
The Wirth Chair in Environmental and Community Development Policy



UNIVERSITY OF COLORADO AT DENVER & HEALTH SCIENCES CENTER

The Graduate School of Public Affairs

**A Leadership Forum:
Securing the Energy Future of the
Western United States**

May 2001

Summary Report

**The Wirth Chair in Environmental and Community Development Policy
The Graduate School of Public Affairs
University of Colorado at Denver & Health Sciences Center
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SUSTAINABLE TECHNOLOGY**

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Summary Report

A Leadership Forum: Securing the Energy Future of the Western United States

Co-sponsored by the
Wirth Chair at the University of Colorado at Denver
and the
The CEO Coalition to Advance Sustainable Technology

with the support of
CH2M-Hill
and
U.S. Department of Energy

May, 2001



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Dear Colleague:

A unique Leadership Forum-*Securing the Energy Future of the Western United States*-took place in Denver on May 22/23. Convened by the Wirth Chair at the University of Colorado at Denver and the CEO Coalition to Advance Sustainable Technology, the Forum brought together nearly 80 senior government, business and non-profit leaders concerned with the energy future of states in the West.

The Forum's discussions were focused, substantive and productive. They resulted in increased understanding of energy problems facing Western states. As important, they resulted in the definition of many alternatives to secure the energy future of Western states. Significantly, the discussions led to the exploration of key concepts and options to link energy priorities to priorities to reduce greenhouse gases. In a similar vein, they recognized the need to integrate energy planning with carbon emission reduction planning.

We are pleased to provide you with the attached summary report of the Leadership Forum. The agenda and list of leaders attending the Forum are included with the report.

We would like to thank CH2M-Hill and the U.S. Department of Energy for their support of the Denver Leadership Forum. We also want to express our appreciation to Heidi VanGenderen, Sr. Associate of the Wirth Chair as well as Tom McCoy and Sue Green, Special Assistants to Marshall Kaplan for contributing to the arrangements for the Forum.

We hope the summary outline will strengthen the current national debate on energy and global warming policies. We would welcome your comments on the summary report.

Sincerely yours

Marshall Kaplan
Executive Director
Wirth Chair
University of Colorado at Denver

David Olsen
President
CEO Coalition to Advance
Sustainable Technology



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MEMORANDUM

TO: Secretary Spencer Abraham

FROM: Marshall Kaplan, Executive Director, Institute for Public Policy,
University of Colorado at Denver
David Olsen, President, CEO Coalition to Advance Sustainable
Technology

RE: SUMMARY OF LEADERSHIP FORUM: SECURING
THE ENERGY FUTURE OF THE WESTERN UNITED STATES

DATE: July 6, 2001

On May 22-23, 2001, more than 80 top Western state and national leaders from the energy industry, from the non-profit community and from the public sector met in Denver. The Forum, titled "Securing the Energy Future of the Western United States," was convened by the Wirth Chair at the University of Colorado and the CEO Coalition to Advance Sustainable Technology. It was supported by CH2M-Hill and the U.S. Department of Energy.

Participants included outstanding CEOs such as Governor Jim Geringer of Wyoming; Ken Lay, Chairman of the Board of Enron; Ralph Peterson of CH2M Hill, Admiral Richard Truly of the National Renewable Energy Laboratory; Pete Cartwright of Calpine; Judi Johansen of PacificCorp; Jeff Sterba of Public Service of New Mexico; Gary Goldberg of Kennecott Energy; etc. (see attached list of participants)

The Forum's agenda (see attached agenda) provided participants with opportunities to share ideas and build common understanding concerning the lessons learned from California's power difficulties. The agenda also granted priority time to discussing what we know (and don't know) about power needs in Western states. Participants received an outstanding briefing from Governor Geringer concerning the Western Governor's Association's initial response to the energy problems facing the Western states. Subsequently, they reviewed alternative strategies to respond to Western power needs, including strategies related to developing a balanced supply; strategies related to using demand management and efficiency options; and, strategies related to developing more intensive use of distributed generation.

Participants examined ways to assure that efforts to secure a reliable and sound energy future complement efforts to respond to global warming problems and carbon emission reduction objectives.

We hope you will find this brief summary of the results of the Leadership Forum in Denver useful.

1. Lessons Learned From California:

For the most part, California's problems stem from a fundamentally flawed 1996 electricity deregulation law. The state deregulated supply and wholesale prices without deregulating the retail side of the power market. Capping retail prices, as California did, eliminated the possibility of market feedback. Over time, a gap grew between the costs of power to utilities and the prices utilities could charge consumers for power. Consumers were protected from price signals based on time of use. Utilities faced a real price squeeze and ultimately severe financial problems.

