

**SOLAR MEETING MINUTES**  
**August 11, 2009 at 11:00 a.m.**  
**Town Hall Conference Room**

Mr. Madden, of GDS Associates, noted that Mr. Dahlquist, of Blue Ridge Power, worked with the Town to enable them to become a Blue Ridge Power member. He stated that the Town determined that working with simply market prices from one contract to another was not the best situation for the Town. He added that to take control of the Town's destiny would include developing a portfolio to address their power needs.

Mr. Madden stated that AMP (formerly AMP Ohio) made a proposal to Blue Ridge Power Members to band the small utilities together to be more effective as a group and beneficial to each locality. He noted that AMP now has 120 members, mostly small members, who were banding their resources together to allot them to better finance projects and work together to determine their energy needs. Mr. Madden stated that the Town had an expiring contract and they joined with AMP to build their portfolio

Mr. Dahlquist noted that the seven year fixed rate contract ended and the rates increased dramatically. He stated that the portfolio option had been studied extensively, and was chosen as it allowed better control by the Town. Mr. Dahlquist described some of the projects that AMP is involved in that the Town has bought into.

Mr. Graham noted that the energy resources had expanded. He stated that the rates were changing to double and it was a large financial hit for the community. Mr. Graham explained that the evolution of towns would be towards balanced portfolios, which included buying intermediate power as well as from the market

Mr. Dahlquist explained how the Town could better diversify with different energy options, such as solar. He noted that the total base load for the members of AMP was about 400 megawatts. Mr. Madden added that the true base load was 100-125 megawatt.

Mr. Graham explained that before the solar opportunity came forward, the Town needed to determine how the power created at the solar farm would return to the grid. He noted that they also needed to determine how to best work with PJM to sell the power back to the grid.

Chris Cook, of E3 Energy Resources, also the founder of Sun Edison, noted that he was working with distribution and engineering aspects with Virginia Power. He stated that he eventually went into solar and energy policy work, as well as the legal aspects relating to power purchase contracts.

Mr. Graham inquired about how to work directly with PJM to get power to them. He asked specifically about the methods of returning power to the grid and the process of ensuring said return occurred. Mr. Graham clarified whether such a project would even be of interest to PJM, relating to the grid. Mr. Cook stated that that PJM was always looking for more power generation.

Mr. Lauterbach, of SolAVerde, stated that he and Mr. Horton had been working on the solar farm idea for some time. He noted that New York was a difficult market to work with in the downtown area. Mr. Lauterbach stated that examining the alternative energy business clearly showed that it was an area in which they wanted to be a part. He stated that they reviewed areas

such as duPont, Toray, the Warren County Public School System, etc. and they had determined that SolAVerde's role was to be the conduit in the process. He detailed that they see themselves as the facility that brings the goal to a head, with the project belonging to the Town. Mr. Lauterbach noted that the purpose of today's meeting was to assist the Town in finding out how to sell the power back to the grid. He added that they may eventually go as high as 100 megawatts. He explained that as solar could not be used 24 hours per day, they would overproduce and sell the rest to the grid, as they had enough land to build a 100 megawatt facility. Mr. Lauterbach stated that his intent was to foster the solar project as best they can, and the solar farm was the beginning.

Mr. Lauterbach noted that the process actually comes together with AMP and PJM in the mix, adding that eventually people would realize that solar was the way to go. He stated SolAVerde's intent to manufacture the racks that hold the solar panels, not the panels themselves. He noted that they wanted to focus more on solving the on the ground problems, by going to the home market as well. Mr. Lauterbach stated that having efficient energy creation could assist property owners by taking their HVAC equipment and altering it to work more resourcefully using solar.

Mr. Cook clarified that the system was a control net metered system, and in Maryland, for example, one had to be connected to the distribution line directly. He added that the long haul method could not be used in such a case.

