



Coordination Between Natural Gas and Electricity Markets

Docket No. AD12-12-000

West Region - August 28, 2012, Portland, OR

Agenda

9:00 - 9:15 Welcome and Opening Remarks

9:15 - 9:45 Regional Energy Infrastructure Presentation (FERC staff)

9:45 – 12:00 First Roundtable Discussion:

Gas-Electric Coordination and Market Structures in the West

The Western region consists of bilateral markets, trading hubs, and the organized wholesale energy markets of the California ISO (CAISO), and varying access to fuel supplies and natural gas storage across several sub-regions. Public and non-public utilities may participate in these markets. Commenters in the West stress the need for regional and even sub-regional approaches to gas-electric coordination, in light of the different market structures and mix of resources that co-exist. The Commission anticipates that the differing perspectives of the Pacific Northwest, Rocky Mountain, Desert Southwest, and California sub-regions will be reflected in the discussion of gas-electric coordination topics and challenges.

Many within the Western region expect that a significant portion of new generating capacity installed in the next ten years will use natural gas as its primary fuel, which has raised concerns for some regarding the sufficiency of pipeline capacity to accommodate this growth in gas-fired generation. Approaches to addressing infrastructure adequacy also vary across the region. Some commenters stress the need for cost recovery mechanisms or other market enhancements that provide incentives for appropriate fuel arrangements. Others emphasize regionally-based approaches to determine whether there is demand for additional pipeline capacity and services, or whether there are ways the region can better deploy existing capacity to meet demand growth. Some commenters suggest that the Commission has a role to play, in terms of possible refinements to its blanket certificate process.

While some pipelines offer flexible pipeline and storage services, commenters suggest that more flexibility and additional nomination opportunities are needed by operators of gas-fired generation in some areas. Commenters differ on the impact of the mismatch in the scheduling and delivery timelines between the gas and electric industries, with some calling for greater harmonization between natural gas trading and transportation nomination and scheduling timelines and electricity trading and scheduling times within the West, and others contending that the gas-electric mismatch presents no significant challenges or that it is a longer-term issue.

Roundtable participants are encouraged to be prepared to discuss the following:

1. Describe the policies and practices in your region that impact the procurement of gas transportation and storage capacity purchases by gas-fired generators. What changes do you expect, if any, as the use of gas for electric generation increases? Salt River Project in its comments suggests the possible development of a gas-sharing pool similar to regional electric reserve sharing pools.¹ Would this type of development help to address the disincentives to long-term gas supply and transportation contracting noted by the California Public Utilities Commission (CPUC)?² Some commenters state that the West already engages in substantial outage and maintenance coordination between the electric and pipeline industries. How, if at all, is the resulting knowledge of pipeline conditions taken into account in electric dispatch and pricing decisions, and how is the resulting knowledge of electric system conditions taken into account in pipeline operational decisions?
2. How does your region approach the question of gas infrastructure adequacy? Are there reforms to the organized wholesale electric market rules that CAISO could consider as a possible means to allow a gas-fired generator to recover the costs of contracting for gas infrastructure expansion needed to serve electric markets in the region? To what extent do bilateral contracts provide for the recovery of such costs, both in CAISO and in the areas that do not have organized markets? Commenters like Puget Sound Energy, Inc. (Puget Sound Energy) suggest that the immediate need to add infrastructure could be minimized by allowing pipeline capacity release for periods longer than one year at greater than maximum tariff rate.³ What would be the advantages and drawbacks to these proposals?

¹ Salt River Project Agricultural Improvement and Power District March 30, 2012 Comments at 2.

² CPUC March 30, 2012 Comments at 7.

³ Puget Sound Energy March 30, 2012 Comments at 10.