Importantly, the state required utilities to buy their power on the spot market rather than through long-term contracts. Additionally, it encouraged them to divest most of their own generation. These simultaneous actions resulted in structural vulnerability to market uncertainties and caprice.¹ The structural problems facing utilities could not be overcome despite the fact that California had the lowest rate of demand growth and the lowest per-capita use of electricity of any Western state during the last decade.

Deregulation errors, alone, would have generated power supply difficulties in California. But other variables clearly exacerbated California's situation. Low electricity prices in California discouraged investment in new plants. Under-investment in power related infrastructure throughout the nineties left California and other Western states vulnerable to pipeline deterioration, explosions, drought and transmission bottlenecks.² It, combined with deregulation flaws, created opportunities for possible market manipulation by major private sector providers of generation and by owners and contract managers of transmission.³

¹ The California PUC required utilities to procure power that they sold to customers from the short-term wholesale market. The decision was made in early 1996. It required utilities to sell off 50% of their fossil fuel fired power plants while at the same time it forbid utilities from securing long term contracts for the supply of electricity. Structurally, the rules of the game changed dramatically. The market for utilities narrowed considerably. Sellers of electricity were in a dominant position.

² Several participants noted the lag in investments in transmission. As one participant noted, "California, like many Western states, has not invested in its transmission system equal to need. Because California imports natural gas, investment in transmission commensurate with increases in demand and the needs of an aging transmission system is both important within its borders and in other states. This has not occurred." The Bonneville Power Administration system, important to the Western states, has not added major new transmission for years. Much of the grid used in the system is almost three decades old. Governor Geringer noted that the grid throughout the West faces the same under-investment problems.

³ Serious charges have been made since the beginning of the California crisis relative to market manipulation of prices by major generation and transmission companies. For example, California has

Demand for power fueled by growth⁴ combined with lack of investment in new plants resulting from low prices and deregulation uncertainties led to dangerously low reserve levels in California.⁵ Supply problems in California were heightened by the recent absence of surplus hydropower resulting from low rainfall totals in the Northwest. Succinctly, states in the Northwest facing possible shortages of power were hesitant to export power to California.⁶

Californians have now begun paying on average a relatively high price for reliable electricity.^{7 8 9} However, California's power supply problems may well be short lived.

complained to FERC that El Paso Gas favored its own sister company, El Paso Merchant Energy, over nearly two dozen other companies for the right to ship natural gas through the pipeline it controls to meet between 15-17% of California's daily need for energy. The state contends that El Paso Gas used the deal to corner the market and influence, if not control, the price of natural gas in California. El Paso Gas has denied the charge indicating that gas prices in California result from demand, problems in the grid and public policy. FERC has not yet ruled on California's complaint. Several investigations are going on in California and have been initiated by FERC concerning affirmations that generation companies may be manipulating the cost of power over and above what is just and reasonable. FERC has issued refund orders totaling many millions of dollars to several leading electricity generating companies in California. Essentially, refunds will be provided if the generators charged rates that exceeded their highest costs of production.

⁴ As noted earlier in this section, California had the lowest rate of demand growth among Western states. But demand grew nevertheless. For example, between 1995 and 2000, electric demand increased by nearly 14%. Generation, however, increased by only 2%.

⁵ Deregulation in California eliminated the state role in regulating reserve levels. Reserve margins are generally low throughout the Western states because of uncertainties concerning deregulation and lack of investment in new plants.

⁶ Former Secretary Richardson's order to states in the Northwest to export hydropower to California was not received well in the Northwest. "The Northwest was short of hydro power. Political leaders objected to sending power that was in short supply to California." Their negative perceptions of the Secretary's order was fueled by negative perceptions of California's deregulation efforts.

⁷ As reported by a number of individuals at the Forum, "Wholesale electricity prices, previously two to three cents a per kilowatt hour rose to 15 cents on average from June to August of 2000. They doubled again between December 2000 to January 2001." "California's cost of purchasing power on the wholesale market may exceed 70 billion dollars this year; it was only 7 billion dollars in 1999."

⁸ Unexpectedly, prices for natural gas and electricity have fallen significantly in recent days in California. Most analysts feel that the steepness of the price drop will only be temporary.

⁹ On June 18th, FERC agreed to monitor all wholesale spot-market prices in electricity in the West until Sept., 2002. The FERC order covers publicly controlled sellers which previously had been exempt. Prices above a benchmark-85% of the highest clearing price-would be subject to a refund. The order covers ten Western states and California. Sellers of power to California would recover a 10% premium to acknowledge assumed credit risk.

