BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

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| In the Matter of the Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107 – Solar Incentive Program | Docket No 07-045-T14<br>REQUEST FOR COMMENTS |

**Comments of Utah Clean Energy**
**November 30, 2010**

## INTRODUCTION

Utah Clean Energy ("UCE") is a 501(c) (3) non-profit public interest organization working to advance energy efficiency and renewable energy in Utah. We have been engaged in the Solar Incentive Pilot Program Docket since its inception, providing input and tracking its progress over the last three years. We commend all the work that Rocky Mountain Power ("the Company"), the Public Service Commission ("Commission"), and all involved stakeholders have dedicated to developing, implementing, and overseeing this pilot program for the past few years. We also appreciate the opportunity to provide comments on the Third-Year Assessment of the Solar Incentive Program ("Three-Year Assessment"). In our comments below, we outline some questions, concerns, and recommendations regarding the Three-Year Assessment, the pilot solar incentive program, and next steps for consideration.

## BACKGROUND

In 2007, the Commission approved a tariff implementing a five-year pilot solar incentive program ("Program") providing financial support for customers who purchase and install solar photovoltaic systems. The Program provides customer incentives of $2.00 per watt for up to 107 kW per year of alternating current to qualifying equipment fully installed at customer sites.[1]

The Program's purpose, when approved by the Commission, was to gather information on the viability of a distributed photovoltaic program by providing market-based data on the integration of distributed PV resources in the electric system, the ability of solar to meet peak demand, and customers' willingness to participate and make investments in solar technology.[2] In approving the original five-year tariff in 2007, the Commission expressed its support for investigating the

[1] Order in Docket No. 07-035-T14, In the Matter of the Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107—Solar Incentive Program (hereinafter *07-035-T14 2007 Order*) at 2.
[2] *07-035-T14 2007 Order* at 2.

viability of distributed renewable resources in Utah because it concluded substantial environmental and public-interest benefits could cost-effectively be derived from such a program.[3]

The Commission recognized that a distributed solar program may be viewed differently than a traditional DSM program in terms of costs and benefits and so directed the Company, the Division, and the DSM Advisory Group to determine appropriate cost-effectiveness criteria and guidelines for a distributed solar program.[4] The Commission also directed the Company, the Division, and interested parties to identify the data that would be collected and how it would be compiled to produce a useful report for evaluating program design and cost-effectiveness.[5] Finally, the Commission ordered a third-year assessment of the program in order to determine whether and what changes (including kW caps) should be considered for the remainder of the pilot term.[6]

In 2009, in Docket No. 09-035-27, the Demand Side Management (DSM) Advisory Group published its report and recommendations on DSM Performance Standards.[7] Pursuant to the Commission's direction in the 07-035-T14 2007 Order to investigate appropriate cost-effectiveness criteria and guidelines for a distributed solar program, the DSM Advisory Group included in its Report the following recommendation:

> Absent more appropriate economic tests, small-scale renewable resources may be evaluated on the same basis as energy efficiency and load management. The Commission may approve small-scale renewable resource projects that fail one or more of the economic tests but are determined to be in the public interest.[8]

The Commission concurred with this recommendation and added that if any of the economic tests fail, the Commission would consider arguments regarding whether the program is in the public interest for reasons other than economic efficiency.[9]

In the three years since the pilot program began, the Company has filed annual reports and interested parties have provided comments. In response to the Company's third annual report and in anticipation of the third-year assessment, the Commission ordered the Company to address concerns raised by various parties in their comments on the annual report. Finding that

[3] *07-035-T14 2007 Order* at 6.
[4] *07-035-T14 2007 Order* at 7.
[5] *07-035-T14 2007 Order* at 7.
[6] *07-035-T14 2007 Order* at 8.
[7] Docket No. 09-035-27, In the matter of the Proposed Revisions to the Utah Demand Side Resource Program Performance Standards. The Order in this docket established the Utility Cost Test as the threshold test for determining program prudence. *09-035-27 Order* at 3, 10-11.
[8] *09-035-27 Order* at 4.
[9] *09-035-27 Order* at 15.

more data transparency was needed, the Commission directed RMP to provide a detailed explanation of the methodology, assumptions, calculations, formulas, and models used in the 2009 annual report. The Commission also found that specific concerns and comments raised by parties in their comments were important and warranted further review and directed the Company to address them in its third-year assessment.

