



Proposal and Offer for:

Tucson Vincent Mullins Landfill Solar Project

2,001,920 kW DC Solar Photovoltaic Project

July, 2017



TYPICAL LANDFILL BALLASTED SOLAR ARRAY

Contact:
ABCOSolar, Inc.
Attn: Charles O'Dowd, President
2100 North Wilmot, #211
Tucson, Arizona 85712
Phone 520-777-0511
Website www.abcosolar.com
Email info@abcosolar.com



Proposal and Offer for:

2,001,920 kW DC Solar photovoltaic installation

July 13, 2017

ABCOSolar Inc. is pleased to provide our proposal for the design and construction for a combined 2,001,920 kWh DC utility scale solar generating plant in Tucson, Arizona. ABCOSolar and its cooperating companies will put forth their best effort to design systems and options that will operate with a high degree of efficiency and produce clean, sustainable electrical power for decades.

We will deploy solar modules purchased from a Tier 1 supplier in North America. The panels will be fixed because of the landfill topography and will be ballasted. There will be no ground penetration. The proposed inverters will be determined during the design phase of the project. All of the project will be constructed by local labor and local product suppliers will be utilized where possible.

We look forward to working with the City of Tucson and our financial partner on this project which will provide power for decades and become a point of pride for all of us.

If you have any questions or comments, please call.

Sincerely,

Charles O'Dowd, President
ABCOSolar, Inc.



2100 N Wilmot Road, Suite 211
Tucson, AZ 85712
Phone 520-777-0511

THE SOLAR ELECTRIC PROJECT
Located at the Vincent Mullins Tucson Speedway Land Fill Site

The Vincent Mullins Landfill is located on the eastern bank of the Pantano Wash immediately north of Speedway Boulevard in Tucson, Arizona. The location of the Vincent Mullins Landfill is East of Kolb Road and North of Speedway at their intersection. The Vincent Mullins Landfill was used for the disposal of municipal solid waste from 1976 through 1987. The City of Tucson-Environmental Services (COT-ES) monitors twenty-three shallow landfill gas probes, three nested deep soil vapor wells, sixteen groundwater monitoring wells, and two privately owned irrigation wells around the landfill. In addition, a landfill gas flare system operates to control the migration of methane and volatile organic compounds (VOCs) from the waste. The landfill is owned and maintained by the City of Tucson.

ABCOSolar, Inc. will design and build a Utility Scale project on landfill site in Tucson Arizona where the utility connections are very close and the land will be inexpensive and close. The site is located less than ½ mile from our Tucson office and within the city limits of Tucson. Known as the Vincent Mullins Speedway Landfill, this site has been closed for over 30 years and has become level and solid.

Our intent is to begin the development of this site with a 2,001,920 DC Watt solar project and we expect that we can place another 3 megawatts on the same landfill in the future. It is an ideal location for service and development, because no line loss will occur with the transmission lines less than 100 yards away.

