

**Demonstration Project for
City of Weed**

Solar/Wind Energy Feasibility Report

Technical Assistance for Disadvantaged Water and
Wastewater Providers

North Coast Resource Partnership

California Department of Water Resources

December 2014



North Coast Resource Partnership
California Department of Water Resources

Technical Assistance for Disadvantaged Water and Wastewater Providers

Demonstration Project for the City of Weed

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1. Introduction

The City of Weed is located in Siskiyou County, California at the juncture of Interstate Route 5 and State Route 97 about 50 miles south of the Oregon/California border. The City's sanitary sewage operations are made up of two different collection and treatment facilities with a common disposal area. The northern portion of Weed is served by the Weed sewer system and the southern portion of town is served by the Shastina sewer system.

Electrical costs for sanitary sewer system make up a significant percentage of the overall operations cost for the system. The average electrical cost to run the system is \$ 76,000 annually. Electricity for the sanitary sewer system operations is currently being purchased from Pacific Power.

The location map and City boundaries are presented in Figure 1. This figure was developed using Toolbox Element 1.3, GIS Layers with General Application Information. The GIS layers and mapping provided the basis for the figure and district information was used to generate the boundary.

1.1 Purpose of this report

The purpose of this report is to help develop the Small Community Tool Box as a demonstration project as well as to assist the City of Weed in determining the feasibility of installing an alternate energy source to produce energy for their sanitary sewer system operations.

1.2 Scope and limitations

This scope of this engineering study is to evaluate the feasibility of installing a city owned and operated alternate energy plant to help reduce electrical costs for the City of Weed sanitary sewer system.

This report: has been prepared by Bray & Associates Civil Engineering and Land Surveying and reviewed by GHD for the North Coast Resource Partnership. The City of Weed has signed a participation agreement relating to the demonstration project that is the subject of this report. It should be emphasized that report is to be used as an example of how tools and processes can be used to help further infrastructure improvement projects for a variety of communities throughout the North Coast region. Further planning, analysis, engineering and permitting may be required.

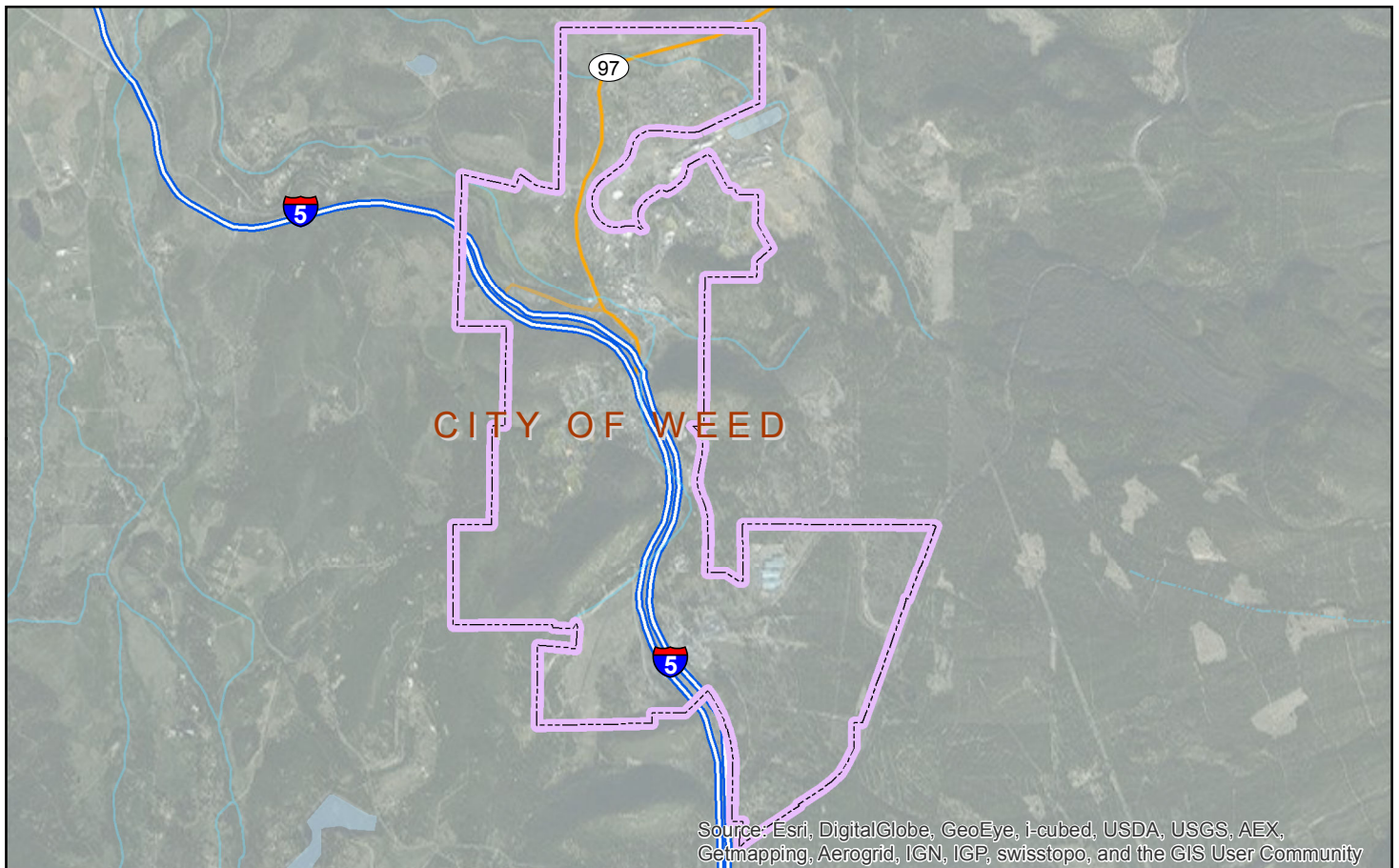
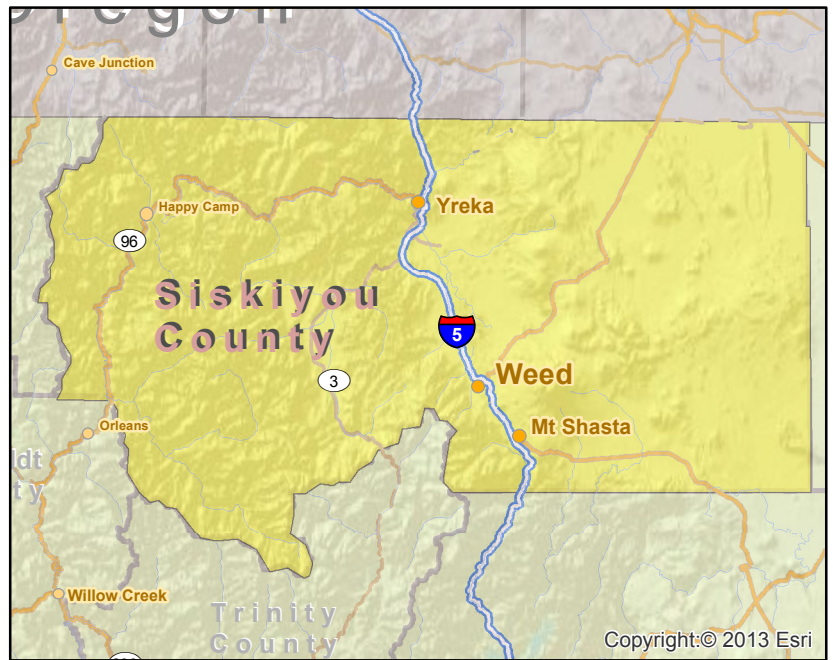
The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. This report has been prepared based on information provided by others, which has not been independently verified or checked.