On September 30 of this year, the Company submitted its third-year assessment with the following general conclusions:

- Additional incentives are unnecessary to drive customer willingness to invest in solar technology.[10]
- Solar power has limited ability to generate during the typical evening peak hour.[11]
- At current levels of net metering participation, the Company has not experienced any negative impacts on distribution system integration.[12]
- The Solar Incentive Pilot Program as currently structured is not a cost effective resource.[13]

Further, the Company proposed to end the pilot program two years early and use the tariff to pay for an energy storage demonstration project conducted by EMB energy and facilitated by the Company.[14]

**ENERGY STORAGE PROPOSAL**

Utah Clean Energy is supportive of the Company's interest in researching and developing an energy storage technology project. The EMB project, as explained in the November 4, 2010 technical conference, shows potential to provide benefits for the entire Rocky Mountain Power system. In particular, it has potential to mitigate impacts of peak demand; operate in a manner that is similar to the Company's Cool Keeper demand response program but at a potentially much larger scale; and to facilitate increased integration of renewable energy into the system. Utah Clean Energy fully supports an EMB energy storage development project and would recommend that the Commission support funding and cost recovery for this project; nevertheless, this project is an inappropriate substitute for the continuation of the solar Program.

The stated purpose of the solar Program was to gather information on the viability of distributed renewable resources in Utah. Although the proposed energy storage project will likely provide information tangentially related to distributed generation issues, such as alternatives to

[10] Docket No. 07-035-T14, Three Year Assessment of the Utah Solar Incentive Program, Findings and Recommendations, filed September 30, 2010 (hereinafter *Three-Year Assessment*) at 9.
[11] *Three-Year Assessment* at 9.
[12] *Three-Year Assessment* at 9.
[13] *Three-Year Assessment* at 6.
[14] *Three-Year Assessment* at 10.

transmission expansions and fossil-fueled peaking generation, [15] the Program is not designed to facilitate or provide information on storage technologies. The energy storage project, though a good idea, is outside the scope of the current Program and tariff and should be funded through other means.

The five-year pilot Program was created to gather information on the viability of a distributed photovoltaic program. Although the Company has concluded that the Program can provide no more meaningful information on integrating distributed solar resources into its system, this third-year assessment and request for recommend changes to the program, including caps, as requested by the Commission in its *07-035-T14 2007 Order*,[16] presents an opportunity to adjust the program and improve its cost effectiveness. As such, it is premature and inappropriate to end the program and preclude the opportunity to utilize the data and information gathered thus far to develop a more cost effective program that leverages utility investments with private sector investments to reap the benefits of distributed renewable energy for the utility and ratepayers.

Because funding for the energy storage project is outside the scope of this docket, the remainder of Utah Clean Energy's comments will respond to the Company's Three-Year Assessment of the Program submitted to the Commission on September 30, as well as outline our recommendations for the remainder of the pilot term.

**CUSTOMER WILLINGNESS TO PARTICIPATE AND INVEST IN SOLAR TECHNOLOGY**

The Three-Year Assessment states, "The data indicates [sic] that both solar vendors and willing consumers exist in the marketplace for the installation of solar power without additional incentives."[17] We concur that the market has grown in the past few years, but the market is still extremely small. Well less than 0.1 percent of Rocky Mountain Power's customers have installed distributed energy projects. Innovation deployment curves, developed by Everett Rogers, indicate that we have not even reached a significant proportion of what he refers to as the "innovators," which constitute about 2.5 percent of the population.

Rocky Mountain Power's incentive has been instrumental, along with other incentives, to the market in Utah. The two other key incentives that have driven projects include the Blue Sky community renewable energy grants that have supported 41 projects in Utah[18] and the now-closed solar rebate program modeled on the State Energy Program pilot program and funded through the American Reinvestment and Recovery Act (ARRA). Given the small size of the Program and the availability of other incentive programs not taken into account in the Three-

[15] *See* Philip Scalzo, Presentation: *Utility-Scale Bulk Electric Energy Storage Technology Proposed Demonstration Facility*, 07-035-T14 Three-Year Assessment Technical Conference, November 4, 2010.
[16] 2007 Order at 8
[17] *Three-Year Assessment* at 9.
[18] Rocky Mountain Power Website http://www.rockymountainpower.net/env/bsre/bscpf/cfr.html, accessed 11/30/2010.

Year Assessment, it is problematic to conclude definitively that customers are willing to invest in solar technology without the Program's incentives.

We further agree that solar photovoltaic prices have declined significantly in the last year as a result of unexpected market forces outside the scope of the Program; therefore, we recommend that going forward incentive levels take into consideration the cost of solar.

**ABILITY OF SOLAR POWER TO MEET PEAK DEMAND**

In the Three-Year Assessment, the Company states, "The pilot program demonstrated that the limited ability of solar to generate during the typical evening peak hour restricts the contribution to system peak demand."[19] The Company acknowledges that south facing panels maximize energy production, while southwest (and/or west) facing panels are more likely to generate more energy during the evening system peak hour.

