage Project was one of the first Prop 39 battery storage projects to be approved by the CEC, and was the first to be approved by the Division of State Architect (DSA).

Accurate system sizing and Avoided Cost calculations: TerraVerde's approach to modeling PV system sizing when integrating battery storage demand reduction/savings (and ECM-related energy savings, when applicable) is to use hourly data rather than 12 months lump sum kWh values, i.e.: our PV system size calculations are net of energy efficiency reductions on an 8760 hours basis. This allows the hourly profile of the kWh reduction associated with energy storage and ECMs to be matched with the hourly solar energy generation profile, which produces the most accurate results. For example, for a HVAC-related ECM, we overlay the hourly HVAC energy use reduction (using the facility's specific use schedule/calendar), and the hourly energy use intensity, on top of the hourly solar energy production curve to calculate the avoided cost correctly. Ignoring the HVAC ECM energy use reduction on an hourly basis for PV system sizing has a material impact on the avoided cost.

TerraVerde possesses the energy modeling resources and in-house Energy Engineers to perform this analysis correctly and accurately. Very few firms have this same capability, and/or the knowledge base to perform these calculations properly. While this approach takes more time, the accuracy pays off by avoiding delays associated with re-sizing an array during or after the RFP process.

Project Interconnection feasibility assessment and implementation management: Drawing upon TerraVerde's knowledge and experience in developing and implementing "export energy" tariff based projects requiring Rule 21 Interconnection rules/regulations, and associated Utility interconnection application screening & study processes, ACWA is currently considering TerraVerde for ACWA's Preferred Provider program to provide distribution level (Rule 21) interconnection consulting and support services to its members. These services will include (on an as needed basis):

- Initial investigation and evaluation using the Utility's regional capacity maps
- Assessment of customer electrical infrastructure and Utility transformer(s)
- Assessment of Utility infrastructure at proposed project POI
- Utility interconnection Pre-application process
- Utility Interconnection Application preparation (all required documentation) and submittal
- Budgetary Interconnection scope cost estimates
- Oversee Utility application review and screening process
- Oversee Supplemental review process
- Oversee Independent and/or Group Study process
- Oversee System Impact Study process (and Facilities Study process if required)
- Oversee Utility scope development and cost estimates for Interconnection facilities upgrades
- Assist clients with GIA negotiation and execution process
- Oversee GIA schedules/milestones and Utility billing associated with new interconnections
- Oversee Utility design/engineering process for Interconnection facilities upgrades

- Oversee Utility facilities upgrades and issuance of Permit to Operate(PTO)

We have integrated this scope into our multi-phase project development task descriptions (please see Scope of Services Section). In addition, TerraVerde is actively involved in interconnection regulatory policy at the CPUC, and provides frequent updates to ACWA's Energy Committee, and individual members.

3. References

Name: **Clovis Unified School District** *Location:* Fresno, CA *Nature of Work Performed*: 5.86 MW Solar PV Systems installed at 23 sites, financed by GO Bond. *Total Project Cost*: $ 25,085,000 *Date Installed:* November 2013 *Contact Reference for the Project*: Don Ulrich, Assistant Supt. (559) 327-9260 donulrich@cusd.com *TerraVerde's role*: Energy Consultant/Project Manager/Owner's rep *Annual Energy Savings:* 11,359,792 kWh	*Name:* **Fowler Unified School District** *Location*: Fowler, CA *Nature of Work Performed:* 843.75 kW Solar PV Systems installed at 6 sites plus numerous Energy Conservation Measures (Prop 39 funding). *Total Project Cost*: $ 5,607,010 *Date Installed:* June 2012 *Contact Reference for the Project*: Eric Cederquist, Superintendent, (559)834-6080 ecederquist@fowlerusd.org *TerraVerde's role*: Energy Consultant/Project Manager/Owner's rep *Annual Energy Savings:* 3,488,917 kWh (Solar & ECMs)
Name: **Burton School District** *Location:* Porterville, CA *Nature of Work Performed:* 1.5 MW Solar PPA combined with a 360 kW multi-site Battery Storage project to reduce peak demand charges (at 10 sites). Note: This is one of the first K-12 School solar + battery storage projects completed in California. *Total Project Cost:* $4,890,000 *Date Installed:* February 2015 *Contact Reference for the Project:* Tracy Tucker, MOT Director (559) 782-5949 ttucker@burtonschools.org *TerraVerde's role*: Energy Consultant/Project Manager/Owner's rep *Annual Energy Savings:* 1,648,373 kWh (Solar only)	*Name:* **Visalia Unified School District** *Location:* Visalia, CA *Nature of Work Performed:* 2.34 MW Solar Systems at 14 sites, financed with GO Bond & an innovative debt instrument. *Total Project Cost:* $10,025,174 *Date Installed:* September 2013 *Contact Reference for the Project:* Robert Groeber , Assistant Supt. (559) 730-7529 rgroeber@vusd.org *TerraVerde's role*: Energy Consultant/Project Manager/Owner's rep *Estimated Annual Energy Savings:* 4,259,286 kWh

Rancho California Water District

Project size and type: 5,011kW single-site, ground-mount tracker system using SCE RES-BCT tariff and Rule 21 Interconnection regulations (energy exported to SCE distribution grid for bill credits)

Annual production (1st year): 11,092,046 kWh

Location: Washington Avenue, Murrieta, CA

Financing Structure: Solar energy PPA (contracts by TerraVerde)

Total capital value: $12,018,137

PPA rate: $0.078/kWh, fixed for 25 years (0% cost escalation)

Projected 25-year energy cost savings: $20,350,000

Scheduled PTO: May 2016

TerraVerde's Role: Project development using SCE RES-BCT tariff, district-wide energy use/cost analysis, site due diligence, land use (entitlements) analysis, grid-tie (export) interconnection studies, financing guidance, benefitting account selection and bill credit matching analysis, multi-scenario financial analysis, feasibility assessment reports and Board presentations. Owner's Rep services: Local community outreach session and open house for local residents, complete Rule 21 Interconnection process, RFP documents (performance specifications, general conditions, template PPA & SLA contracts, instructions to bidders including integrated bill credit matching tool and bid breakdown forms, bidder qualifications forms) and run bid process (site walks, bidder conf calls, qualifications review, RFI responses, proposal evaluations, findings reports, shortlist interviews, BAFO instructions, final recommendations report) PPA contracts, value engineering, contract negotiations, CEQA MND process assistance, implementation management - design/engineering, SCE interconnection scope, construction, equipment installation, system commissioning, Utility signoff, system performance validation, follow-on AMS oversight, and Benefitting accounts management.