Mr. Lauterbach clarified his intent to begin to produce energy in an efficient, simplistic way; beginning with local homes. He stated their desire to take basic home equipment, such as HVAC, hot water heaters, etc., and begin there. Mr. Lauterbach noted that they would then before make the Town a model that can be transferable to other municipalities.

Ms. Herig, with Solar Electric Power Association (SEPA), stated that some municipalities had taken the plunge and completed some strategic planning to address future energy needs regarding solar.

Mr. Lauterbach voiced that in his experience, he had determined that Virginia was not very friendly toward alternative energy options. He noted that if solar energy could succeed in Virginia, then it could work anywhere in the country. Mr. Cook explained that it was a specialized market which was undeveloped, and that solar was in essence competing with wind.

Tina Hobson, a retiree from the Department of Energy, noted that she was present to see the evolution of solar energy options unfold. She added that it was exciting to see the advent of the process of placing solar into the grid.

Mr. Waltz stated that he would like to go through the draft related to information requests. He questioned what needed to be in place to get started with the project. He noted that the Town needed to obtain a grasp on the type of interface they would have with PJM.

Mr. Cook asked if a site had been selected at this point. Mr. Lauterbach stated that there were two main sites owned by the EDA; the first being a brownfield (the old Avtex site), which currently had only 26 acres cleared for use at this point. He stated that the second site being reviewed was in the Happy Creek area.

Mr. Cook noted that PJM and FERC used terms such as wholesale versus resale, which required the power to be non-jurisdiction generated. He explained that the power would all be wholesale

and was PJM jurisdiction. Mr. Cook cautioned that they should be careful with the layout as there were space concerns and requirements to consider.

Mr. Cook opined that it seemed to be a Public-Private Partnership (PPA) arrangement, with a private company producing the solar, and the Town of Front Royal purchasing said power.

Mr. Dahlquist inquired if the Town would be buying 100% of the power generated. Mr. Madden stated that with a plan to have 100 megawatts produced, the Town would not need the entire amount generated. It was noted that the remaining power produced, which would not be purchased by the Town, would then be returned to the grid if possible. Mr. Lauterbach stated that they did not want to produce power they could not use or sell into the grid.

Mr. Graham reminded the attendees that the Town had certain power commitments set up currently that needed to be tended to before purchasing elsewhere.

Mr. Madden noted that the Town would have excess power in general, not just with solar, and the Town would be able to obtain credit for unused power.

Mr. Lauterbach asked about transmission charges. Mr. Madden stated that the Town may still be required to pay transmission charges. Mr. Cook stated that if the injection site could be shown to be the same as the withdrawal site, then they may be able to curb much of the congestion charges.

Mr. Graham described how the Town would not require the full load of solar created first thing each morning, and they proposed selling that solar energy right to the grid. Mr. Waltz noted that until May of 2010, the Town had to stay within a certain bandwidth and he expressed concern on dropping the solar into the mix and being below the bandwidth required. Ms. Herig stated that there was an example of where a similar setup with solar was in place, and their model may be one to view.

Mr. Graham noted that they needed to know what to do with the excess power, adding that their hope was to be able to send it to the grid. Mr. Madden stated that the Town did not want to reduce what they were buying from their other sources, as they were committed to do so. He proposed measuring the Town's load to start with, which would allow them to see where they needed to go.

Discussion ensued, with attendees noting that they would have to be approved to be an interconnector generator, with Mr. Cook stating that a 90-100 day approval would be the timeline for a 2 megawatt generation. He added that if it was a 100 megawatt generation operation, then they would need to study the matter and it may take up to six months to do so. It was noted that 19.9 megawatts would be the starting point, as it was just under the 20 megawatts.

To begin the process, Mr. Cook offered, they needed to file the interconnection paperwork with PJM. Mr. Lauterbach stated that if it was a 12 month process they could work with that approval timeframe, by placing out 2 megawatt generation each month perhaps.

Mr. Graham questioned if the application should be put in as soon as possible with PJM. Mr. Cook noted that it should, adding that PJM required a deposit to ensure they were paid for the studies they will be performing.