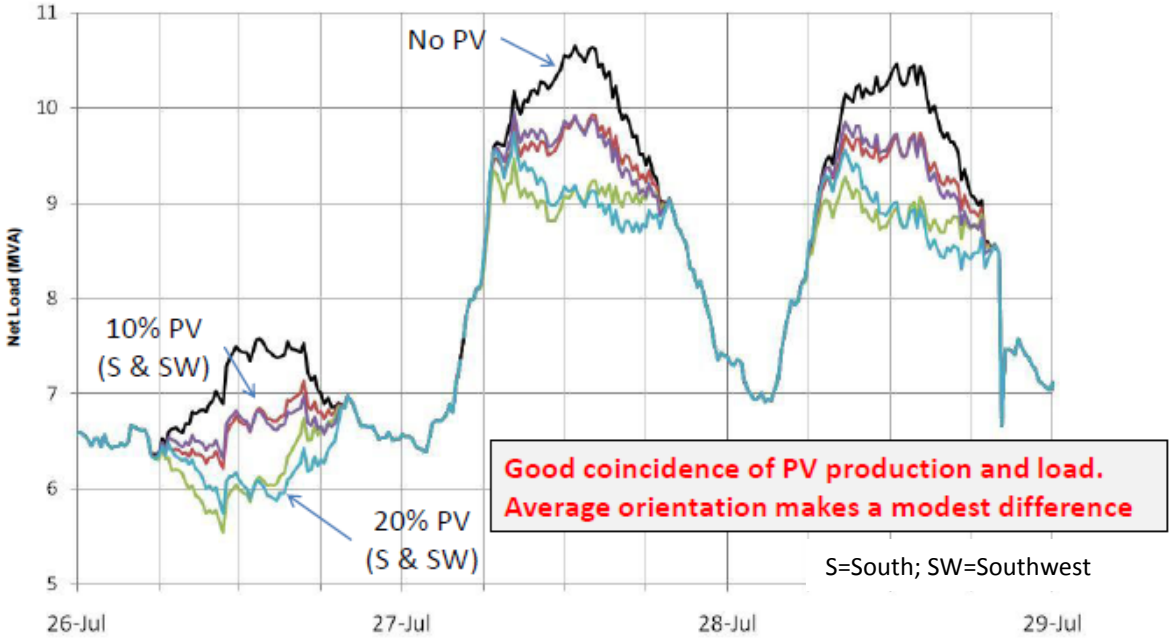
We recognize that rooftop solar PV systems may be limited in their ability to generate power during the super peak evening hours in the summer. Nevertheless, solar PV does generate electricity during the day (especially on hot summer days), when system demand is high and energy prices are typically higher. Solar energy produced during this time can reduce the need to purchase energy on the market during the day and/or reduce natural gas generation to meet the daytime peak demand.

Additionally, different customer classes have different load profiles, and solar situated on a commercial or light industrial facilities (which typically operate during business hours) may help decrease that customer's contribution to the daytime peak energy demand. Sandia National Laboratories[20] recently conducted a study in collaboration with Rocky Mountain Power, Utah Clean Energy, and Salt Lake City as part of a technical assistance project for the U.S. Department of Energy Solar Energy Technologies Program. The findings from the study demonstrate that high penetrations of solar PV (10% - 20%) located in commercial/light-industrial districts can help decrease the peak demand of those customers substantially because, as shown in Figure 1, the output of the solar PV is closely aligned with the commercial/light industrial customer load profile.

[19] *Three-Year Assessment* at 9.

[20] Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

**Figure 1. Results for Commercial Load (Exploration of PV and Energy Storage for Substation Upgrade Deferral in SLC, Utah *Sandia National Laboratories, October 2010*).**