Any cost estimates presented in this report or through related Toolbox elements are for conceptual purposes only. Actual prices, costs and variables may be different at the time of the actual project and thus, project costs may change. Actual costs will depend on final project configuration and requirements. There is no warranty or guarantee that the project as currently conceived can or will be undertaken at a cost which is the same or less than costs that may be inferred from this report.

1.3 Assumptions

Estimates for this report are based on the assumption that contract prices for installation of the plant will be similar to those tracked by the California Energy Commission for government projects in

2013 and 2014. Energy plant modeling is based on estimated site conditions within the System Advisor Model (SAM) provided by the National Renewable Energy Laboratory and the US Department of Energy. This engineering report also assumes that the City will be able to borrow money for capital improvements at low interest rates ranging from 1% to 3% due to their severely disadvantaged community designation.

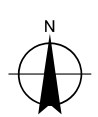


- U.S. Highway
- Major Road
- Local Roads
- Stream
- River
- City of Weed

Paper Size 8.5" x 11" (ANSI A)

0 2,500 5,000 10,000 Feet

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere



City of Weed
Technical Assistance

Job Number 8410996
Revision A
Date 25 Jul 2014

Vicinity Map

Figure 1

718 Third Street Eureka CA 95501 USA T 707 443 8326 F 707 444 8330 E eureka@ghd.com W www.ghd.com
 © 2014. While every care has been taken to prepare this map, GHD makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
 Data source: ESRI Street Map; NAIP aerial 1m. Created by:porogers

2. Use of the Small Community Toolbox

The Small Community Toolbox provides resources and references that allow small communities to approach the management of local water and wastewater infrastructure in a systematic fashion. The Toolbox is not a substitute for professional assistance with operations, management, engineering and legal issues. Rather it is intended to help small utilities develop a “first order” understanding of what their options are, how they should begin to budget, and how to get help.

The Small Community Toolbox is organized around the concept of the Utility Management Cycle illustrated in Figure 2.1.



Figure 2.1: Utility Management Cycle

Individual tools have been prepared for each of the elements of the Utility Management Cycle which are summarized in Table 2.1

Table 2.1: Small Community Toolbox Elements

Utility Management Cycle Element	Toolbox Element	What it is and How it can be Used
Utility Management Cycle Element 1: <i>Organize and Plan for Success</i>	<u>1.1: Community Networking Directory:</u>	A contacts database of willing participants interested in collaboration for advice and assistance.
	<u>1.2: Governance Summaries:</u>	An overview of options, benefits, and steps required to form various types of service entities.
	<u>1.3: GIS Layers:</u>	Census, legislative, and other public data to help agencies access information needed for applications.
Utility Management Cycle Element 2: <i>Match Needs to Economical Technologies</i>	<u>2.1: Technology Overviews:</u>	Overviews of common issues, technologies, and evaluation factors to help select alternatives.
	<u>2.2: General Cost Estimating Charts:</u>	Cost estimating charts to help develop order of magnitude estimates for various types and sizes of infrastructure to begin scoping overall funding strategies.
Utility Management Cycle Element 3: <i>Create Viable Financing Strategies</i>	<u>3.1: Funding Program Summaries:</u>	A one-stop information shop about funding programs suited to small community infrastructure projects.
	<u>3.2: Capital Recovery Tables:</u>	Lookup tables to translate the portion of total project costs not paid by grant into annual debt service requirements met through a revenue mechanism.
	<u>3.3: Financing District Summaries:</u>	Summary of strategy options for generating revenue to pay the annual debt service.
	<u>3.4: Cash Flow Considerations:</u>	Assists entities in understanding the funds needed to move a project through planning, design, and construction
Utility Management Cycle Element 4: <i>Prepare Preliminary Design, Studies, and Applications</i>	<u>4.1: Consolidated Preliminary Engineering Report Template:</u>	Consolidated report outline, with model tables that will meet the needs commonly used funding programs.
	<u>4.2: CEQA/NEPA Exemptions and Checklists:</u>	Summary of CEQA/NEPA exemptions and checklists to aid in meeting State and Federal environmental requirements and funding program requirements.
	<u>4.3: Common Permit Triggers:</u>	Summary chart of typical project components that often trigger different types of permits.
Utility Management Cycle Element 5: <i>Complete Final Design and Construction</i>	<u>5.1: Guidance for Hiring Professionals:</u>	As a project moves from initial planning towards implementation, detailed, community-specific designs are required and communities will need to retain professional support.
	<u>5.2: Public Bidding Process Overview:</u>	Understanding how the public bidding process works, how to set up a successful project bid, and how the low bid contractor is selected
Utility Management Cycle Element 6: <i>Operate and Manage System</i>	<u>6.1: Technical, Managerial, and Financial (TMF) Resources:</u>	Tools to help agencies be organized and managed to improve overall operations and funding competitiveness.
	<u>6.2: Regulatory Resources:</u>	Sources to provide information to the utility operator on various federal and state regulations.
	<u>6.3: Rate Setting Guidance:</u>	Linking the costs of projects to the need to rate increases and methods to set and change rates
	<u>6.4: Capital Improvement Planning Resources:</u>	Part of the on-going Utility Management Cycle of planning for future system improvements

The tools used for this demonstration project are highlighted throughout this report. The Small Community Toolbox summaries should be referenced for additional information regarding the tools and their use.

3. Electrical Rates & Usage

3.1 Electrical Rate Structure

In order to properly analyze the economic benefit of utilizing an alternate power source, one must first understand the electric provider's rate structure. Pacific Power currently provides electricity to the City of Weed for their sanitary sewer operations. The City of Weed currently has four meters measuring electrical usage for their sewer operations. A typical monthly invoice for these services is included in Appendix A. Pacific Power utilizes different schedules for differing types of electrical services. Table 3.1 Service Rate Structure of this report includes the current rate structure for the three different types of services in the City's sanitary sewer system.

Table 3.1 Service Rate Structure

Pacific Power Schedule of Charges:	Office 25	Plant / Blowers A32	Pump Stations (2 each) A36	Units
Basic Charge	\$16.88	\$16.75	\$219.18	/ Service Meter
Distribution Demand Charge	-	\$1.53	\$2.79	/ kw
Generation & Transmission Demand Charge	-	\$2.10	\$5.28	/ kw
Reactive Power Charge	-	\$ 0.60	\$ 0.60	/ kvar
Energy Charge	\$0.14397	\$0.11273	\$0.08534	/ kwh
CPUC Surcharge	\$0.00024	\$0.00024	\$0.00024	/ kwh
Low Income Assistance Charge	\$0.00508	\$0.00508	\$0.00508	/ kwh
Klamath Dam Removal	\$0.00279	\$0.00251	\$0.00211	/ kwh
State Energy Resource Tax	\$0.00029	\$0.00029	\$0.00029	/ kwh
Total Energy Usage Rate	\$0.14958	\$0.12085	\$0.09306	/ kwh
Total Energy Usage Charge (Typ)	\$767.94	\$1,199.44	\$1,704.86	/ month
Total of Other Charges (Typ)	\$16.88	\$190.24	\$2,487.57	/ month
Total Electrical Charges (Typ)	\$784.82	\$1,389.68	\$4,192.43	/ month

Note: Typical dollars amounts shown in Table 3.1 are taken from the City's March, 2014 Electrical Bill.

As one can see from Table 3.1 that the different rate structures vary drastically. The Office and Plant / Blower services depend more on energy usage whereas the Pump Stations depend more on the service, power demand & power transmission.

3.2 Electrical Usage

In order to summarize the electrical usage for the City's sanitary sewer system, the City's electrical bills for a three year period from April, 2011 to March, 2014 were tabulated and averaged. (See

Appendix B). Table 3.2 Summary of Electrical Usage below outlines the monthly average usage for each of the sanitary sewer system’s four services.