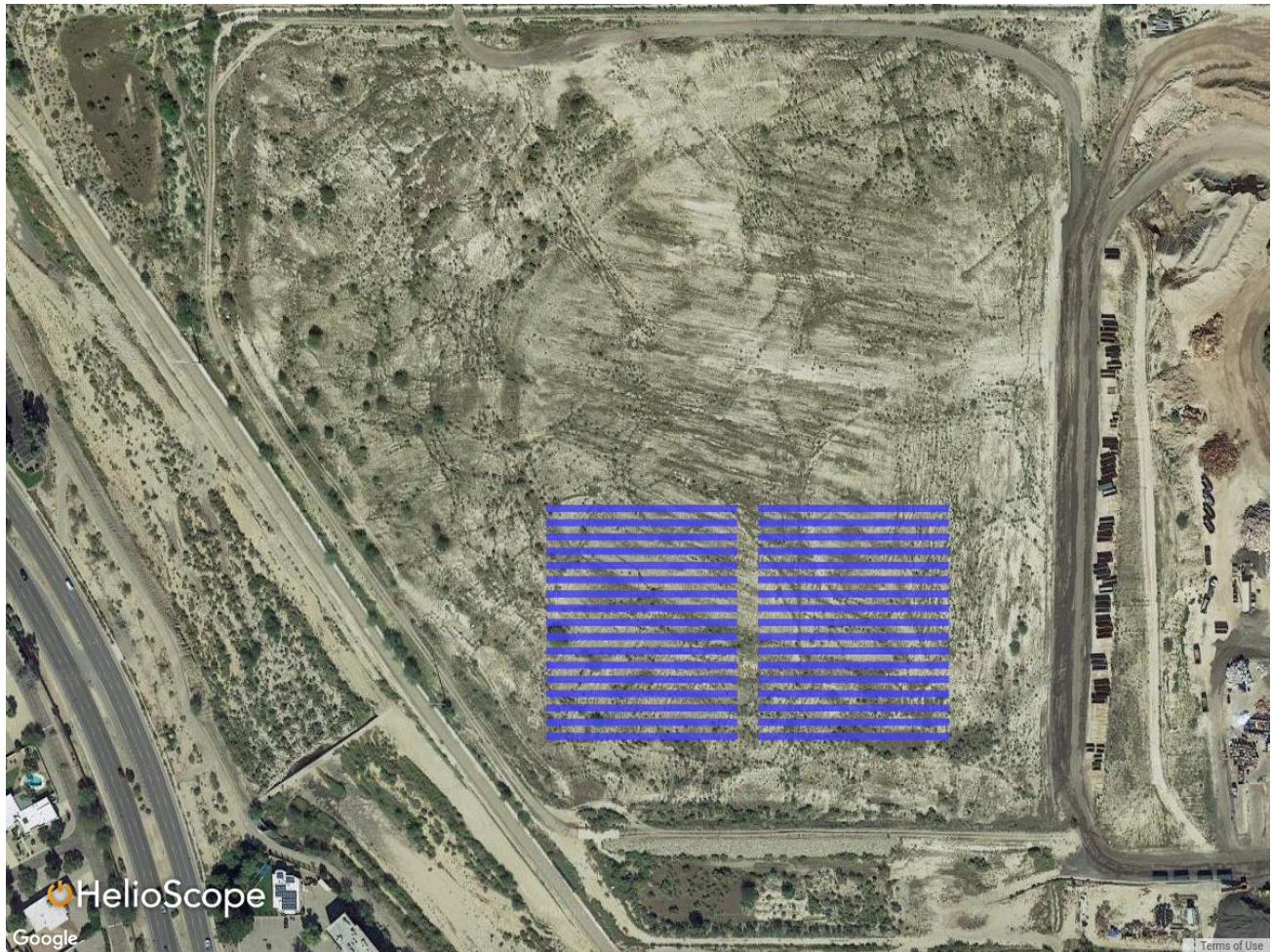
There will be restrictions on the project because the sealed landfill is producing methane gas that is piped to the local utility. No penetrations will be allowed so that gasses will remain recoverable for the present use. This project is designed anticipating a ballasted system that rests on undisturbed soil. In the future, we would like to include the generation of electricity with the local gas lines and the landfill gas to supplement solar downtime.

This project is not yet fully designed or engineered and no permitting has been attempted. This process will be ongoing and this presentation will be updated.

This location expects to sell the solar electricity production to the City of Tucson and interconnect with Tucson Electric Power (TEP). There is a metered interconnection on the site used for ground water reclamation that is currently using 355,120 AC kwh of electricity. The interconnection at this meter is not adequate to handle the output of this project. The electric rate at this meter is \$0.0844 per kWh at present and the pumps located here used approximately \$29,952 of electric power in 2016.

It is anticipated that the first-year production will be approximately \$304,569. The total cost of the project is slated for \$3,303,072 and the buildout will require approximately one year to complete.

Layout for the 2,001,920 DC project at Tucson Vincent Mullins Land Fill Project – Phase 1



ABCO Solar has examined the property and determined the most economical installation of the solar panels would be on ballasted ground mount systems.

Definitions:

- In the solar industry equipment is measured by the Watt or the Kilowatt (kW) ((1000 Watts))
- Electrical billing blocks are typically measured in Kilowatt Hours (kWh)
- Yearly production is measured in Kilo Watt Hours Annually (kWh/a)
- PV means Photovoltaic (light to power)
- Azimuth means Compass orientation
- Tilt means degree of angle of solar module

The following depicts the Patriot Solar Group ballasted ground mount system we plan to use



The following table provides a summary of the financial requirements, cash projections and benefits of this project

Vincent Mullins Landfill
Tucson, Arizona
Solar PV Project
Charles O'Dowd

Fixed Ground Mount



520 777-0511

AZ ROC # 258378

Project Summary

Solar panel installed	320 Watt panels	6,256
Solar project size	DC Watts	2,001,920
Solar production per year	AC Kwh	3,608,634
Production dollars per year	Dollars produced	304,569