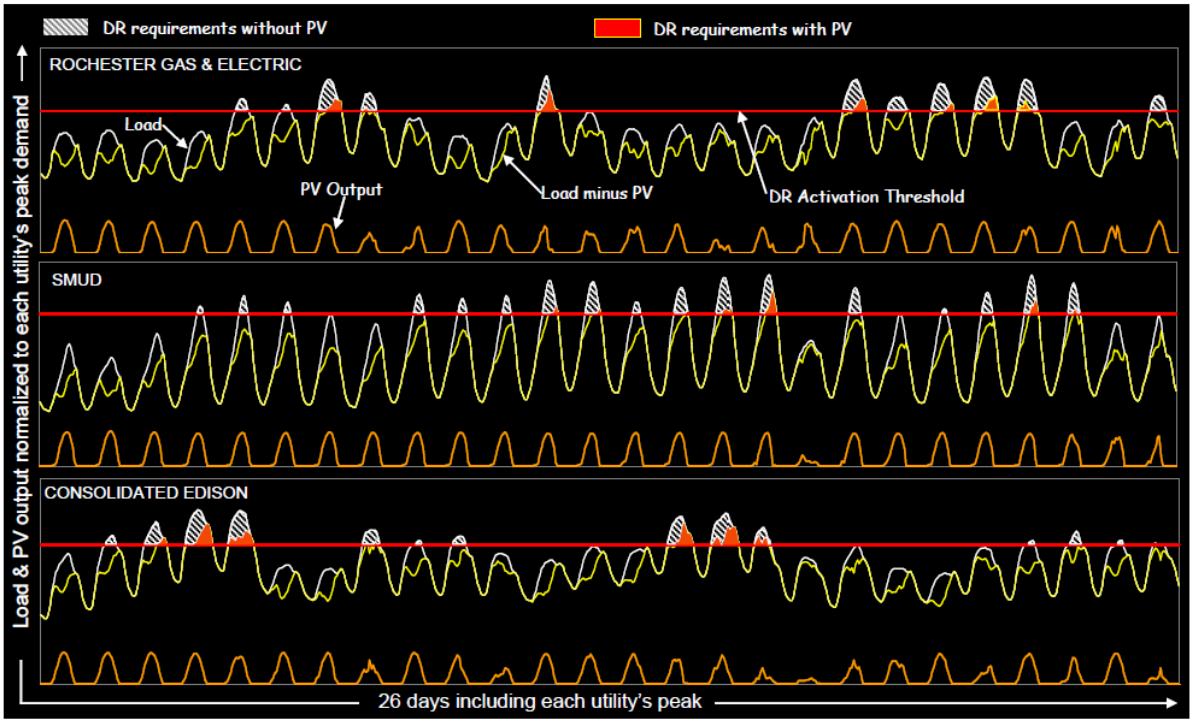

The study findings also suggest that solar PV located in targeted commercial districts may help defer substation upgrades and reduce the potential for overload. The study notes that the benefit of PV with respect to station upgrade deferral is a function of load & feeder characteristics.[21] A copy of the preliminary findings from this study can be made available from Utah Clean Energy upon request.

While some residential solar PV systems may be limited in their ability to meet the system's super peak demand, combining solar with demand response programs may help address this issue and provide diverse benefits to the system and customers. According to a study commissioned by the National Renewable Energy Laboratory, which examined the value of integrating solar PV in demand response programs, solar PV generation has the potential to enhance the effectiveness of demand response programs and provide an added value to grid operators.[22] The study examined three utility case studies and showed that the grid operators in each case would benefit from an operational capacity increase using the same demand response pool with a dispersed PV resource on its grid.[23] Figure 2 demonstrates the symbiotic relationship

[21] Abraham Ellis, Mark Ralph, Garth Corey, Dan Borneo, *Exploration of PV and Energy Storage for Substation Upgrade Deferral in SLC, Utah Second Progress Report*, Sandia National Laboratories, October 2010.
[22] Perez, R., *Integration of PV in Demand Response Programs*, NREL subcontract # AEK-5-55057-01 Final Report, Albany Nanotech, June 2006, *available at* http://www.asrc.cestm.albany.edu/perez/directory/LoadMatch.html.
[23] *Id*.

between demand response programs and distributed solar generation in controlling and reducing peak demand.

**Figure 2. Illustrating demand response (DR) requirements with and without PV. All loads in excess of 80% of peak are to be met by DR or DR+PV.** ***(Integration of PV in Demand Response Programs, Perez et. al. NREL subcontract # AEK-5-55057-01, 2006).***




Utah Clean Energy acknowledges that addressing the system super peak is important, and we are supportive of measures to help address this issue. We recommend that the Company and Commission consider some additional strategies and options to address the system super peak in conjunction with the solar incentive program, to maximize the value of solar and demand response programs. Some possible strategies to consider include:

- Offer tiered incentives for different system orientations and/or tilt
- Consider requiring participation in energy efficiency and/or demand response (i.e. Cool Keeper) programs in order to be eligible for the solar incentive program to minimize the customer impact on the super peak