Contact: Andy Webster, Chief Engineer, 951-296-6978, webstera@ranchowater.com

Client Quote: "TerraVerde has been great to work with on our 5MW RES-BCT project. This project would never have happened without them. The best compliment of their capability & experience came from the solar vendors that were asked to participate in TerraVerde's RFP process: the RFP package was the most complete and professional they had ever seen." – Andy Webster, Chief Engineer, RCWD

D. Scope of Services – Project Development, Feasibility Assessment, RFP Process, Project Management

Phase 1 Tasks – Project Feasibility Assessment: Confirm site/physical feasibility, system sizing, estimated project cost, financial analysis and minimum energy cost savings estimate

1. Project Kickoff meeting to establish goals, objectives, expectations, communication and data collection protocols, roles/responsibilities, Phase 1 Plan of action and milestone schedule
2. Review all District operations, operating profiles (monthly use/cost for all electric meters)
3. Acquire and review 24 months of 15min interval electricity use & billing data for all accounts/meters to be evaluated for project consideration (based on load profile and current rate tariff)
4. Collect and review all available site data and drawings (see detailed RFI list)
5. Conduct in-depth engineering audits of site conditions and electrical infrastructure (all sites/properties under consideration)
6. Initiate interconnection scope evaluation (SCE Pre-application Interconnection Request process)
7. Generate solar array location plans and initial layouts to assess area constraints, if any

8. Review audit findings and initial feasibility assessments (all sites) with the District, and confirm assumptions and due diligence (validate against District's site-specific future plans and energy master plan as applicable)
9. Model optimum PV system size (capacity) for NEM & NEM-A projects based on load offset and available area
10. Model optimum PV system size for RES-BCT project(s) based on Benefitting Accounts bill credit matching analysis and available area, if applicable
11. Model optimum energy storage systems size for SCE accounts with historically high demand charges
12. Generate project cost estimates inclusive of all project costs using audit findings, interconnection scope, current market data for labor, equipment, materials, cost of capital and PPA investor internal rates of return (IRRs), and generate expected PPA rates & escalators
13. Perform energy use and SCE TOU tariff analysis for applicable meters/accounts using 15min interval data to confirm system capacity
14. Provide guidance on project financing options
15. Run financial model (review all assumptions with District), and confirm economic viability
16. Deliver energy cost savings cash flow pro-formas and feasibility assessment report to the District
17. Confirm minimum energy cost savings projections for individual projects, and for aggregation; and confirm total project(s) scope for the RFP with the District
18. Provide summary of savings analysis and feasibility assessment report for District's Committee & Board presentations as needed
19. Oversee SCE CSI incentive (solar PV) and SGIP incentive (energy storage) application process, as applicable. For SGIP applications also oversee the required Utility audit process.
20. Oversee SCE Rule 21 Interconnection Request submittal process, as applicable (RES-BCT projects)

Phase 2 Tasks – Develop Project RFP and Run RFP Process

1. Oversee the SCE Rule 21 Interconnection application(s), as applicable: Initial SCE Screen Review process, Supplemental Review process, Electrical Independence Test for Distribution System process, respond to all RFIs, and attend all meetings/calls
2. Review TerraVerde's template PPA, Site License Agreement (SLA), and/or EPC contracts with the District and District's Legal Counsel, and incorporate all required changes
3. Create detailed site-specific scope of work (SOW) descriptions, and equipment & material specifications for each project.
4. Create complete RFP bid packages based on District requirements, specifications, general conditions, site conditions, and interconnection scope. Finalize template contracts to be included in RFP package (PPA, SLA, Shared Savings Agreement for battery storage, or EPC)
5. Oversee the entire RFP process including delivery of bid packages, bidder meetings, site walks, bidder correspondence, Q/A & RFI responses, and RFP addendums
6. Evaluate proposals, grade/rank, and provide qualitative & quantitative scoring report to District
7. Conduct short list interviews as needed, and provide comprehensive bid evaluation report and final selection recommendations
8. Conduct Value Engineering sessions with selected contractor
9. Assist District with contract negotiations and final contract execution and Board approval
10. Assist District with public outreach as needed to create local community support for the project(s)

Phase 3 Tasks – Owner's Rep Project Manager: System Design Process

1. Determine all applicable AHJ approval requirements, and oversee permitting process including all DSA reviews/approvals
2. Assist District's CEQA consultant with all relevant project technical details, if applicable
3. Review contractor's project schedule, assist District in optimizing schedule to fit District's operations requirements
4. Oversee the design review process and manage all updates and submittals
5. Assist the District with all design approval milestones (30 / 50 / 90 / 100% design approval process)
6. Oversee acquisition of all SCE interconnection agreements (NEM projects and battery storage projects), and Generating Interconnection Agreements (RES-BCT and ReMAT projects)

Phase 4 Tasks – Owner's Rep Project Manager: System Construction and Start-Up

1. Oversee issuance of all applicable AHJ approvals and permits to contractor(s)
2. Attend project progress meetings in person and by phone as necessary
3. Manage solar contractor during all phases of construction per contract terms, project specifications and general conditions, including work in progress field audits as needed
4. Respond to all Questions and RFIs, issue written responses, and address any change orders
5. Review project schedule throughout the project, and manage update process
6. Conduct site walks and manage final punch list completion
7. Oversee Utility (SCE) interconnection signoff and issuance of Permit to Operate (PTO)
8. Manage project closeout and as-built documentation per contract terms
9. Oversee System Commissioning:
    a. Provide and oversee use of specifications for system operation
    b. Provide and oversee use of commissioning forms for contractors responsible for logging performance data
    c. Use performance data to determine if the equipment is operating per specifications and provide report to the District
    d. Oversee corrective actions needed for any anomalies and/or equipment adjustments

E. Project Risk Mitigation:

TerraVerde's approach and experience in developing and managing large solar energy projects for California public agencies provides significant added value while mitigating the many risks inherent in large commercial solar projects that depend on third party financing (PPAs).

