

NEW APPLICATION



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BEFORE THE ARIZONA CORPORATION COMMISSION

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 Arizona Corporation Commission
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IN THE MATTER OF ARIZONA
 PUBLIC SERVICE COMPANY –
 APPLICATION FOR APPROVAL OF
 CONCENTRATING SOLAR POWER
 CONTRACT

DOCKET NO. E-01345A-08-_____

E-01345A-08-0106

Pursuant to the Renewable Energy Standard (“RES”) Rule, A.A.C. R14-2-1804(G), Arizona Public Service Company (“APS” or “Company”) seeks approval and assurance of full cost recovery of a Purchase Power Agreement (“PPA”) to procure renewable energy from a proposed concentrating solar power (“CSP”) resource (“Solana Generating Station” or “Solana”).¹ This solar plant will be developed by Arizona Solar One LLC (“Arizona Solar One”) and will be located near Gila Bend, Arizona. The PPA would allow APS to procure the full output of this 280 megawatt (“MW”) project for a thirty-year period. CSP technology will help APS meet Arizona’s growing demand for power by using clean solar energy, the state’s most abundant renewable resource. APS believes that the Solana Generating Station project, which will be Arizona’s largest source of renewable energy and one of the largest CSP plants in the world, provides a timely opportunity to benefit APS’s customers by integrating this valuable renewable technology into the Company’s generation portfolio.

The successful development of this project is contingent upon several factors, including Arizona Corporation Commission (“Commission”) approval of the PPA, the

¹ A.A.C R14-2-1804(G) specifically provides that “An Affected Utility may ask the Commission to pre-approve agreements to purchase energy or Renewable Energy Credits from Eligible Renewable Energy Resources.” The CSP plant is an Eligible Renewable Energy Resource, specifically a “Solar Electricity Resource,” as defined in A.A.C. R14-2-1802(A)(10).

1 extension of the federal renewable energy investment tax credit, successful siting, permitting
2 and interconnection, and successful project financing. The first critical factor is Commission
3 approval, including assurance of full and timely recovery of all costs of purchasing energy
4 and Renewable Energy Credits (“RECs”) pursuant to the PPA. Due to the magnitude and
5 expense of the proposed project to the Company, which is expected to be greater than four
6 billion dollars over its thirty-year term, APS believes that Commission approval for cost
7 recovery for the Solana Generating Station PPA is required.

8 **I. SOLANA GENERATING STATION**

9 **A. Description of the Project**

10 The Solana Generating Station will consist of approximately three square miles of
11 solar parabolic troughs and two steam turbines. Solana will provide six hours of thermal
12 storage capability² to produce 280 MW of firm capacity. The parabolic trough solar collector
13 technology that Solana will utilize is well established for use in power plant applications—
14 this type of plant has been in commercial operation at several facilities for over twenty years.
15 The Solana Generating Station is projected to provide approximately 900,000 megawatt hours
16 (“MWh”) of renewable energy for APS’s customers each year. Operating at full capacity, it
17 can meet the electricity needs of approximately 70,000 Arizona homes. With its thermal
18 energy storage capability, Solana Generating Station will provide firm capacity at the time of
19 APS’s system peak and operate at greater than a ninety percent capacity factor during times
20 when APS’s customers most need electricity, from noon until 8:00 p.m. during the months of
21 June through September. The ability to dispatch power during peak demand periods makes
22 this an ideal technology for the APS system. The thermal energy storage capacity allows
23 APS to maximize output during summer peak periods, which is of considerable value in the
24 desert with its extreme summer temperatures and substantial air conditioning load.

25 Arizona Solar One plans to construct a substation at the plant site and approximately
26 twenty miles of new 230 kV transmission lines to interconnect to the APS Gila Bend 230 kV

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28 ² Thermal energy storage allows solar energy to be collected and stored for an optimized dispatch of the power plant to match demand. The storage system for Solana is a six tank molten-salt design.

1 substation, where APS will take delivery. It is anticipated that more than fifteen hundred
2 workers will be needed to construct the facilities, and approximately eighty-five employees
3 will be required to operate the Solana plant. Arizona Solar One is currently commencing its
4 siting and permitting process and plans to file for its Certificate of Environmental
5 Compatibility (“CEC”) for this facility in the near future. The Solana Generating Station is
6 expected to be commercially operable in the summer of 2011.