**INTEGRATION OF DISTRIBUTED PHOTOVOLTAIC RESOURCES INTO THE ELECTRICAL SYSTEM**

As noted by the Company in the Three-Year Assessment, the current participation level in net metering is not currently having any adverse impacts on the distribution system.[24] The Company states that intermittent generation can impose challenges to power systems, and we concur that variable output of solar generation creates added challenges and uncertainty that must be managed by system operators and planners. However, variability and uncertainty are inherent characteristics of power systems, as aptly described in a recent Lawrence Berkley National Laboratory (LBL) report:

> Loads, power lines, and generator availability and performance all have a degree of variability and uncertainty. Regulations, standards, and procedures have evolved over the past century to manage variability and uncertainty to maintain reliable operation while keeping costs down. There are many different ways to manage variability and uncertainty. Enforceable reliability standards, overseen by the North American Electric Reliability Corporation (NERC), generally focus on minimum performance standards for reliable operation. The standards, however, do not dictate *how* to meet many of the performance requirements. In general, system operators and planners use mechanisms including forecasting, scheduling, economic dispatch, and reserves to ensure performance that satisfies reliability standards in a least cost manner.[25]

When addressing the issue of variability, it is worth noting that voltage or power quality issues are distinct from grid system level issues of balancing. Accordingly, management and remediation options for voltage or local power quality problems are generally different than options for maintaining a balance between load and supply at the system level.[26] Utah's recently improved Interconnection Standards (Docket No. 09-R312-01 – **In the Matter of:** the Notice of Proposed New Rule 746-700, Standards for Interconnection of Electrical Generating Facilities to Public Jurisdiction Under the Public Service Commission) are specifically geared to address any safety, reliability, or adverse impact concerns through the interconnection application and study process. Utah's Interconnection Standards provide stringent guidelines and requirements for customer interconnection to mitigate and/or avoid detrimental impacts on the distribution system and the grid. Utah Clean Energy concurs with Commissioner Boyer's assessment in 09-R312-01: "The proposed rule…follows existing practices of affected utilities, the requirements of the

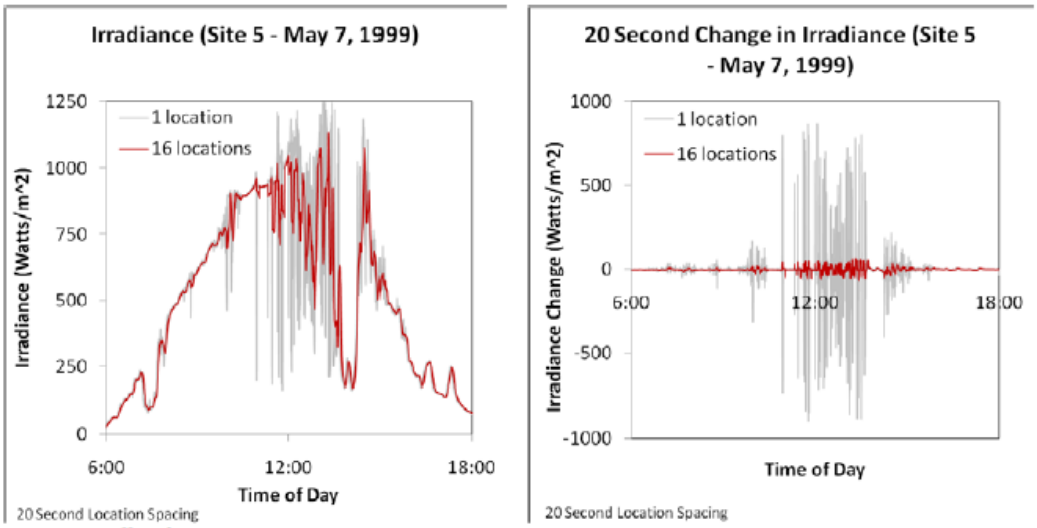
[24] *Three-Year Assessment* at 9.

[25] Mills, Andrew, Ahlstrom, M., Brower, M., Ellis, A., George, R., Hoff, T., Kroposki, B., Lenox, C., Miller, N. Stein, J., Wan, Y. *Understanding Variability and Uncertainty of Photovoltaics for Integration with the Electric Power System* at 1, Ernesto Orlando Lawrence Berkeley National Laboratory, Environmental Energy Technologies Division. December 2009. LBNL-2855E. Preprint of article submitted to THE ELECTRICITY JOURNAL, *available at* http://eetd.lbl.gov/EA/EMP.