Table 3.2 Summary of Electrical Usage

Service Location	Average Annual Energy Usage (kwh)	Average Monthly Energy Usage (kwh)	Average Monthly Demand (kw)
Office	54,412	4,535	14
Plant / Blowers	136,793	11,400	42
Shastina Pump Station	199,990	16,666	150
Weed Pump Station	101,051	8,420	100

Note: Values shown in this table are taken from actual electrical bills from a three year period April, 2011 to March, 2014.

4. Basis for Cost Benefit Analysis

4.1 Cost Benefits for Alternate Energy Production

What is the cost benefit to installing an alternate energy source? Installation of an alternate power source to provide power for the sewer facilities has three different cost benefits.

- **Energy Production Benefit**

The first of these benefits is the actual cost savings of producing the energy required to operate the system. The cost savings for energy production is based solely on energy usage through the Pacific Power net metering program. The net metering program allows the alternate energy generation from the City to run the electrical meter backwards. The energy usage for the year for any given service is metered for usage and alternate power production. For example, if a given service used 10,000 kwh for the year and the alternate energy source produced (I.E. solar/wind) 9,000 kwh for the year, the user would pay for only the net difference in power consumption or $10,000 \text{ kwh} - 9,000 \text{ kwh} = 1,000 \text{ kwh}$ net power usage. In the event the alternate power source produces more power annually than was used the excess power is donated back to Pacific Power.

The total potential electricity bill reduction percentage that can be expected using Table 3.1 is as follows:

Office Service	97.8% reduction
Plant / Blowers	86.3% reduction
Pump Stations	40.7% reduction
Entire Sanitary Sewer System	57.7% reduction

From this comparison, one can see that the services with rate structures that are more dependent on energy usage offer a much higher electric bill reduction.

- **Alternate Energy Incentives Benefit**

There are various incentive programs which benefit users for installing alternate power generation. They include state and federal tax incentives as well as utility company incentives. In the case of

municipalities which pay no taxes, so there is no benefit from tax incentives. The only incentive benefit the City can utilize is the utility company incentive. Pacific Power was contacted regarding incentives for their California users. We were informed that there were no the wind power incentives available. However, there is still a solar power incentive available as shown in Table 4.1 California Solar Incentives – Pacific Power.

Table 4.1 California Solar Incentives – Pacific Power

Step	Total Kilowatts Installed per step	Residential 33%	Commercial 67%	Residential/ Commercial Incentive (\$ / Watt)	Tax Exempt Incentives (\$ / Watt)
1	448	148	300	\$2.00	\$2.75
2	483	160	323	\$1.50	\$2.25
3	520	172	348	\$1.13	\$1.88
4	467	154	313	\$0.84	\$1.59
5	501	165	336	\$0.63	\$1.38
6	540	178	362	\$0.47	\$1.22
7	583	583	391	\$0.36	\$1.11

Note: Table reproduced from the Pacific Power website - www.pacificpower.net/env/nmcg/csip.html.

The incentive rates in the last column are intended for users that do not pay taxes, so these are the rates applicable to the City of Weed. The commercial incentive program is in Step 7. The incentive rate for Step 7 is \$1.11 per watt installed. For example, if the solar energy plant is designed to produce 50 KW of power the incentive paid by Pacific Power would be 50,000 x \$1.11 = \$55,500.

- **Net Salvage Value Benefit**

The installed alternate energy plant has some salvage value at the end of the useful life. Salvage values are more difficult to quantify because they take into account future product availability, product life cycles, and product efficiency over time. For this report a net salvage value of 10% of installed cost was used. In general, the life of the solar panels and wind turbines is somewhere in the range of 20 to 25 years. A useful life of 25 years was used for the purposes of this report.

4.2 Expenses for Alternate Energy Production

There are a number of expenses involved with installation of an alternate energy plant. Estimating these expenses is difficult in Siskiyou County because there are not many systems installed locally that are public systems. The installation of a public system requires payment of prevailing wage rates for labor. This typically increases the labor cost substantially due to the higher rates being paid under prevailing wage law. The expenses used for this economic analysis are capital improvements, operation & maintenance, loan interest, equipment depreciation and insurance.

- **Capital Improvements Cost**

Capital Improvements Costs are the costs associated with installation of the power plant.

Solar Energy:

The California Solar Incentive was mandated by state law and began January 1, 2007. Through this program the State of California has tracked the costs of solar projects for various different types and sizes of systems. The average cost of installation of a 100 to 150 KW government system from 2013 to 2014 in California is approximately \$4.65 per watt. These costs are averaged for all of California and may not accurately represent our local area, however they are the best cost information available for estimating.

Wind Energy:

Capital investment costs for wind generated energy are typically somewhat lower than solar, however in general wind generation plants are much larger scale than are solar plants. Averages taken from a 2012 report prepared by the US Department of Energy suggest that smaller wind generation plants cost somewhere in the neighborhood of \$4 per watt to install. These numbers are nationwide averages and there was no basis for whether or not these were public works, private or a combination of the two. We expect that these averages would be much higher for public works only type projects, or somewhere in excess of \$5 per watt.

- **Loan Interest**

In the event the City of Weed does not have the capital to design and construct the system they would be forced to borrow money to do so. The interest paid on the loan is an expense that is estimated for the purposes of this economic analysis. The interest rates used for this analysis range from 1% to 3%. USDA Rural Development loan rates range from 1% to 4% based on the term of the loan. The California Energy Commission also has low interest loans available for these types of projects.

- **Operation & Maintenance Cost**

Solar:

Operation and maintenance costs are those costs associated with operating and maintaining the power plant. Operation and maintenance costs are estimated to be \$20/ KW per year based on the size of your plant.

Wind:

A report prepared by Wind Measurement International which studied 5,000 wind turbines since 1975 concluded that operation & maintenance costs for wind turbines were running somewhere in the range from 1.5% to 2.0% of the installed cost of the equipment for newer installations. The O & M cost based on these percentages would be from \$60 to \$80/KW per year.

- **Insurance Cost**

Insurance cost is the cost of insurance for the installed system. The property insurance rate for the City of Weed is 0.08467 per \$100 value.

- **Equipment Depreciation Cost**

In this analysis, the depreciation is accounted for by the Net Salvage Value on the cost benefit side.

5. System Modeling

5.1 Energy Generation Plant Modeling Parameters

The research that we conducted suggests that solar energy production is more cost effective at this point in time for this size and type of system. There are no utility company incentives for wind generation plants. Wind generation plants tend to have higher installation, operation and maintenance costs. It is our conclusion that solar energy generation is the most economical source for this project. For this reason solar energy was the only system modeled for this report.

Energy plant modeling is based on estimated site conditions within the System Advisor Model (SAM) provided by the National Renewable Energy Laboratory and the US Department of Energy. A Weed area solar file was downloaded and used for array sizing and energy output estimates. These estimates are based only on the Weed file downloaded and more accurate data should be collected onsite during the design phase of the proposed project to more accurately size the system. The parameters used for modeling are as follows:

- A 0.7% linear decline in power output was factored into the power generation estimates
- Capital costs for modeling were determined using a range from \$4 to \$5 per watt installed
- Loans were modeled with a 20 year term and interest rates were determined using a range of rates from 1% to 3%
- Operation & Maintenance costs were estimated at \$20/KW per year
- Net salvage value is estimated to be 10% of installed system value
- A 25 year life cycle
- A \$1.11 per watt utility company incentive
- Current utility rates were used with a 2.5% inflation factor
- A three year monthly average of electrical load data

A model was created for each of the services to determine the required service size and the amount of land required to install the arrays. Table 5.1 Service Sizes and Land Requirement

Table 5.1 Service Capacity & Land Requirements

Service Location	Capacity Required (KW)	Land Required for Array (Acres)
Office	15	0.05
Plant / Blowers	45	0.15
Weed Pump Station	65	0.25
Shastina Pump Station	105	0.40
All Services	230	0.95

5.2 Weed Pump Station Cost vs Benefit Analysis

The SAM software indicated that we need a 65/KW system for the Weed Pump Station. In order to generate 65 Kilowatts of power the system requires approximately 228 panels covering 0.25 acres of land. The City has unused bare ground available for this purpose near the plants. Appendix C gives the tabulated results of the model.