FERC's policies concerning controlling or limiting prices of electricity have evolved over the past year. For example, based on a finding that rates in California were unjust and unreasonable as a result of a flawed market, FERC set a limited price cap of \$150 a megawatt hour last year. In March of this year, FERC required power generators in California to reimburse customers if their prices exceeded the cost of the least efficient generator in California. Refunds were required in Stage 3 emergencies when supplies fell

While recent state intervention to purchase power through long term contracts¹⁰ may not eliminate serious shortages of power in the state this year and next, more than 15000 MW will come on line within the next three years. This fact combined with large capacity additions in other Westerns may convert California's present scarcity of power into a glut.

2. Lack of Consensus Concerning The Numbers:

Diverse projections of energy demand and supply have been made by different public, private and non-profit agencies throughout the Western states and the nation. They reflect a range of estimates. "Projections have missed the mark by as much as 50% on average." Projections completed by reputable groups and individuals often differ considerably.

Why are projections different and why is it so tough to secure consensus? Participants noted that there are complex methodological problems associated with developing projections. "Estimates of population growth must be related to estimates of economic growth. Both must reflect assumptions relative to the use of energy by consumers. They also must reflect often-complex decisions of investors, suppliers and distributors of energy. Projections must accommodate the use of existing technology and technology likely to come on line in the future. Market assumptions must be related to assumptions concerning public policy."

"It is difficult at times to agree on projections because agreement may suggest or lead to public policy commitments which lack political support."

Demand for energy and demand for new non-renewable sources of supply resulting from growth in the Western states will likely continue to visibly increase based on "business as usual" scenarios¹¹. Complex economic, market, political, policy, technical and indeed cultural factors will affect the relationships between demand and supply. As one participant indicated, "We don't really have a firm handle on either demand or supply side numbers. We will likely face short term scarcity in the West...The excess of supply over demand in some Western states will be marginal at least for the near term..." Another participant asked, "Given the uncertainties associated with projections, why do we have to accept "business as usual" scenarios for policy purposes?" He suggested that,

within 1.5% of demand. FERC extended the mitigation plan in April. Refunds were to occur if supplies fell within 7.5 percent of demand. (See New York Times, June 19, 2001)

¹⁰ California's present effort to secure long-term contracts may result in price stability and increase the state's ability to avoid the uncertainties of the spot market. However, long-term contracts will build in certain price rigidities and limit California's ability to take advantage of possible future price decreases.

¹¹ Several representatives at the table noted the tremendous variance in projections based on assumptions concerning the growth of the economy in the nation and the West; the ability of technology to continue to drive down the cost of renewable energy; the success of demand management strategies; increases in energy efficiency and improved energy management; and the ability of companies to market energy efficient technology to the American public (e.g., hybrid car, efficient refrigerators, solar roof tiles, etc).

"We should develop a flexible response to energy demand. We can reduce demand through effective and fair demand management options and through increased investment in efficiency. We can extend supply alternatives through commitments over time to increase use of renewables."

3. The Role of Natural Gas:

Forum participants, including merchant energy companies, utilities, and state planners, agreed that natural gas will meet most of the power needs of Western states for the near and intermediate future. Some participants questioned whether supplies of natural gas will be sufficient over an extended period of time to meet rising demand. A vigorous dialogue occurred among participants concerning how much proven supplies of natural gas remains in both this country and the world. Most participants felt that the nation and the West would have sufficient supply to meet estimated demand for at least the next twenty years, particularly if pipeline problems can be resolved through improved coordination of present distribution systems and through significant investment in system enhancement as well as new transmission. According to a number of participants, planned investments in LNG infrastructure by businesses suggest that the price of natural gas, likely, will remain higher than it was in the 1990s.

4. The Role of Coal:

Coal presently meets 36% of Western State power needs as compared to 52% in the U.S. Coal has price advantages over gas for electrical generation in terms of raw price per btu of energy content. Depending on rates of demand growth, the U.S. has a 250-year or more supply of coal.

Generators have made progress over the past ten years in developing coal technology that reduces particulate, SO_x and NO_x emissions. However, concern about the role of CO₂ emissions remains a serious issue with respect to the expanded use of coal. While technical options are available to improve generating plant heat rate and lower CO₂ emissions, commercialization of a clean coal or complete CO₂ free plant is at least twenty years away. As a result, greater reliance on coal will cause increased carbon emissions. In this context, some participants felt that developing increased wind generation could offset the CO₂ emissions of coal fired plants and could lead to the increased consideration of coal as part of a comprehensive power strategy in the West.

The CEOs of coal companies and coal-burning utilities at the Forum supported the need for a predictable U.S. carbon policy, including emissions standards, to provide cost, investment risk and permitting certainty. Some participants indicated that new coal plants would be difficult to finance without certainty concerning emissions standards, including standards for CO₂.