3. What types of services offered by natural gas pipelines and storage providers throughout the West would best meet the needs of gas-fired generators in the region? Recognizing that some pipelines offer additional nomination opportunities beyond the current standards, would generators like to see additional operating flexibility in pipeline services, and if so, what kind? For example, one commenter recommends that the Commission encourage gas storage operators to offer 24-hour service and balancing services. Another described an “intermittent gas” product conceptually similar to conditional firm electric transmission service.⁴ Would proposals like these address generators’ flexibility needs? Are these ideas feasible in the West, and, if so, how could they be structured? What financial assurances would gas pipelines and storage providers need to provide such services?

4. How diverse (or consistent) are nomination, scheduling and commitment practices across the region? How do the regions’ utilities and generators manage the mismatch between the scheduling and commitment timelines on the electric side in local time and the NAESB standard gas pipeline practices? Are there areas in the West where this is more of a problem to generators than elsewhere? If so, can the gas and electric market scheduling timelines be adjusted in a way that improves matters for those regions where it is a problem?

12:00 – 1:30 Break

**1:30 – 2:45 Second Roundtable Discussion:
Communications/Coordination/Information-Sharing**

Each of the sub-regions that make up the West has experienced unexpected events that highlighted the need for improved communication and coordination between electric and gas entities: for example, Denver/the Rockies in December 2006; the Pacific Northwest in December 2009; California in September 2010; and the Southwest in February and September 2011.⁵ Western commenters in the AD-12-12 docket identified

⁴ Salt River Project Agricultural Improvement and Power District March 30, 2012 Comments at 2; MidAmerican Energy Holdings Company March 30, 2012 Comments at 15.

⁵ See “Investigation of the Controlled Outages of February 18, 2006 by Public Service Company of Colorado,” Docket No. 06I-118EG, Initial Report to the Colorado Public Utilities Commission by the Staff of the Colorado Public Utilities Commission, July 7, 2006; “Plugging Into Natural Gas,” http://pnucc.org/sites/default/files/RidingNorthwestDec2009Event_0.pdf; <http://www.cpuc.ca.gov/PUC/events/sanbruno.htm>; “Report on Outages and Curtailments During the Southwest Cold Weather Event of February 1-5, 2011,” <http://www.ferc.gov/legal/staff-reports/08-16-11-report.pdf>; “Arizona-Southern

possible improvements including enhanced communication during emergency outages, coordination of maintenance outage scheduling, and FERC clarification of allowed information sharing under existing rules, particularly the Standards of Conduct.

Comments suggest that improving communications protocols between the gas and electric industry is one issue that may lend itself to more immediate resolution than other gas-electric coordination issues. This panel will discuss whether there are adequate communication protocols among the various stakeholders to assure appropriate gas-electric coordination and identify potential solutions to any issues.

Roundtable participants are encouraged to be prepared to discuss the following:

1. How are coordination and information-sharing regarding both emergency and planned outages handled by affected gas and electric entities in the different regions? Are improvements needed? Several entities in the Northwest stated that the gas and electric utility planners in the Northwest have initiated regular meetings to address resiliency in a coordinated manner.⁶ What kind of coordination occurs and what kind of information is shared and with whom in preparation for extreme events that simultaneously and significantly affect both the gas and electric sectors. Are there any limitations on communication that seem unnecessarily restrictive? Should entities coordinate weather forecasts?
2. The gas pipelines in California and the CAISO have worked to improve their coordination of planned outages. What is the impact of electric system outages upon the gas system, and vice versa? Are further changes needed to allow for the coordination of planned outages? Will the Pipeline Safety, Regulatory Certainty and Job Creation Act of 2011 impose new requirements upon inter-industry communication and coordination? If so, how are the industries planning for those new requirements?
3. Several commenters identified the nature of information that currently is available and shared between gas and electric entities. Is there additional information that needs to be shared that currently is not being shared, and are all the relevant and necessary parties included? Are the information-sharing mechanisms appropriate to the circumstances? Are improvements needed and who should be responsible for implementing improvements?

California Outages on September 8, 2011,” <http://www.ferc.gov/legal/staff-reports/04-27-2012-ferc-nerc-report.pdf>.