Table 5.2 Weed Pump Station Cost Benefit Analysis gives an overview of the model performed.

Table 5.2 Weed Pump Station - Cost Benefit Analysis

Estimated Construction Value	Loan Interest Rate	Total Lifetime Project Cost	Total Lifetime Project Benefit	Total Estimated Lifetime Energy Savings	Estimated Benefit per KW
\$4.00/watt	1%	\$188,379.15	\$348,513.53	\$160,134.38	\$2,463
\$4.50/watt	1%	\$225,266.14	\$354,641.33	\$126,352.69	\$1,944
\$5.00/watt	1%	\$259,449.11	\$354,724.13	\$95,275.02	\$1,466
\$4.00/watt	2%	\$202,797.01	\$348,513.53	\$145,716.52	\$2,242
\$4.50/watt	2%	\$243,412.73	\$354,641.33	\$111,228.60	\$1,711
\$5.00/watt	2%	\$281,044.40	\$354,724.13	\$73,679.73	\$1,134
\$4.00/watt	3%	\$218,012.47	\$348,513.53	\$130,501.06	\$2,008
\$4.50/watt	3%	\$262,563.13	\$354,641.33	\$92,078.20	\$1,417
\$5.00/watt	3%	\$303,833.98	\$354,724.13	\$50,890.15	\$783

This model and analysis for the Weed Pump Station shows that the range of benefits for the proposed project are from approximately \$51k to \$160k for the 25 year lifetime of the system. The variables in this range are installation cost and loan interest rate. This model assumes that the utility company incentive amount was used to reduce the loan amount.

5.3 Cost vs Benefit Analysis for the System

Table 3.1 indicates that there are three different rates being paid by the City for electricity. From the Weed Pump model we can correlate a cost vs benefit for each given rates based on the system size. For this correlation we are going to use \$4.50/watt for capital investment cost. Table 5.3 shows the break down for this correlation.

Table 5.3 Estimated System Benefits per KW @ \$4.50/watt Installed

Estimated Construction Value	Loan Interest Rate	Estimated Benefit per KW Rate Schedule A36	Estimated Benefit per KW Rate Schedule A32	Estimated Benefit per KW Rate Schedule 25
\$4.50/watt	1%	\$2,463	\$3,198	\$3,958
\$4.50/watt	2%	\$1,944	\$2,524	\$3,124
\$4.50/watt	3%	\$1,466	\$1,904	\$2,356

Table 5.4 shows the estimated benefit for each individual service and the overall system assuming a \$4.50/ watt installation cost and 2.5% inflation for a 25 year period. The overall system benefit ranges from \$370,240 to \$619,115 depending on loan interest rates.

Table 5.4 Overall Estimated System Benefits @ \$4.50/watt Installed

Service Location	Capacity Required (KW)	Estimated Benefit for a 25 Year Lifetime @ 1% Interest & 2.5% Inflation	Estimated Benefit for a 25 Year Lifetime @ 2% Interest & 2.5% Inflation	Estimated Benefit for a 25 Year Lifetime @ 3% Interest & 2.5% Inflation
Office (25)	15	\$59,370	\$46,860	\$35,340
Plant / Blowers (A32)	45	\$143,910	\$113,580	\$85,680
Weed Pump Station (A36)	65	\$160,095	\$126,360	\$95,290
Shastina Pump Station (A36)	105	\$255,780	\$204,120	\$153,930
All Services	230	\$619,155	\$490,620	\$370,240

There are few comparable public works projects located in Siskiyou County to use for budgeting this proposed project. We were able to contact a local electrical contractor who completed a 180 KW school system January, 2013 in Siskiyou County. The cost of that system came in at approximately \$ 4.00/watt installed, which is a little lower than what we see throughout the State of California for public works solar installations.

6. Conclusions & Recommendations

The modelling analysis performed for this report indicates that there is some cost benefit to moving ahead with a solar generation plant project for the purpose of producing electricity for the City of Weed sanitary sewer system.

The largest unknown going into a project like this is the capital improvement cost. All public works capital improvements project budgets are subject to prevailing wage rates for labor and the public bid process. The public works capital improvements project budget is dependent on what contractors bid the project and for what price. It is difficult to estimate what bids will be on any given day for any given market. We believe it is reasonable to expect bids between \$4.00/watt and \$4.50/watt for this system.

The Pacific Power incentive is in the seventh and final step and it is unknown if other incentives will be added in the future. The total incentive for a 230 KW system is 230,000 watts x \$1.11 = \$255,300, which in effect, reduces the capital loan cost required, which in turn reduces the project interest cost. The interest cost associated with an extra \$255,300 of loan ranges from \$26,500 @ 1% to \$84,500 @ 3%. The power company incentive benefit is a range from \$280,000 to \$340,000 depending on loan interest rates.

The cost benefit for the project is estimated in Table 5.4. The range of cost benefit for the proposed project is \$370,000 to \$620,000 also depending on the loan interest rate. These benefits outlined in Table 5.4 include the current power company incentives.

We recommend that the City explore loan options for this proposed project and determine if loans are available and if so, what interest rates will be charged. Pacific Power should also be contacted to ensure that the incentives are still available prior to proceeding.

7. References –

California Public Utilities Commission. *California Solar Initiative Annual Program Assessment*. June 2013

United State Department of Energy. *2012 Wind Technologies Market Report*. August, 2013

Wind Measurement International. windmeasurementinternational.com. *Operational & Maintenance Costs*

United State Department of Energy - National Renewable Energy Laboratory. SAM energy system modeling software.

California Solar Statistics. Californiasolarstatistics.com. Website for tracking installation costs of solar projects throughout California.

Appendices

Appendix A – Electricity Rates & Typical Electric Bill

City of Weed
Sanitary Sewer Electricity Rates

Office Service (# 56622303)

	Cost	Unit
Basic Charge (for service)	16.88	per meter
Energy Charge	0.14397	per kwh
CPUC Surcharge	0.00024	per kwh
Low Income Assistance Charge	0.00508	per kwh
Klamath Dam Removal	0.00279	per kwh
State Energy Resource Tax	0.00029	per kwh
Total Energy Cost/kwh	0.15237	per kwh

Shastina Pump Service (# 21247329)

Basic Charge (for service)	219.18	per meter
Distribution Demand Charge	2.79	per kw
Generation & Transmission Demand	5.28	per kw
Reactive Power Charge	0.6	per kvar
Energy Charge	0.08534	per kwh
Low Income Assistance Charge	0.00508	per kwh
CPUC Surcharge	0.00024	per kwh
Klamath Dam Removal	0.00211	per kwh
State Energy Resource Tax	0.00029	per kwh
Total Energy Cost/kwh	0.09306	per kwh

Weed Pump Service (# 28767271)

Basic Charge (for service)	219.18	per meter
Distribution Demand Charge	2.79	per kw
Generation & Transmission Demand	5.28	per kw
Reactive Power Charge	0.6	per kvar
Energy Charge	0.08534	per kwh
Low Income Assistance Charge	0.00508	per kwh
CPUC Surcharge	0.00024	per kwh
Klamath Dam Removal	0.00211	per kwh
State Energy Resource Tax	0.00029	per kwh
Total Energy Cost/kwh	0.09306	per kwh

Plant Blower Srevice (# 56622291)

Basic Charge (for service)	16.75	per meter
Distribution Demand Charge	1.53	per kw
Generation & Transmission Demand	2.1	per kw
Reactive Power Charge	0.6	per kvar
Energy Charge	0.11273	per kwh
Low Income Assistance Charge	0.00508	per kwh
CPUC Surcharge	0.00024	per kwh
Klamath Dam Removal	0.00251	per kwh
State Energy Resource Tax	0.00029	per kwh
Total Energy Cost/kwh	0.12085	per kwh

ITEM 4 - ELECTRIC SERVICE

1542 Alameda Ave # Opr Bldg Weed CA
Schedule 25

METER NUMBER	SERVICE PERIOD From To	ELAPSED DAYS	METER READINGS Previous	Current	METER MULTIPLIER	AMOUNT USED THIS MONTH
56622303	Feb 11, 2014 Mar 11, 2014	28	54038	59078	1.0	5,040 kwh
56622303	Demand Mar 11, 2014			18.037	1.0	18 kw
56622303	Reactive Mar 11, 2014			2.909	1.0	3 kvar

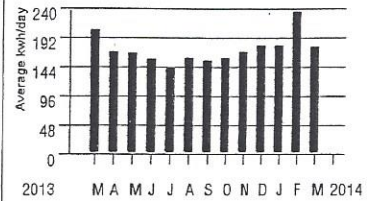
Next scheduled read date: 04-10. Date may vary due to scheduling or weather.