STEP 2 Calculation - Cost and Credits

Gross Price	\$1.60	3,203,072
Finance fees and soft cost		100,000
Total selling price for credits		3,303,072
Federal tax credit of 30%		990,922
State tax credit 10% Max\$ 25,000		25,000
Net cost to Owners	For Financers	2,287,150
Lifetime Savings 30 years		14,890,849

PROPOSED SOLAR PROJECT

STEP 1 Calculation of Array Size

Total AC kWh USAGE		3,608,634
DC watts per panel		320
AC kWh Produced /Panel /Yr Via PV Watts		576.82
Total number of panels needed for 100% offset		6,256
Total number of panels (space available) roof top		6,256
DC watts installed		2,001,920

Calculation - Cost Savings

Produced AC kWh Per Year		3,608,634
Current rate per kWh		0.0844
Projected Produced dollars per year		\$304,569
Return on Investment year one		13.32%
Percentage of annual utility expense offset		100.00%
Rate per kWh based on bills		\$0.0844

Calculation of project production and cash yield

Beginning rate per kWh \$0.0844
 Estimated reduction in production per year \$0.0080
 Estimated rate of increase in utility costs 4%

Year 7 is the breakeven year	Annual rate per kWh	Solar Production	Projected reduction in utility bill	Accumulated total	Anticipated payment	Net Savings	Accumulated net Savings
Year 1	0.0844	3,608,634	\$304,569	304,569	???	304,569	304,569
Year 2	0.0878	3,579,765	\$314,217	618,786		314,217	618,786
Year 3	0.0913	3,551,127	\$324,172	942,958		324,172	942,958
Year 4	0.0949	3,522,718	\$334,442	1,277,400		334,442	1,277,400
Year 5	0.0987	3,494,536	\$345,037	1,622,436		345,037	1,622,436
Year 6	0.1027	3,466,580	\$355,967	1,978,404		355,967	1,978,404
Year 7	0.1068	3,438,847	\$367,245	2,345,648		367,245	2,345,648
Year 8	0.1111	3,411,336	\$378,879	2,724,527		378,879	2,724,527
Year 9	0.1155	3,384,046	\$390,882	3,115,409		390,882	3,115,409
Year 10	0.1201	3,356,973	\$403,265	3,518,674		403,265	3,518,674
Year 11	0.1249	3,330,118	\$416,040	3,934,714		416,040	3,934,714
Year 12	0.1299	3,303,477	\$429,220	4,363,935		429,220	4,363,935
Year 13	0.1351	3,277,049	\$442,818	4,806,753		442,818	4,806,753
Year 14	0.1405	3,250,832	\$456,847	5,263,599		456,847	5,263,599
Year 15	0.1462	3,224,826	\$471,320	5,734,919		471,320	5,734,919
Year 16	0.1520	3,199,027	\$486,251	6,221,170		486,251	6,221,170
Year 17	0.1581	3,173,435	\$501,655	6,722,825		501,655	6,722,825
Year 18	0.1644	3,148,047	\$517,548	7,240,373		517,548	7,240,373
Year 19	0.1710	3,122,863	\$533,944	7,774,317		533,944	7,774,317
Year 20	0.1778	3,097,880	\$550,859	8,325,176		550,859	8,325,176
Year 21	0.1849	3,073,097	\$568,310	8,893,486		568,310	8,893,486
Year 22	0.1923	3,048,512	\$586,314	9,479,800		586,314	9,479,800
Year 23	0.2000	3,024,124	\$604,889	10,084,689		604,889	10,084,689
Year 24	0.2080	2,999,931	\$624,052	10,708,741		624,052	10,708,741
Year 25	0.2163	2,975,932	\$643,822	11,352,563		643,822	11,352,563
Year 26	0.2250	2,952,124	\$664,218	12,016,780		664,218	12,016,780
Year 27	0.2340	2,928,507	\$685,260	12,702,041		685,260	12,702,041
Year 28	0.2434	2,905,079	\$706,969	13,409,010		706,969	13,409,010
Year 29	0.2531	2,881,839	\$729,366	14,138,376		729,366	14,138,376
Year 30	0.2632	2,858,784	\$752,472	14,890,849		752,472	14,890,849
		<u>96,590,045</u>	<u>\$14,890,849</u>			<u>0</u>	<u>\$14,890,849</u>

Tucson Vincent Mullins Landfill Project
 ABCO Solar Project
 Analysis of investors depreciation benefit