5. The Role of Nuclear Power:

Most individuals felt that expansion of nuclear power use in the West was not a likely option. High capital costs combined with negative public perceptions concerning storage of waste and the operation as well as location of plants make increased reliance on nuclear power both a political and financial problem. At the present time, "nuclear options are not financially viable. The capital markets will not finance them."

6. The Role of Renewables:

Increased use of renewables (e.g., wind, solar, geothermal, biomass) in Western states was subject to much discussion at the Forum. Several Western states have wind resources equal to many times their total electric loads.

Many participants noted that the cost of renewable technology had been reduced significantly, particularly with respect to wind power and solar photovoltaics. Wind power, at the present time, appears to be competitive or almost competitive with natural gas. Indeed, given the production tax credit, and the current price of natural gas, wind may well be the least cost energy resource in many areas of the West. Solar photovoltaics are cost effective for peak shaving and for a variety of transmission support or reinforce most options.¹²

Biomass and geothermal are widely available in parts of the West. Their development as power resources could bring important economic and political benefits. But both are more expensive at the present time than gas fired generation.

Participants noted that Texas and Nevada have enacted Renewable Portfolio Standards that mandate the installation of renewables. The Western Regional Air Partnership Air Pollution Prevention Forum has recommended a 20% renewable energy goal for 2015. California is considering legislative initiatives that would achieve a 20% renewable energy goal by 2010. The European Union is committed to using renewable energy to produce 22% of its energy by 2010.

Despite significant commitments in some areas of the West, most Western states get less than 1 - 2% of their energy from renewables. Participants felt problems with respect to expanding use of renewables remain significant. Apart from the actions of some utilities that frustrate the use of renewables, these include: competitor costs; dispatchability; policy constraints with respect to interconnection; transmission and scheduling; failure of the federal and state governments to grant renewables an "even playing field."

¹² Wind and solar are intermittent non-dispatchable power sources. The grid must be able to accommodate them.

7. The Role of Energy Efficiency and Demand Management:

Participants felt that improved energy efficiency and the use of effective demand management could reduce the rate of demand growth. Successful demand management and improved efficiency would reduce the magnitude of required investment in plant and transmission.¹³

(Use of Technology) Every day new technology is being developed that if used would help make commercial and industrial buildings, homes, transportation systems, utilities more energy efficient. The experience of energy service providers, some of which manage the entire energy operations of major companies, indicates that strategic investments in technology and management efficiency will secure significant energy savings for involved companies and the economy.

Participants acknowledged the need to convince the business community and the general public to adopt and use available technology and energy efficient management approaches. Presently, significant policy barriers frustrate the commercialization of efficient technologies and the implementation of energy savings programs. Clearly, current tax and regulatory policies do not maximize the use of efficiency related technologies. Participants felt that the development of a facilitative regulatory and policy environment will help increase the ability of technology and improved energy management to improve energy efficiency and lessen power needs.¹⁴

(Demand Management) Many Western states and many businesses within Western states have granted primacy to developing strategic demand management alternatives. They include but are not limited to: time of use pricing with respect to power use; rebates for customers who reduce power use; use of variable tolls on tollways to affect auto use and reduce congestion,¹⁵ etc. Improved demand management strategies will continue to reduce energy and power needs. Indeed, most analysis reviewed by participants at the Forum suggested that effective demand management strategies could significantly reduce the number of power plants that would otherwise be required over the next decade and beyond.

8. The Role of Distributed Generation:

Participants devoted considerable time at the Forum to discussing the advantages of distributed generation or the development of smaller power facilities nearer to end

¹³ Efficiency programs in California were seen as successful in reducing the rate of demand growth.

¹⁴ A study prepared by the U.S. Department of Energy's national laboratories published toward the end of 2000, titled "Scenarios for a Clean Energy Future," indicated that more efficient building construction could reduce by almost 50% the White House's Energy Task Force's estimated need for 1300 new power plants by 2020.

¹⁵ Support was expressed at the Forum by several participants for real time pricing.

users.¹⁶ To most, distributed generation held out the promise of an efficient and reliable alternative to the conventional and historical power model that relies on central station power plants and high voltage transmission lines connected to load centers. While the conventional model generally worked well in the last century, management, technical and cost issues may limit its ability to deliver reliable power to Western states and the nation in the future.¹⁷

At a minimum, distributed generation can complement the grid and help avoid power blackouts. More relevant, if encouraged by fair ground rules, distributed generation may reduce net power supply needs and investment related to large power plants and transmission. Most participants agreed that unnecessary barriers to interconnection, generation and sale of distributed power should be identified and removed.