7 **B. Description of the Project Developer**

8 Arizona Solar One is part of a family of companies that have decades of experience in
9 the solar industry. Abengoa S.A. is a multi-national technology company that has been in
10 business for over sixty years and is headquartered in Madrid, Spain. Abengoa S.A. had four
11 billion dollars in sales in 2006, and has over 23,000 employees worldwide. Its wholly-owned
12 subsidiary, Abengoa Solar S.A, has over 500 MW of CSP plants operating or under
13 development in the United States, Spain, Algeria and Morocco. Abengoa Solar S.A. has
14 completed a number of groundbreaking renewable installations, including the world’s first
15 commercial solar tower in Spain and the world’s first Integrated Solar Combined Cycle in
16 Algeria. Abengoa Solar Inc.³ is the United States subsidiary of Abengoa Solar S.A., and has
17 installed the first solar system in Arizona to provide space heating, water heating, and cooling
18 using parabolic troughs at Cochise College in Douglas.

19 Arizona Solar One is the wholly-owned subsidiary of Abengoa Solar Inc., and was
20 formed to develop the Solana Generating Station project. Members of the Arizona Solar One
21 team have extensive experience in the solar power industry and CSP technologies, including
22 the management of large CSP plants in California. APS believes that Arizona Solar One and
23 its related companies have the development experience, extensive understanding of supply
24 chain constraints, and access to capital resources that places them in a position to meet the
25 obligations of the PPA.

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28 ³ Abengoa Solar Inc. was formerly named “Solucar, Inc.”

1 **C. Purchase Power Agreement**

2 Abengoa Solar presented this solar project to APS in response to the 2007 Renewable
3 RFP.⁴ After completing a full evaluation and several months of negotiations, APS and
4 Arizona Solar One executed a thirty-year PPA, contingent on Commission approval, for the
5 full output of the Solana Generating Station, which is expected to produce approximately
6 900,000 MWhs per year. At 280 MW, the project was sized to be large enough to achieve
7 significant economies of scale, an important factor in driving down the project cost.
8 Collectively, APS and Abengoa worked to optimize the size of the solar field and the thermal
9 storage (six hours) to best fit APS's capacity and energy needs.

10 The contract includes energy-based pricing, with APS taking the output of the plant,
11 but only paying for the actual energy produced. The PPA includes performance guarantees
12 and termination rights, so APS can terminate the contact with damage payments if the plant
13 fails to produce over a period of several years. The PPA pricing is defined, with a modest,
14 fixed escalation over the term of the agreement, eliminating any uncertainty in cost. Also,
15 the renewable project is free of carbon emissions, eliminating exposure to prospective carbon
16 legislation. Over the term of the contract, the cost is approximately nineteen percent greater
17 than the cost of the conventional resource alternative, which is competitive with other
18 renewable energy projects. The total notional value of the contract is more than four billion
19 dollars, which is approximately \$20/MWh to \$25/MWh above the cost of conventional
20 generation over the thirty-year term of the contract.

21 With a project this size, a number of contingencies are required. The PPA includes a
22 provision that allows the parties to terminate the PPA if Commission approval acceptable to
23 APS has not occurred within 160 days of the effective date.⁵ Additionally, Arizona Solar
24

25 ⁴ On March 5, 2007, APS issued a request for proposal to acquire additional renewable resources ("2007
26 Renewable RFP"). APS contracted with an independent auditor for the duration of the 2007 Renewable RFP,
27 who has certified that the procedures for choosing Eligible Renewable Energy Resources were fair and
28 unbiased and have been appropriately applied. In addition to the Solana project, the Company is pursuing
other projects from this RFP to meet RES compliance.

⁵ Section 2.02(a) of the PPA provides that either party has the right to terminate the PPA if Commission
approval has not occurred within 160 days of the effective date of the PPA or July 17, 2008. However, the 160

1 One may terminate the contract if the federal renewable energy investment tax credit⁶ that
2 applies to the project is not extended by June 30, 2009; if Arizona Solar One is not able to
3 obtain acceptable third-party financing; or if by December 31, 2008, Arizona Solar One is
4 not satisfied with the expected outcome of their transmission interconnection studies. The
5 terms of the contract are further described in the Contract Summary, which is attached as
6 Exhibit A. The full contract, along with the Company's economic analysis, will be provided
7 to the Commission pursuant to a protective agreement.

