To: Utah Public Service Commission

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Date: June 9, 2011

Reference: Comments on Docket 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; Request for Comments

Dear Public Service Commissioners and Commission Staff:

We represent a diverse group of businesses, organizations, and local governments supportive of measures to facilitate adoption of clean energy technologies, including the utility solar program under consideration. While our individual interests in this matter are broad spread, we all agree that diversifying Utah's energy portfolio with clean energy technologies can provide numerous benefits to the State's economy, environment, and quality of life.

We are interested in seeing programs and measures adopted that reduce impacts on Utah's pristine outdoor environment and affiliated recreation opportunities, help improve local and regional air quality, reduce greenhouse gas emissions and mitigate carbon risk, provide new economic development opportunities for Utah's communities, and minimize risks and uncertainties for Utah's businesses and consumers in the energy arena.

Thank you for the opportunity to provide comments on *Docket 07-035-T14* and whether or not a continued or expanded solar PV program in Utah is appropriate and how that program might be structured. We appreciate the efforts of Rocky Mountain Power (RMP), the Public Service Commission (PSC), the Division of Public Utilities, the Office of Consumer Services, and all involved stakeholders to oversee the implementation and review of this pilot program. We feel it has been a valuable first step in better understanding the value and potential of distributed solar energy in Utah. We submit these comments for your consideration and look forward to the next steps on this important initiative.

Comments on the Continuation and Expansion of the Pilot Solar Incentive Program
We strongly support and recommend the continuation and expansion of Rocky Mountain Power's Solar Incentive Program for several reasons, outlined below. We have also included some recommendations on how an expanded solar incentive program might be structured for the Commission and Rocky Mountain Power to consider.

1. **A distributed solar incentive program can be an economical resource for the utility and ratepayers.** In the 2011 PacifiCorp Integrated Resource Plan, PacifiCorp modeled two distributed solar incentive program scenarios to replicate the costs to the utility to provide a $2/watt and a $1.50/watt solar rebate program (with additional administrative costs included). According to the 2011 IRP, "the System Optimizer selected the maximum annual amount per year (1.2 MW of distributed solar) for 2011 through 2028" in both rebate cost scenarios.[1] It is our understanding that the findings of these analyses indicate that a distributed solar incentive can be a least-cost resource for the utility and ratepayers. As noted in the 2011 IRP, PacifiCorp fixed the Utah solar PV amounts used in the modeling assumptions, imposing a limit on the amount of the distributed solar resource that the model could select. Given that the System Optimizer selected all of the available solar resource allowed in both scenarios, it is highly likely that more solar would be selected by the model, if no modeling cap were imposed.

   Recommendation: The 2011 IRP sensitivity analyses for a solar rebate program suggest that a utility solar incentive is an economical resource for the utility and ratepayers. As such, the Commission should approve an expanded solar incentive with no caps to leverage the maximum amount of private investment in solar resources for the benefit of the utility, ratepayers, citizens, businesses, and Utah's emerging solar market.

2. **Lower administrative costs will improve the cost-effectiveness of the solar incentive program.** According to Rocky Mountain Power's *Solar PV Incentive Program Annual Report for Program Year 2010*, the pilot solar program's administrative costs represent nearly 30 percent of the total cost of the program (incentives + administration + meters).[2] This relatively high administrative cost impacts the overall cost-effectiveness of the program; however, we recognize that a small program is inherently less efficient to administer. That said, in Rocky Mountain Power's *Three-Year Assessment of the Solar Incentive Program*, RMP provided two different cost-benefit analyses of the program under different administrative cost scenarios (5 and 10 percent administrative costs). In both of these scenarios, the solar

[1] PacifiCorp – 2011 Integrated Resource Plan. Chapter 8 – Modeling Results, Renewable Resource Cases, page 243-4.
[2] Table 3. Levelized cost of Energy. Solar Photovoltaic Incentive Program (Schedule 107) Annual Report for Program Year 2010. Rocky Mountain Power. 7 March 2011. Pg. 12. Docket No. 07-035-T14 – In the Matter of Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107 – Solar Incentive Program.