Distributed generation provides power in smaller amounts close to where it is needed. It is modular and therefore quite flexible in linking use to demand. It may well be better able to accommodate the high reliability power demands of computers, servers, etc. It also may be able to reduce transmission losses and minimize the need for new large transmission/power plant investments. Participants noted that distributed generation offers the potential of a smart grid, in which there is two way communication between generator and energy user. As a result, real time balancing of consumption and generation may become easier. Most participants felt that strategies to increase the use of distributed generation should be explored by Western states.

¹⁶ Distributed generation or micropower means the production of power by diverse small systems using varied fuel supplies (e.g., fossil, wind, geothermal, etc). Generation plants are located closer to the consumer lessening the length of transmission lines and transmission problems (95% of the causes of outages). Distributed generation permits consumers to avoid the problems associated with the grid and can result in power more consistent with consumer needs. Distributed generation could involve many providers of electricity including groups of consumers (e.g., industrial commercial consortiums, groups of neighborhoods and communities, etc). Distributed generation should be able to extend the capacity of grid systems.

¹⁷ Participants suggested that economies of scale combined with relatively low marginal costs associated with existing plants may make it difficult for distributed generation to initially compete with larger grid based systems. Market acceptance and increasing market penetration as well as innovative financial arrangements with respect to the acquisition of still relatively costly equipment may lower the costs of distributed generation. In reducing the costs of power supplies, co-generation (e.g., the conversion of heat to power) has been shown to lessen the costs of distributed generation.

Increasing the use of distributed generation will face many hurdles. While the cost of some renewable technologies has become cheaper and in the context of natural gas price increases reasonably competitive, other renewable technologies remain expensive and in some cases not yet feasible. Connections and coordination with the existing grid in light of varied state and utility regulations may be difficult. Many utilities have not seen fit to "encourage" distributed generation. They fear competition and ostensible "standby costs" related to possible problems faced by distributed generation systems.

Both conventional power systems and distributed generation would have similar kinds of negative impacts with respect to carbon emission reduction if they use primarily fossil fuels.

9. Convergence of Energy and Climate Change Policies and Initiatives:

Participants generally agreed that man-made greenhouse gas emissions are likely to have a negative effect on the environment and quality of life of the United States and the world. Most participants felt that the evidence concerning climate change and global warming produced by scientists was compelling. Both the level and concentration of the emissions appear to be increasing in the atmosphere.

Most participants felt that responding to energy demand and meeting carbon emission reduction requirements associated with global warming were priorities that must and could be met simultaneously. Failure to integrate energy planning with planning to reduce carbon emissions and other greenhouse gases could intensify climate change problems.¹⁸

Participants acknowledged that it would be more costly now to meet the emission reduction targets in the Kyoto Protocol because of our economic growth and the absence of comprehensive emission reduction strategies. Several participants pointed out that the Framework Convention on Climate Change agreed to by President Bush in 1992 and ratified by the Senate committed the U.S. to stabilize the concentration of carbon in the atmosphere.

Whether or not the Kyoto Protocol is approved, participants felt that market-based flexibility mechanisms provide a sensible way to address carbon concerns. Participant statements on this issue included: "Kyoto should be viewed as providing a framework for consideration of alternative strategies." "Options in the Protocol that use the market to reduce greenhouse gases (e.g., emissions trading) should be supported by the U.S." "Given the delay in ratification and implementation, the 1990 targets in the Protocol should be moved back ten years."

Participants debated the importance of sequestration in reducing carbon. Some felt that the West, given its agriculture and forests, could serve a vital role in helping the U.S. meet emission targets; others felt that sinks were not stable; that they were subject to carbon release from natural causes (e.g., fire); and that their carbon absorption rate has been overemphasized in national and international studies. A number of participants noted the opposition of many countries to a possible U.S. plan to meet its carbon reduction targets by "planting trees...." and or through the use of existing agriculture and forestlands. Clearly, more research was required to define the relevance of sequestration in any national or Western based carbon emission reduction strategy.¹⁹

¹⁸ Two participants noted that the proposed national energy plan relies on "business as usual" projections of demand and supply. It also suggests increased development of power plants using primarily fossil fuel. As a result, it could heighten the contribution of the U.S. and the Western states to global warming problems.

¹⁹ Participants briefly discussed strategies that inject carbon deep into the ground and ocean. There was no agreement on the relevance of these options. There was agreement that both should be examined further.

10. The Need for Improved Coordination:

Participants generally agreed that there is a need for improved coordination between the various federal, state and regional planning and regulatory agencies in the West and in the nation. Participants pointed to the clear differences among California as well as some other Western states and FERC concerning rate caps. Several also noted that proposed federal energy policies with respect to exploration, investment, and use of eminent domain for transmission were inconsistent with policies favored by some states and governors. Finally, some participants observed that FERC positions with respect to the structure and role of regional transmission organizations was out of sorts with some Western states.

