

Abstract

Final Report: Demand Side Bidding DOE Instrument No. DE-FG01-01EE10829

This document sets forth the final report for a financial assistance award for the National Association of Regulatory Utility Commissioners (NARUC) to enhance coordination between the building operators and power system operators in terms of demand-side responses to Location Based Marginal Pricing (LBMP). Potential benefits of this project include improved power system reliability, enhanced environmental quality, mitigation of high locational prices within congested areas, and the reduction of market barriers for demand-side market participants.

NARUC, led by the Committee on Energy Resources and the Environment (ERE), actively works to promote the development and use of energy efficiency and clean distributive energy policies within the framework of a dynamic regulatory environment. Electric industry restructuring, energy shortages in California, and energy market transformation intensifies the need for reliable information and strategies regarding electric reliability policy and practice.

NARUC promotes clean distributive generation and increased energy efficiency in the context of the energy sector restructuring process. NARUC, through ERE's Subcommittee on Energy Efficiency, strives to improve energy efficiency by creating working markets. Market transformation seeks opportunities where small amounts of investment can create sustainable markets for more efficient products, services, and design practices.

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N A R U C
National Association of Regulatory Utility Commissioners

December 31, 2003

Mr. Joseph Malinovsky
U.S. Department of Energy (EE-3.2)
1000 Independence Avenue, SW
Washington, DC 20585

Re: DOE Instrument No. DE-FG01-01EE10829

Dear Mr. Malinovsky:

This correspondence will serve as the final report for the above-referenced grant for the reporting period October 1, 2001 to August 30, 2003. The National Association of Regulatory Utility Commissioners (NARUC) continues to make excellent progress on the initiatives funded with this financial assistance award.

If you could please verify receipt of this Final Report via telephone, e-mail or in writing, I would be much obliged. My phone number is (202) 898-2217 and my email address is aspahn@naruc.org. Please do not hesitate to contact me with any questions or concerns. We deeply appreciate the financial support of the U.S. Department of Energy

Sincerely,

Andrew Spahn
Director of Grants and Research
NARUC

NOTICE

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FINAL REPORT

DOE Instrument No. DE-FG01-01EE10829

National Association of Regulatory Utility Commissioners
1101 Vermont Avenue NW, Suite 200
Washington, D.C. 20005

December 2003

Prepared for

U.S. Department of Energy
Award No. DE-FG01-01EE10829

INTRODUCTION

This document sets forth the final report for a financial assistance award for the National Association of Regulatory Utility Commissioners (NARUC) to enhance coordination between the building operators and power system operators in terms of demand-side responses to *Location Based Marginal Pricing* (LBMP). Potential benefits of this project include improved power system reliability, enhanced environmental quality, mitigation of high locational prices within congested areas, and the reduction of market barriers for demand-side market participants.

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Overall Objectives

- Increase understanding and awareness of energy efficiency and renewable or alternative uses and technologies as relating to reliability.
- Increase Cooperation Between Power Grid Operators and Building Operators to Decrease Electric System Load Congestion
- Increase Cooperation Between Power Grid Operators and Building Operators to Energy Efficiency throughout Regional Power Grids/Pools

Specific Objectives

- Increase Awareness of Current Market-Based, Demand –Side Load Reduction Practices for Heavily Congested Transmission and Distribution Nodes
- Increase Awareness of Potential Market-Based, Demand-Side Load Reduction Strategies for Heavily Congested Transmission and Distribution Nodes
- Increase Cooperation between Urban Building Operators and Power Grid Operators To Enhance Market-Based, Demand-Side Load Reduction Practices

The funding for the above referenced grant requires NARUC to:

- Develop a Report That Documents Current Market-Based, Demand –Side Load Reduction Practices for Heavily Congested Transmission and Distribution Nodes - **Completed**
- Develop A Report That Documents Potential Market-Based, Demand-Side Load Reduction Strategies for Heavily Congested Transmission and Distribution Nodes - **Completed**