[26] *Id*. at 11.

federal regulatory commission, or processes and procedures reasonably expected for safe and efficient interconnection of the size of resources subject to the proposed rule."[27]

Additionally, a number of renewable energy integration studies have shown that aggregating the output of several different solar insolation reduces the variability of multiple sites relative to a single site.[28] As shown in Figure 3, the change in irradiance from one minute to the next is dramatically reduced for multiple sites due to diversity.[29]




*Source: Hoff and Perez, 2009*

**Figure 3. Aggregating the output of several different solar insolation meters illustrates the reduction in variability of multiple sites relative to a single site. The change in irradiance from one minute to the next (left) is dramatically reduced for multiple sites due to diversity.**

Finally, on-site distributed solar resources are distinct from central station solar resources in many ways and are considered as such by system planners and grid operators. Distributed solar resources are designed and installed to provide energy directly to the facility to meet some, or all, of the customer's annual electricity load. Accordingly, the variability of the solar generation system output is more accurately reflected as variability in the customer load profile, which utilities have experience dealing with on a daily, hourly, and minute-by-minute basis. As stated in the aforementioned LBL report, "the daily load shape that system operators use to plan for the real-time operation of the grid is dramatically smoother than the daily profile of an individual residential customer, due to the diversity of load usage among customers. Rather than being

[27] Department Head Comments, Notice of Proposed New Rule, Utah Public Service Commission, Docket 09-R312-01, 13 August 2009.
[28] Mills, A., et al. *supra* note 25; *see also* Lew, D., M. Milligan, G. Jordan, L. Freeman, N. Miller, K. Clark, and R. Piwko, *How do Wind and Solar Power Affect Grid Operations: The Western Wind and Solar Integration Study* . Golden, CO: National Renewable Energy Laboratory, September 2009. *Available at* http://www.nrel.gov/docs/fy09osti/46517.pdf.
[29] Figure 3 taken from Mills, A. et al., *supra* note 25 at 5.

concerned with the timing and duration of each individual customer appliance, system operators know that the aggregate of all customers will follow a general trend that can be predicted and managed with relative ease."[30] System operators are already trained to address this variability on a daily basis and are effectively managing both the supply-side and demand-side resources available to them to meet customer demand and provide reliable service.

**COST EFFECTIVENESS**

In the Commission's Order approving the Program, a three year review was requested that would include recommendations as to whether changes were warranted in any element of the program, including caps. While the Company suggests eliminating the program, Utah Clean Energy recommends expanding the program and eliminating or raising the program caps, both the caps on system size and the annual total program size cap. Utah Clean Energy has reviewed the Company's 2007, 2008, and 2009 Annual Reports and the Three-Year Assessment of the Solar Incentive Program and we submit that there is sufficient evidence indicating that the program is viable and that the Program can be designed to meet the Commission's cost effectiveness criteria. We acknowledge that changes to the program will be necessary to improve the cost effectiveness of the program.

In the Three-Year Assessment, the Company states, "The bottom line is that the program as currently structured is not cost effective."[31] Given that the pilot program is a small program with resultantly high administration costs, Utah Clean Energy agrees that the pilot program as currently structured does not pass the cost effectiveness test using the assumptions and methodology used in the Three-Year Assessment. The Company's analysis shows that the Program passes the Utility Cost Test when using lower administration costs of 5% and 10%.[32] These results indicate that the program can be modified to be cost effective.

In the Commission's Order approving the Program, the Commission states that it believes that substantial benefits to the general public and the environment could be cost effectively derived from this program.[33] The Commission also recognized that distributed energy programs may be viewed differently than a traditional DSM program when determining cost and benefits and they directed Company, Division and DSM advisory group to include recommendations on appropriate cost-effectiveness criteria and guidelines for a solar program.[34]

[30] Mills, A. et al., *supra* note 25 at 2.

[31] *Three-Year Assessment* at 6.
[32] *Three-Year Assessment* at Tables 4 and 5.
[33] *07-035-T14 2007 Order* at 6.
[34] *07-035-T14 2007 Order* at 7.

The Commission's 2009 Order on DSM Guidelines and Recommendations,[35] supports the Utility Cost Test as the threshold test. It states:

> We concur with the recommendation to evaluate small-scale renewable resources, such as solar photovoltaic projects, on a similar basis as energy efficiency and load management until other economic tests are available. Thus, all five tests will be performed. Should any of the tests fail, the Company and parties may present arguments and we shall consider whether the program is in the public interest for reasons other than economic efficiency.[36]

Utah Clean Energy submits that the Solar Program is in the public interest for the following reasons:

1. The Company's analysis shows that with lower administrative costs of 5 and 10 percent the program passes the Utility Cost Test. The Utility Cost Test is the Threshold test and it provides the most equivalent comparison of costs between supply side and demand side resources. Utah Clean Energy's comments on the Company's 2009 Annual Report of the Program addressed the administrative cost issue:

> Other utility solar incentive programs across the country explicitly cap administrative costs at 5-10 percent of the total program costs; for example, the Colorado Solar Incentive Program caps administrative costs at 10 percent.[37] In addition to higher costs, the design of the program and the consistent issue of allocations going unfulfilled in the intended year appears to entail more administrative burdens, as noted in the report: "Annual program allocations pose an on-going administrative burden related to communications, chronological processing requirements, etc."[38] It is likely that a more expanded program, redesigned to be administratively straightforward and efficient, would benefit from economies of scale and would lower the administrative costs and burdens even as the program grew. Going forward, Utah Clean Energy would like to explore how this program might be revised to address some of these comparatively higher administrative costs and inefficiencies.[39]

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[35] Docket No. 09-035-27 Order, issued October 7, 2009.
[36] *09-035-27 Order* at 15.
[37] Matthew Baker, Commissioner, Colorado Public Utilities Commission. Presentation: *Colorado's Renewable Portfolio Standard Making it a Success* at slide 7, EUCI RPS Planning & Implementation Conference, San Francisco, CA., August 15, 2008.
[38] Docket 08-035-78 –In the Matter of the Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107 – Solar Incentive Program. Rocky Mountain Power, *Utah Solar Incentive Program 2009 Annual Report* at 8.
[39] Docket 08-035078- In the Matter of the Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107 – Solar Incentive Program, *Comments of Utah Clean Energy*, 3 May 2010.

We appreciate the Company for providing some additional cost effectiveness analyses to reflect how the Program might perform with 5% and 10% administration cost caps (Tables 4 & 5, respectively). These analyses provide some additional insight into how the solar program might be altered to address the currently high administrative costs, become a more operationally efficient program, and capitalize on economies of scale of a larger program. Additionally, there may be other program elements that could be modified to further improve the cost effectiveness ratio for the Utility Cost Test, such as incentive levels and program design.

2. While we acknowledge that the Program does not pass the Total Resource Cost (TRC) test, we believe that the Program is in the public interest. The cost-effectiveness analyses in the Three-Year Assessment were actually a review of the one year's worth of results (based on 2009 data), rather than a three year analysis that takes into account the declining costs trends for solar resources from 2007-2009. We acknowledge that even with this adjustment it may be some time before solar passes the TRC test. However, if consumers are willing to make investments in solar through a program that passes the UCT it will be beneficial to the utility and the ratepayers because the cost to the utility and its ratepayers would be lower than the utility's avoided costs.[40]

3. Solar energy provides maximum output during the day in the summer months when the demand on the electricity system is high. While the output of PV systems may not exactly match the system super peak, solar provides valuable power that can mitigate fuel and energy price volatility in the summer months.

4. Solar PV systems provided through a rebate program allow the utility and the ratepayers to leverage private investments to reap the benefits of solar in a cost effective manner.

5. Distributed renewable energy generation in the summer months has the potential to reduce the need to utilize more polluting, less efficient plants, such as the Gadsby plant, which is located in the Salt Lake Valley's heavily populated and polluted air shed. Oxides of Nitrogen emissions (NOX) from natural gas electricity generating plants, when combined with sunlight in the hot summer months, contribute to ground level ozone. Ground level ozone is a respiratory irritant and studies show that exposure can lead to permanent lung damage and a depressed immune system.[41] Ground level ozone is a problem pollutant during the summer months along the Wasatch front. The Utah Division of Air Quality issues warnings when ground level ozone levels reach harmful

[40] *See* Rocky Mountain Power Utah Demand Side management Advisory Group, *Utah Demand Side Management and Other Resources Benefit and Cost Analysis Guidelines and Recommendations* at 8 ("Passing the UC test indicates that the cost of the demand side resource that is recovered through rates is lower than a utility's avoided cost").

[41] Utah Division of Air Quality website, http://www.cleanair.utah.gov/pollutants/ozone.htm accessed 11/29/2010.

levels.

6. Distributed solar resources, along with other renewable resources, reduce carbon emissions and other greenhouse gas emissions and provide risk mitigating benefits relating to future carbon regulation.

7. Studies have shown that distributed renewable energy sources can defer distribution system upgrades, as discussed above in the Integration Section.

8. Utah has abundant and inexhaustible Solar PV potential. It provides daytime power in the summer months; it produces no noise, pollution, greenhouse gases; it uses no water (with the exception of limited water use for periodic cleaning); and its modular nature allows incremental investments, rapid deployment, and flexibility in location. Given its environmental characteristics, its modularity and impact on summer energy demand, solar PV is much like a demand-side resource.