incentive program passes the Utility Cost Test.[3] Lower administrative costs appear to be aligned with other larger solar incentive programs.[4] In their comments on the Three-Year Program review of RMP's Solar Incentive Program, the Utah State Energy Program provided information on the administrative costs for their Utah Renewable Energy Rebate Program:

> The Utah Renewable Energy Rebate Program was launched on April 19, 2010 with a budget of $3,000,000. The program will process over 350 applications, 216 of these applications involve solar photovoltaic systems from residential and commercial applicants. This program is being administrated for five percent of the program budget. Based on this experience, the Utah State Energy Program believes the program results reflected in Table 4 – Results at 5% Program Deliver and Administration Cost, accurately represent the program costs for a solar incentive program of this scale.[5]

Recommendation Given that lower administrative costs improve the overall cost-effectiveness of the program, we recommend the Commission approve an expanded solar incentive program with lower administrative costs in order to improve economies of scale and the operational efficiency of the program.

3. **Distributed solar provides additional benefits to the environment and economy; accordingly, distributed solar is in the public interest for reasons other than economic efficiency.**
In a recent order by the Commission in *Docket 09-035-27 – In the Matter of the Proposed Revisions to the Utah Demand Side Resource Program Performance Standards*, the Commission stated: "[W]e 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 [cost-effectiveness] 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."[6]

We assert that on-site, distributed renewable generation provides numerous environmental benefits that are in the public interest, including the following:

a. Greater penetrations of solar PV can help reduce the need to burn natural gas fired peaker plants located across the valley, whose emissions contribute to local air quality issues along the Wasatch Front.

An analysis conducted in Colorado examined the economic and environmental benefits that Colorado can expect from installing roughly 1,000 MW of distributed solar energy by 2020. The analysis found considerable air quality benefits of achieving this goal:

> Nitrogen oxides (known collectively as NOx) and sulphur dioxide (SO2) are harmful pollutants that are produced in the process of fossil fuel combustion…NOx is also a key contributor to Colorado's current ground level ozone problem, which increases the risk of serious chronic respiratory problems. The state's summertime levels already exceed

[3] Tables 4 and 5, respectively. Three-Year Assessment of the Solar Incentive Program. Rocky Mountain Power. 13 December 2010. Pg. 9. Docket No. 07-035-T14 – In the Matter of Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107 – Solar Incentive Program
[4] Comments of Utah Clean Energy, November 30, 2010. Docket No. 07-035-T14 In the Matter of Approval of Rocky Mountain Power's Tariff P.S.C.U. No. 47, Re: Schedule 107 – Solar Incentive Program; Request for Comments.
[5] Comments from Utah State Energy Program, November 30, 2010. Subject: Docket No. 07-035-T14, *Three-year assessment of Solar Incentive Program.*
[6] Docket 09-035-27 – In the Matter of the Proposed Revisions to the Utah Demand Side Resource Program Performance Standards, pg. 15. URL: http://www.psc.utah.gov/utilities/electric/elecindx/documents/638480903527o.pdf.

> federal health standards, and continued noncompliance could result in penalties. Installing 1,000 MW of solar would prevent the emission of over 75,000 tons of NOx and SO2.[7]

Greater penetrations of solar PV distributed across the state, especially in non-attainment areas for federal air pollution standards, would arguably provide significant benefits to Utah and help mitigate impacts on our vulnerable air sheds.

b. Distributed solar PV also provides significant water saving benefits. The aforementioned Colorado analysis provides an estimate of the value of the water saving benefits of installing 1,000 MW of distributed solar:

> Colorado's growing population, agricultural industry, and recreation sector all rely on the state's limited water resources. Unlike most thermoelectric coal- or natural gas-fired power plants, solar PV does not use water in the electricity generation process. Developing a stronger PV program would help meet Colorado's water conservation needs: 1,000 MW of solar would save almost *6.8 billion gallons of water* over the lifetime of the PV panels. By 2019, annual water savings (approximately 271 million gallons) could meet the consumption needs of over 3,300 households. For the purposes of this study, we conservatively assume solar PV displaces electricity generated at a combined cycle natural gas plant….The monetary value of water depends on a host of factors, including whether it can be transferred to a city. Assuming the water could be applied to a "high value" use (like a growing city); the value of the water saved in 2019 could be as high as $33.3 million (2009 dollars). This value will only increase as rising pressure is put on the state's finite water resource.[8]