- Convene A Workshop with Urban Building Operators, Power Grid Operators, Energy Regulators, and Other Stakeholders To Enhance Market-Based, Demand-Side Load Reduction Practices - **Completed**
- Disseminate Project Deliverables (Tasks 1,2, and 3) to Power Grid Operators, Building Operators, Regulators, and Legislators - **Completed**

CONTRACTUAL ACTIVITIES

- NARUC issued a Request for Proposals in December 2001 to assist NARUC's Energy Resources and Environment Committee in developing a paper on demand responsiveness. As a result of an intensive review of thirteen proposals, NARUC's Executive Committee awarded a contract to ICF Consulting. The ICF paper will focus on:
 - Providing an overview and critique of current and impending ISO-based demand response programs, emphasizing day-ahead or real-time "bidding" type programs.
 - Identifying how demand response programs can best be implemented within the constraints of existing ISO market structures and procedures.
 - Identifying methods to achieve optimal participation by load-serving entities and their customers (industrial, commercial, and residential) in ISO-based demand response programs.
 - Identifying relevant State regulatory issues associated with ISO-based demand response programs.
- In late March 2002 ICF circulated a draft report to NARUC for substantive review.
- The final paper, *Policy and Technical Issues Associated with ISO Demand Response Programs* was presented to ERE at NARUC's Summer Meeting held July 28-31 in Portland, Oregon. This report can be found at:
http://www.naruc.org/Programs/demand_bidding/index.shtml.
 NARUC is still receiving requests for copies of this paper.

A copy of the paper is provided as an attachment to this report

- In March 2003, DOE and NARUC agreed to fund Commissioner travel to different demand response conferences in lieu of conducting one large conference. NARUC in consultation with DOE determined that grant objectives would be accomplished more effectively through a series of smaller demand response events. This action will allow more Commissioners and other stakeholders to assist in the development of concrete policy actions as outlined in the grant proposal. A comprehensive list of demand response activities supported by this grant is provided in the following section of this report.

GRANT RELATED ACTIVITIES

Defining Priority Actions for Demand Responsiveness and Energy Efficiency, November 14-15, 2001

Over sixty representatives from state energy and environmental agencies, public utility commissions, and the independent system operators (ISOs), along with their federal government counterparts, gathered in Philadelphia for the second New England/Mid-Atlantic states regional meeting. The meeting was held as follow-on to the Practical Pathways to Energy and Environmental Coordination in the New England/Mid-Atlantic States held June 2001 in Baltimore.

The National Association of Regulatory Utility Commissioners (NARUC), the National Association of State Energy Officials (NASEO), the Ozone Transport Commission (OTC) and the State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) co-hosted this meeting to learn from one another and develop specific priority actions to achieve more reliable and environmentally benign power supply.

NARUC provided travel funding for the following commissioners to attend the meeting:

- Roy Hemmingway, Commissioner, Oregon Public Service Commission
- Bob Anderson, Commissioner, Montana Public Service Commission
- Edward Garvey, Commissioner, Minnesota Public Utilities Commission
- Bob Keating, Commissioner, Massachusetts Department of Telecommunications and Energy
- Michael Dworkin, Commissioner, Vermont Public Service Board

FERC Demand Response Meeting, February 11, 2002, Washington D.C.

FERC Commissioners met with State commissioners to discuss the FERC should require Regional Transmission Organizations (RTOs) to administer a regional, long-term generation capacity obligation, and if so, the form and mechanism for that obligation.

NARUC provided travel funding for the following commissioners to attend the meeting:

- Bob Anderson, Commissioner, Montana Public Service Commission
- Edward Garvey, Commissioner, Minnesota Public Utilities Commission

Policy and Technical Issues Associated with Demand Bidding Programs: Presentation by Dr. David Kathan, NARUC's ERE Committee, February 11, 2002, Washington D.C.

Presentation given by Dr. David Kathan of ICF Consulting to ERE Committee on ISO Demand Bidding Programs, Improvements to ISO Programs, Barriers to Customer Participation and Program Design Issues.