- ***Project feasibility and financial performance validation:*** TerraVerde's Phase 1 scope combines the use of comprehensive field audits and our proprietary utility rate tariff modeling software to determine economic viability and estimated minimum savings, resulting in the most accurate validation of project feasibility and projected cost savings.

- ***RFP and Contract documents:*** TerraVerde is completely independent of any relationship, financial or otherwise, with solar integrators, suppliers, EPC contractors, equipment manufacturers, or renewable project financiers; thus our sole focus is on determining project feasibility and system design in a way that addresses our client's interests and requirements, and not the interests of solar contractors. This eliminates risks (and costs)

inherent in projects that are not scoped and designed to meet the specific objectives and requirements of the client, versus the needs of suppliers, contractors or financiers.

- ***Contract Negotiations:*** Because our project specifications and RFP documents are designed to serve the client's interests, the client has the assurance that their risks have been fully addressed in the contract documents during the RFP process. In addition, any proposed revisions or redlines to standard contracts are the responsibility of respondents to the RFP, which can be comparatively evaluated at the proposal review/grading stage; resulting in reduced client legal costs.

  TerraVerde's specialized engineering and finance expertise provides our clients the benefit of negotiating contracts on a "level playing field"; reducing the risk of agreeing to something or missing something in the contracting process that could present problems during construction, resulting in unnecessary change orders.

- ***Value Engineering:*** One of the most critical elements of TerraVerde's RFP process is "open book bidding". Our RFPs require complete transparency in supply, equipment and labor pricing, overhead and profit (even for PPAs), allowing TerraVerde and the client to evaluate proposals on an "apples to apples" basis. The open book approach also provides the detailed information needed to confirm project cost estimates and validate the accuracy of expected minimum savings pro-formas. In addition, proposal cost breakdowns help facilitate the value engineering stage of our RFP process with the selected bidder, resulting in reduced project cost, optimized project schedules, and increased overall project value.

In summary, when taking all of TerraVerde's risk mitigation approaches into consideration, our refined development and competitive procurement process has consistently produced high value results for our clients. Publicly available evidence of this claim can be found in the California Solar Initiative (CSI) records for costs of completed solar PV projects (Category of Government/public sector systems over 10 kW). Comparing the market pricing for solar projects from the CSI records to what TerraVerde's clients paid for similar projects during the same time period, inclusive of our fee, our clients benefitted from substantially lower costs for their projects (14-23% lower than market prices).

APPENDIX 2: ASSET MANAGEMENT SERVICES

Independent 3rd Party Oversight of Solar PV & Battery Storage Systems Operations & Administration for Existing Operation Systems:

TerraVerde Renewable Partners Asset Management Services (AMS) group manages comprehensive Operations and Maintenance (O&M) programs for 93 operational Solar PV Systems, totaling 17.3 Megawatts (MW) of installed solar capacity. TerraVerde's AMS focuses on ensuring that Solar PV system and Battery Storage system owners and Solar PPA customers receive the maximum financial benefit from their solar energy and energy storage investments. In order to accomplish this, TerraVerde actively monitors system performance and alerts, performs routine preventative maintenance, enforces installer and manufacturer warranties, manages corrective maintenance budgets, tracks all rebates/incentives payments (CSI PBI), and manages REC certifications, accounting and sales. In addition, TerraVerde regularly reports on solar production performance and electricity bill savings so that all project stakeholders remain aware of how their systems are performing financially.

Support Services Overview: A typical scope of services for an owner's rep role to provide independent oversight of existing O&M providers (for providers that are contracted directly with the District, or through a PPA provider) may consist of the following elements:

- Evaluation of existing O&M contract terms and Performance Guarantee (PeGu) terms, and recommendations for changes/improvements, as applicable.
- Evaluation of system performance (past & present) for existing generation systems, and recommendations for changes/improvements, as applicable.
- Assessment of the financial performance of the existing systems (actual Net Savings and ROI to date).
- Oversee on-going performance of existing (and future) project O&M contracts, i.e.: service provider's operations obligations for monitoring, O&M, warranty support, preventive maintenance, and performance reporting to confirm each system is being properly managed and maintained.
- Provide investment grade financial analysis and reports for each system on an annual basis.
- Manage billing credits and benefitting accounts associated with RES-BCT projects.
- Ensure that the original baseline performance metrics and production estimates were/are properly calculated, and that net savings estimates are as accurate as possible per past and present Utility rate schedules.
- Administrate all applicable incentive/rebate payments (CSI PBI and SGIP).
- Manage REC tracking, certification and trading for client.

Owner's Rep Benefits:

Enforcement of existing service contract obligations will ensure maximum uptime, production performance, and financial benefit. TerraVerde provides third party oversight of O&M contract terms and Performance Guarantee agreements, along with independent financial performance review including confirmation of energy cost savings estimates, and verification of actual cost savings using past & present production data, site operations energy consumption profiles, and TOU rate schedules. Examples of third party oversight benefits:

- Avoided cost calculations provided by solar developers/contractors typically do not reflect the most up to date rate schedules. Over the past five years Utility (SCE) rates have had non-linear increases in consumption (kWh) charges, demand (kW) charges, and fixed charges. Since solar energy generation affects each of these billing components differently, TerraVerde recommends performing an updated savings analysis to bring original/past savings projections up to date. In addition to providing a valuable insight into "real" financial performance, this analysis also enables the District to generate more accurate energy budget forecasts going forward.

- Most public agencies choose to retain ownership of the environmental attributes and Renewable Energy Credits (RECs) associated with renewable energy projects (for systems either directly owned by the agency, or for PPAs). TerraVerde has substantial experience in negotiating and securing sale agreements for California Green-E certified solar RECs on behalf of our clients. TerraVerde is currently involved with securing REC trade quotes for several clients, and as of December 2015 received bids ranging $2.75 to $3.50/REC from trading companies such as ACT Group and Karbone. Based on these prices and the production profiles associated with ground-mount tracker installations in Southern California, a 5MW project can generate approximately $20,000 in annual REC sales revenue. TerraVerde recommends going through the process of Green-E Certification to increase REC value and marketability. This is a process TerraVerde has completed for 18 of our current client's sites.

