BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO

DOCKET NO. 07M-230E

IN THE MATTER OF THE COMMISSION ADOPTING POLICIES AS REQUIRED BY HOUSE BILL 07-1228.

7/13/2007

COMMENTS OF THE COLORADO SOLAR ENERGY INDUSTRIES ASSOCIATION

The Colorado Solar Energy Industries Association (CoSEIA) appreciates the opportunity to present its thoughts on policy development as called for by House Bill 07-1228 (HB 1228). CoSEIA represents the interests of several hundred solar electric and thermal sales and installation companies, distributors and manufacturers of solar products and concerned Colorado citizens. We represent a thriving and rapidly growing industry, particularly in the area of solar electric installations.

CoSEIA requests that copies of comments, other filings, decisions and orders be provided to the following individuals:

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Background

Amendment 37 (40-2-124) has created vibrant big wind and solar electric (photovoltaic) industries in Colorado. A remarkable collaboration of effort with Xcel Energy, Aquilla, the Colorado PUC, and numerous wind and solar companies largely represented by Interwest Energy Alliance and CoSEIA have helped rapidly and effectively move forward on the legislative intent of the voters for the big wind and solar electric industries.

> *From the 2004 Election Bluebook Section on Amendment 37:*
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> SECTION 1. Legislative declaration of intent:
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> Energy is critically important to Colorado's welfare and development, and its use has a profound impact on the economy and environment. Growth of the state's population and economic base will continue to create a need for new energy resources, and Colorado's renewable energy resources are currently underutilized.
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> 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.

However, there are a number of renewable energy resources and industries that have not been developed and utilized "to the maximum practicable extent." For example, small wind, biomass

for thermal and electricity generation, geothermal for electricity, and solar thermal. Call these the rest of the renewables.

Recognizing that the ever-improving technology for harvesting renewables now makes it practical for homeowners and small businesses to generate their own renewable energy, Amendment 37 and the subsequent PUC rules created a special category for "on-site," distributed solar electric systems. These on-site systems are incentivized by a system of Renewable Energy Credits (RECs) that are used to account for meeting a utility's Renewable Energy Standard (RES) requirements, rebates from the utility to the distributed consumers to purchase those on-site RECs, and a method for the utility to recoup costs associated with meeting the RES requirements.

CoSEIA believes that the purpose of HB 07-1228 is to get the combined expertise embodied in the PUC process to help develop policy that will create vibrant industries for the rest of the distributed renewables beyond on-site solar electric. Furthermore we believe that policy needs to be developed for the expansion of distributed solar electric systems beyond Investor Owned Utility (IOU) territory. The long-term goal of policy should be to help drive down prices so that there are healthy industries and markets without rebates.

Policy Must Be Statewide

More than 50 IOU, muni, and coop electric utilities serve Colorado residents. Even in fairly small and mostly suburban Boulder county 5 entities provide electricity (1 IOU, 2 munis, 2 coops). It becomes very difficult to sell solar if each utility is allowed to have substantially different rules, policies, and rebates. Higher consumer costs and lost sales result from trying to

explain to distributed consumers why they don't get the same rebate or metering policy that their neighbor across the street gets. Inconsistent policy generates calls and letters from unhappy consumers to their utilities and elected representatives.

To the maximum extent possible, policy must be made statewide. Exceptions and exclusions to policy should be few in number.

Distributed Solar Electric Policy

Just under 60% of Colorado consumers have access to a solar electric rebate program that helps them harvest Colorado's bountiful sunshine. This means that more than a third of Colorado consumers are left in the dark.

The key requirements for distributed solar electric have developed as:

- Interconnection Standards
- Net Metering (NM - single meter, single register, with kilowatt-hour carryover month-to-month)
- Rebate incentives
- Distributed solar electric requirements

The current policy status for distributed solar electric in Colorado is

	IOU	Coop	Muni
Interconnection Standards	Good	Good	
Net Metering	Good		
Rebate Incentives	Good		
Distributed solar electric requirement	Good(?)		

It is likely that these 4 policies are essential for all distributed renewables that generate electricity, not just solar.

Interconnection standards clearly define how distributed generation connects to the grid and protects the grid. Net metering provides the simplest-for-customers-to-understand form of metering and billing at minimal costs. Rebate incentives help customers with the up-front costs and are the best way to move markets.

