Chapter 1 Identifying Transmission Expansion Opportunities

A. Background and History of the RMATS Effort

The modern era in transmission planning in the Western interconnection began in August 2001 with the release by the Western Governors' Association of a report entitled Conceptual Plans for Electricity Transmission in the West. The report, which was developed in the wake of an electricity crisis that affected prices and supply and held the West in its grip for many months, revealed that new transmission and generation infrastructure located remotely from population centers can produce benefits for consumers throughout the West. This investment strategy was shown to be an effective means to ensure that growing electricity demands are met with a diverse portfolio of resource options, including renewables and coal, to keep the West from putting all its eggs in the basket of heavy dependence on new natural gas-fired generation. The study was conceptual and did not identify specific projects or undertake the detailed work necessary to establish financial viability, obtain approvals, or to site and construct transmission facilities.

In 2001, Western Governors asked the Seams Steering Group-Western Interconnection to develop an ongoing proactive transmission planning process for the interconnection. In 2003, SSG-WI released its first report on transmission needs on the westwide interconnection . The report examined three bookend generation scenarios and necessary transmission. The SSG-WI study effort developed a public database to support transmission expansion analysis. Although the SSG-WI report refined the analysis in the WGA report, it did not provide sufficient detail to enable the development of specific transmission projects. Detailed subregional studies are therefore necessary to evaluate specific transmission proposals.

On August 22, 2003, Wyoming Governor Dave Freudenthal and Utah Governor Mike Leavitt announced the formation of the Rocky Mountain Area Transmission Study (RMATS). The Governors found that: "For many years, utilities and other entities have been reluctant to make investments in needed electric transmission infrastructure. This has been due to a number of factors, including protracted uncertainties in the regulatory environment and nascent regional transmission organizations under development. As a consequence of this lack of transmission expansion, transmission congestion and bottlenecks are increasing. While this is a problem throughout the western interconnect, it is becoming an acute issue in areas of the Rocky Mountain subregion." The Governors directed that a charter be developed for the study that specified goals, principles and operating procedures. The study covers several western states including Colorado, Idaho, Montana, Utah and Wyoming.

In addition to the RMATS effort, there are three subregional transmission planning processes under way in the Western interconnection. The Central Arizona Transmission Study (CATS) (now expanded to New Mexico and parts of Colorado and

Nevada and renamed Southwest Area Transmission (SWAT) Planning Committee) was the first subregional transmission planning process. As a result of the CATS process, transmission projects were identified and at least one is under construction. The Southwest Transmission Expansion Plan (STEP) is examining transmission needs in the Arizona-Southern California-Southern Nevada region. STEP is using the same model and public database used in the SSG-WI process. Finally, the Northwest Transmission Advisory Committee (NTAC) is beginning an effort to examine transmission expansion needs in the Northwest region.

In response to the directions of Governors Freudenthal and Leavitt, a white paper and draft charter were developed in preparation for the September 23, 2003, kickoff meeting of stakeholders in the RMATS process. Based on stakeholder input received at that meeting, the RMATS steering committee adopted a charter on October 14, 2003.

RMATS Charter (excerpts)

PART 1. Goals

a. Secure and commit the resources to the planning process needed to make it a success.
b. Identify technically, financially and environmentally viable generation projects with potential for development in the Rocky Mountain sub-region in the near future.
c. Identify necessary transmission infrastructure to support such development.
d. Evaluate needs, alternatives, costs and benefits of generation and transmission within the Rocky Mountain sub-region.
e. Identify potential obstacles to the siting and construction of potential transmission projects.
f. Identify necessary financial and technical resources to enhance the successful development of needed transmission.
g. Develop necessary information to facilitate regulatory approvals of new transmission.
h. Complete the Rocky Mountain Area Transmission Study in six months.

PART 2. Principles

a. Include all interested stakeholder individuals or groups in the Rocky Mountain Area Transmission Study.
b. Work together for effective solutions in a balanced open and inclusive public process.
c. Conduct analysis of generation and transmission alternatives based on data, assumptions, and scenarios developed by participating stakeholders.
d. Consider every need, generation technology and location option that is appropriate for the sub-region.
e. Evaluate all potential transmission alternatives within the sub-region.

f. Identify the costs and benefits of generation and transmission options for serving electricity needs of consumers that make operational, economic, and environmental sense for the sub-region.
g. Cooperate and coordinate with the region-wide SSG-WI planning effort and other sub-regional planning efforts.
h. Cooperate and coordinate with WECC in order to ensure maintaining or improving system reliability.