- O&M contract enforcement: TerraVerde works directly with installers/service providers to ensure ongoing warranty obligations are met. We hold weekly calls with contractors and service providers to track all open warranty claims and corrective maintenance issues, which ensures that installers/service providers are performing the work they are responsible for, and that work will be evaluated (QC'd) to confirm proper performance. Initiating a warranty claim or enforcing a contract obligation requires notification to the installer/O&M provider in writing, for any new claim. Technical documentation including calculations, inverter alerts, photographs, and screenshots of monitoring data are instrumental tools in showing that a system is not performing as expected. Our expertise in detecting and diagnosing issues enables us to provide compelling proof of issues when they do arise (please see Appendix IV Issue Detection and Handling).

- Performance Guarantee enforcement: Performance Guarantees typically have complex methods and formulas for determining energy production shortfalls and possible monetary reimbursements to the public agency (for both PPA and owned systems), which include adjustments for weather conditions. TerraVerde tracks system performance and applies energy production metrics to performance guarantee terms & conditions to provide clients with an accurate accounting of cost of solar power. And if necessary, will pursue reimbursement payments through the performance guarantee for the client.

Scope of Services: Oversight Services Associated with Existing Operational Systems:

Scope development starts with comprehensive review all relevant data, drawings, specs, contracts, guarantees, production projections, savings projections, maintenance logs, warranty claims, performance reports, etc. associated with the installed systems. Then field inspections can be performed as needed. The data review findings are used to tailor a scope of support specific to the

District's needs. Multi-site projects implemented in multi-year phases may have a different combination of contracts, necessitating different scopes for each site. Example scope tasks include:

- Provide updated savings and bill projections based on recent energy use profiles and Utility rate schedules.
- Monitor system performance daily through provider portal to ensure that all issues are caught immediately. Confirm provider is aware of and effectively communicating about open cases (examples of issues, and steps to resolution are included in Appendix IV).
- Ensure that warranty and corrective maintenance work is performed according to timelines specified in each contract.
- Verify that all contractual obligations are being met by service providers (key clauses, such as performance guarantees, are addressed in project-specific scopes).
- Provide annual savings report by back-calculating savings based on 15 minute interval data at each site. This provides a more accurate view than applying an avoided cost calculation to all production.
- Validate Project Developer's/Provider's weather-adjusted expected energy calculations going back to project PTO/COD.
- Conduct historical performance assessment. This will include a review of all Provider reports as well as all production and weather data available from the monitoring portal.
- Provide annual savings reports (please see attached sample report for more detail).
- If Provider is contractually obligated to provide monthly reports. TerraVerde will review and validate these reports.
- Track expected CSI performance based incentives for all systems/sites and validate accuracy of rebate payments.
- Complete the green-e certification process to increase the value of the District's Renewable Energy Credits (RECs).
- Enforce timeframe obligations to perform warranty support, preventive maintenance and repairs as needed.
- Validate PPA billing as applicable. Confirm that Provider's billed kWh matches production values in the monitoring system.
- Perform PPA buyout analysis, oversee fair market value assessment, and assist District in negotiations for ownership transfer as applicable.
- Validate and enforce Performance Guarantees to their contractual levels of production, and oversee process for short fall reimbursement as applicable.
- Confirm module washing is being performed properly, evaluate timing of cleaning, and perform cost/benefit analysis to determine if additional cleanings would add value at each site.

RES-BCT Project Support Scope:

- Manage Bill Credit Transfers and accuracy of the Utility's monthly billing for benefitting accts
    - Ensure bill credits are being applied properly to each benefitting account.
        - Download monthly bills from the Utility (i.e.: SCE.com).
        - Validate that total credit is being applied according to set allocations at each meter.
    - Adjust annual credit allocations, as necessary, to ensure optimal financial benefit.

        - On an annual basis review operating profiles and bill credit match for each meter.
        - Recalculate optimal credit distribution for each meter.
        - Work with District staff to understand any known future energy use changes at each meter, and determine if any sites may benefit from increasing, or decreasing their credit allocations.
        - Prepare and submit the Utility RES-BCT benefitting accounts allocation form 60 days in advance of the annual true-up date (system PTO anniversary).
    - Validate the Utility's billing practices for all benefitting accounts through monthly bill review.
- Validate the PPA Provider's PPA billing - confirm that billed kWh matches production values in the monitoring system

Asset Management Services Scope of Services for New Client-owned Systems

TerraVerde Asset Management Services (AMS) provides system monitoring, alert/alarm/error assessment, and technician dispatch conducted by in-house Asset Management Engineers ("AME") under TerraVerde's Operations department. Systems are monitored daily and reporting covers 365 days per year.

Our AMS also includes warranty enforcement (both labor and equipment); including the scheduling and oversight of required inspections and maintenance. Based on our monitoring activities, retro-commissioning is also implemented to ensure long-term equipment performance to specifications.

The following is the Scope of Work performed for client-owned solar projects, and is more extensive than 3rd party owned systems (PPAs) given the additional responsibilities and risks requiring management/oversight:

1- Prepare the Facility Operations Plan, which shall include the following information:
   a. Description of each PV system
   b. Equipment & manufacturer lists
   c. Spare equipment management log
   d. Site plans/as-built drawings
   e. Installers O&M manual reference guide
   f. Roles and responsibilities of stakeholders
   g. Emergency contact list / location of keys
   h. Insurance coverage and claim procedure
   i. Special maintenance requirements
   j. Performance Monitoring & Reporting System guide
   k. Emergency shutdown/restart procedures
2- Monitor System Performance (7 days/week), as follows:
   a. Inverter, weather station, revenue meter operation
   b. Cross check revenue meter output against inverter output
   c. Validate actual production vs. predicted production
3- Assess & Respond to PV System Alerts, as follows:

a. Assess PV system alerts and contact owner if necessary
b. Contact contractor if under contractor warranty
c. Contact technician if not under warranty (on a time and materials basis and subject to written approval of technician by System Owner)

