

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO
PROCEEDING NO. 14M-0235E

IN THE MATTER OF COMMISSION CONSIDERATION OF RETAIL RENEWABLE
DISTRIBUTED GENERATION AND NET METERING

**COMMENTS OF THE COLORADO SOLAR ENERGY INDUSTRIES ASSOCIATION
ADDRESSING TOPICS PURSUANT TO DECISION NO. C15-0158-I**

I. Introduction / Summary of Comments

Pursuant to Decision No. C15-0158-I, mailed on February 17, 2015 (“Decision”), the Colorado Solar Energy Industries Association (“COSEIA”) respectfully submits the following comments regarding the topics discussed in the Decision, including specific points that COSEIA believes will aid the Commission in resolving these matters.

COSEIA appreciates the opportunity to file comments on important issues raised through the Commission's series of panel discussions on renewable distributed generation and net metering. We applaud the Commission's thoughtful approach to this important topic and its efforts to consider a variety of viewpoints on this matter.

Thus far, COSEIA has provided input to the Commission through the comments and presentations made by the Joint Solar Parties including COSEIA, the Alliance for Solar Choice (“TASC”), the Solar Energy Industries Association (“SEIA”), the Southeast Colorado Solar Coalition (“SCSC”), and Vote Solar (“VS”). In this filing we continue to join our industry partners and generally support the Joint Solar Parties’ position, but wish to elaborate upon the following points:

1. COSEIA does not believe there is justification for a new minimum bill. Instead, the record in this Proceeding clearly demonstrates that the value of solar in Public Service Company of Colorado’s (“PSCo” or “Company”) territory exceeds the value of net

metering using a retail rate offset. Therefore, COSEIA believes that current Net Metering Policy should remain unchanged.

2. COSEIA is concerned that this comprehensive public process aimed at discovery of the value of solar has been devoid of discussion of the environmental consequences and attendant actual costs of decisions made in this docket. We believe it is vital to establish in this proceeding the enormous public and environmental responsibility that the Commission, PSCo, state leaders, and all other stakeholders share in addressing issues such as Net Energy Metering (“NEM”). Any policy decision by the Commission that discourages rather than encourages the broader deployment of distributed generation solar, without weighing environmental considerations relating to such matters as climate change, is a serious miscarriage of public responsibility.
3. COSEIA believes that the current NEM at retail rate for non-demand based tariffs continues to be an important market mechanism to approximate solar value. Although it fails to capture the full value of solar (as demonstrated in the Crossborder Energy Study¹ and numerous other studies referenced throughout this proceeding), the simplicity of current NEM rates represents good public policy; particularly while market penetration is low. The Commission should not alter this policy until penetration reaches a 5% threshold, at which point we would support a thorough analysis of costs and benefits. However, demand-based tariffs for commercial customers currently constrain on-site solar projects, hindering a vast commercial market that currently has virtually no market penetration. Thus, we believe special and urgent review is needed for this class of customers.
4. *The Colorado solar market is in decline at a time when solar markets in other states are growing dramatically.* While the Company’s Solar*Rewards program was among the first in the nation eight years ago, incentive levels are down to 1 or 2 cents for residential customers² - so it is likely near the end of its life. Moreover, this program no longer addresses important industry needs for serving many markets as was envisioned by Amendment 37. Because of the greatly reduced incentives for rooftop solar and the state's failure to lead on new policy, Colorado is now ranked 13th in the country in solar installations, down from 9th in 2012.³ Colorado has also fallen in U.S. solar jobs ranking from 2nd place in 2011 to 11th place in 2014.⁴ The workforce has declined from 5,300 jobs in 2010 to 4,200 in 2014.⁵ This trend is especially troubling because the U.S. Solar

¹ Crossborder Energy, *Benefits and Costs of Solar Distributed Generation for Public Service Company of Colorado: A Critique of PSCo’s Distributed Solar Generation Study* (December 2, 2013), submitted September 24, 2014 in this docket as Exhibit 1 of the solar industry’s response to the Commission’s questions set forth in Decision C14-1055-I.

² See ¶185 of Decision No. R14-0902, at page 22. Mailed Date: July 31, 2014. Proceeding No. 13A-0836E.

³ GTM Solar Market Insight Report, 2014 Year in Review at 8.

⁴ The Solar Foundation, State Profile of Colorado, available at <http://pre.thesolarfoundation.org/solarstates/colorado>.

⁵ *Colorado solar jobs declined 32 percent since 2010*, BizWest article from February 12, 2014, available at <http://bizwest.com/colorado-solar-jobs-declined-32-percent-since-2010/>

workforce in total has increased 86% since 2010.⁶ The Commission's approach to NEM should account for this critical economic factor.