8 **D. Benefits of the Solana Generating Station Project**

9 There are a number of factors that have influenced the Company's decision to pursue
10 the CSP resource. APS strongly believes that the diversification of generation resources is
11 critical to maintaining a reliable, cost effective electric system in Arizona – a point promoted
12 by Commission Staff.⁷ The Solana Generating Station project provides a significant
13 opportunity to diversify APS's energy resources at a reasonable premium. Historically CSP
14 plants have been prohibitively expensive, but the costs to construct and maintain CSP plants
15 have recently begun to decline at the same time that equipment and labor costs, rising fuel
16 prices, and emissions concerns are increasing the risks of conventional resources.

17 The Solana Generating Station PPA provides APS with a firm resource that will help
18 the Company meet its customers' summer capacity needs, thereby deferring the need to
19 acquire additional peaking resources. In addition, the long-term nature of the PPA and the
20 associated fixed pricing schedule will provide APS with significant price stability in the
21 future. APS estimates that this project will reduce the Company's incremental natural gas
22 consumption costs by approximately fifty million dollars per year. This reduction in natural
23 gas consumption provides the added benefit of acting as a hedge against natural gas price
24 fluctuations.

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26 days referred to in Section 2.02(a) addresses a final Commission order, so the timeframe in the PPA of 160
27 days includes statutory timeframes for reconsideration and filing an appeal with the appellate court.

28 ⁶ At the end of December 2006, Congress extended the federal solar energy tax credits, which provide a 30%
tax credit, through the end of 2008. (Tax Relief and Health Care Act of 2006).

⁷ See RES Staff Report at 9.

1 Acquiring this renewable resource will also address current regulatory requirements,
2 as the output associated with this renewable energy plant will apply toward the Company's
3 requirements under the RES Rules.⁸ Depending upon the final in-service date and the success
4 of other renewable projects, Solana may enable APS to meet the RES Rules requirement to
5 acquire five percent of its annual retail sales from Eligible Renewable Energy Resources by
6 2012, which is more than three years earlier than required.⁹

7 APS recognizes that renewable energy becomes even more important under the
8 prospects of carbon legislation. The significant procurement of energy and capacity that the
9 Arizona Solar One transaction represents has the potential to reduce the Company's exposure
10 to future carbon legislation. APS forecasts that the energy procured by this PPA will help the
11 Company avoid carbon dioxide emissions an average of approximately 475,000 tons per year.
12 This is equivalent to the annual greenhouse gas emissions from more than 78,000 passenger
13 vehicles.

14 **II. PROPOSED PRUDENCE FINDING AND RATE RECOVERY**

15 Because of the significance of the Solana PPA, Commission approval is required. In
16 its report addressing the proposed amendments to the Commission's Environmental Portfolio
17 Standard Rules,¹⁰ Staff specifically addressed the reasons that utilities may believe that pre-
18 approval for long-term contracts for renewable electricity with above-market costs is
19 necessary.¹¹ Staff noted that in the early years of the Environmental Portfolio Standard,
20 utilities were reluctant to execute long-term contracts for renewable energy with above-
21 market costs because of fears that a future Commission might cancel the Portfolio Standard,
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23 ⁸ See A.A.C. R-14-2-1804.

24 ⁹ The forecast for renewable energy assumes the successful delivery of energy from all existing and several
25 new PPAs, without termination, delay or interruption. RES targets require APS to serve 5% of the retail
26 energy needs with renewable energy in 2015 and 15% by 2025. See A.A.C. R14-2-1804. While the Solana
27 PPA is a significant renewable commitment, it is less than one-year's amount of APS's growing capacity (300
28 MW/yr) and energy (1200 GWh/yr) need, and, therefore, does not eliminate the Company's need to pursue
other resource options going forward.

¹⁰ The Commission changed the name of the Environmental Portfolio Standard rules to the "Renewable
Energy Standard and Tariff."