4- Manage System Warranties
   a. Act as a liaison with contractor/manufacturers (as applicable) to enforce System warranty claims
   b. Issue warranty claims / work orders to contractor/manufacturer to resolve deficiencies found during the Annual System Inspection
5- Prepare Quarterly System Performance Reports, including the following information:
   a. Analysis of electricity usage and PV system production on a monthly basis
   b. Comparison of PV system production and electricity usage against baseline values
6- Prepare Annual Savings Report, including the following information:
   a. Executive summary
   b. Annual Savings Report:
      i. Comparison of 8760 hourly electricity usage profile with and without solar energy generation
      ii. Revenue from CSI rebates as applicable
      iii. Revenue from REC sales as applicable
      iv. Operational costs
   c. Assessment of PV system performance
   d. Report on annual weather variation (HDD/CDD)
   e. Report on revenues (rebates, RECs, etc.)
   f. Report on alerts and actions taken
   g. Summary of maintenance/warranty logs
   h. Report on Annual System Inspection results
7- Conduct Annual System Inspection, consisting of the following:
   a. Validate conductor continuity and torque marks
   b. Conduct Voc tests or perform I-V curve tracing
   c. Check for burned fuses
   d. Check for electrical hot spots, as needed
   e. Check inverters, disconnect switches, combiner boxes
   f. Check pyranometer and temperature sensors
   g. Conduct visual inspection of System
   h. Perform annual inverter maintenance per manufacturer's equipment manual
   i. Test ground fault values at the inverters
8- Manage CSI Rebates
   a. Validate CSI rebates reported to Utility Provider
   b. Confirm CSI rebate revenue from Utility Provider
9- Register/Manage RECs
   a. Register PV systems on WREGIS
   b. Confirm continuity of production data reporting to avoid REC losses
   c. Manage sale of RECs to maximize System Owner's revenue (REC sales will be conducted through 3rd party brokers who collect a fee as a percentage of total REC sales)
10- Manage Corrective Maintenance (Contingency) Budget

a. Advise owner on the need for PV module washing, vegetation abatement, soil stabilization, non-warranty equipment and labor costs, and other expenditures and activities
b. Manage and schedule the foregoing activities other than PV module washing, subject to written approval of System Owner and allocation of funds for such activities by System Owner

APPENDIX 3: CALIFORNIA BUSINESS ENTITY

Secretary of State | Administration | Elections | Business Programs | Political Reform | Archives | Registries | Other Services

Business Entities (BE)

Online Services
- **E-File Statements of Information for Corporations**
- **Business Search**
- **Processing Times**
- **Disclosure Search**

Main Page
Service Options
Name Availability
Forms, Samples & Fees
Statements of Information (annual/biennial reports)
Filing Tips
Information Requests (certificates, copies & status reports)
Service of Process

Business Search - Results

Data is updated to the California Business Search on Wednesday and Saturday mornings. Results reflect work processed through Friday, November 8, 2013. Please refer to **Processing Times** for the received dates of filings currently being processed. The data provided is not a complete or certified record of an entity.

- *Select an entity name below to view additional information.* Results are listed alphabetically in ascending order by entity name.
- For information on checking or reserving a name, refer to **Name Availability**.
- For information on ordering certificates, copies of documents and/or status reports or to request a more extensive search, refer to **Information Requests**.
- For help with searching an entity name, refer to **Search Tips**.
- For descriptions of the various fields and status types, refer to **Field Descriptions and Status Definitions**.

Results of search for " TERRAVERDE RENEWABLE PARTNERS, LLC " returned 1 entity record.

Entity Number	Date Filed	Status	Entity Name	Agent for Service of Process
201025310094	09/07/2010	ACTIVE	TERRAVERDE RENEWABLE PARTNERS, LLC	RICHARD F BROWN

Project Qualification Model

Cover Sheet

Las Virgenes Municipal Water District

Solar Project Pro Forma

Feasibility Study

1/28/2016

Scenarios Included in this Pro Forma:

#1: RES-BCT: Power Purchase Agreement (PPA)
#2: RES-BCT: Client Cash (100%)

TerraVerde Renewable Partners

Project: Las Virgenes Municipal Water District

Financing Structure	PPA Start Price	PPA Escalator	Net Operating Benefit Year 1	Net Operating Benefit Years 1-5	Net Operating Benefit Years 1-25
RES-BCT: Power Purchase Agreement (PPA)	$ 0.0780	0.00%	$ 124,586	$ 881,766	$ 10,745,205
RES-BCT: Client Cash (100%)	n/a	n/a	$ 580,218	$ 3,120,721	$ 18,774,806

Disclaimers and Assumptions

1) RES-BCT Benefiting Account selections are based on recent historical kWh consumption and current rate schedules, and should be reviewed on an annual basis to maintain optimum absorption of bill credits generated by the Generating Account array.

2) Net Operating Benefit does not include repayment of any client capital that may be invested.

3) Projections are subject to tariff eligibility over the life of the installation.

4) Avoided cost is the average cost/kWh of the total annual value of the generation bill credits using the URG portion of the generating account rate tariff applied to the designated benefitting accounts on a matched TOU basis over the applicable 30-day billing period

5) System size (kW) will be confirmed upon site audit and is subject to real estate availability and electrical service capacity. This analysis assumes the electrical service will not require significant upgrades.

TerraVerde Renewable Partners

Project: Las Virgenes Municipal Water District

Benefitting Accounts	Current Rate	Proposed Rate	Customer Usage (kWh)
#1 - 731 Malibu Canyon Rd (SAID: 436856, Meter: 359150000363)	TOU-8-CPP	TOU-8-CPP	12,194,786
#2 - 23589 Calabasas Rd (SAID: 1339585, Meter: V349N000662)	TOU-PA-3-B	TOU-PA-3-B	1,018,790
#3 - 24282 Parkway Calabasas (SAID: 1278242, Meter: ZYA085134771)	TOU-PA-3-B	TOU-PA-3-B	712,595
#4 - 3240 Las Virgenes Road (SAID: 436860, Meter: 259000058556)	TOU-PA-2-B	TOU-PA-2-B	663,118
#5 - 4232 Las Virgenes Rd 1 (SAID: 10663432, Meter: ZYA101000039)	TOU-GS-2-B	TOU-GS-2-B	372,205
#6 - RES-BCT Array @ 3810 Las Virgenes Rd (SAID: 436862, Meter: 256000169208)	TOU-GS-2-B	TOU-GS-2-A	14,882
Portfolio Totals			**14,976,376**