II. Background - The Growing Reality of Climate Change

This proceeding began after PSCo claimed in 2013 that net metered solar customers were being subsidized by other customers - and that this situation needed to be addressed by declaring net metering a subsidy and reducing the credit that NEM customers receive.

This Proceeding has clearly and adequately shown the opposite- that net metered solar customers are paying more than their fair share.⁷ The study by Crossborder Energy, evaluating PSCo's own understated report to this Commission,⁸ shows that onsite solar customers contribute a net benefit of \$13.6 million per year to the Xcel grid in Colorado.⁹ Additional recent studies from other states have indicated that the Crossborder study is in fact conservative in its estimate of benefits.¹⁰ Accordingly, Colorado's solar industry in the 2014 RES Compliance plan asked that the Commission require a thorough cost-benefit study to provide better Colorado-specific data.¹¹

Underlying this dispute is a critical factor that has received virtually no mention during this debate: the growing risk of catastrophic climate change caused largely by unchecked and growing emissions from burning fossil fuels. For the first time, in March 2015, the entire planet surpassed 400 ppm of carbon dioxide for an entire month, according to National Oceanic and Atmospheric Administration ("NOAA"), which reported average levels of 400.83 parts per

⁶ The Solar Foundation, National Solar Jobs Census 2014 at 2, available at http://www.thesolarfoundation.org/wp-content/uploads/2015/01/TSF-National-Census-2014-Report_web.pdf

⁷ See RMI eLab, *A Review of Solar PV Benefit and Cost Studies 2nd Ed.*, September, 2013 at p. 22. And See Fn 21, 22, and 23.

⁸ *Costs and Benefits of Distributed Solar Generation on the Public Service Company of Colorado System*. Xcel Energy Services, Inc, (May 23, 2013) filed April 10, 2015 in this Proceeding, and originally filed in response to Dec. No. C09-1223 in Dkt. No. 11M-426E (May 23, 2013).

⁹ Crossborder Energy, *Benefits and Costs of Solar Distributed Generation for Public Service Company of Colorado: A Critique of PSCo's Distributed Solar Generation Study* (December 2, 2013), at page 15.

¹⁰ See e.g. RMI eLab, *A Review of Solar PV Benefit and Cost Studies, 2nd Ed.*, at 22. And Fn 21, 22, and 23.

¹¹ See Proceeding No. 13A-0836E, Statement of Position of COSEIA, submitted June 6, 2014, at page 3.

million (ppm).¹² This was the first time that the Earth's atmosphere surpassed a level that signals a new danger zone for catastrophic climate change.¹³

Those who are most expert in the field are expressing great alarm. Recently, Fatih Birol, chief economist at the International Energy Agency said, "The door is closing...I am very worried – if we don't change direction now on how we use energy, we will end up beyond what scientists tell us is the minimum [for safety]. The door will be closed forever."¹⁴

This looming crisis must play a central role in the Commission's deliberations. Colorado is already facing serious effects from climate change, such as less average snowpack and available usable water, increasingly violent storms and fires and unusual and costly flood/drought cycles.¹⁵ The human and overall cost of what lies ahead if emissions continue unchecked cannot be calculated, but will be enormous.

When Colorado voters passed Amendment 37 in 2004, solar energy was included as a qualifying resource to ensure that the environmental attributes of the generation are recognized. In the context of eligible resources, Amendment 37 called for:

¹² See NOAA Earth System Laboratory, Global Monitoring Division, Global Mean Carbon Dioxide Concentration for March 2015: 400.83 ppm. Available at: <http://www.esrl.noaa.gov/gmd/ccgg/trends/global.html> Last visited: 5/18/2015.

¹³ See generally <http://climate.nasa.gov/400ppmquotes/> list of quotes from NASA scientists about earth reaching 400 ppm CO₂. Last visited: 5/19/2015.

¹⁴ *World headed for irreversible climate change in five years, IEA warns*, The Guardian, Fiona Harvey, 11/09/2011. Quoting Faith Birol, chief economist at the International Energy Agency. Available at: <http://www.theguardian.com/environment/2011/nov/09/fossil-fuel-infrastructure-climate-change> Last visited: 5/19/2015.