With a growing population and increasing pressures on Utah's similarly constrained water resources, similar benefits would likely be derived from increased adoption of distributed renewable energy technologies and other low water-use renewable energy resources in Utah.

c. Distributed solar PV helps reduce the need to burn fossil fuels that contribute to global climate change, which poses significant economic risks and uncertainties for Utah's businesses, especially Utah's ski and outdoor recreation industries and communities. A recent analysis commissioned by Park City Foundation conducted by Stratus Consulting, *Climate Change in Park City: An Assessment of Climate, Snowpack, and Economic Impacts*, found that unabated greenhouse gas emissions (and resultant declines in snowpack) will have severe economic consequences:

> Climate change caused by greenhouse gases (GHGs) has long been a concern of snow-dependent industries, as changes in snow and ice are predicted to be some of the first effects of a warming climate (Barry et al., 2007; Lemke et al., 2007; Armstrong and Brun, 2008). Changes to snowpack can impact a range of commercial activities from water resource management to ski area operations (Tegart et al., 1990; Watson et al., 1996; National Assessment Synthesis Team, 2000; McCarthy et al., 2001; Barry et al., 2007; Lemke et al., 2007). For example, several studies have analyzed the effects of potential climate change on ski areas and winter tourism, and all of the studies have projected negative consequences for the industry (Galloway, 1988; König, 1998;

[7] Investing in the Sun Economic and Environmental Benefits of Developing 1,000 Megawatts of Distributed Generation Solar in Colorado. Vote Solar and Environment Colorado. March 2010. Pg. 4. URL: http://cdn.publicinterestnetwork.org/assets/19c69d7ef4af21460f88cc7cdca9feff/Colorado_1000-megawatt-solar-benefits-report.pdf

[8] Id. Pg. 3 (emphasis added).

> Hennessy et al., 2003; Scott et al., 2003, 2007, 2008; Scott and Jones, 2005; AGCI, 2006; Climate Impacts Group, 2006; Nolin and Daly, 2006; Agrawala, 2007).
>
> In this study, we used climate, snowpack, and economic models to estimate how the duration and quality of the snowpack at the Park City ski area, in the Wasatch Mountains of north central Utah, may change in the near and more distant future under climate changes caused by GHG emissions, and how the regional economy could subsequently be impacted because of changes in winter tourism...Our economic modeling results indicate that projected decreases in snowpack will have severe economic consequences [for the Park City area]…By 2050, the potential impacts range from $160.4 million in lost output, $27.2 million in lost earnings, and 1,520 lost jobs (low emissions scenarios) to $392.3 million in lost output, $66.6 million in lost earnings, and 3,717 lost jobs (high emissions scenario).[9]

Distributed renewable energy can provide an important financial hedge to customers and the utility against the risks of changing climate conditions and a reliance on fossil fuels, which have volatile and rising costs. These risks have serious implications for Utah's economy, particularly Utah's tourism, outdoor industries, and ski and recreation economies.

d. Lastly, distributed generation spurs new job creation and stimulates local economic activity. A rebate program that passes the utility cost test provides local power, leverages private dollars and investments, and supports Utah jobs that cannot be outsourced.

It remains unclear if/how the benefits figures provided in Table 4. Results for Standard Economic Tests (*2010 Annual Report, pg. 12*) take into account any of the non-energy benefits of distributed solar. We believe these benefits should be given adequate consideration in determining the full spectrum of benefits offered by distributed solar. Furthermore, the scale of the 107 kW pilot program inherently inhibits many of the benefits that may be derived from an expanded distributed solar program deployed across a broader geographic area with more participants across numerous sectors (commercial, residential, local governments, etc.).

