

TRANSMISSION PLANNING PRINCIPLES

BACKGROUND

The following principles have been discussed and deliberated by a group of stakeholders at a meeting convened by the National Wind Coordinating Committee and co-sponsored by Portland General Electric Company (PGE) in Portland, Oregon on June 3 and 4, 2003. The NWCC is a multi-party collaborative organization formed in 1994 to support the development of sustainable markets for wind power. PGE is the utility serving the Portland area and surrounding region. Persons attending the meeting included representatives of energy resource developers, utility and transmission owners, consumer and environmental groups, power marketers, transmission planning experts, and other interested parties.

Wind generation is an environmentally attractive electric power source with increasingly competitive economics and growing market acceptance in most regions of the United States. Over 4742 (www.awea.org/projects) MW of wind generation have been installed in this country (at August 13, 2003). Wind is an intermittent resource, available only when the wind is blowing. In addition, wind resources are often most plentiful in remote areas. While these constraints may prove challenging for developing wind projects, wind resources can be built and dispatched in very short time frames compared to other electric power resources. These characteristics, as well as time frames for needed transmission upgrades, make transmission planning a very important issue for wind. At a meeting in Salt Lake City in January NWCC members identified a

common agreement on transmission planning principles as essential to winning public acceptance and regulatory approval of needed transmission additions and upgrades.

These principles address transmission planning issues that affect all power resources; they do not provide for special treatment of wind as a specific fuel source. The NWCC members believe they reflect mainstream views of many stakeholders, and that their adoption would benefit all energy market participants. They also believe they are consistent with the 1992 Energy Policy Act's integrated resource planning requirements, and FERC Order 2000. A FERC white paper discussing wholesale market design was published on April 28, 2003. This paper proposes a requirement that regional transmission organizations file a transmission plan that includes evaluating the impact of new generation, transmission, energy efficiency, and demand response on regional reliability and resource adequacy. The white paper also calls for responsible planning entities to be independent. These principles are consistent with the proposed requirements.

PURPOSE

The purpose of these principles is to suggest to existing or future transmission planning entities standards and criteria that will attract widespread public and regulatory support for their transmission expansion and upgrade proposals. The principles are designed to help maintain a reliable, efficient, and environmentally friendly electric power system. They are intended to

promote a number of attributes not yet considered in current regional planning processes and to have universal applicability in all regions. It is hoped that the development and dissemination of these principles at stakeholder meetings and conferences will encourage useful debate. It is also hoped that transmission planning entities such as RTO's, utilities, PMA's, and regional governing bodies, that have the authority to compel and fund planning results, will consider these guidelines.

Stakeholders attending the meeting recognized that there are at least three specific levels of planning that should be distinguished from one another:

- the technical level relating to utility-specific transmission functions and requirements;
- the energy resource level that includes the integration of transmission, generation, and other resource options; and
- the electric power system level that considers the broader interconnected grid.

Stakeholders generally recognized that transmission planning should be performed on a broad geographic basis in order to capture all physical and commercial impacts and interactions in the interconnection. They also recognized that planning should be proactive in order to ensure timely system adjustments, upgrades, and expansions.

Some stakeholders believe the capacity of the existing grid is underutilized and that there is a need to make the “best use” of the current transmission system. They differentiate between public and private values when determining the “best use” of the system. Other stakeholders believe certain transmission paths are over-

utilized, causing new generation to be tripped by system operators to prevent cascading outages. These stakeholders generally believe that a need for expansion of the system will require an explanation of benefits to regulators, rate payers, and the affected public.

Resource value, supply and demand side considerations, and new metrics for non-traditional and external costs are proposed as issues for consideration in planning. Good examples are PacifiCorp's Integrated Resource Planning, the Bonneville Power Administration, the NWPPC regional plan, and PJM's regional expansion plan. There is general agreement that planning processes should facilitate market-driven enhancements to relieve congestion and provide a reasonable level of reliability as interpreted on a regional basis but at a minimum as defined by NERC planning standards. While transmission systems may have the character of natural monopolies, competitive bidding processes and competitive market signals should be incorporated in the planning for upgrade, expansion, and selection of non-transmission alternatives.

The NWCC believes these principles will provide guidance to planners and planning authorities called upon to navigate through existing issues, including the ones identified at the meeting, and any future problems encountered in the transmission planning process.

NWCC TRANSMISSION PLANNING PRINCIPLES¹

Authority

1. Transmission planning entities should be independent and publicly accountable.

Explanation. In order to eliminate the reality and appearance of conflicts of interest, the planning entity responsible for assessing needs and options for addressing them should not be controlled by parties with a private financial interest in the results of the planning process. Transmission utility interests and other regional planning interests may not be identical. Transmission utilities are accountable to their regulators to plan and implement plans to fulfill these obligations.

2. The transmission planning entity should have the responsibility to identify needs and the authority to provide incentives for or directly implement solutions that may or may not be available to the market.