¹⁵ See generally Garfin, G., G. Franco, H. Blanco, A. Comrie, P. Gonzalez, T. Piechota, R. Smyth, and R. Waskom, 2014: Ch. 20: Southwest. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 462-486. Showing effects in Colorado and the Southwest US Region. Available at: <http://nca2014.globalchange.gov/report/regions/southwest>. And See Lukas, Jeff. University of Colorado Boulder, CIRES Western Water Assessment. *Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation* 2nd Ed. August 2014. Available at: <http://cwcb.state.co.us/environment/climate-change/Pages/main.aspx>.

STANDARDS FOR THE DESIGN, PLACEMENT AND MANAGEMENT OF ELECTRIC GENERATION TECHNOLOGIES THAT USE ELIGIBLE RENEWABLE ENERGY RESOURCES TO ENSURE THAT THE ENVIRONMENTAL IMPACTS OF SUCH FACILITIES ARE MINIMIZED.¹⁶

It is evident that non-energy benefits and costs (“NEB” and “NEC”, respectively) are real and significant and cannot be ignored. Metrics for either ascribing extra NEC for use of fossil fuels or alternatively ascribing NEB for use of renewable energy are increasingly applied in forward planning decisions. For example, the Commission approved a Modified Total Resource Cost Test for evaluating the cost effectiveness of its efficiency and demand reduction activities that utilizes a 5% “non-energy benefits adder.”¹⁷ Also, testimony in Strategic Issues Demand Side Management planning proceeding, 13A-0686EG, by the Sierra Club and the PUC Staff recognized a range of models and studies used in the US with values ascribed for Total Resource Cost planning related to energy efficiency costs and benefits.¹⁸

This evolution in modeling costs caused by climate change is being recognized by other utilities and state PUCs as well. As veteran utilities leader David Freeman (former chairman of the Tennessee Valley Authority and numerous other public utilities) said recently in a policy forum, “Let me just remind you that we have an uninvited guest in this room that's sitting next to each and every one of you and hovering over you -- and she is called Mother Nature. And

¹⁶ C.R.S. § 40-2-124(1)(b).

¹⁷ The Modified Total Resource Cost (MTRC) test measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. The presumed MTRC of 1.0 for indirect market transformation programs was approved by the Commission in Decision No. C08-0560 (Proceeding No. 07A-420E) paragraph 141, and reaffirmed by Decision No. C11-0442 (Docket No. 10A-554EG) paragraph 99.

¹⁸ See generally Answer Testimony of Tim Woolf, On Behalf of the Sierra Club, On the Topic of Setting Energy Efficiency Goals, Proceeding No. 13A-0686EG, filed October 16, 2013, pages 6-21.

‘regardless of’ what you believe; she's here, ‘she will not leave your process’ and she will dominate the energy policy of this country for the rest of your life.”¹⁹

We urge the Commission to clearly state as part of the outcome of this proceeding that there is a cost of carbon, which must be factored into all future energy proceedings.

III. Specific Comments

Comment 1: Considering Solar’s Real Value, No New NEM Charges are Needed

The core question presented is whether NEM rules need revamping to achieve rate equity among classes of ratepayers. COSEIA believes the record clearly indicates that *nothing* should be done to reduce the net metering benefit, and that the value of solar exceeds the current rate for residential net metering.

Furthermore, we believe the evidence presented has shown there is no need for a new minimum bill beyond the current \$7.63 now charged.

The net metering benefit-cost analyses that the industry has submitted to the Commission (principally the Crossborder Energy study) shows that the benefits of net-metered DG solar exceed the costs for PSCo. As a result, net metering in Colorado does not cause a cost shift from solar to non-solar customers but rather benefits non-solar customers and provides net benefits to the Xcel system of \$13.6 million per year or approximately \$0.126/kWh - \$0.189/kWh depending on assumptions such as natural gas volatility and a price on carbon emissions.²⁰

¹⁹ Klump, Edward. Energy Wire: Climate: “It doesn’t really matter what you believe” – former TVA chairman talks of life after fossil fuels. Wed. April 1, 2015. Quoting David Freeman. Available at: <http://www.eenews.net/energywire/stories/1060016101/search?keyword=david+freeman> (password required).

²⁰ Crossborder Energy, *Benefits and Costs of Solar Distributed Generation for Public Service Company of Colorado: A Critique of PSCo’s Distributed Solar Generation Study* (December 2, 2013), submitted September 24, 2014, at page 15.