Depreciation factors	Total	Investor's Est. Tax Rate	Depreciation Tax Benefit
Gross Price	\$3,303,072		
Less one half of federal tax credit	495,461		
Depreciable basis	2,807,611		
Section 179 depreciation	500,000		
Depreciation basis	2,307,611		
Regular accelerated depreciation MACRS	461,522		
Total depreciation 1 st year benefit	<u>\$961,522</u>	30% tax rate	<u>\$288,457</u>

Depreciation rates MACRS 5 year life	%			
Year 1	0.20	461,522	0.3	\$138,457
Year 2	0.32	738,436	0.3	\$221,531
Year 3	0.192	443,061	0.3	\$132,918
Year 4	0.115	265,375	0.3	\$79,613
Year 5	0.115	265,375	0.3	\$79,613
Year 6	0.058	133,841	0.3	\$40,152

Total depreciation by year	1	<u>2,307,611</u>		<u>\$793,502</u>
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Consult your accountant to verify these numbers.

The Investor should also plan for a seven, ten and or fifteen year buyout option for the off taker (City of Tucson).

DESIGN: On the following pages, we have included the site design and electrical construction of the layout that we plan for this project. Changes will be required when local requirements and ground conditions are known, engineering studies have been submitted and permitting has been completed per the Tucson and TEP requirements. The layout is also subject to the requirements of management input for the desired layout.

FINANCING: ABCO Solar can help secure a Solar Service Agreement option or Power Purchase Agreement or Operating Lease where City of Tucson would buy the produced kWh's at a projected rate of approximately \$0.08.44 electric rate through a tax equity investor.

ABOUT ABCO SOLAR, INC (THE CONTRACTOR)

ABCO Solar, Inc. is a Tucson, Arizona based corporation that supplies solar electric (PV) equipment and related services, LED lighting and electrical services in Arizona. We are licensed electrical contractor for industrial, commercial, and residential customers. Our contractor licenses are current, in good standing, and we are bonded and insured. We carry both US and foreign products for solar PV. ABCO Solar Inc. has been in business for 8 years.

ABCO has installed over 200 projects in Arizona, including a number of commercial/public projects in both Arizona and New York, accumulating over 2 megawatts of PV systems. ABCO has five million dollars in insurance, and with bonding capacity available through our partners, project size, capacity and capability are significant.

Our State licensing and ID #s are:

Registrar of Contractors K11 Electrical Services License: ROC 258378

The following are seven (9) projects that have been successfully implemented:

- 1) Davis Monthan AF Base Predator Program, PV Project Sabino Electric Contract, US Government
- 2) Mesa Fire Station, Mesa Arizona, DL Withers Contractor
- 3) Labors Community Service Agency, Phoenix, Arizona, AZ Dept. of Commerce, ABCO Solar Direct Contract.
- 4) Southern Arizona Schools Program, 39 schools, 41 installations, Solon Contractor, ABCO staff with grants from Sulphur Springs Electric Co-op.
- 5) St. Raymond's High School for Boys, Bronx, NY, solar PV, solar thermal, LED lighting. Financed by ABCO Solar, Inc., through M & T Bank.
- 6) Amphitheater School District, Tucson Arizona, LED lighting complete in two schools in 2013
- 7) Hillside Baptist Church, Solar Parking Structures, LED lighting, Church and School, 2014
- 8) Self Storage systems in Arizona 5 projects \$1,185,000 in 2015.
- 9) San Rafael Medical Group – Carport projects totaling \$286,000 in 2015.

Contact information for these projects can be provided upon request.

The executive officers and project staff are:

Charles O'Dowd, President, Director

Phone 520-991-4110 Fax 520-843-2106 Email codowd@abcosolar.com

Mr. O'Dowd has spent the past 40 years in a marketing and sales career in real estate, business brokerage and as past VP of the Southern Arizona Small Business Association. His holds a Bachelor of Science degree in Business and Public Administration from the University of Arizona.

Michael Barwick, Licensed Electrician, Project Supervisor

Phone 520-403-2882 Fax 520-620-5574 Email: mike@abcosolar.com

Michael supervised the installation of 41 school projects in Arizona and supervised our St. Raymond High School for Boys project in the Bronx, NY. This project is solar photovoltaic, solar hot water and LED lighting retrofit. Michael is a licensed journeyman electrician. With 25 years' experience, he has been specifically trained at American Solar Electric and was Supervisor of Construction for Solon Corporation.