NEW CHARGES - 03/14	UNITS	COST PER UNIT	CHARGE
Basic Charge - 3P			16.88
Energy Charge	5,040 kwh	0.1439700	725.61
CPUC Surcharge	5,040 kwh	0.0002400	1.21
Low Income Assistance Charge	5,040 kwh	0.0050800	25.60
Klamath Dam Removal	5,040 kwh	0.0027900	14.06
State Energy Resource Tax	5,040 kwh	0.0002900	1.46
Total New Charges			784.82

BREAKDOWN OF CHARGES BY SERVICE CATEGORY

CATEGORY	TOTALS	
Distribution	290.65	** This Service is subject to competition. You may purchase electricity from another supplier. The Market Energy Price portion of this bill is provided for comparison with prices offered by other Energy Service Providers. Pacific Power's charge is based on the weighted average cost of the energy at the California Oregon Border (COB) Index for this billing period.
Interstate (FERC) Transmission	23.03	
State Transmission	34.47	
Generation		
Competition Transition Charge	102.47	
**Market Price @ 0.0545300	274.87	
Public Purpose	57.86	

Historical Data - ITEM 4



Your Average Daily kwh Usage by Month

PERIOD ENDING	MAR 2014	MAR 2013
Avg. Daily Temp.	43	40
Total kwh	5040	6094
Avg. kwh per Day	180	210
Cost per Day	\$28.03	\$31.67

ITEM 13 - ELECTRIC SERVICE

1542 Alameda Ave Pump 1 Weed CA
Schedule A36

METER NUMBER	SERVICE PERIOD From To	ELAPSED DAYS	METER READINGS Previous	Current	METER MULTIPLIER	AMOUNT USED THIS MONTH
21247329	Feb 11, 2014 Mar 11, 2014	28	64223	64552	40.0	13,160 kwh
21247329	Demand Mar 11, 2014			3.724	40.0	149 kw
21247329	Reactive Mar 11, 2014			2.282	40.0	91 kvar

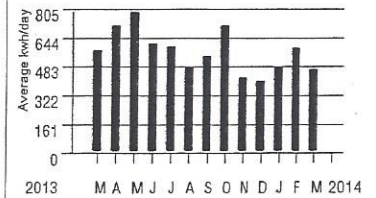
Next scheduled read date: 04-10. Date may vary due to scheduling or weather.

NEW CHARGES - 03/14	UNITS	COST PER UNIT	CHARGE
Basic Charge - 3P			219.18
Distribution Demand Charge	152 kw	2.7900000	424.08
Generation & Transmsn Demand	149 kw	5.2800000	786.72
Energy Charge	13,160 kwh	0.0853400	1,123.07
Low Income Assistance Charge	13,160 kwh	0.0050800	66.85
Reactive Power Charge	31 kvar	0.6000000	18.60
CPUC Surcharge	13,160 kwh	0.0002400	3.16
Klamath Dam Removal	13,160 kwh	0.0021100	27.77
State Energy Resource Tax	13,160 kwh	0.0002900	3.82
Total New Charges			2,673.25

BREAKDOWN OF CHARGES BY SERVICE CATEGORY

CATEGORY	TOTALS	
Distribution	946.60	** This Service is subject to competition. You may purchase electricity from another supplier. The Market Energy Price portion of this bill is provided for comparison with prices offered by other Energy Service Providers. Pacific Power's charge is based
Interstate (FERC) Transmission	216.05	
State Transmission	302.47	
Generation		

Historical Data - ITEM 13



Your Average Daily kwh Usage by Month

PERIOD ENDING	MAR 2014	MAR 2013
Avg. Daily Temp.	43	40
Total kwh	13160	16760
Avg. kwh per Day	470	578
Cost per Day	\$95.47	\$100.74

ITEM 23 - ELECTRIC SERVICE

1542 Alameda Ave # Pmp2 Weed CA
Sewer Ponds Schedule A36

METER NUMBER	SERVICE PERIOD		ELAPSED DAYS	METER READINGS		METER MULTIPLIER	AMOUNT USED THIS MONTH
	From	To		Previous	Current		
28767271	Feb 11, 2014	Mar 11, 2014	28	10890	11019	40.0	5,160 kwh
28767271	Demand	Mar 11, 2014			2.462	40.0	98 kw
28767271	Reactive	Mar 11, 2014			1.59	40.0	64 kvar

Next scheduled read date: 04-10. Date may vary due to scheduling or weather.

NEW CHARGES - 03/14	UNITS	COST PER UNIT	CHARGE
Basic Charge - 3P			219.18
Distribution Demand Charge	103 kw	2.7900000	287.37
Generation & Transmsn Demand	98 kw	5.2800000	517.44
Energy Charge	5,160 kwh	0.0853400	440.35
Low Income Assistance Charge	5,160 kwh	0.0050800	26.21
Reactive Power Charge	25 kvar	0.6000000	15.00
CPUUC Surcharge	5,160 kwh	0.0002400	1.24
Klamath Dam Removal	5,160 kwh	0.0021100	10.89
State Energy Resource Tax	5,160 kwh	0.0002900	1.50
Total New Charges			1,519.18

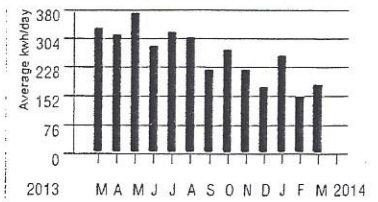
BREAKDOWN OF CHARGES BY SERVICE CATEGORY

CATEGORY	TOTALS
Distribution	625.49
Interstate (FERC) Transmission	142.10
State Transmission	198.94
Generation	
Competition Transition Charge	218.87
**Market Price @ 0.0545300	281.41
Public Purpose	50.88
State Energy Resource Tax	1.50

** This Service is subject to competition. You may purchase electricity from another supplier. The Market Energy Price portion of this bill is provided for comparison with prices offered by other Energy Service Providers. Pacific Power's charge is based on the weighted average cost of the energy at the California Oregon Border (COB) Index for this billing period.

Total Breakdown by Service Category \$ 1,519.19

Historical Data - ITEM 23



2013 M A M J J A S O N D J F M 2014

Your Average Daily kwh Usage by Month

PERIOD ENDING	MAR 2014	MAR 2013
Avg. Daily Temp.	43	40
Total kwh	5160	9840
Avg. kwh per Day	184	339
Cost per Day	\$54.26	\$65.75

ITEM 27 - ELECTRIC SERVICE

1542 Alameda Ave Pump 3 Weed CA
Schedule A32

METER NUMBER	SERVICE PERIOD		ELAPSED DAYS	METER READINGS		METER MULTIPLIER	AMOUNT USED THIS MONTH
	From	To		Previous	Current		
56622291	Feb 11, 2014	Mar 11, 2014	28	115095	125020	1.0	9,925 kwh
56622291	Demand	Mar 11, 2014			40.765	1.0	41 kw
56622291	Reactive	Mar 11, 2014			52.386	1.0	52 kvar

Next scheduled read date: 04-10. Date may vary due to scheduling or weather.