Generating Account	Current Rate	Proposed Rate	Customer Usage (kWh)	Target (kWh)	System Size (kW)	Avoided Cost
#6 - RES-BCT Array @ 3810 Las Virgenes Rd (SAID: 436862, Meter: 256000169208)	TOU-GS-2-B	TOU-GS-2-A	14,882	7,652,774	4,034	$ 0.1058
Portfolio Totals				**7,652,774**	**4,034**	**$ 0.1058**

Project Name: LVMWD 4 MW RES-BCT Project

Scenario #1: RES-BCT: Power Purchase Agreement (PPA)

Technical Assumptions	
Total Project Size (MW, DC)	4.03 MW
Yield (kWh/kW/yr)	1,897
Year-1 Solar Production (kWh)	7,652,774
System Cost ($/Wp)	n/a
Annual Degradation Factor	0.50%
Number of SCE Accounts	6

Avoided Cost & Revenue Sources	
Avoided Cost of Current Electricity ($/kWh)	$0.1058
Estimated Utility Cost Escalator (%)	3.00%

PPA Assumptions	
PPA Rate	$0.0780
PPA Annual Escalator (%)	0.00%

Asset Management Services Assumptions	
Asset Management Services ($/kWh) PPA	$0.0100
Asset Management Services Escalator (%)	3.50%

Total Net Benefit (25 years)	
Gross Project Benefit	$27,601,481
Operating Expenses	($2,795,343)
Power Purchase Agreement (PPA) Payments	($14,060,933)
Total Net Benefit	$10,745,205

Net Operations Benefit Summary		
Net Benefit	Year 1	$124,586
Net Benefit	Years 1-5	$881,766
Net Benefit	Years 1-25	$10,745,205

Environmental Benefits (per year)		
Sulfur Dioxide	SO2	48 lbs
Oxides of Nitrogen	NOX	9,161 lbs
Particulate Matter	PM10	321 lbs
Carbon Dioxide	CO2	10,285,328 lbs
Volatile Compounds	VOCs	804 lbs
Water	H20	6,026,559 gallons

Project Name: LVMWD 4 MW RES-BCT Project

Scenario #2: RES-BCT: Client Cash (100%)

Technical Assumptions	
Total Project Size (MW, DC)	4.03 MW
Yield (kWh/kW/yr)	1,897
Year-1 Solar Production (kWh)	7,652,774
System Cost ($/Wp)	$2.28
Annual Degradation Factor	0.50%
Number of SCE Accounts	6

Avoided Cost & Revenue Sources	
Avoided Cost of Current Electricity ($/kWh)	$0.1058
Estimated Utility Cost Escalator (%)	3.00%
Average 25-year REC Price ($/kWh)	$0.0021

Asset Management Services Assumptions	
Asset Management Services ($/kWh)	$0.0220
Asset Management Services Escalator (%)	3.50%

Sources of Project Capital (Year-1)		
Primary Financing: NONE	0%	$0
Client Contribution: Cash	100%	$9,195,295
Special Financing: NONE	0%	$0
Total Sources of Capital	100%	$9,195,295

Total Net Benefit (25 years)	
Gross Project Benefit	$27,937,145
Total Initial Project Cost	($9,195,295)
Operating Expenses	($9,162,339)
Total Net Operations Benefit	$18,774,806
Total Net Savings Benefit	**$9,579,511**

Net Operations Benefit Summary		
Net Benefit	Year 1	$580,218
Net Benefit	Years 1-5	$3,120,721
Net Benefit	Years 1-25	$18,774,806

Environmental Benefits (per year)		
Sulfur Dioxide	SO2	48 lbs
Oxides of Nitrogen	NOX	9,161 lbs
Particulate Matter	PM10	321 lbs
Carbon Dioxide	CO2	10,285,328 lbs
Volatile Compounds	VOCs	804 lbs
Water	H20	6,026,559 gallons

Project Qualification Model

Project Name: Las Virgenes Municipal Water District
Scenario #1: RES-BCT: Power Purchase Agreement (PPA)