¹¹ February 3, 2006 Staff Report for Proposed Amendments to the Environmental Portfolio Standard Rules at
14-15. (Docket No. RE-00000C-05-0030) ("RES Staff Report").

1 or prohibit the utility from cost recovery of above-market costs.¹² Under the PPA, the cost
2 above conventional resource alternatives is approximately \$20 MWh to \$25 MWh over the
3 thirty-year contract period, with APS's obligation under the contract totaling more than four
4 billion dollars.¹³ In addition, while the capacity and energy produced by Solana are less than
5 one year's worth of growth for APS, the project exceeds the amount of energy needed to meet
6 the near-term RES targets. Clearly, Staff's statements accurately reflect the Company's need
7 today to obtain Commission approval before proceeding with this significant PPA.
8 Specifically, the Company requests that the Commission find that it is prudent for APS to
9 enter into the Solana Generating Station PPA, and that all costs of purchasing energy and
10 RECs pursuant to the PPA, including the above-market costs, will be fully and timely
11 recovered in retail electric rates.¹⁴

12 APS is not asking the Commission to provide a prudence determination in this filing
13 on the imputed debt associated with this contract. The cost of the contract represents an
14 approximately nineteen percent premium, excluding imputed debt, as compared to the costs
15 of a comparable conventional resource. This analytical approach is consistent with the one
16 used for prior APS renewable contracts that the Commission has seen in the past because
17 previously, rating agencies were not imputing debt for these types of contract.¹⁵ However,
18 under the currently published Standard and Poor's ("S&P") methodology, imputed debt is
19 included for all PPAs. Using the S&P imputed debt methodology, the percent of above
20 avoided costs for the Solana Generating Station PPA increases to twenty-one percent above
21 the cost of conventional resources. Long-term PPAs and their associated imputed debt place
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23 ¹² *Id.*

24 ¹³ Specific costs of the PPA and a comparison to the conventional resource alternative are competitively
25 confidential, and will be provided to the Commission under a protective agreement. The economic evaluation
26 does not include the financial impact of avoided carbon emissions, which will not be known until carbon
27 legislation is passed.

28 ¹⁴ Since payment under the PPA will not begin until 2011, it is not necessary that a funding method be
identified at this time.

¹⁵ APS executed several significant renewable contracts approximately two years ago. All of those contracts
were energy-only contracts, which S&P excluded from their imputed debt calculations. Other rating agencies
had different approaches toward imputing debt on long-term contracts, but none assessed any imputed debt for
renewable contracts at that time.

1 a measurable financial burden on the Company, which results in real costs that must be
2 recovered for APS to maintain its financial well-being. However, unlike the PPA pricing, the
3 cost of imputed debt may change over time. Consequently, the Company is not asking for
4 imputed debt recovery in this filing, but anticipates doing so in a future rate case filing.

5 **III. TIMING OF DECISION**

6 APS requests that the Commission make a determination in this matter and issue a
7 decision no later than June 6, 2008. Time is of the essence in obtaining Commission approval
8 of this PPA, because under its terms, either party will have the right to terminate the
9 transaction if final Commission approval is not received within 160 days¹⁶ of the date of
10 execution. There are several important reasons for the establishment of the 160-day deadline.
11 The PPA pricing is specifically sensitive to commodity pricing, and significant concerns exist
12 that those commodity prices will increase over the upcoming year. Abengoa cannot sign firm
13 contracts for many of the necessary materials and services or acquire its financing until after
14 APS makes an unqualified commitment, which it cannot do until it has received Commission
15 approval to proceed. Additionally, delays in final approval of the PPA will affect the ability
16 of the plant to be in-service by the summer of 2011. To assist in the Commission's
17 determination, APS will provide the Solana Generating Station PPA and the Company's
18 economic analyses supporting this PPA to the Commission, pursuant to an executed
19 protective agreement.

20 **IV. CONCLUSION**

21 The Solana Generating Station PPA would provide an important new renewable
22 resource to the APS portfolio that will help meet critical summer capacity needs, add a long-
23 term fixed-price energy source, reduce the Company's dependence on natural gas, assure
24 compliance with certain RES requirements, and reduce the Company's exposure to carbon
25 risk. But the commitment is over four billion dollars; therefore, APS requests that the
26 Commission approve the Company's execution of the Solana Generating Station PPA as
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28 ¹⁶ See explanation at Footnote #5.