⁶ Puget Sound Energy March 30, 2012 Comments at 6; Northwest Gas Association, *et al.*, March 29, 2012 Comments at 1.

4. Parties in the West region expect increased reliance on gas-fired generators to result in greater daily fluctuations in gas usage than have been experienced in the past. For example, the 2012 California Gas Report prepared by the California Gas and Electric Utilities projects that there will be higher daily fluctuations in gas usage in the future, associated with the increase in renewable generation in the state.⁷ What changes in communications and real time data sharing protocols will be needed to accommodate these expected variations?

5. Based on the experience in your region, what aspects of the FERC Standards of Conduct (which govern the relationship between a transmission provider and its marketing function) need to be clarified or potentially revised to improve gas-electric communications and coordination? For example, Puget Sound Energy recommends that the Commission should clarify that the exception for a transmission provider to disclose non-public transmission information with its merchant function should not be limited solely to an emergency on the transmission provider's system. Rather, Puget Sound Energy suggests that the exception be broadened to include non-emergency situations to prevent an emergency and also to permit communications to alleviate emergencies on a nearby/regional transmission provider's system.⁸ Describe specific non-emergency situations to be covered by the suggested clarification to the emergency exception to prohibited communications. Although the Standards of Conduct do not restrict transmission providers from communicating with each other, describe how the Standards of Conduct prevent individuals managing resources on a number of transmission systems in a region from conferring with each other as suggested by Puget Sound Energy.

2:45 – 3:00 Break

**3:00 – 4:30 Third Roundtable Discussion:
Reliability**

The bulk electric system is typically planned, as required by the mandatory reliability standards, to meet projected customer demands and system performance criteria, even under single element contingency conditions. Interstate natural gas pipelines are planned and expanded to meet firm gas delivery contracts between the pipelines and one or more shippers. As noted above, almost all commenters from the West indicated they expect an increased reliance on natural gas generation in the coming

⁷ “2012 California Gas Report Prepared by the California Gas and Electric Utilities,” July 2012, at 11;
http://www.socalgas.com/regulatory/documents/cgr/2012%20CGR_Final.pdf

⁸ Puget Sound Energy March 30, 2012 Comments at 12-13.

years, due to economic and national policy factors. Commenters also expressed concerns about the future reliability and interdependencies of the bulk electric system and the interstate natural gas pipeline system as the amount of natural gas-fired generation increases.

Roundtable participants are encouraged to be prepared to discuss the following:

1. Is there a need for a minimum level of dependability in the fuel supply for gas-fired generators? How would it be defined, who would define it, and what would be the mechanism for accomplishing this? To what extent is the dependability of fuel supply a required specification in standardized contract documents for buying and selling electricity? Should this be addressed regionally, and how can it be addressed in the regions without organized markets? What role can or do State Commissions play in defining or otherwise supporting requirements for fuel dependability in all of the Western subregions?
2. Several commenters express concern about whether there are particular reliability concerns in areas that lack underground natural gas storage. What tools are available to regions to manage gas-fired generation swings and preserve reliability, in areas without gas storage? What happens when there are events that impact pipeline deliverability in those regions?
3. To what extent do the regions in the West coordinate studies of the natural gas and electric systems to analyze forecasted resource mix and/or interdependency risks from curtailments or contingencies? Can this be addressed through existing transmission planning processes or are different processes needed?
4. Commenters from California and the Northwest highlighted ongoing coordination efforts that allowed participants from the natural gas and electric industries, as well as state regulators, to assess emergency response plans and provided a forum to discuss and implement improvements.⁹ Are sufficient emergency coordination procedures in place in the West? Are these procedures routinely tested through functional exercises or simulations? Should all regions within the West routinely conduct joint functional exercises?

4:30 – 5:30 General Discussion of Other Region-Specific Issues Affecting Gas-Electric Coordination

⁹ See, e.g., Northwest Industrial Gas Users March 30, 2012 Comments at 3; Northwest Gas Association, *et al.* March 29, 2012 Comments at 1.