Nearly every independent expert benefit-cost NEM study in the West and other regions has reached similar conclusions, including the Nevada commission's study released last year, and those done in Maine and Vermont. In fact, these studies show that the Colorado Crossborder study is somewhat conservative in estimating the true value of solar, especially when viewed in light of other analyses:

In Nevada:²¹

- A study by E3 shows that for systems installed in 2014 and 2015, the annual grid-specific benefits of net metering flowing to other customers exceed the costs by at least \$168 million over the systems' lifetimes, or approximately \$0.05 /kWh of net metered energy generated.
- If savings from avoiding distribution upgrades are included, E3's estimated net benefit over the systems' lifetime increases by \$130 million or approximately \$0.09 /kWh above current retail net metering in that state.

Maine:²²

- With approximately 15% less solar resource than Colorado, the Maine study completed in March of 2015 determined that the first year Value of Solar is \$0.182/kWh including societal environmental benefits. The study recognizes that the societal costs include estimates of future mitigation costs for carbon emissions, which are not currently being borne by Maine ratepayers.
- The long- term levelized Value of Solar over 25 years is considerably higher at \$0.337/kWh.

Vermont:²³

²¹ *Nevada Net Energy Metering Impacts Evaluation* prepared for the State of Nevada Public Utilities Commission by Energy and Environmental Economics (E3), July 2014, available at: http://puc.nv.gov/uploadedFiles/pucnv.gov/Content/About/Media_Outreach/Announcements/Announcements/E3%20PUCN%20NEM%20Report%202014.pdf?pdf=Net-Metering-Study

²² Maine Distributed Solar Valuation Study, Clean Power Research, March 1, 2015. Available at: <https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/CaseMaster.aspx?CaseNumber=2014-00171>

²³ *Evaluation of Net Metering in Vermont Conducted Pursuant to Act 125 of 2012*, Public Service Department, January 2013. Available at: http://publicservice.vermont.gov/sites/psd/files/Topics/Renewable_Energy/Net_Metering/Act%20125%20Study%2020130115%20Final.pdf

- The Vermont Study by the Vermont Public Service Commission was published in 2013 and focused on the issue of cross subsidization and also considered wind, methane and other alternatives to solar.
- Like in Maine, with approximately 15% lower solar insolation than Colorado enjoys, the results show essentially no cross subsidization between solar participants and non-participants even without accounting for greenhouse gas benefits.
- When greenhouse gas benefits (using an \$80/ton factor) were applied, an additional \$0.03 - \$0.04/kWh benefit of solar was assigned.
- Importantly, the Study found an average VT net metering offset was \$0.147/kWh, the average residential rate in the state during the time of the Study.
- This indicates that the VOS determined by the PSC is in the range of \$0.147/kWh and \$0.19/kWh depending on assumptions of environmental benefits.
- It is notable that VT State Act 125 requires all commercial demand based rates to be credited with Net Metering at the full Residential Rate.

Not only does PSCO's approach buck the national tide, it ignores the reality of rate structures relevant to NEM. Notwithstanding that rates are already designed to accommodate significant differences in costs of serving varied types of customers, PSCo focuses here on perceived cost shifts in solar DG - a service that has only about 1% penetration of its overall business. The flaw in this reasoning came out in these proceedings, as Jim Lazar of the Regulatory Assistance Project noted during Panel 4:

All customers don't have the same cost-of-service. Apartments are much cheaper to serve than sprawling ranchettes. Urban areas are cheaper to serve than suburban areas. And all of that is built, you know, we got cost-shifting between those subclasses going on in rates now, and we have accepted that for a long time.²⁴

Just before that, Mr. Lazar noted, "I was troubled when I heard the company using the term, 'cost-shift,' because this is a revenue stability issue for the company. It's not really a cost-shifting issue. You have a cost-based rate design that recovers costs in a pretty structured fashion now."²⁵

²⁴ See Transcript from Panel 4, April 23, 2015, at page 179, lines 13 – 19.

²⁵ *Id.* at page 175, lines 19 – 24.

While Public Service's "cost shift to non participants" position is often adopted by utility companies and their industry organizations (including the Electric Power Research Institute), these approaches also suffer the same flaw: they use internal studies which ignore or discount key DGS benefits.