PART 3. Operating Procedures

a. The Rocky Mountain Area Transmission Study (RMATS) will be informed and guided by the Enlibra Principles adopted by the Western Governors' Association.
b. The Study will be a front-end planning process that will evaluate needs, alternatives, costs and benefits of generation and transmission within the Rocky Mountain sub-region.
c. The Study will be facilitated by an independent third party facilitator.
d. Three stakeholder meetings will be held to help develop and implement the Study.
e. A Steering Committee will be formed at the kick-off meeting to direct the Study and, as necessary, approve modeling assumptions.
f. Working Groups will be formed at the kick-off meeting to carry out the work of the planning process. Initial expectations are that a Resource Additions Workgroup, a Transmission Additions Workgroup, a Load Forecasting Workgroup and a Report Writing Workgroup will be established.
g. PacifiCorp will perform the technical studies based on assumptions and scenarios developed by participating stakeholders, and provide an in-kind contribution of resources to perform this work.

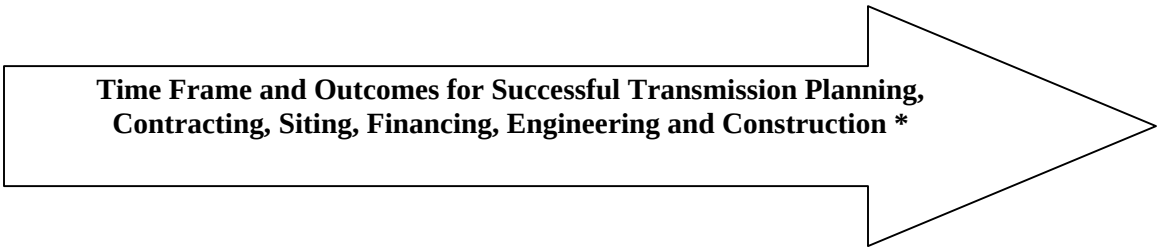
The planning initiative is the first step of a multiphase process necessary for successful transmission expansion in the Rocky Mountain region. In this Phase I, representative generation is identified and specific transmission projects to support such generation were examined and analyzed. Phase I will produce:

- An in-depth understanding of the impacts on system-wide production costs of specific transmission investments in the sub-region;
- An assessment of needed regulatory approvals and financial backing for the projects and identification of obstacles to moving forward; and,
- The foundation for future work on siting, obtaining regulatory approvals, contracting, financing, engineering and construction of projects where appropriate (i.e., Phases II and III.)

Phase I is intended to provide enough information to interested stakeholders for their further analysis to determine if there is economic interest in pursuing project development. Phase II and Phase III will occur as Project Sponsors decide to move forward with projects. Figure 1-1 below illustrates the basic elements of the process.

Figure 1-1

Phases of RMATS Work



Phase I – Planning and Project(s) Definition	**Phase II – Regulatory Approvals, Contracting, Siting, and Financing**	**Phase III – Engineering and Construction**
Time Frame: September 2003 – March 2004	**Time Frame:** To be determined by Project Sponsors	**Time Frame:** To be determined by Project Sponsors
Outcomes: • Specific transmission projects are defined to support resource additions as proposed, including renewables and thermal plants • Impacts of transmission and generation additions are derived, including: generation capacity utilization; path loading duration curves; congestion and power flow implications; and, where and how consumers benefit • Indications of interest in subscribing to and financial support for specific projects • Identification of any barriers to project advancement • Development of information necessary to pursue regulatory approvals • Study results incorporated in West-wide transmission studies, including SSG-WI	**Outcomes:** • Siting and permitting of specific selected transmission and generation projects • Where appropriate, sponsoring Governors initiate the State/Federal siting protocol collaboration • Subscription, contracting and financial arrangements put in place on specific projects • If any, barriers to project advancement are removed, where possible, including Governors' initiative, if necessary	**Outcomes:** • Engineering design and construction of selected projects, subsequent to successful siting, approval and permitting, and removal of any identified obstacles

***** Emphasis shifts from the Sub-regional Planning Effort to project developers as you go from left to right across the Table.