Electric markets in the West function differently in California, the Pacific Northwest and in the rest of the Western Interconnect. To the extent not discussed in the earlier roundtable discussions, we'll discuss these differences as well as any specific issues of concern to one or more of these sub-regions not touched on earlier.

Roundtable Participants:

- Richard Adams, Executive Director, Pacific Northwest Utilities Conference Committee
- Stefan Bird, Senior Vice President Commercial and Trading (on behalf of MidAmerican Energy Holdings Company) (representing the common views of Pacific Corp Energy and Kern River Gas Transmission)
- Ed Brewer, Vice President, Commercial Operations, Williams – Northwest Pipeline
- Will Brown, Director-Commercial, Kinder Morgan West Region Pipelines
- Tina Burnett, Senior Energy Analyst, The Boeing Corporation (on behalf of Process Gas Consumers Group)
- Jan Caldwell, Manager, Marketing Services, Williams – Northwest Pipeline
- Tom Carlson, Director of Fuels and Term Trading, Arizona Public Service Company
- Shelley Corman, Senior Vice President, Commercial & Regulatory, Transwestern Pipeline Company
- John Dagg, Director of Gas Transmission and System Operations, Southern California Gas Company and San Diego Gas & Electric
- Lynn Dahlberg, Director Marketing Services, Williams – Northwest Pipeline
- Curtis Dallinger, Director, Gas Resource Planning, Xcel Energy
- Randy Friedman, Director, Gas Supply, Northwest Natural Gas
- Paul Goldstein, Managing Director, Sempra U.S. Gas & Power
- Roger Graham, Director Wholesale Marketing & Business Development, Pacific Gas & Electric
- Steve Harper, Director Gas Supply, Avista Corp.
- Tom Haymaker, Slice Manager, Clark Public Utilities

- Lee Hobbs, Senior Vice President, TransCanada US Pipelines
- Kevin Johnson, Director, Gas Control, Kinder Morgan Western Pipelines
- Hardev Juj, Vice President Planning Asset Management, The Bonneville Power Administration
- Dan Kirschner, Executive Director, Northwest Gas Association
- Jim Lobdell, Vice President Power Operations and Resource Strategy, Portland General Electric
- Ray Miller, Vice President, Pipeline Management, Kinder Morgan Pipelines
- John Moura, Associate Director, Reliability Assessment, NERC
- Beth Musich, Director of Energy Markets and Capacity Products, SoCalGas and SDG&E
- Liam Noailles, Manager, Market Operations, Xcel Energy
- Terri Peschka, General Manager, Power Operations, Portland General Electric
- Kent Price, Senior Marketing Representative, Salt River Project
- Clay Riding, Director Natural Gas Resources, Puget Sound Energy
- Justin Thompson, Director of Business Support, Arizona Public Service Company
- William Tom, Senior Manager, Day-Ahead Operations, Pacific Gas & Electric
- Gregory Van Pelt, External Affairs Manager, California ISO
- Craig Williams, Market Interface Manager, Western Electricity Coordinating Council

Anticipated Attendees
Gas-Electric Coordination Conference
August 28, 2012
Portland, OR