NEW CHARGES - 03/14	UNITS	COST PER UNIT	CHARGE
Basic Charge - 3P			16.75
Distribution Demand Charge	43 kw	1.5300000	65.79
Generation & Transmsn Demand	41 kw	2.1000000	86.10
Energy Charge	9,925 kwh	0.1127300	1,118.85
Low Income Assistance Charge	9,925 kwh	0.0050800	50.42
Reactive Power Charge	36 kvar	0.6000000	21.60
CPUUC Surcharge	9,925 kwh	0.0002400	2.38
Klamath Dam Removal	9,925 kwh	0.0025100	24.91
State Energy Resource Tax	9,925 kwh	0.0002900	2.88
Total New Charges			1,389.68

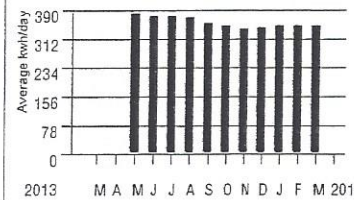
BREAKDOWN OF CHARGES BY SERVICE CATEGORY

CATEGORY	TOTALS
Distribution	445.80
Interstate (FERC) Transmission	59.45
State Transmission	44.28
Generation	
Competition Transition Charge	194.40
**Market Price @ 0.0540400	536.38
Public Purpose	106.50
State Energy Resource Tax	2.88

** This Service is subject to competition. You may purchase electricity from another supplier. The Market Energy Price portion of this bill is provided for comparison with prices offered by other Energy Service Providers. Pacific Power's charge is based on the weighted average cost of the energy at the California Oregon Border (COB) Index for this billing period.

Total Breakdown by Service Category \$ 1,389.69

Historical Data - ITEM 27



2013 M A M J J A S O N D J F M 2014

Your Average Daily kwh Usage by Month

PERIOD ENDING	MAR 2014	MAR 2013
Avg. Daily Temp.	43	40
Total kwh	9925	0
Avg. kwh per Day	354	0
Cost per Day	\$49.63	\$0.00

Appendix B - Summary of Electrical Usage

City of Weed Sanitary Sewer Operations - Office

Electrical Usage - Meter # 56622303

Year	January	February	March	April	May	June	July	August	September	October	November	December
2014												
Monthly usage	6203	6928	5040									
Demand	14	19	18									
2013												
Monthly usage	5643	6863	6094	4760	5251	4456	4816	5156	4380	4655	5147	5840
Demand	14	14	14	14	15	13	11	12	12	14	15	19
2012												
Monthly usage	5080	5593	4280	5206	3912	3687	7880	3810	4011	4411	4620	5825
Demand	14	14	14	14	14	14	14	14	14	14	14	14
2011												
Monthly usage				2101	1026	1257	1394	1374	2208	4362	3902	6065
Demand				14	14	14	14	14	14	14	14	14

3 year average

Average Month	5642	6461	5138	4022	3396	3133	4697	3447	3533	4476	4556	5910
Average Demand	14	16	15	14	14	14	13	13	13	14	14	16

Average Annual Usage

54412 kwh

Average Annual Demand

171 kw

Monthly Average Energy Usage

4534.33 kwh

Monthly Average Demand

14.22 kw

City of Weed Sanitary Sewer Operations - Plant Blower
Electrical Usage - Meter # 56622291

Year	January	February	March	April	May	June	July	August	September	October	November	December
2014												
Monthly usage	12047	10333	9925									
Demand	41	41	41									
2013												
Monthly usage	9794	11226	10448	10729	11720	13008	10141	10000	12061	10290	10459	11660
Demand	40	40	42	41	41	41	41	41	41	40	40	41
2012												
Monthly usage	11602	11754	11371	10711	11454	12718	11720	10263	12610	11161	9530	11987
Demand	42	43	46	44	42	42	43	42	41	42	41	41
2011												
Monthly usage				12988	12194	12204	12991	11772	11800	12626	10073	13009
Demand				43	44	45	44	44	44	45	43	43

3 year average usage

Monthly Usage	11148	11104	10581	11476	11789	12643	11617	10678	12157	11359	10021	12219
Demand	41	41	43	43	42	43	43	42	42	42	41	42

Average Annual Usage

136793 kwh

Average Annual Demand

505 kw

Monthly Average Energy Usage

11399.42 kwh

Monthly Average Demand

42.11 kw

City of Weed Sanitary Sewer Operations - Shastina Pump

Electrical Usage - Meter # 21247329

Year	January	February	March	April	May	June	July	August	September	October	November	December
2014												
Monthly usage	16400	17240	13160									
Demand	152	152	149									
2013												
Monthly usage	16680	15320	16760	20280	24840	17440	20680	15520	15440	21120	12640	13400
Demand	150	149	148	147	144	144	143	143	142	146	260	149
2012												
Monthly usage	13840	13760	11400	17760	17680	16440	17000	11880	15440	15800	10880	22880
Demand	150	150	150	148	148	143	143	142	142	146	147	148
2011												
Monthly usage				29120	16600	22250	15320	13600	15320	20120	9200	16760
Demand				148	147	145	143	142	142	147	147	149

3 year average

Monthly Average	15640	15440	13773	22387	19707	18710	17667	13667	15400	19013	10907	17680
Average Demand	151	150	149	148	146	144	143	142	142	146	185	149

Average Annual Usage

199990 kwh

Average Annual Demand

1795 kw

Monthly Average Energy Usage

16665.83 kwh

Monthly Average Demand

149.58 kw

**City of Weed Sanitary Sewer Operations - Weed Pump
Electrical Usage - Meter # 28767271**

Year	January	February	March	April	May	June	July	August	September	October	November	December
2014												
Monthly usage	8880	6928	5160									
Demand	105	100	98									
2013												
Monthly usage	10120	10560	9840	9000	11720	8120	11120	10000	6160	8080	6680	6038
Demand	100	100	100	98	97	96	96	96	94	94	98	100
2012												
Monthly usage	5760	6720	5507	10920	11040	7040	7880	5720	6920	8160	5200	16200
Demand	150	150	100	99	99	96	96	95	95	98	98	99
2011												
Monthly usage				21840	6160	11240	6880	7880	5800	5960	5120	6800
Demand				100	99	97	97	96	96	99	99	100

3 year average

Monthly Average	8253	8069	6836	13920	9640	8800	8627	7867	6293	7400	5667	9679
Average Demand	118	117	99	99	98	96	96	96	95	97	98	100

Average Annual Usage 101051 kwh

Average Annual Demand 1210 kw

Monthly Average Energy Usage 8420.92 kwh

Monthly Average Demand 100.83 kw

Appendix C - Weed Pump Station- Cost Benefit Tables

Weed Pump Service - Overall Project Cost/Benefit \$4.00/ Watt Installed : 1% Loan Rate - 20 Year Term - 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$5,702.38	\$1,255.61	\$208.46	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$5,759.41	\$1,198.58	\$213.67	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$5,817.00	\$1,140.99	\$219.01	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$5,875.17	\$1,082.82	\$224.48	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$5,933.92	\$1,024.07	\$230.10	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$5,993.26	\$964.73	\$235.85	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$6,053.19	\$904.80	\$241.74	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$6,113.73	\$844.26	\$247.79	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$6,174.86	\$783.13	\$253.98	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$6,236.61	\$721.38	\$260.33	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$6,298.98	\$659.01	\$266.84	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$6,361.97	\$596.02	\$273.51	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$6,425.59	\$532.40	\$280.35	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$6,489.84	\$468.15	\$287.36	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$6,554.74	\$403.25	\$294.54	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$6,620.29	\$337.70	\$301.91	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$6,686.49	\$271.50	\$309.45	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$6,753.36	\$204.63	\$317.19	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$6,820.89	\$137.10	\$325.12	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$6,889.10	\$68.89	\$333.25	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$341.58	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$350.12	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$358.87	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$367.84	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$377.04	\$2,229.23	\$0.00	\$16,164.10	\$24,619.70
Totals:	\$125,560.78	\$13,599.02	\$7,120.37	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$24,619.70
				Total Project Cost:			
				\$188,379.15	Total Project Benefit:	\$348,513.53	