At times, energy policies defined by some Western states seem to lack cohesion with other Western states. As relevant, energy policies defined by some Western states appear at times inconsistent with articulated regional objectives. Future state-by-state regulatory and deregulatory initiatives, if they are not reasonably consistent, could reduce each state's and the western region's ability to access reasonably priced, environmentally safe, reliable supplies of energy. WGA has initiated a comprehensive effort to assure policy relevance and consistency among states concerning the development of additional generation and transmission facilities as well as the use of renewables and the implementation of demand management.

Participants had no easy answers with respect to the absence of and need for sustained policy coordination among the federal government, the region and the states. Most felt that whatever is done to improve coordination should focus on creating an even, transparent playing field for private sector participants in power markets. Some felt the need for a "portfolio manager" at some level of government, preferably the regional level of government. Others preferred development of portfolio criteria rather than a portfolio manager. "Let the market place and the participants in the market place be guided by a set of realistic consistent portfolio standards."

Several participants suggested that anti-trust and anti-competitive concerns will increase with deregulation. They argued that, at a minimum, market ground rules defined by public agencies, irrespective of government level, should be transparent and should impede market domination by major power generators and or managers/owners of transmission. Many participants wondered out loud "why federal, regional and state planning and regulatory agencies could not define a better way of communicating with each other.... and a better way of reaching consensus concerning energy policies and initiatives. While conflict may well be built into the federal system, given the different roles and objectives of the federal government, states and regional groups with respect to energy, it need not be pervasive. We should be able to design a way for relevant federal, regional and state agencies to work together."



Mr. Secretary, we hope this summary of the Leadership Forum in Denver contributes to the current national and Western state dialogue concerning energy, power and global warming issues and objectives.

Clearly, based on the statements of participants, future comprehensive energy policies must link energy objectives to longer term environmental and greenhouse gas concerns. Just as clearly, future comprehensive energy policies must focus on increasing supply through environmentally sound exploration, improved energy efficiency and conservation and significantly increased use of carbon free fuel, such as renewable energy. Importantly, future energy policies must be structured to balance supply options with major efforts to reduce demand through better energy management, investment in technology and demand management strategies. Finally, future energy policies must reflect a willingness to reduce the barriers that limit the increased use of distributed generation in the nation and Western states.

The Wirth Chair and the CEO Coalition to Advance Sustainable Technology welcomed the opportunity to host the Leadership Forum in Denver. We look forward to working with you and your colleagues in the Administration, the Congress, state leaders, business and non-profit communities to help develop fair, efficient and coordinated energy and greenhouse gas emission policies.

cc: Senator James Jeffords, Chair, Senate Environment and Public Works Committee
Congressman W.J. "Billy" Tauzin, Chair, House Committee on Energy and Commerce



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Securing the Energy Future of the Western United States

A Regional Leadership Forum

May 22-May 23, 2001

**Denver Metro Chamber of Commerce Building
1445 Market Street, Executive Board Room, 4th floor**

Convened by:

**CEO Coalition to Advance Sustainable Technology
and the Wirth Chair at the University of Colorado at Denver¹**

with Support from:

CH2M Hill and the U.S. Department of Energy

Agenda

Tuesday, May 22, 2001

8:00 a.m. Welcome

David Olsen, Forum Co-Chair and CEO Coalition President
- Goals of the Forum

Rick O'Donnell, Deputy Chief of Staff for Policy, Office of Governor Bill Owens
- The Governor's Energy Principles and Concerns

8:25 a.m. Framing the Agenda

Ralph Peterson, President and CEO, CH2M Hill
- Putting Our Energy Needs in Context: Regional and National Challenges and
Environmental Stewardship

8:45 a.m. Causes of the Power Crisis and What We've Learned So Far

Bill Keese, Chair, California Energy Commission
- Causes of the Crisis

¹ Marshall Kaplan, Executive Director of the Wirth Chair, will facilitate sessions

Discussants

Ray Gifford, Chair, Colorado Public Utilities Commission
Judi Johansen, Executive, Vice President, PacifiCorp
Matthew Brown, National Conference of State Legislatures

10:15 a.m. How Much Power Do We Need?

Doug Larson, Executive Director of the Western Interstate Energy Board
- Regional and State-by-State Energy Needs

Ralph Cavanagh, Energy Program Director of the National Resources Defense Council
- How Much Can We Rely on Efficiency?