**ENERGY SUBSIDIES**

The Company's discussion of the impact of federal and state incentives falls beyond the scope of this docket.[42] It is nevertheless worth noting that all energy resources receive federal and state policy support. To that end, the U.S. Energy Information Association acknowledges that "some electricity sources, such as nuclear, coal, oil, and natural gas, have received varying levels of subsidies and support in the past which may have aided them in reaching their current role in electricity production."[43] Given the scope of the Three-Year Assessment and the purview of the Commission, we shall not delve deeper into this topic.

**NET METERING**

Regarding the matter of net metering, the Company states that "net metering customers are effectively paid the retail price of electricity…yet energy from net metering customers has a value comparable to the wholesale market price."[44] A number of comprehensive studies show that distributed solar-generated electricity provides a number of benefits to the system that are not likely quantified in avoided costs. These studies demonstrate that the value of distributed solar may include the following benefits: elimination of line losses, distribution system upgrade deferral, grid stabilization benefits, avoided emissions, protection against fuel cost volatility and economic risks associated with future environmental regulations, energy security, and environmental and public health benefits.[45] A thorough quantitative analysis on these benefits has not been conducted for Utah or the Company; however, arguably, the findings from other

[42] *Three-Year Assessment* at 6.
[43] Energy Information Association, Federal Financial Interventions and Subsidies in Energy Markets 2007. Executive Summary. April 2008. pg. xvi. URL: http://www.eia.doe.gov/oiaf/servicerpt/subsidy2/index.html
[44] *Three-Year Assessment* at 6.
[45] See Appendix A.

studies could be applicable for other utilities and states.

Furthermore, the Commission's Order on net metering (Docket No. 08-035-78) explicitly clarifies that residential and small commercial net metering customers are credited on a kilowatt-hour for kilowatt-hour basis, while large commercial and industrial customers are given a choice between either the avoided cost or an alternative blended rate.[46]

**ADDITIONAL RESPONSES REQUESTED BY THE COMMISSION**

In its September 15th order in this docket, the Commission directed the Company to respond to seven issues raised by various parties in their comments on the third annual report on the incentive pilot program. One of those issues, including the Company's response, is below along with Utah Clean Energy's comments.

Issue: The Commission should use caution in using the findings in the company's 2009 Annual Report to determine the effectiveness of the program without considering economies of scale, more reasonable administrative costs, programs used in other utilities, and more transparent data analysis.

Company reply: The program has been informative. However, the pilot Program was not designed to answer all possible questions. The program has collected actual cost data from participating customers that has documented a substantial decline in the market cost of installing solar. It has also shown there is a group of customers willing to invest in subsidized solar. The size of that group appears to be in the hundreds. As indicated above, the bottom line is that solar is expanding without Program incentives.

UCE response: Although the pilot Program was not "designed to answer all possible questions," it is nevertheless premature to conclude that the information gathered by the program in the first three years of its five year term is the totality of the information provided by the program. Furthermore, it appears that the Program can be modified to be more cost effective. Additionally, it is premature to proclaim that solar will expand without program incentives because the Three-Year Assessment did not account for the impact of other available incentives (i.e. Blue Sky program, ARRA stimulus funding for specific projects, the temporary federal grant in lieu of tax credits, and the temporary ARRA funded program, modeled after the utility rebate program implemented by the Utah State Energy Program). This program could be modified to be more cost effective to further leverage utility investments with private investments, thereby expanding deployment of PV. This will provide further valuable information on the specific issues the Program was designed to inform: the integration of

[46] Docket No. 08-035-78 - In the Matter of the Consideration of Changes to Rocky Mountain Power's Schedule No. 135 - Net Metering Service, Report and Order Directing Tariff Modifications, 12 February 2009. Pg. 23-24. URL: http://www.psc.utah.gov/utilities/electric/09orders/feb/0803578ROdtm.pdf

distributed PV resources, the ability of solar power to meet peak demand, and customer willingness to invest in solar technology.

**CONCLUSION**

As discussed throughout these comments, there is enough evidence on the record to support the Commission continuing the Program to exploit distributed solar as a utility resource. Utah Clean Energy recommends that the Solar Incentive Program should be continued and expanded with higher caps. We recognize that modifications to the program will be necessary to improve the cost-effectiveness, which may include: lower administrative costs, modified incentive levels, improved economies of scale of a larger program, and consideration of opportunities to tie the program with demand response/efficiency programs. Finally, we recommend that the Commission continue to provide the opportunity for stakeholder input and appropriate technical proceedings to facilitate the expansion of the program. Thank you for the opportunity to provide comments on this important matter.

Sincerely,

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