

**FERC Technical Conference**  
**“Integrating Renewable Resources into the Wholesale Electric Grid”**  
**Technical Conference (AD09-4)**

**Panel 1: Transmission and System Planning to**  
**Enhance Integration of Renewable Energy**

**March 2, 2009**

**Remarks of Pedro J. Pizarro**

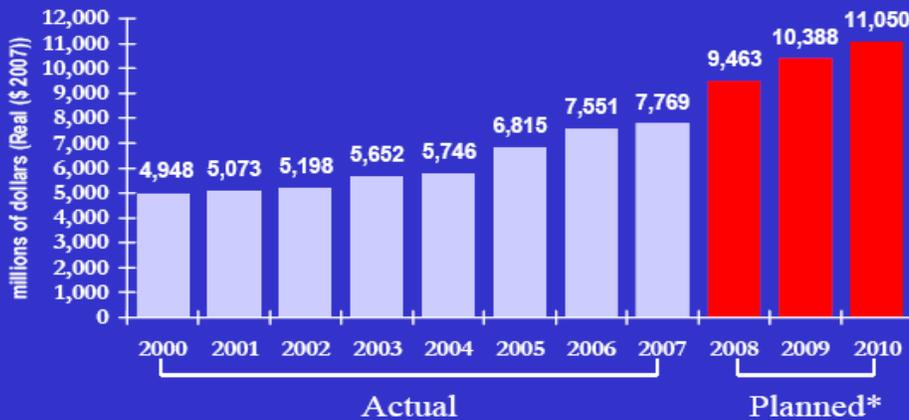
Good morning, Chairman Wellinghoff and Commissioners. My name is Pedro Pizarro. I am Executive Vice President of Power Operations for Southern California Edison Company. I am speaking this morning on behalf of both SCE and the Edison Electric Institute. Thank you for the opportunity to participate today and for addressing the unique challenges associated with the integration of intermittent renewable resources.

Within California, we have 6,240 MW of wind, solar, geothermal, biomass and small hydroelectric resources currently in service and tens of thousands of additional megawatts are planned. In SCE’s interconnection queue alone, we have 41,000 MW of active requests, 86% of which are for renewable resources. Thanks, in part, to the decisions of this Commission, SCE is currently constructing transmission facilities that will deliver these resources to load. However, as the Commission well knows, these resources are often located far from load centers, making the siting and permitting of transmission facilities to serve them difficult. And, then, we must address the unique operational challenges the intermittent nature of these resources present.

*IOU Transmission Investment*

Let me begin by speaking on behalf of EEI and its member companies, to briefly highlight the shareholder-owned utility investment that is already underway. The bar chart to my right depicts what EEI member companies have built and are planning to build to meet various needs, including the delivery of renewable resources. Actual transmission investment for the period 2000 to 2007 totaled nearly \$50 billion. While the books are not closed on 2008, it is believed that \$9.5 billion more was invested last year, and an additional \$21 billion in investment is planned this year and next.

## Actual and Planned Transmission Investment by Investor-Owned Electric Utilities (2000-2010)



Note: Handy-Whitman Index of Public Utility Construction Costs used to adjust actual investment for inflation from year to year. Data represents both vertically integrated and stand-alone transmission companies. \*Planned total industry expenditures are preliminary and estimated from 85% response rate to EEI's Electric Transmission Capital Budget & Forecast Survey. Actual expenditures from EEI's Annual Property & Plant Capital Investment Survey & Form 1s.

In February, EEI completed a new report, “Transmission Projects Supporting Renewable Resources.” This report provides information on EEI member transmission projects in development, or recently completed, that will access renewable resources in various regions of the country. Many of these projects, representing approximately \$21 billion in investment, are projected to be in service by the end of 2015. Copies of this report were provided to you earlier. Additional copies are available here today and at [www.eei.org](http://www.eei.org).

In short, shareholder-owned utilities have the construction and financial capability to build interstate transmission facilities that are identified through Commission-approved planning processes as needed to support development of renewable and other resources.