Mr. Cook stated that once they approved the Town for 100 megawatts then they were locked in to that reservation for that number of megawatts. He added that as long as the economics worked then the process would be successful without a downsized amount.

Mr. Dahlquist asked about interconnecting at a higher voltage. Mr. Cook stated that who paid for a higher voltage also came down to the economics of who paid, the Town of SolAVerde.

*The group took a lunch intermission.*

Mr. Madden noted that his expectation was that solar would be \$100 a megawatt hour to generate, even with the tax benefits and he could not see how it could be much lower. Mr. Lauterbach stated that perhaps the whole conversation needed to cease if it would not be worthwhile to pursue the solar project. He added that they needed real numbers in order to obtain financiers of the project. Mr. Madden noted that there were many answers required before moving forward with the project, such as how to interconnect, whether they were in front of or behind the meter, whether they would have to pay transmission costs, etc.

Mr. Waltz asked what needed to be accomplished at this point. Ms. Herig described Florida Power & Lights story, noting that they produce 110 megawatts. She added that there were other municipalities which they could look to for a model, noting that most PPA's were producing solar energy for basic use, rather than profit.

Mr. Lauterbach stated that the real issue was that SolAVerde was attempting to benefit the Town and if it did not make sense to make energy to sell to the grid in excess of what the Town needed, then they would not move forward at that point. He stated that their goal of eventually having the Town become energy independent was fore most important.

Mr. Lauterbach noted that if the facility was scaled back than they may reconsider different aspects, adding that they did want to build the facility on a hope and a prayer. He stated that if the Town could benefit to become self sufficient then they would be reaching their initial goal. Mr. Cook noted the problems attempting to build a solar facility to make a profit.

Mr. Graham noted that the Town and Mr. Lauterbach needed to know what they needed to do to sell the amount of power the Town would not need back to the grid once purchased by the Town from SolAVerde. Mr. Lauterbach noted that he did not know what the answers were, however; he needs to understand the importance of interconnection and the pricing possibilities.

Mr. Madden stated that they may place a lot of work into the solar project without breaking even. Mr. Lauterbach stated that he needed to determine the PJM aspect before moving forward in order to obtain construction costs. He noted that they would begin just under 20 megawatts most likely.

Mr. Cook asked if the pricing would change much if they were producing 20 or 30 megawatts. Mr. Lauterbach stated that the pricing would not change. He reiterated that their intent was to have the first phase in place to produce the power needs of the Town via solar means. He noted that if the solar community was going to be competitive, they would have to fly in the face of convention. Mr. Lauterbach noted that they needed to better understand the integral pieces and the specific details with this unconventional approach.

Mr. Dahlquist stated that if there would be an inter-connect there would be a limit to the number of megawatts. Discussion ensued regarding the acreage to be utilized and its effect on the interconnect details.

Ms. Herig opined that this would be an innovation of the Town which was quite unique, adding that there were many financial aspects to be considered. Mr. Cook added that there was not a local solar market in this area, noting that while the program was innovative and exiting, there were many pitfalls to be considered.

Mr. Waltz noted that while it was a productive meeting, there were many questions unanswered that needed to be further researched. Mr. Dahlquist and others expressed their agreement. Mr. Graham noted that another meeting, and/or future conference calls, would assist in assigning which tasks would be attributed to whom to determine the needed answers.

Mr. Lauterbach stated that the meeting had been very informative and he was excited to see the answers come together in order to obtain their goal – have the Town of Front Royal self sufficient with their power needs, via solar generation.

**Present:**

Town Manager J. Michael Graham	Willi Lauterbach, SolAVerde
Clerk of Council Jennifer E. Berry	Bill Bensten, SolAVerde
Director of Energy Resources Joseph Waltz	Chris Cook, E3 Energy Services
Duane Dahlquist, Blue Ridge Power	Jennifer McDonald, EDA Executive Director
Jack Madden, GDS Associates, Inc.	Tina Hobson, DOE Retiree
Greg Horton, SolAVerde	Christy Herig, Solar Electric Power Assoc. (SEPA)

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Town of Front Royal, VA (“FR”)

**1st Data Request to SolAVerde, Inc. (“SAV”)**  
**Regarding Proposed Solar Installation near FR (“Project”)**

Please provide responses to this data request in writing.