Term	Electricity Assumptions		Avoided Cost and Revenue		Expenses				Net Savings	
Year	Annual Solar Production (kWh)	Savings per kWh Produced	Avoided Cost from Solar Generation	Subtotal: Annual Gross Benefits	PPA Payments	Asset Management Service	Interconnection Application Fees	Subtotal: Annual Operating Expenses	Net Benefits	Cumulative Net Benefits
2016	-	$ -	$ -	$ -	$ -	$ -	$ (11,600)	$ (11,600)	$ (11,600)	$ (11,600)
2017	7,652,774	$ 0.1058	$ 809,630	$ 809,630	$ (596,916)	$ (76,528)	$ -	$ (673,444)	$ 136,186	$ 124,586
2018	7,614,510	$ 0.1090	$ 829,749	$ 829,749	$ (593,932)	$ (78,810)	$ -	$ (672,742)	$ 157,007	$ 281,593
2019	7,576,438	$ 0.1122	$ 850,368	$ 850,368	$ (590,962)	$ (81,161)	$ -	$ (672,123)	$ 178,246	$ 459,839
2020	7,538,555	$ 0.1156	$ 871,500	$ 871,500	$ (588,007)	$ (83,581)	$ -	$ (671,589)	$ 199,911	$ 659,750
2021	7,500,863	$ 0.1191	$ 893,157	$ 893,157	$ (585,067)	$ (86,074)	$ -	$ (671,141)	$ 222,015	$ 881,766
2022	7,463,358	$ 0.1226	$ 915,352	$ 915,352	$ (582,142)	$ (88,641)	$ -	$ (670,783)	$ 244,569	$ 1,126,334
2023	7,426,041	$ 0.1263	$ 938,098	$ 938,098	$ (579,231)	$ (91,285)	$ -	$ (670,516)	$ 267,582	$ 1,393,916
2024	7,388,911	$ 0.1301	$ 961,410	$ 961,410	$ (576,335)	$ (94,008)	$ -	$ (670,343)	$ 291,067	$ 1,684,984
2025	7,351,967	$ 0.1340	$ 985,301	$ 985,301	$ (573,453)	$ (96,811)	$ -	$ (670,265)	$ 315,036	$ 2,000,020
2026	7,315,207	$ 0.1380	$ 1,009,786	$ 1,009,786	$ (570,586)	$ (99,699)	$ -	$ (670,285)	$ 339,501	$ 2,339,521
2027	7,278,631	$ 0.1422	$ 1,034,879	$ 1,034,879	$ (567,733)	$ (102,672)	$ -	$ (670,405)	$ 364,474	$ 2,703,995
2028	7,242,238	$ 0.1464	$ 1,060,596	$ 1,060,596	$ (564,895)	$ (105,734)	$ -	$ (670,629)	$ 389,967	$ 3,093,961
2029	7,206,026	$ 0.1508	$ 1,086,952	$ 1,086,952	$ (562,070)	$ (108,888)	$ -	$ (670,958)	$ 415,994	$ 3,509,955
2030	7,169,996	$ 0.1554	$ 1,113,962	$ 1,113,962	$ (559,260)	$ (112,136)	$ -	$ (671,395)	$ 442,567	$ 3,952,522
2031	7,134,146	$ 0.1600	$ 1,141,644	$ 1,141,644	$ (556,463)	$ (115,480)	$ -	$ (671,943)	$ 469,701	$ 4,422,223
2032	7,098,476	$ 0.1648	$ 1,170,014	$ 1,170,014	$ (553,681)	$ (118,924)	$ -	$ (672,605)	$ 497,409	$ 4,919,632
2033	7,062,983	$ 0.1698	$ 1,199,089	$ 1,199,089	$ (550,913)	$ (122,471)	$ -	$ (673,384)	$ 525,705	$ 5,445,337
2034	7,027,668	$ 0.1749	$ 1,228,886	$ 1,228,886	$ (548,158)	$ (126,124)	$ -	$ (674,282)	$ 554,604	$ 5,999,941
2035	6,992,530	$ 0.1801	$ 1,259,424	$ 1,259,424	$ (545,417)	$ (129,885)	$ -	$ (675,303)	$ 584,121	$ 6,584,063
2036	6,957,567	$ 0.1855	$ 1,290,721	$ 1,290,721	$ (542,690)	$ (133,759)	$ -	$ (676,450)	$ 614,271	$ 7,198,334
2037	6,922,779	$ 0.1911	$ 1,322,795	$ 1,322,795	$ (539,977)	$ (137,749)	$ -	$ (677,725)	$ 645,070	$ 7,843,404
2038	6,888,166	$ 0.1968	$ 1,355,667	$ 1,355,667	$ (537,277)	$ (141,857)	$ -	$ (679,134)	$ 676,533	$ 8,519,936
2039	6,853,725	$ 0.2027	$ 1,389,355	$ 1,389,355	$ (534,591)	$ (146,088)	$ -	$ (680,678)	$ 708,677	$ 9,228,613
2040	6,819,456	$ 0.2088	$ 1,423,881	$ 1,423,881	$ (531,918)	$ (150,445)	$ -	$ (682,363)	$ 741,518	$ 9,970,131
2041	6,785,359	$ 0.2151	$ 1,459,264	$ 1,459,264	$ (529,258)	$ (154,932)	$ -	$ (684,190)	$ 775,074	$ 10,745,205
Totals	180,268,371		$ 27,601,481	$ 27,601,481	$ (14,060,933)	$ (2,783,743)	$ (11,600)	$ (16,856,276)	$ 10,745,205	$ 10,745,205

Key Project Assumptions	
Total Project Size (MW, DC):	4.03 MW
Estimated Cost of Utility Escalator:	3.00%
PPA Rate	$0.0780
PPA Annual Escalator	0.00%
Asset Management Services ($/kWh) PPA	$0.0100
Asset Management Services Escalator	3.50%

Project Qualification Model

Project Name: Las Virgenes Municipal Water District
Scenario #2: RES-BCT: Client Cash (100%)