The Crossborder Study highlights these very deficiencies in the PSCo study:²⁶

Table 1: Summary of Benefits Assessed in PSCo's DSG Study

Energy:

- *Avoided energy purchases (including fuel purchases) (Included in PSCo DSG study)*
- *Avoided transmission and distribution line losses (Undervalued in PSCo DSG study)*

Capacity:

- *Avoided capacity purchases (Undervalued)*
- *Avoided transmission and distribution capacity investments, and operations and maintenance avoided costs (Undervalued)*

Grid Support Services:

- *Ancillary services, including reactive support and voltage control (Not included)*
- *Energy and generator imbalance (Not included)*
- *Synchronized and supplemental operating reserves (Not included)*
- *Scheduling, forecasting and system control and dispatch (Not included)*

Financial Risk:

- *Fuel price hedge (Undervalued)*
- *Avoided RPS generation purchases (Not included)*

Security Risk:

- *Reliability benefits (e.g. electricity grid resiliency) (Not included)*

Environmental Risk:

- *Avoided costs of current or future NOx, SOx, PM, & CO2 regulatory costs (Undervalued)*
- *Reduced water usage in power production (Not included)*
- *Avoided land cost of avoided transmission or generating infrastructure (Not included)*

Societal Benefits:

- *Economic development impacts, including, impact on local and state tax revenues (Not included)*
- *Job creation (Not included)*
- *Avoided health impacts (Not included)*

Finally, COSEIA disagrees with the premise that PSCo under-recovers its costs from solar customers, a faulty assumption that unfortunately underlies the Commissions' Topic 3,

²⁶ See Crossborder Energy, *Benefits and Costs of Solar Distributed Generation for Public Service Company of Colorado: A Critique of PSCo's Distributed Solar Generation Study* (December 2, 2013), Table 1 at page 2.

Question #1, in the 4th Panel to the Parties. This unsubstantiated utility industry premise was widely broadcast in Colorado in major advertising campaigns by PSCo to influence ratepayer opinion as though a public vote was at stake on this controversial proceeding. This premise is particularly questionable in light of PSCo's recent announcement that it would be returning a \$66.5 million credit to customers because of excess profits, the third year in a row of increasing excess profits.²⁷ This fact alone is an indicator that there is likely greater justification to reduce the current \$7.63 minimum bill rather than consider any increases.

All this leads to the following conclusion: no new minimum bill is justified. Further, any new minimum bill, including as introduced in the 4th Panel by PSCo at \$35.03, would have a detrimental impact on DSG. Action by the Commission in this docket should serve to support broader deployment of distributed generation rather than hinder, better serving the public and the intent of Amendment 37.

Comment 2: True Health and Environmental Cost Accounting is Critical in this Context

The value of solar can only be properly measured if the calculation includes all its benefits, not just those that currently appear on the PSCo balance sheet. Non-Energy Costs or externalities in the form of environmental degradation, emission-based health costs, and infrastructure costs are incurred by our use of fossil fuels for electricity generation, and are all borne by the public. Yet these costs are not properly accounted for by the utilities generating these costs. It is time for the Commission to fulfill its regulatory responsibility to ensure that utilities account for these costs and related externalities in developing rates.

²⁷ Jaffey, Mark. Denver Post: Business. *Xcel set to return \$65.5 million in excess profits to customers*. Posted: 4/30/15. Available at: http://www.denverpost.com/business/ci_28023439/xcel-set-return-66-5-million-excess-profits. Last visited 5/20/2015.

Specifically, we implore the Commission to consider the full benefits of distributed generation solar by including its environmental attributes (emissions free), while placing a realistic price on the costs actually incurred by fossil fuel generation it replaces. This inherent duty to the public interest and the Commission's charge to protect it was acknowledged by Chairman Epel in the first workshop: “The public interest is served when the people of Colorado receive safe, reliable, reasonably priced services consistent with the economic, environmental and social values of the state.”²⁸

This is the same public that increasingly demands clean energy, which is becoming cost competitive even without properly accounting for these NEC/NEB externalities. Coloradans have shown in poll after poll that they favor clean energy over fossil sources. For example, a summer 2014 poll by the Alliance for Solar Choice found that in Colorado: 76% of respondents support net metering and 73% oppose Xcel’s proposal to cut the amount of credit it provides to solar customers.²⁹

As the public demands, it is paramount that the Commission considers how fluctuating climate patterns, flooding (as we have experienced yet again this month), and other potential damaging climate events will impact rates. These events will dramatically drive up the cost of delivering energy, underscoring why climate change impacts need to be factored into Colorado’s energy choices.

²⁸ Transcript from Panel 1, August 24, 2014, page 3, line 25 – page 4, line 4, Chairman Epel quoting the Colorado PUC Mission Statement.

²⁹ See The Alliance for Solar Choice, *Colorado Statewide Survey*, August 2014. Page 5 of statistically valid phone poll showing 76% of Coloradans support the practice of net metering, and page 12, showing 73% of Coloradans oppose Xcel Energy’s proposed changes to net metering. Available at: http://b.3cdn.net/solarchoice/20a40661d7ad707353_fxm62yg5q.pdf

NREL Director Dan Arvizu in Panel Three provided excellent guidance when he said: "You have to go at this from the perspective of what are the policies, principles, and really, the values that we are trying to embrace, as we develop public policies."³⁰

Surely there is no higher public value than keeping the planet habitable.