B. RMATS Process

[Hyperlink Work Group Names To Appropriate Appendix]

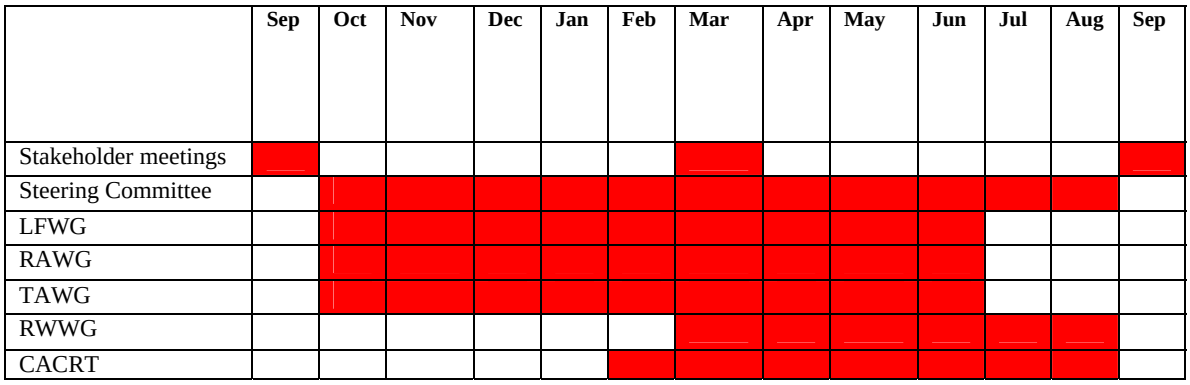
An open stakeholder process is the guiding element of the RMATS effort. As a result of the September 23, 2003, kickoff meeting, attended by over 150 stakeholders, four working groups (a Load Forecasting Work Group (LFWG), Resource Additions Work Group (RAWG), Transmission Additions Work Group (TAWG), Report Writing Work Group (RWWG)); two work teams (the Cost Allocation and Cost Recovery Team (CACRT) and a Modeling Team) and a Steering Committee were established. Stakeholders populated the working groups and Steering Committee, and Pacificorp assembled the Modeling Team. New work group and team members were accepted freely as persons expressed their interest in the RMATS process.

[HYPERLINK TO MEMBERSHIP OF WORK GROUPS AND STEERING COMMITTEE]

The work groups and Steering Committee met frrequently by conference calls and in person; and all meetings were open to interested parties. Written summaries of the Steering Committee meetings were prepared and posted on the RMATS website at http://psc.state.wy.us/htdocs/subregional/steering.htm.

Figure 2-1 shows the chronology of the RMATS study effort.

Figure 2-1
Chronology of RMATS Activities



The principal work of the RMATS work groups and Steering Committee for most of this period focused on the modeling effort described in the following chapter.

C. Generic Benefits and Costs of Transmission Expansion

The benefits of investment in transmission expansion may include:

- Improved access for utilities to lower cost power;
- Greater liquidity and price competition in power markets, including mitigation of generator market power;
- Increased ability of generators to diversify fuels used to serve their customers, which can help minimize fuel price risks and broaden access to renewable resources;
- Tax, revenue and other economic benefits to communities and states where development takes place; and
- Improved reliability and greater flexibility for maintenance, and other operational purposes.

The cost of new transmission includes the capital cost of building the line, operating and maintenance costs over the life of the line, environmental impacts from construction of the line, and changes in property values resulting from the location of the line. Although it is commonly assumed that property values decline in the vicinity of a transmission line; they could increase, particularly for industrial properties benefitting from better access to transmission lines.

Discussion of Types of Benefits and Beneficiaries[1]

Lower Cost Generation: Benefits of accessing lower cost generation flow to utilities and their customers and to certain generators. RMATS alternatives entail reductions in variable O&M on a West-wide basis. This new access to lower cost generation can also reduce net revenues for some existing generators, whose higher cost generation may be displaced.

Enhanced Competition in Energy Markets: In concept, by relieving congestion, liquidity in energy markets will increase and competition will become more robust. This may lead to lower and more stable prices, especially in short-term markets, and may help to mitigate exercise of generator market power, creating benefits which flow to utilities and their customers within and outside the RMATS region.