Explanation. Stakeholders involved in the planning process should have assurances that their input and participation in deliberations will result in a plan that can be implemented at the appropriate local or regional levels. The planning entity's authority can range from having its plan be the rebuttable default in regional regulatory processes, to the authority to allocate costs and order construction. Planning without implementation is an empty process that will

¹ *Note: For the purpose of developing this set of principles, the group agreed to define a principle as a standard, criterion, or value by which needs, goals, objectives, and action options are evaluated.*

not be taken seriously or funded adequately. Examples of such entities may be RTO's, transmission companies, utilities, PMA's, and multi-state governing bodies. Stakeholders should also be assured that the planning process leading to transmission upgrades or expansion is consistent with the following principles. Planners should recognize that certain system needs may not have market solutions.

Scope

3. Transmission planning should be integrated with resource planning.

Explanation. This principle underlies all other principles that follow. Electricity industry restructuring in some states and regions has resulted in the separation of transmission planning from generation and distribution planning, and in some areas regulated transmission and generation planning has been disconnected from unregulated generation development. Because electric resources of all types must be integrated in interconnected grids to assure reliability and economic efficiency, separating transmission planning from generation planning creates both reliability and economic risks.

4. Transmission planning should be done on a broad, regional basis.

Explanation. Broad-based wholesale markets can create impacts over wide geographic areas not previously considered comprehensively in power system planning. Grid modifications in a single control area often affect the performance of the grid in other areas, and such modifications can have significant economic impacts on market participants outside the control area. Thus, planning entities should be organized on a

regional multi-state basis in order to assess needs, evaluate impacts, and provide effective interregional coordination.

5. Transmission plans should fully integrate planning for reliability with planning for competitive markets.

Explanation. Reliability requirements have a significant effect on how power markets function and, thus, must be taken into consideration in power market design and operation. In addition, buyer and seller actions in power markets can significantly affect grid reliability. Thus, it is critical that a regional planning entity consider both reliability and competitive impacts when assessing regional needs and evaluating resource options.

Process

6. Transmission planning processes should be transparent and facilitate the input of all stakeholders in the region.

Explanation. In order to ensure that all regional values and public purposes are incorporated in transmission plans, all planning activities should be public and transparent with adequate notice, posting of agendas and reports, and full provision for consideration of inputs. Active participation by local, state, and federal officials, including environmental and rate regulators, should be facilitated by the planning entity.

7. Transmission planning should be based on an appropriate planning horizon and be proactive and responsive to needs of market participants.

Explanation. Transmission planning processes should be flexible enough to be responsive to emerging conditions. These planning processes should incorporate adequate scenario, uncertainty, and risk

analyses over a long term. Proactive planning should also consider expectations for increased transfers of energy and guidance for optimal location of new resources, not just responses to interconnection requests.

8. Transmission planning should consider on an equal basis all types of resources available to meet planning goals and to address system resource needs and problems.

Explanation. Intermittent resources, energy efficiency, load management, demand-side bidding, and distributed resources, in addition to traditional generation and transmission resources, are all potentially cost-effective means of meeting system needs. Non-traditional resources may be less expensive and easier to site than central power stations or new transmission lines. These considerations should also create greater certainty and rate stability for investors and consumers.

9. Electric system plans should be based on a life-cycle least-cost standard including external costs such as environmental and societal impacts.

Explanation. A principal criterion for selecting a solution that receives socialized support should be whether or not it is the lowest cost, reasonably available solution to an unmet system need. These solutions should be considered on a total cost basis in both the short-term and the long-term.

10. Transmission planners should use explicit, standardized methods and assumptions for evaluating all resources, including demand-side and intermittent generation technologies.

Explanation. Standardized metrics would help assure fair and impartial evaluation of all types of resources. Because non-traditional resources have significant potential to meet regional needs, transmission planners should work with stakeholders to identify ways to standardize methods across various studies so that resources may be fairly compared.

11. Planning results should clearly identify system needs, benefits, and resource options so that market participants have the opportunity to propose and implement viable solutions.

Explanation. Regional planning entities should develop the information needed for the market to propose investments that address grid congestion, reliability, and efficiency needs, and identify local and system benefits. The entities should evaluate market proposals and publish their assessments for stakeholder review and input.

**NWCC Members and Associate Members include
representatives from:**

Consumer Groups

Economic Development Organizations

Agricultural Interests
Rural Development

Electric Power

Co-operatives
Investor Owned Utilities
Public/Municipal Utilities

Environmental Organizations

Conservation/Wildlife Groups
Renewable Energy Advocates

Federal Government

Bureau of Land Management
Department of Energy
Fish and Wildlife Service
National Renewable Energy Laboratory

Green Power

Marketers
Traders

State Government

Legislatures
State Energy Offices
Regulatory Agencies
State Environmental Agencies

Tribal Governments

Wind Industry

Developers
Manufacturers
Suppliers
Consultants

For more information, or to receive copies of NWCC publications, contact:

National Wind Coordinating Committee

c/o RESOLVE

1255 23rd Street, N.W., Suite 275

Washington, DC 2003

e-mail: nwcc@resolv.org

(888) 764-WIND

www.nationalwind.org

The production of this document was supported by the National Renewable Energy Laboratory under the subcontract YAM-9-29210-01 and the Department of Energy under Financial Assistance Award DE-FG03-00SF22100. Financial support by the National Renewable Energy Laboratory and the Department of Energy does not constitute an endorsement by these institutions of the views expressed in this document.

©RESOLVE, Inc. on behalf of the National Wind Coordinating Committee, November 2003.

All rights reserved.