1. Please provide a narrative description of the Project, including technology to be used, timelines, respective responsibilities of SAV and FR, expected economic results of the Project, etc. This should include Project design, permitting, financing, construction, acceptance testing, start-up, COD, operations/maintenance after COD, power delivery to FR, anticipated interconnection arrangements (with FR and/or PJM), etc. Depending on the

detail necessary to respond to any of the items below, the responses may be satisfied within the content of the narrative.

2. Please provide a description of the phases of the Project, from initial installation (5-20 MW), to full implementation (100 MW).
3. It appears that two solar facilities are to be constructed with a maximum of output of 50 MW each, which would exceed the current capacity of either FR substation (approx 25 MW) for the behind-the-meter scenario. If some portion of the project is to be interconnected behind-the-meter and other phases on the transmission system, please provide a detailed description of the development by phase.
4. Please provide a detailed pro forma of the Project, including all phases, showing the operations of the Project from SAV's perspective. Pro forma should include, in narrative and projection form, specific assumptions and basis for the following:
  - Project revenues
  - Project financing (sources, percentage, term and cost for each source)
  - Equity (sources, percentage and cost for each source including cash and tax equity)
  - Project Tax treatment (PTC, accelerated depreciation, etc.)
  - Operating costs over life of Project
  - Capital improvements over life of Project
5. Please provide a description of any federal, state or local tax incentive programs to be utilized by the project.
6. Please provide a description of any federal, state or local "stimulus" or other types of non-loan grants (detail can be included in the pro forma above).

7. Please provide a detailed capital budget and draw schedule ("S-Curve") for the construction of the Project (all phases), including, but not limited to, solar panels, ancillary equipment, electrical interconnection, water (if any), land clearing/improvement, road improvements needed, etc.
8. Please provide a one-line diagram of the proposed interconnection scheme, whether behind-the-meter on the FR 12.5 kV distribution system and/or on the Allegheny Power ("AP")/PJM 34.5 kV transmission system. This should include the metering placement for settlement (billing) purposes with PJM as well as FR and protective relay placement along with demarcation of components owned by SAV, FR and AP.
9. Please provide copies of all correspondence with PJM regarding interconnection of the Project and transmission service from the Project.
10. Please provide copies of all correspondence, notes, and findings regarding the ability of FR to market excess generation from the Project into the PJM market, whether real-time, day-ahead, and/or bilateral contracts with third parties.
11. Please provide SAV's understanding of the arrangements necessary for FR to sell excess capacity and energy into the PJM markets from a resource located behind-the-meter, including real-time and/or day-ahead sales into the PJM market, and/or bilateral contracts with third parties.
12. Please provide a detailed pro forma of the Project, including all phases, showing the operations of the Project from FR's perspective. Pro forma should include, in narrative and projection form, specific assumptions and basis for the following:
  - Purchases by FR of output of the Project
  - Use of capacity and energy for FR's retail load

- Sales of excess capacity and energy into the PJM capacity and energy markets, and/or bilateral transactions with third parties
- Sales of RECs
- Administrative costs to be incurred by FR
- Transmission/ancillary costs to be borne by FR, both in serving retail loads and in marketing excess.
- Any penalty risk to be shouldered by FR

13. Please provide the basis for projection of REC value.

14. Please provide a draft of the Purchased Power Agreement (“PPA”) to be entered into by FR and SAV. If a draft PPA is not available, please provide a narrative description of the PPA.