The following Commissioners attended the meeting:

- Nancy Brockway, Commissioner, New Hampshire PUC
- Michael Dworkin, Commissioner, Vermont Public Service Board
- Donald Downes, Commissioner, Connecticut Department of Public Utility Control
- Jack Goldberg, Commissioner, Connecticut Department of Public Utility Control
- Linda Kelly, Commissioner, Connecticut Department of Public Utility Control

Creating Energy-Air Quality Collaboratives in the Northeast/Mid-Atlantic States Conference, October 22-23, 2002, Westbrook, CT

The Ozone Transport Commission (OTC), in coordination with the National Association of Regulatory Utility Commissioners (NARUC), and the National Association of State Energy Officials (NASEO), held the *Creating Energy-Air Quality Collaboratives in the Northeast/Mid-Atlantic States Conference* on October 22-23, 2002 in Westbrook, Connecticut.

The conference built upon an effort by State-based organizations to coordinate programs, policies and regulations among energy and environmental officials. The Energy-Air Quality Collaboratives Conference was a follow-up to the successful National Energy, Environment and Transportation Summit conducted in May 2002. The purpose of the Energy-Air Quality Collaboratives Conference was to explore opportunities for energy, environmental, and air quality officials to develop integrated, interagency approaches to promote clean energy resources. The conference was designed to facilitate an open and ongoing dialogue to help develop successful State projects and public/private partnerships that capitalize on these integrated efforts and their relation to air quality standards.

NARUC provided travel funding for the following commissioners and staff to attend the meeting:

Commissioners:

- Nancy Brockway, Commissioner, New Hampshire PUC
- Michael Dworkin, Commissioner, Vermont Public Service Board
- Donald Downes, Commissioner, Connecticut Department of Public Utility Control
- Jack Goldberg, Commissioner, Connecticut Department of Public Utility Control
- Linda Kelly, Commissioner, Connecticut Department of Public Utility Control

Staff:

- Mike Chowaniec, Staff, Connecticut Department of Public Utility Control
- Rich Cowart, National Council on Competition and the Electric Industry
- Philip Hastings, Maine Public Utilities Commission
- Cameron Johnson, Connecticut Department of Public Utility Control
- Dennis Keschl, Maine Public Utilities Commission
- Alexander Lee, New Hampshire Public Utilities Commission
- Peter Meyer, Vermont Public Service Board
- Alan Nault, Rhode Island Public Utilities Commission
- Bill Palomba, Connecticut Department of Environmental Protection
- Rich Sedano, Consultant, Regulatory Assistance Project
- Ginger Teubner, Connecticut Department of Public Utility Control

NARUC Annual Convention, November 10, 2002, Chicago, Illinois

At the NARUC Annual Convention on Sunday November 10, 2002 Carl Monroe, Vice President of Operations at the Southwest Power Pool, gave a tutorial session to the Staff Subcommittee on Locational Marginal Pricing. Several Commissioners attended this tutorial including:

- Bob Anderson, Commissioner, Montana Public Service Commission

- Phyllis Reha, Commissioner, Minnesota Public Utilities Commission
- Pam Nelson, Commissioner, South Dakota Public Utilities Commission
- Steve Ellenbecker, Chairman, Wyoming Public Service Commission

Demand Response and Electric Industry Restructuring Forum, March 13-14, 2002 Washington D.C.

In March 2002, the Consumer Energy Council of America completed the CECA Distributed Energy Domestic Policy Forum. The goal was a thorough discussion of the many technological, regulatory, and business issues that must be addressed if distributed energy and demand response is to make a positive contribution to the nation's energy infrastructure.

NARUC provided travel funding for the following commissioners and staff to attend the meeting:

- Bob Anderson, Commissioner, Montana Public Service Commission
- Edward Garvey, Commissioner, Minnesota Public Utilities Commission
- Leon Jacobs, Commissioner, Florida Public Service Commission
- Marilyn Showalter, Commissioner, Washington Utilities and Transportation Commission

Energy, Security and Energy Restructuring Forum, May 22, 2002, Washington, D.C.