Discussants

Steve Kean, Executive Vice President and COO, Enron
Jeff Burks, Utah State Energy Manager
William Brack, Vice President, Phelps Dodge Corporation
Bill Chew, Managing Director, Standard and Poors

Noon Lunch: The Western Governors Action Plan

Lunch address by Wyoming Governor Jim Geringer
Overview of the Western Governors Association (WGA) Recommended Objectives, Policies and Initiatives to Respond to Electricity and Energy Needs in the West.

Commentary: Jim Souby, Executive Director of Western Governors Association
- Details of Western Governors Association's Action Plan and Next Steps

1:30 p.m. Framework for Considerations of Western Energy Alternatives

Admiral Richard Truly, Director of the National Renewable Energy Laboratory
NREL's Agenda - Moving the United States and the West Toward a Cleaner, More Efficient and More Secure Energy Future

1:50 p.m. Regulation, New Technologies, and Transmission

Nora Mead Brownell, Nominee, Federal Energy Regulatory Commission
- Transmission Investment, Consolidation of Grid Operations, and Cooperation of Regulated and Deregulated Systems

U.S. Department of Energy
Bob Anderson, Commissioner, Montana, Public Service Commission
Hank Habicht, CEO of Global Environment Technology Foundation
Charles Murphy, Managing Director, Merrill Lynch's Global Energy and Power Group

3:30 p.m. Power Supply

Gary Goldberg, President and CEO, Kennecott Energy Company
- Potential and Challenges of Coal in the Western Electricity Mix

Peter Cartwright, Chairman and CEO, Calpine
- Potential and Challenges of Gas Fired Generation;

Rachael Shimshak, Executive Director, Renewable Northwest Project
- The Western Regional Air Partnership's Goal for Renewable Energy

Discussants

Jeff Sterba, CEO, Public Service New Mexico
Bill Becker, Director, Denver Regional Office, U.S. DOE

6:30 p.m. Reception-Denver Marriott Hotel
1701 California Street, Denver

7:15 p.m. Dinner-Denver Marriott Hotel

Dinner Speakers Chris Hessler, Chief of Staff and Chris Miller, Senior Minority Staff of the U.S. Senate Environment and Public Works Committee:
What will the Administration and Congress Likely Do with Respect to Energy and Related Environmental and Greenhouse Gas Emission Issues?

9:30 p.m. Adjourn

Wednesday, May 23

7:30 a.m. Breakfast

Dr. John Firor, National Center for Atmospheric Research:
- An Overview of Climate Change

8:30 a.m. Keynote

Ken Lay, Chairman, Enron
- Energy and Climate Realism in a Political World

9:00 a.m. The Convergence of Energy, Environmental and Greenhouse Gas Issues

Dr. Robert Repetto, Senior Wirth Fellow, University of Colorado
- An Overview of the Economics of Climate Change

Paul Yhouse, President and CEO, Holnam Corporation
- Mini Case Study of Holnam's Environmental and Energy Efficiency Objectives

Discussants

Dirk Forrister, Managing Director of NatSource
Donna Kraisinger, Director of Health, Safety and Environment for the Western
U.S. Region, BP Amoco
Mike Miller, Energy Manager, Ball Corporation
Nancy Kete, Vice President of World Resources Institute
Dr. Ronald Follett: United States Department of Agriculture (USDA)

11:00 a.m. Wrap Up: Next Steps Toward Western Energy Policy

The final session will summarize the deliberations of the Forum. Participants will assess areas of agreement and disagreement. Participants also will discuss initiatives and actions to build common ground on policy issues.

SECURING THE ENERGY FUTURE OF THE WESTERN UNITED STATES

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FirstName	LastName	Title	OrganizationName
Brent	Alderfer	President	Community Energy
Bob	Anderson	Commissioner	Montana Public Service Commission
Dean	Anderson	President	POMA of America
Dan	Arvizu	VP, Energy & Industrial Systems	CH2M Hill
Arnold	Baker	Chief Economist	Sandia National Laboratories
William S.	Becker	Director of Denver Reg Office	U.S. Department of Energy
Michael	Bertolucci	President & CEO	Interface Research Corp.
Rudi	Bertsche	CEO	Northwest Energy
Robert	Boswell	Chairman and CEO	Forest Oil Corporation
William S.	Brack	Vice President, Engineering	Phelps Dodge Mining Co.
Kent	Briggs	Executive Director	Council of State Governments-West
Matthew	Brown	Energy Program Director	National Conference on State Legislatures
Roy	Brown	Majority Whip-Montana House	Montana State House
Ron	Burch	President and CEO	Far West Energy, Inc.
Jeff	Burks	Director	Utah Office of Energy Services
Peter	Cartwright	CEO	CALPINE
Ralph	Cavanagh	Director, Energy Program	Natural Resources Defense Council
William	Chew	Managing Director	Standard and Poors
Craig	Cox	Director	Colorado Coalition for New Energy Technologies
J. Michael	Davis	CEO	Avista Labs
Robert K.	Dixon	Deputy Assistant Secretary	Office of Power Technologies U.S. Department of Energy
Angus	Duncan	Executive Director	Bonneville Environmental Foundation
Peggy	Duxbury	Consultant	Center for a Sustainable Economy
Monica	Ellis	President and COO	GETF
James	Ferris	President, Energy, Environment	CH2M Hill
John	Firor	Senior Scientist (retired)	NCAR