15. What is the expected term of the PPA?

16. Will the PPA reflect FR purchasing all of the Project attributes (energy, capacity, environmental attributes such as renewable energy certificates or RECs, etc.) at an all-in delivered rate of \$38 for the life of the agreement, unconditionally? If not, what are the conditions/criteria that would change the rate?

17. Will the PPA project the net annual kWh to be delivered to FR for each year of the term as well as a mechanism to estimate each year after the first year based on prior the prior year’s actual production? In addition, assuming that such a mechanism is incorporated, will there be any guarantee of minimum kWh delivery and/or true up mechanism if the projected amount ends up being surplus or deficient?

18. If the facility fails to produce electricity as designed and per the stated operating performance standards set out in the PPA, will SAV reimburse FR for replacement power?

19. Is the PPA anticipated to have a fixed term, initial term with extension rights, evergreen for some numbers of years, cancellable by either party with notice?
20. What flexibility will FR/American Municipal Power (AMP, FR's scheduling agent) have to schedule the plant's output on a day-ahead and real-time basis?
21. Will FR have first-right-of-refusal should SAV decide to sell these facilities to another party during or at the expiration of the PPA?
22. SAV has indicated that they will insure the plant. What all will be insured besides equipment replacement, such as replacement power or LD for loss of resource? How will the amount of coverage for any of these items be determined?
23. Please provide a projection of the generation from the Project, by month and year for the life of the PPA.
24. Please provide, on a per MW installed basis, a chronological hourly generation curve for one full year and the expected degradation by month/year as panels degrade and are replaced. Please provide in numerical (Excel) and graphic form. State specifically the annual degradation rate, in percent, for each manufacturer's panels to be installed in the Project.
25. Has SAV made a formal Interconnection Request to PJM for this facility? If not, when do you anticipate such a request to be made? If so, please provide a copy of the data provided or that will be provided to PJM for the interconnection request and any studies conducted by PJM to this point.
26. Please provide an analysis that indicates the level of network upgrades that will be required to:

- Serve the FR's load
- Sell the balance into the PJM Capacity and Energy Markets

27. Please provide copies of power flow, short circuit, or transient stability studies related to the project conducted by or on behalf of SAV as relates to both the FR distribution system and the AP/PJM transmission system.

28. Please indicate whether the Project will qualify as a Capacity Resource in PJM for FR, and the expected Capacity value by PJM Planning Year. If so, will the capacity be offered into the RPM Auction? If it is to be offered into the RPM auction, what is the expected delivery year for RPM purposes?

29. Will the Project, or FR, participate in the day-ahead market, real-time market, or both?

30. What information/assurances does SAV need from FR to proceed with a preliminary Project design including physical layout, electrical interconnection and protection details, etc?

31. Please provide, in as much detail as possible, a timeline of milestones related to the Project design, permitting, financing, construction, testing, start-up, COD, etc.

32. Does the projected capital cost of the Project include the costs related to the design, purchase, installation, O&M and replacement of interconnection equipment and devices; any one-time upgrades that are strictly to accommodate the solar generation; and PJM-related engineering and legal expenses related to the interconnection/operation of the facility to meet PJM requirements and rules?

33. What has been determined by SAV consultants/counsel in regard to how PJM would look at a net flow of power into versus from the PJM grid at FR delivery points if all of the SAV facilities are “behind the meter?”

- Does FR become a generator in all senses of the PJM operating rules (and attending NERC rules)?
- Do the requirements of the interconnection application with its system impact and feasibility studies come into play? If so, exactly what will be required of FR? How would the anticipated application queue affect the anticipated schedule?

34. What engineering, procurement and construction contracts does SAV have in place or near execution at this point in time?

35. What warranty period will be provided to SAV on the major pieces of equipment such as the solar panels, inverters, transformers, etc.?

36. Over the course of discussions with FR, the SAV team of partners and contractors has changed--at this point in time, please provide a list of all parties/companies involved in this project, key individuals and the role of each.

37. What quantity and quality of water will be required and what is the expected source of the water and treatment, by phase?

38. How much property will be required for the Project development, by phase?