We believe that if the Commission ignores the true costs of fossil fuels and the true benefits of solar, the public and our state- not to mention the ratepayers to whom the Commission is sworn to protect -- will pay a steep price in the future. In the Netherlands, for example, nearly 900 Dutch citizens have filed a lawsuit against their government for failing to effectively cut greenhouse gas emissions and curb climate change. This NEM proceeding is a perfect place to start acknowledging the cost of carbon, and the Commission and PSCO's failure to do so would open up vulnerability to challenges at the legal, policy, and public level.

Comment 3: Colorado Needs Continued NEM at Retail Rates

Net metering at retail rate is widely used in the U.S., and is a convenient market mechanism to account for an approximation of the economic value of solar.³¹ Furthermore, the simplicity of NEM at Retail rates makes it good public policy; particularly while market penetration is low. The Commission should not alter this policy for non-demand based rates until penetration reaches a 5% threshold, at which point we would support a thorough analysis.

More urgently, commercial and industrial (C&I) ratepayers need attention by the Commission to address and correct the offset of net metering to just 50% or less of a typical commercial bill. This effort will more closely establish the true value of solar and invigorate

³⁰ Transcript from Panel 3, December 1st, 2014, page 25, lines 10 – 13.

³¹ See list of all 50 states and their annual compensation for net metering at http://en.wikipedia.org/wiki/Net_metering Last visited: 5/20/2015. While valuing NEM at retail helps customers get closer to the true value of solar, it is not a calculation of the NEB/NEC value of solar, which can only be done in a thorough and independent study.

this vast market. The trend of modifying C&I demand based rates is already underway in other states. For example, since 2008 the California Public Utilities Commission has approved specific, optional rate designs for C&I customers who install solar to serve at least 15% of their on-site demand. These rate designs reduce the use of demand charges, and have been based on cost-of-service studies of C&I solar customers. These solar-specific time-of-use (TOU) rates feature significantly lower demand charges and higher TOU energy rates than the rates in the standard C&I tariffs of the California utilities³²

Demand- based rate tariffs have long been a method to balance the allocation of fixed and variable costs in establishing rates for larger C&I users. The objective is to fairly distinguish between two C&I customers with roughly the same usage but a significantly different demand at a given time, requiring more or less available fixed facility at that time. The C&I customer with the higher demand will see a higher bill with similar volumetric usage. Yet an artifact of this rate when applied to Net Metering is that only the volumetric component of the bill is offset as a practical matter – generally 50% or less. Therefore, NEM needs to be accounted for as an offset of the entire bill.

A very simple solution might be to adopt a parallel approach to that of Vermont, which treats NEM offset in all demand-based commercial tariffs to be equal to the Average Residential NEM Rate Offset.³³

³² These solar-specific rates are the Schedule DG-R tariff for San Diego Gas & Electric, and the Option R rates for Southern California Edison (SCE) and Pacific Gas & Electric (PG&E). See CPUC Decisions D. 08-02-034, D. 09-08-028, D. 13-03-031, D. 14-12-048, and D. 14-12-080.

³³ See 30 V.S.A. 219(e)(4), which states in relevant part: For a net metering system serving a customer on a demand or time-of-use rate schedule, the manner of measurement and the application of bill credits for the electric energy produced or consumed shall be substantially similar to that specified in this subsection for use with a single nondemand meter.

We recommend that policy be guided by acknowledging the value of solar and the importance of DG to provide the transition to a utility of the future including a more robust and reliable grid. As NREL Director Dan Arvizu said in Panel Three, “It [our current utility system] was built on the premise that fossil fuels were limitless, they were abundant, that they were low cost, and there were no environmental consequences, okay? We thought that to be the case, and for many, many years, that's the way it was. That ... is no longer ... accurate.”³⁴

As cell phones and the Internet transformed the regulated communications industry two decades ago, technologies such as onsite solar generation, affordable battery storage, electric cars, demand response systems, smart appliances and other exciting products will require the Commission to enact creative changes to accommodate this much-needed energy progression. Smart renewable energy policy will also incentivize technologies, products and services that add economic value and make the grid more resilient while promoting the rapid removal of carbon-based energy sources.