Patricia Blackman, VP. Sales and customer service

Phone 603-477-4704, Fax 520-620-5574, Email patricia@abcosolar.com

Patricia Blackman is NABCEP certified solar professional and has extensive administration and sales experience. She has worked for over five years in sales and customer service with ABCO. Ms. Blackman worked as an Energy Conservation Consultant designing active ventilation systems using radiant barrier insulation and German made attic fans. Patricia's science background; a bachelor's degree in Earth Sciences and a master's degree in Hydrology, makes her an excellent fit for the Solar Industry.

David L Shorey, Financial Consultant

Phone 520-603-6979, Fax 520-843-2106 Email dshorey@abcosolar.com

Mr. Shorey has worked for the past 40 years in manufacturing, construction and the financial and business management arena during self-employment and management positions for various enterprises. Mr. Shorey is a Graduate of University of Oregon. Mr. Shorey has extensive experience with public and private companies for which has served in an executive position.

The following pictures are representative of the commercial project of ABCO Solar in recent years.

ABCO SOLAR PARKING PROJECT COMPLETED IN 2016



Self Storage Facility Phoenix Arizona



Southern Arizona RV Storage 20,804 square Feet



AVONDALE - 10,000 square feet shade structure



The Photovoltaic Equipment Components

Solar Module

Boviet 320 Watt Polycrystalline

25 years, 80% power guarantee
10 years, 90% power guarantee
12 Year manufacturer warranty
72 cell configuration
Net Operating Cell Temperature 45 degrees (C)
Datasheet in Addendums

Inverter Option

TBD (models will be determined during the design phase)

Best-in-class efficiency
Touch safe fuses
Lightweight, compact design
User-interactive LCD
DC arc-fault protection

Grid Connections

Electrical Grid Interconnection Requirements: ABCO will adhere to the interconnection requirements provided by Tucson Electric Power (TEP).

Monitoring System

A web based monitoring system is required in a PPA is included in the price quoted because the source of financing is still an option. The monitoring system dashboard provides a comprehensive suite of tools for system users, installers, and owners. Detailed inverter graphs provide multi-variable investigations of each inverter on site, a quick and easy troubleshooting tool. ABCO, the system owners and designated representatives can see any significant fluctuations of nominal operating parameters. In this event, ABCO will schedule a technician to arrive on site to assess the problem so the system can operate at full potential. We use the recommended interface equipment specified by the inverter manufacturer.

Options

Operations and Maintenance

We have guaranteed our workmanship for five years and will provide a quotation if requested for additional maintenance including but not limited to:

- 1) Panel Inspection and Cleaning
- 2) Inverter Inspection and Filter Cleaning
- 3) Visual Inspection of entire Generating Plant
- 4) Voltage Checks on Strings, Combiner Boxes
- 5) Immediate response to Operations and Maintenance needs

Specific testing and reporting schedules will be contained in a separate maintenance contract

Financial Projections

Please see attached Excel Spreadsheet analyzing the entire project for a period of 30 years. The guaranteed performance life of the solar modules is 25 years and the expectation is 80% of original output watts. The anticipated life of the project is 30+ years.

System Commissioning

An extensive and comprehensive testing of the entire system occurs before we commission it. Approvals will have been received by TEP and any jurisdiction having authority. Our own internal pre-commissioning system verification report contains over 35 specific tests, and a comprehensive metered testing of the array, strings, inverters, junction boxes, disconnects, and more.

Post Commissioning

After the PV system is commissioned and operational, ABCO will submit a commissioning packet to the owner including:

- 1) Cut sheets for all equipment used in the construction of the system.
- 2) Warranty information for all the equipment used in the system.
- 3) A set of 'as built' wiring plans that accurately reflect the system as it was built, incorporating any changes or modifications made during the construction process.
- 4) The ABCO Construction and Workmanship Warranty.
- 5) Additional Geo-Tech Reports and boring data if any
- 6) Contact information for Project Managers and Field Response Teams.
- 7) Emergency Contact Information

Warranty Statement

ABCO Solar and its cooperating companies warrant that the solar energy systems to be constructed will be installed in a good, workmanlike manner in accordance with the State of Arizona, NEC 2011, International Building Codes, and accepted industry standards. We warrant that the system will be free from defects for a period of five years from the date of commissioning. The equipment manufacturers' warranties prevail.

ABCO Solar, Inc. and our project equipment suppliers are confident our talents and resources will combine to create the best solar installations for your company and be the beginning of a long and mutually fruitful relationship and anticipate a favorable response to this proposal.

Please review the information included in this presentation and let us know if you have questions or comments. You may also meet with your accountant and ABCO Solar at your request to become more comfortable with this project and the solar components.

Sincerely,

Charles O'Dowd, President
ABCO Solar, Inc.