Term	Electricity Assumptions		Avoided Cost and Revenue			Expenses							Net Savings		Cash	
Year	Annual Solar Production (kWh)	Savings per kWh Produced	Avoided Cost from Solar Generation	Renewable Energy Certificates (RECs)	Subtotal: Annual Gross Benefits	Asset Management Service	Contingency Reserve Fund	Module Washing (2 per Year)	Inverter Replacement	Insurance	Interconnection Application Fees	Subtotal: Annual Operating Expenses	Net Benefits	Cumulative Net Benefits	Cash Contribution	Cumulative Cash Position
2016	-	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ (11,600)	$ (11,600)	$ (11,600)	$ (11,600)	$ (9,195,295)	$ (9,206,895)
2017	7,652,774	$ 0.1058	$ 809,630	$ -	$ 809,630	$ (168,361)	$ (30,252)	$ (16,134)	$ -	$ (3,065)	$ -	$ (217,812)	$ 591,818	$ 580,218	$ -	$ (8,615,077)
2018	7,614,510	$ 0.1090	$ 829,749	$ 7,653	$ 837,402	$ (173,382)	$ (31,008)	$ (16,457)	$ -	$ (3,126)	$ -	$ (223,974)	$ 613,428	$ 1,193,646	$ -	$ (8,001,648)
2019	7,576,438	$ 0.1122	$ 850,368	$ 7,615	$ 857,983	$ (178,554)	$ (31,783)	$ (16,786)	$ -	$ (3,189)	$ -	$ (230,312)	$ 627,671	$ 1,821,318	$ -	$ (7,373,977)
2020	7,538,555	$ 0.1156	$ 871,500	$ 7,576	$ 879,077	$ (183,879)	$ (32,578)	$ (17,122)	$ -	$ (3,253)	$ -	$ (236,831)	$ 642,245	$ 2,463,563	$ -	$ (6,731,732)
2021	7,500,863	$ 0.1191	$ 893,157	$ 7,539	$ 900,695	$ (189,363)	$ (33,392)	$ (17,464)	$ -	$ (3,318)	$ -	$ (243,537)	$ 657,158	$ 3,120,721	$ -	$ (6,074,573)
2022	7,463,358	$ 0.1226	$ 915,352	$ 7,501	$ 922,853	$ (195,011)	$ (34,227)	$ (17,813)	$ -	$ (3,384)	$ -	$ (250,435)	$ 672,417	$ 3,793,139	$ -	$ (5,402,156)
2023	7,426,041	$ 0.1263	$ 938,098	$ 11,195	$ 949,293	$ (200,827)	$ (35,083)	$ (18,170)	$ -	$ (3,452)	$ -	$ (257,531)	$ 691,762	$ 4,484,901	$ -	$ (4,710,394)
2024	7,388,911	$ 0.1301	$ 961,410	$ 11,139	$ 972,549	$ (206,817)	$ (35,960)	$ (18,533)	$ -	$ (3,521)	$ -	$ (264,830)	$ 707,719	$ 5,192,619	$ -	$ (4,002,675)
2025	7,351,967	$ 0.1340	$ 985,301	$ 11,083	$ 996,384	$ (212,985)	$ (36,859)	$ (18,904)	$ -	$ (3,591)	$ -	$ (272,339)	$ 724,046	$ 5,916,665	$ -	$ (3,278,629)
2026	7,315,207	$ 0.1380	$ 1,009,786	$ 11,028	$ 1,020,814	$ (219,337)	$ (37,780)	$ (19,282)	$ -	$ (3,663)	$ -	$ (280,062)	$ 740,751	$ 6,657,417	$ -	$ (2,537,878)
2027	7,278,631	$ 0.1422	$ 1,034,879	$ 10,973	$ 1,045,852	$ (225,879)	$ (38,725)	$ (19,668)	$ -	$ (3,736)	$ -	$ (288,008)	$ 757,844	$ 7,415,261	$ -	$ (1,780,034)
2028	7,242,238	$ 0.1464	$ 1,060,596	$ 14,557	$ 1,075,153	$ (232,616)	$ (39,693)	$ (20,061)	$ -	$ (3,811)	$ -	$ (296,181)	$ 778,972	$ 8,194,233	$ -	$ (1,001,061)
2029	7,206,026	$ 0.1508	$ 1,086,952	$ 14,484	$ 1,101,436	$ (239,554)	$ (40,685)	$ (20,462)	$ -	$ (3,887)	$ -	$ (304,588)	$ 796,848	$ 8,991,081	$ -	$ (204,213)
2030	7,169,996	$ 0.1554	$ 1,113,962	$ 14,412	$ 1,128,374	$ (246,698)	$ (41,702)	$ (20,871)	$ -	$ (3,965)	$ -	$ (313,237)	$ 815,137	$ 9,806,219	$ -	$ 610,924
2031	7,134,146	$ 0.1600	$ 1,141,644	$ 14,340	$ 1,155,984	$ (254,056)	$ (42,745)	$ (21,289)	$ -	$ (4,044)	$ -	$ (322,134)	$ 833,850	$ 10,640,069	$ -	$ 1,444,774
2032	7,098,476	$ 0.1648	$ 1,170,014	$ 14,268	$ 1,184,282	$ (261,633)	$ (43,813)	$ (21,715)	$ -	$ (4,125)	$ -	$ (331,286)	$ 852,996	$ 11,493,065	$ -	$ 2,297,770
2033	7,062,983	$ 0.1698	$ 1,199,089	$ 17,746	$ 1,216,835	$ (269,437)	$ (44,909)	$ (22,149)	$ -	$ (4,208)	$ -	$ (340,702)	$ 876,133	$ 12,369,198	$ -	$ 3,173,904
2034	7,027,668	$ 0.1749	$ 1,228,886	$ 17,657	$ 1,246,544	$ (277,472)	$ (46,031)	$ (22,592)	$ -	$ (4,292)	$ -	$ (350,388)	$ 896,156	$ 13,265,355	$ -	$ 4,070,060
2035	6,992,530	$ 0.1801	$ 1,259,424	$ 17,569	$ 1,276,993	$ (285,748)	$ (47,182)	$ (23,044)	$ -	$ (4,378)	$ -	$ (360,352)	$ 916,642	$ 14,181,996	$ -	$ 4,986,702
2036	6,957,567	$ 0.1855	$ 1,290,721	$ 17,481	$ 1,308,202	$ (294,271)	$ (48,362)	$ (23,505)	$ -	$ (4,465)	$ -	$ (370,602)	$ 937,600	$ 15,119,596	$ -	$ 5,924,302
2037	6,922,779	$ 0.1911	$ 1,322,795	$ 17,394	$ 1,340,189	$ (303,047)	$ (49,571)	$ (23,975)	$ (275,643)	$ (4,555)	$ -	$ (656,790)	$ 683,399	$ 15,802,995	$ -	$ 6,607,701
2038	6,888,166	$ 0.1968	$ 1,355,667	$ 20,768	$ 1,376,435	$ (312,086)	$ (50,810)	$ (24,454)	$ (275,643)	$ (4,646)	$ -	$ (667,638)	$ 708,797	$ 16,511,792	$ -	$ 7,316,497
2039	6,853,725	$ 0.2027	$ 1,389,355	$ 20,664	$ 1,410,020	$ (321,393)	$ (52,080)	$ (24,943)	$ (275,643)	$ (4,739)	$ -	$ (678,799)	$ 731,221	$ 17,243,013	$ -	$ 8,047,718
2040	6,819,456	$ 0.2088	$ 1,423,881	$ 20,561	$ 1,444,442	$ (330,979)	$ (53,382)	$ (25,442)	$ (275,643)	$ (4,833)	$ -	$ (690,280)	$ 754,162	$ 17,997,175	$ -	$ 8,801,880
2041	6,785,359	$ 0.2151	$ 1,459,264	$ 20,458	$ 1,479,722	$ (340,850)	$ (54,717)	$ (25,951)	$ (275,643)	$ (4,930)	$ -	$ (702,091)	$ 777,631	$ 18,774,806	$ -	$ 9,579,511
Totals	180,268,371		$ 27,601,481	$ 335,664	$ 27,937,145	$ (6,124,235)	$ (1,033,329)	$ (516,784)	$ (1,378,215)	$ (98,176)	$ (11,600)	$ (9,162,339)	$ 18,774,806	$ 18,774,806		$ 9,579,511

Key Project Assumptions	
Total Project Size (MW, DC):	4.03 MW
Estimated Cost of Utility Escalator:	3.00%
Total Project Cost:	$9,195,295
Asset Management Services ($/kWh)	$0.0220
Asset Management Services Escalator	3.50%