Policy that acknowledges the value of solar and appropriately credits the host with that value is urgent in demand-based C&I bill structures. Fort Collins Utilities has recently acknowledged this differential by crediting NEM at retail for residential uses while paying a Feed-in Tariff of about \$0.15/kWh - \$0.19/kWh for commercial customers.³⁵

New renewable policy could incentivize battery storage to shift the solar peak to cover the utility's energy peak, incentivize use of electric vehicles as storage devices, and reinvigorate the commercial market to make use of the thousands of acres of flat office building rooftops ideally suited to produce solar energy in Colorado.

³⁴ Transcript from Panel 3, December 1st, 2014, page 27, lines 2 – 7.

³⁵ See City of Fort Collins Utilities: *Solar Power Purchase Program (SP3)*. Fact Sheet. 8/6/2013. Available at: http://www.fcgov.com/utilities/img/site_specific/uploads/Solar_Power_Purchasing_Fact_Sheet.pdf.

Other utilities are realizing the importance of reform. According to *Utility Dive*, “A two-year pilot program testing time-of-use (TOU) rates has led officials at Sacramento Municipal Utility District to determine that variable pricing can help control peak loads and reduce the need for new generation. Ultimately, the utility decided, time-of-use should be made the default rate for all customers.”³⁶

A final evaluation of the company's SmartPricing Options pilot was published late last year, and the findings showed the utility was able to shift up to 10% of its peak load to shoulder hours, while revealing other benefits as well.³⁷

Comment 4: The Colorado Solar Market is Slipping – A Point Central to the NEM Discussion

As COSEIA has noted in this and other recent dockets, Colorado's position as a solar leader is threatened. The state has fallen steadily in rankings for installed capacity and solar jobs.

While the notion that solar costs continue to fall has been bandied about during this Proceeding, module prices are projected to increase (and there is evidence some already have). Additionally, the expiration of the federal Investment Tax Credit at the end of 2016 is expected to harm solar markets.³⁸ Labor costs rise with the market and general inflation. At the same time, new costs loom. For example, a National Electric Code provision scheduled for implementation in August of 2015 will add the cost of Rapid Shutdown safety switching to

³⁶ Utility Dive. *SMUD: Time-of-use is the future of rate design*. Robert Walton. May 13, 2015. Available at: <http://www.utilitydive.com/news/smud-time-of-use-is-the-future-of-rate-design/397098/>. Last visited: 5/20/2015.

³⁷ See generally *SmartPricing Options Final Evaluation: The final report on pilot design, implementation, and evaluation of the Sacramento Municipal Utility District's Consumer Behavior Study*. Prepared for US DOE. September 5, 2014. Available at: https://www.smartgrid.gov/sites/default/files/doc/files/SMUD-CBS_Final_Evaluation_Submitted_DOE_9_9_2014.pdf.

³⁸ See *iHS Top Solar Power Industry Trends for 2015*: at page 4, stating: “Meanwhile, in the U.S., an uncertain environment is the result of the ongoing debate over net metering, the potentially crippling module price increases as a result of the anti-dumping tariffs and the looming Dec. 31, 2016, expiration of the Investment Tax Credit (ITC). Also see GTM Solar Market Insight Report, 2014 Year in Review, at p. 18, Section 2.6, and p. 70, Sec. 2.9.1.

100% of all projects, bringing an additional and significant increase of costs – estimated in the range of \$0.10/W- \$0.40/W depending on system size and other factors.³⁹ These increased costs of doing business come during a period when the remaining incentives under the Solar*Rewards program have declined to 1 or 2 cents per kWh for rooftop systems.⁴⁰ The allowed capacity in the small program has also been cut in half, from 4 MW/mo during most of 2014 to 2 MW/mo in 2015.

Evidence presented during the course of the proceeding has shown that the economics of rooftop solar are such that several large national players are not participating in Colorado. Significant national companies such as Vivint Solar, One Roof Solar and Sunnova all operate in multiple solar friendly markets. But these firms either choose not to operate in Colorado or have very limited operations here. One Roof CEO David Field informed Commissioner Epel by letter that while his company enjoys stable operations in other states, a litmus test for viability of a solar in a state is the combination of NEM retail rate offset and local incentives that total more than approximately \$0.016/kWh.⁴¹ Below that rate, he explained, One Roof does not see the value of entering a market.⁴² Meanwhile, commercial-scale solar developers throughout Colorado are being forced to work mostly out of state, as the market in Colorado is virtually moribund.