Teresa Acosta	Noble Solutions
Richard Adams*	PNUCC
Bukola Adetayo	FERC, Office of Energy Projects
Elizabeth Atherton	ConocoPhillips Company
Brenda Anderson	Bonneville Power Administration
Cory Anderson	Seattle City Light
John Anderson	Idaho Power Company
Pam Anderson	Perkins Coie LLP
David Andrejcek	FERC, Office of Electric Reliability
Erin Apperson	Puget Sound Energy
John Apperson	PacificCorp Energy
Dave Arthur	David Arthur Consulting
Elizabeth Atherton	ConocoPhillips
Mark Babula	ISO New England Inc.
Loren Baker	Loren Baker Consulting, LLC
Nancy Baker	Public Power Council
Melissa Bartos	Concentric Energy Advisors
Adam Bednarczyk	FERC, Office of Energy Market Regulation
Collen Larkin Bell	Questar Corporation
Stefan Bird*	MidAmerican Energy Holdings Company
Charlie Black	NW Power & Conservation Council
Kerry Bleskan	SNL Energy
Kirby Bosley	JP Morgan Ventures Energy Corp.
Scott Brattebo	Public Generating Pool
Ed Brewer*	Williams – Northwest Pipeline
Allison Bridges	Williams – Northwest Pipeline
Don Brookhyser	Alcantar & Kahl
Rebecca Brown	Portland General Electric
Stefan Brown	Portland General Electric
Will Brown*	Kinder Morgan Western Pipelines
Jonathan Buchanan	Energy Transfer
Pete Bukunt	Competitive Power Ventures
Michael Burke	Transcanada
Terry Burke	FERC, Commissioner Moeller's Office
Tina Burnett*	The Boeing Corporation
Bradley L. Burton	Questar Pipeline Co.
Jeff Bush	Noble Americas Energy Solutions

Jim Caldwell*	Williams – Northwest Pipeline
Thomas Carlson*	Arizona Public Service
John Carr	ICNU
Gregg Carrington	Chelan County PUD
Lauren Casey	NW Power & Conservation
Franz Cheng	California Public Utilities Commission
Dave Churchman	Eugene Water & Electric Board
David Clement	Seattle City Light
Connie Clonch	PacifiCorp
Colin Coe	Oregon LNG
Ed Coghlan	ON Semiconductor
Connie Colter	Portland General Electric Company
Kelsey Colvin	WECC
Kurt Conger	Northern Wasco PUD
Shelly Corman*	Transwestern Pipeline Company
Scott Corwin	Public Power Council
Valerie Crockett	NAESB
John Dagg*	Southern California Gas Company
Lynn Dahlberg*	Williams – Northwest Pipeline
Curtis Dallinger*	Xcel Energy
Sarah Dammen	NW Natural
Tai Danforth	Western Energy Institute
Dale Davis	Williams Gas Pipeline
Jay Dibble	Calpine
Bill Dickens	Tacoma Power
Lloyd Drain	Wyoming Infrastructure Authority
Dina Dubson	Renewable Northwest Project
Jim Duke	Idahoan Foods
John Dushinske	Kern River Gas Transmission Company
Dan Egolf	FortisBC
Jason Eisdorfer	Oregon Public Utility Commission
Eric Eisenman	PG&E
Catherine Elder	Aspen Environmental Group
Thomas Elgie	Powerex Corp.
John Ellis	SoCalGas and SDG&E
Rich Ellison	The Bonneville Power Administration
Christopher Ellsworth	FERC, Office of Enforcement
Mason Emmett	FERC, Office of Energy Policy & Innovation
Erin Erben	Eugene Water & Electric Board
Stephen Ernst	Energy Newsdata
Bob Essex	Cowlitz County PUD
Mike Evans	Shell Energy North America
Carl Fink	Blue Planet Energy Law