Ronald	Follett	Soil Scientist/Research Leader	USDA - Agricultural Research Service
Dirk	Forrister	Managing Director	NatSource
Maggie	Fox	Deputy Executive Director	The Sierra Club
Inge	Fretheim	President & CEO	Future Energy Resources Corporation
Janet A.	Gellici	Executive Director	Western Coal Council
Jim	Geringer	Governor	Office of the Governor
Ray	Gifford	Chairman	Colorado Public Utilities Commission
Gary J.	Goldberg	President and Chief Exec. Officer	Kennecott Energy Company
Rick	Grice	Executive Director	Governor's Office of Energy
Hank	Habicht, II	CEO	Global Environment & Technology Foundation
Jack	Haffey	President,	Montana Power Company
Bob	Hagedorn	Senator	Colorado General Assembly
Christine	Hansen	Executive Director	Interstate Oil & Gas Compact Comm
Tom	Harvey	Chairman	GETF
Steven	Hauser	Power Systems Program Manager	Pacific Northwest National Laboratory
Jim	Hempstead	Director, Global Energy and Power Group	Merrill Lynch
Chris	Hessler	Majority Staff	U.S. Senate Environment & Public Works Committee
Harry	Javernick	VP of Manufacturing for the West	Holnam Corporation
Judi	Johansen	Exec. VP, Reg. and External Affairs	PacifiCorp
Fred	Julander	CEO	Julander Energy Co.
Marshall	Kaplan	Executive Director	Institute for Policy-UCD University of Colorado - Denver
Steven	Kean	Exec. VP and Chief of Staff	Enron Corporation
Patrick	Keegan	Executive Director	Colorado Energy Science Center
William	Keese	Chair	California Energy Commission

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Nancy	Kete	Director of Global Climate	World Resources Institute Program in Climate Energy & Pollution
Donna	Kraisinger	Director, External Relations, HSE for N. America	BP Amoco
Doug	Larson	Executive Director	Western Interstate Energy Board
Ken	Lay	Chairman of the Board	Enron
Ron	Lehr	Attorney	
John	Maddex	President	Center for the New West
Kelly F.	Mader	Director, Government & Public Affairs	Kennecott Energy Company
Chuck	McDermott	CEO	The Citizen Companies, LCC
Mike	Miller	Energy Manager	Ball Corporation
Michael	Minor	Chairman	SUPERSITE Holdings Corporation
Kahlid	Muslih	Director of Government Affairs	El Paso Corporation
John	Nielsen	Co-Director, Energy Project	Land & Water Fund of the Rockies
John F.	Nunley, III	Manager, State Energy Program	Wyoming Business Council
Rick	O'Donnell	Director of Policy	Governor's Office
David	Olsen	President	CEO Coalition to Advance Sustainable Technology
Deana	Perlmutter	Sr. Vice President	The Dutko Group, Inc.
Ralph	Peterson	CEO	CH2M HILL World Headquarters
Robert	Repetto	Sr. Wirth Fellow, Wirth Chair	University of Colorado
Steve	Reynolds	Director, Minerals, Energy & Transp.	Wyoming Business Council
Robert	San Martin	VP and Chief Science Officer	Midwest Research Institute
Marcus	Schneider	Program Officer	The Energy Foundation
Rachel	Shimshak	Executive Director	Renewable Northwest Project
George	Sissel	President and CEO	Ball Corporation
James	Souby	Executive Director	Western Governors Association

Jeff	Sterba	President and CEO	Public Service Company of New Mexico
John	Trefny	Vice President	Colorado School of Mines
Richard	Truly	Director	National Renewable Energy Laboratory
John	Tuttle	CEO	Daystar Technologies
Randy	Udall	Director	CORE
			Wirth Chair-UCD
Heidi	VanGenderen	Senior Associate	University of Colorado - Denver
Kaushik	Vyas	Corporate Vice President	SAIC
Ronald	Williams	President/CEO	Gary-Williams Energy Corp.
		Exec. Vice Pres. & General	
Ken	Wonstolen	Counsel	Colorado Oil and Gas Association
Dennis	Yakobson	President	Rentech, Inc.