³⁹ See State of Colorado Electrical Board. 2014 National Electric Code became effective in the State of Colorado on July 1, 2014, however, the State Electric Board has agreed to delay implementation of Section 690.12 (requirement for the installation of rapid shutdown of photovoltaic systems on solar installations) until August 1, 2015. See: <http://cdn.colorado.gov/cs/Satellite?c=Page&childpagename=DORA-Reg/DORALayout&cid=1251632358699&pagename=CBONWrapper> . Last visited: 5/20/2015.

⁴⁰ See ¶185 of Decision No. R14-0902, at page 22. Mailed Date: July 31, 2014. Proceeding No. 13A-0836E.

⁴¹ Public Comment Letter from One Roof CEO, David Field, to Chairman Epel, Submitted April 16, 2015 at 8am in Proceeding No. 14M-0235E.

⁴² *Id.*

In the 2014 RES Proceeding, COSEIA recommended the Commission conduct an industry review to compare the State's business and to evaluate new programs in Colorado.⁴³ That recommendation received no response. COSEIA hereby renews this request - with heightened urgency given developments over the last year.

We also urge the Commission to look carefully at what other solar leaders are doing. For example, other states have modern programs for low-income ratepayers, new home construction, school districts, virtual net metering, and bold next generation incentive programs. These stem from recognition that business-as-usual and incremental change is not sufficient to meet the urgency of the climate crisis and other emerging considerations. For example, New York State is engaging in an effort called Reforming the Energy Vision ("REV"), and the NY PUC Staff sees its duty to looking beyond for-profit timelines:

Staff's proposal to pursue the regulatory policy changes in REV is based on the premise that, considering the trends, challenges and opportunities facing the industry, a business-as-usual approach to the future is not a tenable way for the Commission to perform its duties under the law. The business model, market, and regulatory changes initiated in REV will place New York's electric industry on a sustainable path to controlling customer bills and increasing system efficiency.⁴⁴

IV. CONCLUSION

Net metering is a critical policy that makes rooftop solar continually attractive to thousands of Coloradans. We urge the Commission to build on the discussion and recommendations of the four panels and retain net metering as it has been operating successfully in PSCo territory.

⁴³ See COSEIA Statement of Position in Proceeding No. 13A-0836E, filed June 6, 2014, at pages 12 - 15.

⁴⁴ New York State Public Service Commission, Case No. 14-M-0101 – Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision. Order Adopting Regulatory Policy and Framework and Implementation Plan. Effective February 26, 2015, at pages 117 – 118.

We further urge the Commission to begin a comprehensive analysis of the current status of the solar industry, with the goal of making statewide improvements that will invigorate renewable energy market uptake and rapidly reduce the burning of fossil fuels

We realize that our comments on climate change are not typical for this proceeding, but we call on the Commission to realize that the looming climate crisis makes business-as-usual insufficient. Despite the magnitude of the challenge, there are solutions that are within our reach to avert the worst outcomes.

Experts agree that the most promising path to avoid making the planet uninhabitable is to rapidly transition to a clean energy economy. Electric utilities have the biggest opportunity to ameliorate the crisis if they were to quickly change their business models to adapt to the changing realities and the imperative to decarbonize their energy sources. Solar energy has tremendous potential to stem the effects of climate change because it uses little or no water and its application emits no greenhouse gases. Solar is ready to be scaled rapidly and cost effectively and is already more than paying its way. Rooftop solar offers a variety of other benefits to the grid, as has been well documented during this proceeding.

This policy was established over a decade ago in Amendment 37, which says in part,

Therefore, in order to save consumers and businesses money, attract new businesses and jobs, promote development of rural economies, minimize water use for electricity generation, diversify Colorado's energy resources, reduce the impact of volatile fuel prices, and improve the natural environment of the state, it is in the best interests of the citizens of Colorado to develop and utilize renewable energy resources to the maximum practicable extent.⁴⁵

We urge the Commission to be a leader in this transition, and integrate critical environmental factors into all of its calculations and decisions going forward, starting with

⁴⁵ Colorado Amendment 37, § 1: Legislative declaration of intent.

declaring that there is a price for carbon emissions. This is clearly within its statutory and regulatory authority – after all, the economy is a wholly owned subsidiary of the environment.

Respectfully submitted this 22th day of March 2014.

On Behalf of the Colorado Solar Energy Industries Association

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CERTIFICATE OF SERVICE

I hereby certify that on this 22nd day of May 2015, the **COMMENTS OF THE COLORADO SOLAR ENERGY INDUSTRIES ASSOCIATION ADDRESSING TOPICS PURSUANT TO DECISION NO. C15-0158-I** was filed through the Colorado Public Utilities Commission E-Filings System in Proceeding No. 14M-0235E.

/s/ Vincent P. Calvano