Total Estimated Energy Savings for 25 Year Term: \$160,134.38

Weed Pump Service - Overall Project Cost/Benefit

\$4.00/ Watt Installed : 2% Loan Rate - 20 Year Term : 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$5,167.67	\$2,511.22	\$208.46	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$5,271.02	\$2,407.86	\$213.67	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$5,376.44	\$2,302.44	\$219.01	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$5,483.97	\$2,194.91	\$224.48	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$5,593.65	\$2,085.23	\$230.10	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$5,705.52	\$1,973.36	\$235.85	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$5,819.64	\$1,859.25	\$241.74	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$5,936.03	\$1,742.86	\$247.79	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$6,054.75	\$1,624.14	\$253.98	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$6,175.84	\$1,503.04	\$260.33	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$6,299.36	\$1,379.52	\$266.84	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$6,425.35	\$1,253.54	\$273.51	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$6,553.85	\$1,125.03	\$280.35	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$6,684.93	\$993.95	\$287.36	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$6,818.63	\$860.26	\$294.54	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$6,955.00	\$723.88	\$301.91	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$7,094.10	\$584.78	\$309.45	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$7,235.98	\$442.90	\$317.19	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$7,380.70	\$298.18	\$325.12	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$7,528.32	\$150.57	\$333.25	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$341.58	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$350.12	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$358.87	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$367.84	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$377.04	\$2,229.23	\$0.00	\$16,164.10	\$24,619.70

Totals:	\$125,560.75	\$28,016.92	\$7,120.37	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$24,619.70	
Total Project Cost:				\$202,797.01	Total Project Benefit:			\$348,513.53

Total Estimated Energy Savings for 25 Year Term: \$145,716.52

Weed Pump Service - Overall Project Cost/Benefit
\$4.00/ Watt Installed : 3% Loan Rate - 20 Year Term : 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$4,672.83	\$3,766.82	\$208.46	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$4,813.02	\$3,626.64	\$213.67	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$4,957.41	\$3,482.25	\$219.01	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$5,106.13	\$3,333.53	\$224.48	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$5,259.31	\$3,180.34	\$230.10	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$5,417.09	\$3,022.56	\$235.85	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$5,579.61	\$2,860.05	\$241.74	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$5,747.00	\$2,692.66	\$247.79	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$5,919.41	\$2,520.25	\$253.98	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$6,096.99	\$2,342.67	\$260.33	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$6,279.90	\$2,159.76	\$266.84	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$6,468.29	\$1,971.36	\$273.51	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$6,662.34	\$1,777.31	\$280.35	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$6,862.21	\$1,577.44	\$287.36	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$7,068.08	\$1,371.58	\$294.54	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$7,280.12	\$1,159.53	\$301.91	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$7,498.53	\$941.13	\$309.45	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$7,723.48	\$716.18	\$317.19	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$7,955.19	\$484.47	\$325.12	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$8,193.84	\$245.82	\$333.25	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$341.58	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$350.12	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$358.87	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$367.84	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$377.04	\$2,229.23	\$0.00	\$16,164.10	\$24,619.70
Totals:	\$125,560.78	\$43,232.34	\$7,120.37	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$24,619.70
Total Project Cost:				\$218,012.47	Total Project Benefit:		
					\$348,513.53		
Total Estimated Energy Savings for 25 Year Term:						\$130,501.06	

Weed Pump Service - Overall Project Cost/Benefit
\$4.50/ Watt Installed : 1% Loan Rate - 20 Year Term : 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$7,177.11	\$1,580.33	\$234.75	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$7,248.88	\$1,508.56	\$240.62	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$7,321.37	\$1,436.07	\$246.63	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$7,394.58	\$1,362.85	\$252.80	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$7,468.53	\$1,288.91	\$259.12	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$7,543.21	\$1,214.22	\$265.60	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$7,618.64	\$1,138.79	\$272.24	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$7,694.83	\$1,062.60	\$279.04	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$7,771.78	\$985.66	\$286.02	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$7,849.50	\$907.94	\$293.17	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$7,927.99	\$829.44	\$300.50	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$8,007.27	\$750.16	\$308.01	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$8,087.34	\$670.09	\$315.71	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$8,168.22	\$589.22	\$323.60	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$8,249.90	\$507.54	\$331.69	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$8,332.40	\$425.04	\$339.99	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$8,415.72	\$341.71	\$348.49	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$8,499.88	\$257.56	\$357.20	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$8,584.88	\$172.56	\$366.13	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$8,670.73	\$86.71	\$375.28	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$384.66	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$394.28	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$404.14	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$414.24	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$424.60	\$2,229.23	\$0.00	\$16,164.10	\$27,725.00
Totals:	\$158,032.76	\$17,115.94	\$8,018.47	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$27,725.00
				\$225,266.14		Total Project Benefit:	\$351,618.83

Total Project Cost:

Total Project Benefit:

Total Estimated Energy Savings for 25 Year Term: \$126,352.69

Weed Pump Service - Overall Project Cost/Benefit
\$4.50/ Watt Installed : 2% Loan Rate - 20 Year Term : 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$6,504.11	\$3,160.66	\$234.75	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$6,634.19	\$3,030.57	\$240.62	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$6,766.88	\$2,897.89	\$246.63	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$6,902.21	\$2,762.55	\$252.80	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$7,040.26	\$2,624.51	\$259.12	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$7,181.06	\$2,483.70	\$265.60	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$7,324.68	\$2,340.08	\$272.24	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$7,471.18	\$2,193.59	\$279.04	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$7,620.60	\$2,044.16	\$286.02	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$7,773.01	\$1,891.75	\$293.17	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$7,928.47	\$1,736.29	\$300.50	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$8,087.04	\$1,577.72	\$308.01	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$8,248.78	\$1,415.98	\$315.71	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$8,413.76	\$1,251.01	\$323.60	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$8,582.04	\$1,082.73	\$331.69	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$8,753.68	\$911.09	\$339.99	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$8,928.75	\$736.02	\$348.49	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$9,107.32	\$557.44	\$357.20	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$9,289.47	\$375.30	\$366.13	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$9,475.26	\$189.51	\$375.28	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$384.66	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$394.28	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$404.14	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$414.24	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$424.60	\$2,229.23	\$0.00	\$16,164.10	\$30,747.50
Totals:	\$158,032.75	\$35,262.54	\$8,018.47	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$30,747.50

Total Project Cost: \$243,412.73

Total Project Benefit: \$354,641.33

Total Estimated Energy Savings for 25 Year Term: \$111,228.60

**Weed Pump Service - Overall Project Cost/Benefit
\$4.50/ Watt Installed : 3% Loan Rate - 20 Year Term : 25 Year Life Span**

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$5,881.30	\$4,740.98	\$234.75	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$6,057.74	\$4,564.54	\$240.62	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$6,239.47	\$4,382.81	\$246.63	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$6,426.66	\$4,195.63	\$252.80	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$6,619.46	\$4,002.83	\$259.12	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$6,818.04	\$3,804.24	\$265.60	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$7,022.58	\$3,599.70	\$272.24	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$7,233.26	\$3,389.03	\$279.04	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$7,450.26	\$3,172.03	\$286.02	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$7,673.76	\$2,948.52	\$293.17	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$7,903.98	\$2,718.31	\$300.50	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$8,141.10	\$2,481.19	\$308.01	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$8,385.33	\$2,236.96	\$315.71	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$8,636.89	\$1,985.40	\$323.60	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$8,896.00	\$1,726.29	\$331.69	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$9,162.88	\$1,459.41	\$339.99	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$9,437.76	\$1,184.52	\$348.49	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$9,720.89	\$901.39	\$357.20	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$10,012.50	\$609.76	\$366.13	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$10,312.90	\$309.39	\$375.28	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$384.66	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$394.28	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$404.14	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$414.24	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$424.60	\$2,229.23	\$0.00	\$16,164.10	\$30,747.50
Totals:	\$158,032.76	\$54,412.93	\$8,018.47	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$30,747.50