Recommendation: The non-energy benefits of distributed solar PV (water savings, air pollution reductions, greenhouse gas emission reductions, and local economic development) have a value that may not be accounted for in the analysis of the pilot program. We strongly encourage the Commission to give these benefits adequate consideration, in accordance with their stated Order in *Docket 09-035-27*. We believe these benefits further support the expansion of the solar PV incentive program to a more meaningful level in order to maximize the non-energy benefits of solar. We have attached the reports referenced (see Attachments A and B) to provide more detailed analysis of benefits gained and risks avoided by increased utilization of distributed solar resources.

4. **Solar provides energy during peak usage hours during the day, especially in the summer.** In the 2010 Annual Report, Rocky Mountain Power explains that "solar resources, while not coincident with system peaks do contribute a percentage of energy during the higher load and energy cost hours of summer days."[10] We concur with this assessment. While some solar PV systems may be limited in their ability to contribute to the system evening peak, distributed solar still provides energy during highly congested load times, including on hot summer days, when system demand is high and energy prices are higher. On-site generation effectively reduces consumer demand during these times. Additionally, a

[9] Climate Change in Park City: An Assessment of Climate, Snowpack, and Economic Impacts. Stratus Consulting Inc.. September 2009. Pg. 1-2. URL: www.theparkcityfoundation.org/Portals/0/Uploads/Documents/Park.City.Climate.Change.Assessment.9.29.2009.pdf
[10] Solar Photovoltaic Incentive Program (Schedule 107) Annual Report for Program Year 2010. Pg. 13.

properly-sited solar PV system located on a commercial facility (which operates during the day) will likely generate power during the commercial customer's peak, which helps reduce consumer demand on the system.

Recommendation: We recommend the Commission support a significantly expanded solar program that removes the annual program cap along with the cap on system size for commercial systems (we feel the per system cap on residential systems is appropriate). We support the Commission's ordered reduction in payment to $1.55 per watt for this program as we feel that it makes the program even more cost-effective for all ratepayers. Nevertheless, the Commission should consider a higher incentive for systems that are oriented to the west or southwest because these systems provide energy later in the day and provide greater benefit toward the system peak. (West-facing systems do not maximize overall output, but maximize solar's contribution to evening peak energy demand). Additionally, we recommend that the Commission consider, for larger systems (i.e. systems greater than 100 kW), a rebate paid on a per-kWh basis over a determined amount of time. This would reduce the upfront cost for the utility and ratepayers and ensure well designed and well maintained systems. Given that large commercial and industrial systems could provide significant power during summer months, it is critical not to exclude large installations from an expanded solar program.

Conclusions

Given the aforementioned reasons, we recommend that the Commission approve an expanded pilot program to a much larger and long-term solar incentive program. The program could be designed to pass the utility-cost test, and the Commission should consider the additional and unique benefits that distributed generation provides when evaluating the cost-effectiveness of the program (such as those mentioned above). We also recommend that the process to develop the expanded program continue to be open to interested stakeholders to ensure that the expanded program is designed, administered, and implemented with best practices in mind. Thank you again for the opportunity to provide comments on this important matter. We look forward to future involvement in next steps.

Respectfully,

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(signed and submitted on behalf of the parties listed below)

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ATTACHMENTS
(submitted as PDF attachments)

Attachment A: *Investing in the Sun- Economic and Environmental Benefits of Developing 1,000 Megawatts of Distributed Generation Solar in Colorado. Economic and Environmental Benefits of Developing 1,000 Megawatts of Distributed Generation Solar in Colorado. Environment Colorado and Vote Solar***.** March 2010. URL: http://cdn.publicinterestnetwork.org/assets/19c69d7ef4af21460f88cc7cdca9feff/Colorado_1000-megawatt-solar-benefits-report.pdf

Attachment B: *Climate Change in Park City: An Assessment of Climate, Snowpack, and Economic Impacts.* Stratus Consulting Inc. September 2009. URL: www.theparkcityfoundation.org/Portals/0/Uploads/Documents/Park.City.Climate.Change.Assessment.9.29.2009.pdf