1 quickly as possible, and provide assurances of full and timely cost-recovery for all costs of
2 purchasing energy and RECs pursuant to the PPA so that the construction of this new
3 renewable resource can commence.

4 RESPECTFULLY SUBMITTED this 21st day of February, 2008.

5 PINNACLE WEST CAPITAL CORPORATION
6 LAW DEPARTMENT

7
8 By: 

9 Deborah R. Scott

10 Attorney for Arizona Public Service Company

11 ORIGINAL and thirteen (13) copies
12 of the foregoing filed this 21st day of
13 February, 2008, with:

14 Docket Control
15 ARIZONA CORPORATION COMMISSION
16 1200 West Washington Street
17 Phoenix, Arizona 85007

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**Summary of
Renewable Energy Purchase and Sale Agreement
between
Arizona Public Service Company and Arizona Solar One LLC**

Commercial Terms

- Overview – APS has agreed to purchase all energy produced by Arizona Solar One's solar power plant for a period of thirty (30) years after it begins commercial operation.
- Output Contract – APS will purchase whatever energy is actually produced by the solar power plant, subject to certain limits on how much energy APS is obligated to accept.
- Renewable Energy Resource – The solar power plant will be a qualified solar electricity resource under Arizona law and the rules of the Arizona Corporation Commission (the "Commission"). Energy produced by the solar power plant will generate Renewable Energy Credits for APS and count towards its renewable energy resource requirements.

Description of Solar Power Plant

- Location – West of Gila Bend, Arizona.
- Delivery Point – All energy produced by the solar power plant will be delivered to APS at its Gila Bend 230kV Substation.
- Technology – Parabolic trough solar technology with a thermal storage system designed to add up to six (6) hours of stored energy under normal solar conditions.
- Nameplate Rating – 280 MW.
- Projected Annual Output – 900,000 MWh.

Construction and Operation of the Solar Power Plant

- Construction Schedule – Under the agreement, Arizona Solar One is obligated to meet certain construction milestones based on a pre-determined schedule. If Arizona Solar One does not meet those milestones, it must take certain steps to ensure the timely completion of the solar power plant – and, in some instances, pay damages to APS.
- Expected Commercial Operation Date – The solar power plant is expected to achieve commercial operation not more than 38 months after the Commission approves the agreement. That deadline can be extended by the parties if certain events occur, but, with certain exceptions, the agreement may be terminated if commercial operation does not occur within 50 months of Commission approval.
- Standards – Arizona Solar One is obligated to construct, operate and maintain the solar power plant in accordance with "good utility practices" as established by the industry.

Performance Guarantees

- General – The agreement includes several performance guarantees that are designed to ensure the solar power plant is a reliable resource for APS and its customers – both in terms of annual output and its contribution to APS's peak load requirements.
- Minimum Annual Output – Arizona Solar One must pay APS damages if the solar power plant's annual energy output falls below certain levels.
- Minimum Capacity – Arizona Solar One must pay APS damages if the solar power plant's peak capacity falls below certain levels.
- Chronic Underperformance – If the solar power plant demonstrates chronic underperformance over specified time periods, APS is entitled to terminate the agreement.
- Planned Outages – Arizona Solar One shall not schedule any planned outages from the period beginning June 1 and ending on September 1 of any year.

Conditions and Contingencies

- Commission Approval – The agreement is subject to Commission approval and such approval must be acceptable in all respects to APS. If final Commission approval is not obtained within 160 days of execution, which includes a 40-day window for reconsideration and appeal, either party may opt to terminate the agreement.
- Investment Tax Credits – Arizona Solar One plans to finance construction of the solar power plant (in part) with renewable energy Investment Tax Credits that are under consideration by the United States Congress. If those tax credits are not implemented by June 30, 2009, Arizona Solar One may opt to terminate the agreement.
- Other Contingencies – Arizona Solar One may also opt to terminate the agreement if it does not receive suitable financing or assurance that an acceptable interconnection agreement will be executed, based on the solar power plant's anticipated in-service date.