Total Project Cost: \$262,563.13

Total Project Benefit: \$354,641.33

Total Estimated Energy Savings for 25 Year Term: \$92,078.20

Weed Pump Service - Overall Project Cost/Benefit

\$5.00/ Watt Installed : 1% Loan Rate - 20 Year Term - 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$8,541.03	\$1,880.65	\$261.04	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$8,626.44	\$1,795.24	\$267.57	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$8,712.71	\$1,708.98	\$274.26	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$8,799.83	\$1,621.85	\$281.11	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$8,887.83	\$1,533.85	\$288.14	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$8,976.71	\$1,444.97	\$295.34	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$9,066.48	\$1,355.20	\$302.73	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$9,157.14	\$1,264.54	\$310.30	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$9,248.71	\$1,172.97	\$318.05	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$9,341.20	\$1,080.48	\$326.00	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$9,434.61	\$987.07	\$334.15	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$9,528.96	\$892.72	\$342.51	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$9,624.25	\$797.43	\$351.07	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$9,720.49	\$701.19	\$359.85	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$9,817.70	\$603.99	\$368.84	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$9,915.87	\$505.81	\$378.06	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$10,015.00	\$406.65	\$387.52	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$10,115.20	\$306.50	\$397.20	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$10,216.30	\$205.35	\$407.13	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$10,318.50	\$103.19	\$417.31	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$427.75	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$438.44	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$449.40	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$460.64	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$472.15	\$2,229.23	\$0.00	\$16,164.10	\$30,830.30
Totals:	\$188,064.96	\$20,368.63	\$8,916.56	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$30,830.30
						Total Project Benefit:	\$354,724.13
						Total Project Cost:	\$259,449.11

Total Estimated Energy Savings for 25 Year Term: \$95,275.02

Weed Pump Service - Overall Project Cost/Benefit

\$5.00/ Watt Installed : 2% Loan Rate - 20 Year Term : 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$7,740.14	\$3,761.30	\$261.04	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$7,894.94	\$3,606.50	\$267.57	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$8,052.84	\$3,448.60	\$274.26	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$8,213.90	\$3,287.54	\$281.11	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$8,378.18	\$3,123.26	\$288.14	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$8,545.74	\$2,955.70	\$295.34	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$8,716.65	\$2,784.79	\$302.73	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$8,890.99	\$2,610.45	\$310.30	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$9,068.81	\$2,432.63	\$318.05	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$9,250.18	\$2,251.26	\$326.00	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$9,435.19	\$2,066.25	\$334.15	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$9,623.89	\$1,877.55	\$342.51	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$9,816.37	\$1,685.07	\$351.07	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$10,012.70	\$1,488.74	\$359.85	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$10,213.00	\$1,288.49	\$368.84	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$10,417.20	\$1,084.23	\$378.06	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$10,625.60	\$875.89	\$387.52	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$10,838.10	\$663.38	\$397.20	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$11,054.80	\$446.62	\$407.13	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$11,275.90	\$225.52	\$417.31	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$427.75	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$438.44	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$449.40	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$460.64	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$472.15	\$2,229.23	\$0.00	\$16,164.10	\$30,830.30
Totals:	\$188,065.12	\$41,963.76	\$8,916.56	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$30,830.30

Total Project Cost:

\$281,044.40

Total Project Benefit:

\$354,724.13

Total Estimated Energy Savings for 25 Year Term: **\$73,679.73**

Weed Pump Service - Overall Project Cost/Benefit

\$5.00/ Watt Installed : 3% Loan Rate - 20 Year Term : 25 Year Life Span

Project Year	Principal Payment (\$)	Interest Payment (\$)	Insurance Expense (\$)	O&M Capacity-based Expense (\$)	Pacific Power PBI Incentive Income (\$)	Energy Value (\$)	Net salvage Value (\$)
1	\$6,998.97	\$5,641.95	\$261.04	\$1,232.49	\$119,563.00	\$9,633.04	\$0.00
2	\$7,208.94	\$5,431.98	\$267.57	\$1,263.30	\$0.00	\$9,948.29	\$0.00
3	\$7,425.21	\$5,215.71	\$274.26	\$1,294.88	\$0.00	\$10,276.30	\$0.00
4	\$7,647.97	\$4,992.96	\$281.11	\$1,327.25	\$0.00	\$10,616.90	\$0.00
5	\$7,877.41	\$4,763.52	\$288.14	\$1,360.43	\$0.00	\$10,949.40	\$0.00
6	\$8,113.73	\$4,527.20	\$295.34	\$1,394.44	\$0.00	\$11,292.90	\$0.00
7	\$8,357.14	\$4,283.78	\$302.73	\$1,429.31	\$0.00	\$11,569.40	\$0.00
8	\$8,607.85	\$4,033.07	\$310.30	\$1,465.04	\$0.00	\$11,785.50	\$0.00
9	\$8,866.09	\$3,774.83	\$318.05	\$1,501.66	\$0.00	\$12,006.00	\$0.00
10	\$9,132.07	\$3,508.85	\$326.00	\$1,539.21	\$0.00	\$12,230.90	\$0.00
11	\$9,406.04	\$3,234.89	\$334.15	\$1,577.69	\$0.00	\$12,460.40	\$0.00
12	\$9,688.22	\$2,952.71	\$342.51	\$1,617.13	\$0.00	\$12,694.60	\$0.00
13	\$9,978.86	\$2,662.06	\$351.07	\$1,657.56	\$0.00	\$12,933.50	\$0.00
14	\$10,278.20	\$2,362.70	\$359.85	\$1,699.00	\$0.00	\$13,177.30	\$0.00
15	\$10,586.60	\$2,054.35	\$368.84	\$1,741.47	\$0.00	\$13,426.20	\$0.00
16	\$10,904.20	\$1,736.75	\$378.06	\$1,785.01	\$0.00	\$13,679.50	\$0.00
17	\$11,231.30	\$1,409.63	\$387.52	\$1,829.63	\$0.00	\$13,935.00	\$0.00
18	\$11,568.20	\$1,072.69	\$397.20	\$1,875.37	\$0.00	\$14,195.00	\$0.00
19	\$11,915.30	\$725.64	\$407.13	\$1,922.26	\$0.00	\$14,459.70	\$0.00
20	\$12,272.70	\$368.18	\$417.31	\$1,970.31	\$0.00	\$14,729.80	\$0.00
21	\$0.00	\$0.00	\$427.75	\$2,019.57	\$0.00	\$15,005.20	\$0.00
22	\$0.00	\$0.00	\$438.44	\$2,070.06	\$0.00	\$15,286.30	\$0.00
23	\$0.00	\$0.00	\$449.40	\$2,121.81	\$0.00	\$15,573.00	\$0.00
24	\$0.00	\$0.00	\$460.64	\$2,174.86	\$0.00	\$15,865.60	\$0.00
25	\$0.00	\$0.00	\$472.15	\$2,229.23	\$0.00	\$16,164.10	\$30,830.30

Totals:	\$188,065.00	\$64,753.45	\$8,916.56	\$42,098.97	Reduced Loan Amount	\$323,893.83	\$30,830.30
				Total Project Cost:			
				\$303,833.98	Total Project Benefit: \$354,724.13		

Total Estimated Energy Savings for 25 Year Term: **\$50,890.15**