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TESTIMONY OF
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COLORADO SENATE COMMITTEE ON AGRICULTURE, NATURAL RESOURCES, AND ENERGY
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Chair Schwartz, Vice-chair Giron, and members of the committee, thank you for the opportunity to speak briefly today about the active solar thermal systems that are referenced in Senate Bill 13-272 – the Energy Efficiency and Renewable Energy Jobs Act.

My name is Tim Merrigan. I am a senior program manager for the National Renewable Energy Laboratory (NREL) in Golden, Colorado. NREL is the U.S. Department of Energy's (DOE) primary national laboratory for renewable energy and energy efficiency research and development.

My remarks this afternoon are strictly focused on the technology of solar thermal systems – a renewable energy technology that has developed significantly over the past 30 years. Here are just a few technical facts about solar thermal systems:

- Under the U.S. DOE Building America Program, the Florida Solar Energy Center (FSEC) conducted an analysis of residential solar water heating systems in the U.S. and determined that Colorado had the highest energy savings potential in the nation (Figure 1). Excellent sunshine coupled with low cold water temperatures make Colorado the best place in the U.S. for solar thermal systems.

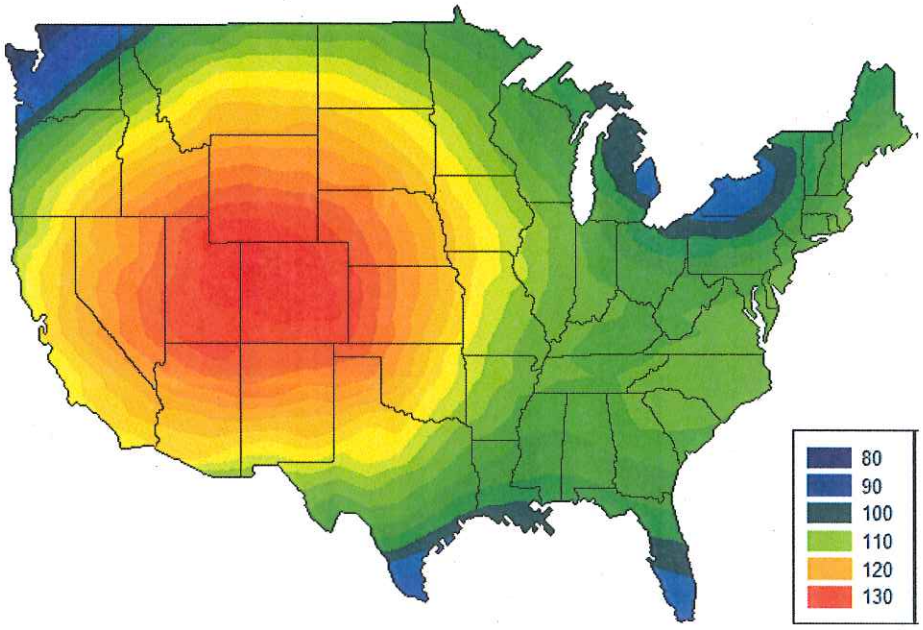

Figure 1. U.S. Solar Water Heating Energy Savings (therms/year)

(Source: Gil and Parker, *Geographical Variation in Potential of Residential Solar Hot Water System Performance in the United States*, FSEC-CR-1817-09, October 2009)

- Solar thermal systems capture the sun's energy in a circulating liquid for use in space heating, water heating, and other residential, commercial, and industrial heating processes.
- Worldwide, the total capacity of installed solar thermal systems exceeds the total power capacity of installed solar electric systems and has the highest total capacity of all renewable energy systems.
- The performance and reliability of solar thermal systems has increased dramatically over the last 30 years. In the United States, this is in part due to state and industry involvement in the DOE-sponsored Solar Rating & Certification Corporation (SRCC) as well as to the incorporation of solar thermal systems into utility demand side management programs (e.g., Hawaiian Electric Company's highly successful solar water heating DSM program).
- In the U.S., a few states have recognized the importance of thermal energy for space and water heating and the complementary role it plays to electrical energy in overall building energy demand. These states (e.g., Arizona, Massachusetts, and California) have addressed thermal energy primarily through the offering of renewable energy, energy efficiency, and demand side management programs overseen by their state utility commissions.
- Information and "lessons learned" from state and utility renewable thermal energy programs is regularly shared with other states and utilities through the DOE-sponsored Utility Solar Water Heating Initiative (USH2O). In fact, USH2O conducted a forum yesterday (April 17) in Baltimore entitled "Solar Water Heating: Optimizing Benefits for Utilities and Their Customers."

In closing, these are just a few technical highlights about thermal energy, solar thermal systems, and the role they play in the U.S. as well as their potential in Colorado. I appreciate your time today and look forward to answering any questions you might have. Thank you.

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