### *Transmission and System Planning to Enhance Integration*

I would now like to speak on behalf of Southern California Edison Company, to share with you some thoughts on the transmission and system planning issues the Commission has raised in this conference. The Commission has asked whether current planning processes are enabling the development of transmission to interconnect renewable resources. We believe that they are and I will highlight four major efforts currently underway in the West.

First, in California, we have the Renewable Energy Transmission Initiative, or RETI. RETI is designed to create a 20-year outlook of transmission planning for renewable resources through a statewide collaboration of all interested parties, including federal, state, and local agencies; environmental interest groups; generation developers; and transmission owners. RETI has already identified potential transmission to serve generation currently operating or in development in California's Competitive Renewable Energy Zones and is now studying what it will take to serve renewable generation that is not yet in development. Additional streamlining work is necessary, but the conceptual plans identified through RETI will provide a strong foundation for obtaining both state and federal designations as renewable resource transmission corridors.

Second, the Western Governor's Association has a similar initiative, paralleling RETI, examining potential transmission development throughout the West. Documents and maps detailing the Western Renewable Energy Zones have just been posted for comments.

Third, WECC's Transmission Expansion Planning Policy Committee, or TEPPC, is currently evaluating a number of potential projects. This organization develops common economic and technical data bases for modeling the economic benefit and potential impacts of new transmission, and serves as a clearinghouse for coordination of interconnection-wide expansion planning.

Finally, there is WestConnect, a planning group similar to TEPPC, which is evaluating transmission projects that will be of value in the southwestern United States on a subregional basis.

All of these regional and subregional planning efforts ensure that potential new transmission projects can be properly developed to maximize system benefits, in an economic manner.

### *Operational Challenges and Innovative Solutions to Integrating Renewables*

Turning to the challenge that is the focus of this afternoon's discussion – PG&E, SDG&E, and SCE have funded an independent analysis to better evaluate the integration and operational issues associated with relying on higher levels of intermittent, renewable resources. The study considered the existing 20% Renewables Portfolio Standard (RPS) in California along with

the potential for 33% or even higher goals. We anticipate that it will be released shortly, but I can share with you today its key finding.

First, higher RPS levels can result in significant amounts of surplus energy that cannot be used on the grid or sold to others. Power must be offloaded when generation is greater than load and export capability. In California, this is likely to happen in March through May when hydro, wind and solar production can all be high while the system load is far from the summer peak. Energy storage and off-peak-electric-vehicle charging may mitigate the need to dump this energy in the future. However, these energy storage technologies are not yet mature enough to significantly contribute to most resource plans today. Additionally, the “Smart Grid” is still being developed and it may be several years before it is capable of fully integrating such technology.

Second, to maintain grid reliability, higher RPS levels will require higher Planning Reserve Margins to back up the system when these intermittent resources are incapable of producing sufficient energy. Higher ancillary service levels will also be required to maintain proper voltage and frequency levels. This requires the proper type of generation and storage technologies to meet the system regulation, load following, and ramping requirements. As we plan for larger amounts of renewable resources in our generation portfolios, we need to complement those intermittent renewable resources with quick start and fast ramping technologies, such as peaking resources and storage devices, to manage generation variability and maintain system reliability. The California Independent System Operator has begun a stakeholder initiative to better understand the specific system operations and performance implications of higher amounts of renewable resources within its control area.

Finally, the typical six-to-eleven-year lead time for transmission construction is a barrier. One of the most significant hurdles is obtaining right-of-way permits over federal lands. In some cases, it takes many months and even years for necessary special use permits, even after a project’s environmental documentation has been approved, and even on existing rights of way. Since much of the Western renewable resources require transmission traversing federal lands, FERC can play a major role in facilitating its sister agencies’ review of these projects, so that timely right of way permits are issued.

## *Conclusion*

Thank you for the opportunity to speak with you today. I look forward to addressing any questions you may have.