Edward Finklea	Northwest Industrial Gas Users
Linda Finley	Snohomish PUD
Ann Fisher	AF Legal & Consulting Services
Bryce Freeman	Wyoming Office of Consumer Advocate
Randy Friedman*	Northwest Natural Gas
Brent Gale	MidAmerican Energy Holding Company
Mark Gall	SMUD
Nicolas Garcia	Tacoma Power
Tina Gary	Portland General Electric
Bob Geddes	Lewis County PUD
Lauren Gertsch	Williams – Northwest Pipeline
Alaine Ginocchio	Western Interstate Energy Board
Paul Goldstein*	Sempra U.S. Gas & Power
Teyent Gossa	Portland General Electric
Roger Graham*	Pacific Gas and Electric Co.
Larry Greenfield	FERC, Office of General Counsel
Stephen Greenleaf	J.P. Morgan
Randy Gregg	The Energy Authority
Bryan Griess	Transmission Agency of Northern California
Robert Grimm	Southern California Edison
Jake Haake	NextEra Energy Resources
Teresa Hagans	Northwest Pipeline GP
Francis Halpin	Bonneville Power Administration
Dede Hapner	PG&E
Stephen Harper*	Avista Corp.
Anita Hart	NV Energy
Charley Hathaway	Northwest Procurement
Christina Hayes	FERC, Chairman Wellinghoff's Office
Robert Hayes	Calpine Corporation
Tom Haymaker*	Clark Public Utilities
Ben Hemson	NW Gas Association
Dennis Henderson	NW Natural Gas Storage
Robert Henke	ICF International
Cynthia Henry	Xcel Energy
James Henry	PacifiCorp
Fred Heutte	NW Energy Coalition
Harry Hewitt	Tillamook PUD
Jim Hicks	Oregon Public Utility Commission
Megan Higgins	Ecology and Environment, Inc.
Lee Hobbs*	TransCanada US Pipelines
Robert Howard	Development Partners Group
Jennifer Hubbs	Public Utility Commission of Texas
Richard Ishikawa	Southern California Gas Company

Patricia Jagtiani	Natural Gas Supply Association
Don James	PNGC Power
Brian Jeffries	Wyoming Pipeline Authority
Bob Jenks	Citizens Utility Board of Oregon
Anders Johnson	Bonneville Power Administration
Erick Johnson	R. Erick Johnson PC
Kevin Johnson*	Kinder Morgan Western Pipelines
Steve Johnson	Washington Utilities and Transportation Comm.
Tod Johnson	TransCanada
Commissioner Phillip Jones	Washington Utilities and Transportation Comm.
Massoud Jourabchi	NWPCC
Hardev Juj*	Bonneville Power Administration
Clint Kalich	Avista
Robert Kahn	NIPPC
Kolby Kettler	Vitol Inc.
Dan Kirschner*	Northwest Gas Association
Tina Ko	Bonneville Power Administration
Stacey Kusters	PacifiCorp
Bob Lane	San Diego Gas and Electric
William Lansinger	Sempra Energy
Lynn Latendresse	Clark Public Utilities
Edmond Leung	FortisBC
Jimmy Lindsay	Renewable Northwest Project
Shirley Lindstrom	Northwest Power & Conservation Council
Jim Lobdell*	Portland General Electric
Jacob Lucas	FERC, Office of Electric Reliability
Robin Lunt	FERC, Commissioner Clark's Office
Clay MacArthur	Deseret Power
Scott Madison	Cascade Natural Gas Company
Brad Marcy	NVEnergy
George Marshall	Puget Sound Energy, Inc.
Joseph McClelland	FERC, Office of Electric Reliability
Catriona McCracken	Citizens Utility Board of Oregon
Patrick McGary	Clark Public Utilities
Malcolm McLellan	Van Ness Feldman PC
Patrick Mealoy	Navigant Consulting
Adam Menendez	Portland General Electric Co
Alan Meyer	Weyerhaeuser NR Company
Preston Michie	Bonneville Power Administration
Anna Miles	Snohomish County PUD No. 1
David Miller	CEERT
Jeffrey Miller	ColumbiaGrid
Jennifer Miller	PNUCC