The purpose of this forum was to bring together representatives from all stakeholder groups to develop policy recommendations regarding the future structure of the electric industry while ensuring benefits and protection for all consumers, including measures of demand response.

NARUC provided travel funding for the following commissioners to attend the meeting:

- Edward Garvey, Commissioner, Minnesota Public Utilities Commission
- Bob Anderson, Commissioner, Montana Public Service Commission
- Nancy Brockway, Commissioner, New Hampshire Public Utilities Commission
- Marilyn Showalter, Commissioner, Washington Utilities and Transportation Commission

New England Demand Response Initiative Stakeholder Meetings:15(b), June 18, 2003, Holyoke, MA

The meeting focused on reviewing and finalizing the recommendations and chapters of the NEDRI Report, "Dimensions of Demand Response: Capturing Customer Based Resources in New England's Power Systems and Markets". NARUC provided travel funding for the following commissioners and staff to attend the meeting:

- Bill Nugent, Commissioner, Maine Public Utility Commission
- Nancy Brockway, Commissioner, New Hampshire Public Utilities Commission
- Thomas Austin, Maine Public Utility Commission
- Sandra Waldstein, Vermont Public Service Board

Edison Electric Institute Locational Marginal Pricing Workshop, July 26, 2003, Denver, CO

FERC has proposed the adoption of Locational Marginal Pricing (LMP) that depends on improved price transparency to manage transmission congestion in wholesale markets. Some regions of the country have extensive experience with LMP while other regions are determining whether LMP will work in their system. With LMP already well developed in some regions, a

key question is will LMP work in others? This session provided a tutorial on LMP and addressed issues in connection with regional concerns and alternatives, for example:

- What are the basic components of LMP?
- How is LMP working?
- Will LMP work in all regions?
- What are the alternatives to LMP?

Utility executives from the Northeast and West explored these issues, and others. NARUC provided travel funding for the following commissioners and staff to attend the Workshop.

Commissioners:

- | | |
|--------------------|---------------------------------------|
| • Connie O. Hughes | New Jersey Board of Public Utilities |
| • David Svanda | Michigan Public Service Commission |
| • David Hadley | Indiana Utility Regulatory Commission |

Staff:

- Robby Abarca, Texas Staff

Mid-Course Review of Electric Restructuring In the Mid-Atlantic Meeting, September 4, 2003, Philadelphia, PA

The meeting was a follow-up to the first Mid-Atlantic Mid-Course Review that focused on electric restructuring issues. The meeting featured FERC Commissioner Nora Brownell and attracted several high-profile regional speakers and decision-makers, including the Chairs of the Maryland and Pennsylvania PUCs. The meeting encompassed electric restructuring, as well as distributed energy and demand response issues.

The following commissioners and staff attended the meeting:

Commissioners

- | | |
|--------------------------------|--------------------------------|
| • President Jeanne Fox | NJ Board of Public Utilities |
| • Commissioner Fredrick Butler | NJ Board of Public Utilities |
| • Chairman Kenneth Schisler | MD Public Service Commission |
| • Chairman Terry Fitzpatrick | PA Public Utilities Commission |
| • Commissioner Anthony Rachel | DC Public Service Commission |
| • Commissioner Richard Morgan | DC Public Service Commission |

Legislative Attendees

- Delegate Harry Parrish, Virginia House of Delegates
- Senator Harris McDowell, Delaware State Senate
- Delegate Samuel Cann, West Virginia
- Representative Frank LaGrotta, Pennsylvania
- Delegate Ann Marie Doorey, Maryland House of Delegates, Vice Chair of House Economic Matters Committee

Staff

- David J. Ellis, Director -Utilities Division, Public Service Commission WV

- Caryn Watson Short, Attorney Supervisor, Public Service Commission WV
- Tom Lamm, Energy Regulation Division, VA CC
- Molly Davis, NJ Board of Public Utilities
- Mike Winka, Clean Energy Office, NJ BPU
- Rich Sedano, Consultant, Regulatory Assistance Project
- Matthew Brown, National Conference of State Legislatures
- Kevin Porter, National Council on Electricity Policy