Distributed solar electric requirements insure that the rebates actually get used and protect the interests of a particular segment of the renewables marketplace from other segments. The reason for the "(?)" in the chart above is that there are equity concerns where large, medium, and small solar electric systems have different incentive needs but are playing for the same share of the solar requirement.

CoSEIA wants to thank the munis and coops that provide voluntary and in some cases excellent net metering and/or rebate programs for their consumers. Unfortunately, many munis and coops have net metering policies that, while legal under current Colorado law, have the impact of discouraging distributed solar electric systems by requiring high monthly fees, multiple meters, and/or confusing billing schemes. A few coops and munis have voluntary solar electric rebate programs and self-imposed requirements for renewables that in some cases exceed statewide requirements.

CoSEIA would also like to note that while there is no state policy, muni interconnection issues have not been a significant problem so far.

Distributed Solar Thermal Policy

Solar thermal systems harvest renewable energy for heating water for domestic and business hot water needs, for providing space heating of buildings, and for providing heating and pre-heating for industrial processes. Solar thermal systems capture solar energy – energy that would otherwise come from electricity, propane, or natural gas.

If a grid-tied renewable electric system is oversized for any period of time, excess energy flows into the grid. For distributed renewable thermal systems, we need policy to encourage systems that are not oversized since there is no "grid" for excess thermal energy to flow into. This can be done with caps on the total rebate amount and care in sizing the original system for smaller systems. For larger thermal systems actual performance based rebates based on metering can be required. For example, we suggest a cap of $4000 for a residential domestic hot water solar thermal system.

Under the renewable energy standard, distributed solar electric rebates are based on reasonable calculations from PVWATTS and based on the nameplate watts of the solar system. Programs similar to PVWATTS exist for solar thermal systems including RETSCREEN and others that can calculate energy output and peak watts based on collector information, number of collectors, and system tilt and azimuth.

Because they are extremely limited in the amount of the year that they produce useful power in Colorado, we recommend that unglazed collectors that are typically used for pool heating be excluded from the incentives.

All other solar thermal technologies should be allowed where they are performance rated by an independent test laboratory (e.g., SRCC OG-100).

For example, a fairly typical solar thermal system of 2 panels in size would generate enough hot water to cover 70 to 95% of a family of four's hot water use. It would peak at 4 kW and produce some 3800 kWh per year of hot water that could be used by that family in Colorado. In the summer time, this system could produce far more kWh of hot water than the family would use. Since excess production is lost it is not counted in the 3800 kWh number that RETSCREEN produces. Cost is in the range of $8000 to $10000 installed.

We believe that rebates in the $0.50 to $1.00 per watt range would incent an active market in Colorado.

However, rebates by themselves are not always sufficient to create a vibrant market. We believe that, in addition to rebates, it is essential that some entity be responsible for making sure that the rebates are used. In the case of solar electricity in Colorado, Xcel and Aquilla have been doing a very good job of marketing their rewards programs and making sure rebates are utilized.

Under the renewable energy standard, the investor owned utilities are required to meet a certain portion of their retail sales with on-site distributed solar electricity – a solar electric carve-out. We believe a solar thermal carve-out would work as well and could easily be set as a percentage of retail electric sales even though solar thermal does not offset just electricity. In solar thermal's case the carve-out serves to measure the size of the market.

Solar Thermal Benefits:

- When offsetting electric heat: reduces peak electrical load since hot water is drawn from a solar hot water storage tank during typical morning shower and breakfast, and evening washing and shower peaks. Offsets electricity generation as well.
- When offsetting fossil fuels: Reduces gas or propane use. A significant reduction in natural gas use would reduce the cost of natural gas for all gas users, including for the high costs of electricity production from natural gas.
- In all cases provides financial savings for consumers while stabilizing costs for hot water and heating (solar energy is free… electricity, gas, and propane prices are volatile).
- Could produce low-cost solar RECs.

Conclusion

CoSEIA appreciates the opportunity to help establish new Colorado policies that will expand solar electric and solar thermal industries in our state. The primary goal of such policy should be to help create vibrant industries and markets for solar electric and solar thermal that become self-

sustaining without rebates over time. Existing solar electric policies for interconnection, net metering, rebates, and for meeting an actual requirement for installation of distributed solar electric generation need to be expanded statewide. New solar thermal policies need to be developed that define appropriate technology, establish rebates, and identify entities to be responsible for meeting a specific standard of success (e.g., a utility meeting a percentage of electric sales).

Respectfully submitted this 13th day of July, 2007.

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