Mark Kay Miller	Northern Natural Gas Company
Ray Miller*	Kinder Morgan Pipelines
Scott Miller	FERC, Office of Energy Policy & Innovation
Will Mitchell	Competitive Power Ventures
Brenna Moore	Clark Public Utilities
Frank K. Morehouse	Cascade & Intermountain Gas Co.
Representative Jeff Morris	Washington House of Representatives
Julie Morris	Iberdrola Renewables, LLC
Michael Mott	Northwest Natural
John Moura*	NERC
William Muir	NV Energy
Sylvia Munson	SunGard Energy
Beth Musich*	Southern California Gas Company
Ryan Mymko	Morgan Stanley
Bradley Nickell	WECC
David Nilsson	PCI – Power Costs, Inc.
Liam Noailles*	Xcel Energy
Kevin Nordt	Grant County PUD
Commissioner John Norris	FERC
Jason Norlen	Heber Light and Power
Phil Obenchain	PacifiCorp
Mary O’Driscoll	FERC, Office of External Affairs
John Olenick	Southwest Gas Corporation
Catherine Palazzari	Kinder Morgan Western Pipelines
Lopa Parikh	EI
Randy Parker	ExxonMobil
Lori-Lynn Pennock	Salt River Project
Linda Perez	Western Electricity Coordinating Council
Terri Peschka*	Portland General Electric
Donald Peterson	Pacific Gas and Electric Co.
Thomas Peterson	Black & Veatch
Irina Phillips	PGE
Kent Price*	Salt River Project
Paula Pyron	Northwest Industrial Gas Users
Pete Richards	Williams – Northwest Pipeline
Clay Riding*	Puget Sound Energy
Jennifer Rinker	Spectra Energy
Ken Roach	Clark Public Utilities
Chris Robbins	Cascade Natural Gas Corp.
Phil Rockefeller	NW Power and Conservation Council
Aileen Roder	FERC, Commissioner Norris’ Office
Steve Rodgers	FERC, Office of Energy Market Regulation
Clarke Ross	Tenaska

Oscar Santillana	FERC, Office of Energy Market Regulation
Vijay Satyal	Oregon DOE
Chuck Sawyer	Peregrine Midstream Partners
Mark Sellers-Vaughn	Cascade Natural Gas Corp.
David Shaffer	Wright & Talisman, P.C.
Mike Shapley	Snohomish PUD
Emily Shults	Sempra U.S. Gas & Power
Edward Sienkiewicz	Columbia Grid
Jason Sierman	Willamette University
Nano Sierra	FERC, Office of Electric Reliability
Pamela Silberstein	FERC, Office of Energy Policy & Innovation
Steve Simmons	Northwest Power & Conservation Council
Heather Sixkiller	Portland General Electric
Lara Skidmore	Troutman Sanders LLP
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Andrew Soto	American Gas Association
Alex Spain	Bonneville Power Administration
Jim Spurgen	SDG&E
Blaine Stewart	Heber Light and Power
Jay Story	TransCanada
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Glenn Suga	NV Energy
Dean Sutherland	Clark Public Utilities
Francisco Tairn	Kinder Morgan – Western Region Gas Pipes
Reuben Tavares	California Energy Commission
Justin Thompson*	Arizona Public Service Company
Mark Thompson	NW Natural
Michael Thompson	Wright & Talisman, P.C.
Terry Thorn	North American Energy Standards Board
Jim Thornton	Ecology & Environment
Sue Tierney	North American Energy Standards Board
Keith Tiggelaar	WBI Energy Transmission, Inc.
Henry Tilghman	Tilghman Associates
Terry Toland	Clark Public Utilities
William Tom*	Pacific Gas & Electric
Sheryl Torrey	NV Energy
Zabyn Towner	PNGC Power
Gregory Van Pelt*	California ISO
Roger Vanhoy	Modesto Irrigation District
Mia Vu	PG&E
Kent Walter	Arizona Public Service
Robert Webster	Magnum Energy
Chairman Jon Wellinghoff	FERC

Andrew Wetz
David White
Austin Whitman
Tom William
Craig Williams*
Debi Winney
Bruce Wittmann
Bill Wolf
Val Yildirok
Jim Yost
Jessica Zahnow
Ron Zeilstra

Black & Veatch
TransCanada
MJB&A
PG&E
Western Electricity Coordinating Council
PacifiCorp
Weyerhaeuser Company
CenterPoint Energy, Inc.
Portland General Electric
Northwest Power & Conservation Council
Arus Media
FortisBC