Fuel Diversity: It is assumed that fuel diversity means greater reliance on fuels other than natural gas. By diversifying fuels, generators can mitigate gas price risks. Further, new access can be provided to renewable resources, helping to reduce risks and costs, to stabilize customer prices, and to meet environmental policy objectives, including renewable portfolio standards. Fuel diversity benefits of new transmission investments can flow to utilities and their customers. The size of benefits may depend on the value of

[1] Presumably under FERC Order 888, the benefit of owning transmission to block competitors having access to one's power markets has been eliminated. However, there still may be benefit to the integrated utility in owning the line since the utility will calculate and reserve ATC on the line for future load growth, thereby providing an advantage over other users of the line.

reduced fuel price volatility to the generator, how risks and costs are calculated, and on incremental costs to utilities of alternatives for meeting Renewable Portfolio Standards, risk management goals, and environmental policy objectives.

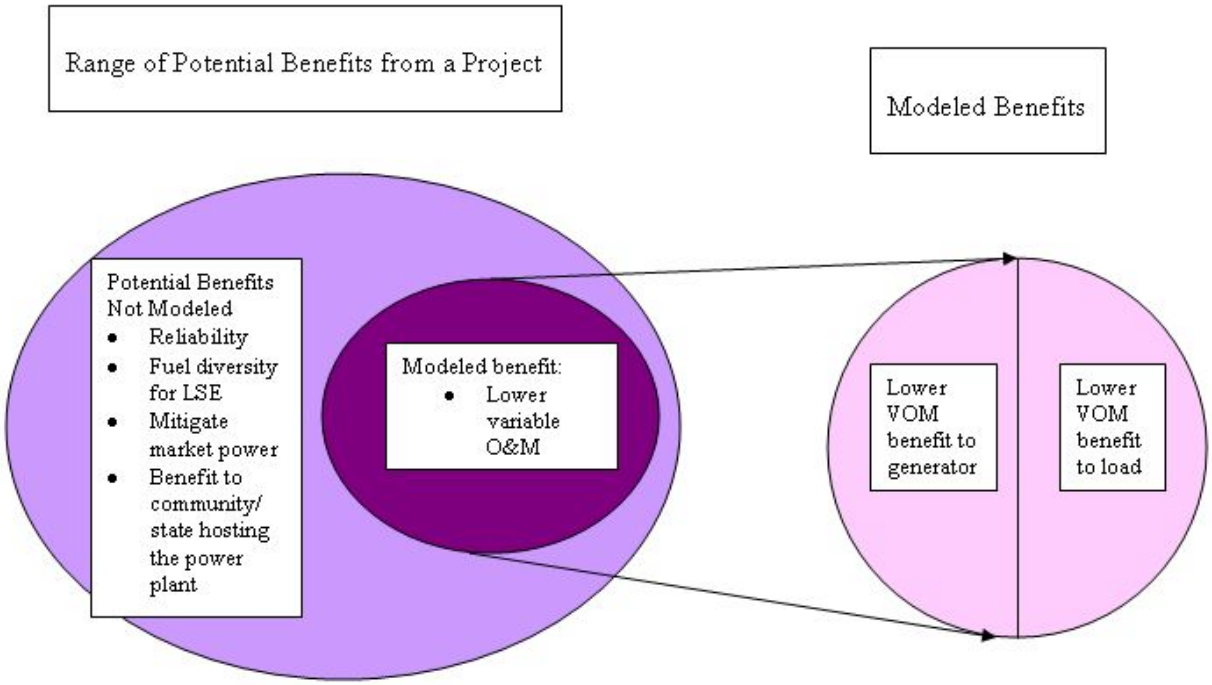
Local and State Economic Development: Construction of new power plants provides economic development benefits in terms of jobs and increased tax revenues to the communities and states hosting the plants. Tax revenue benefits for states and localities include increased property taxes, additional franchise taxes, higher utility tax revenues, and increased state and local income taxes, along with secondary and tertiary induced and indirect economic benefits and resulting taxes flowing from the investments. Offsets include increases in utility rates due to higher revenue requirements.

Reliability: All new transmission investments must meet the goal of maintaining or improving reliability and meet WECC reliability criteria. Full implementation of alternatives to new lines might have pronounced reliability benefits as needle peaks are eliminated, as overall energy use is reduced, and as new technology is implemented to provide better information flows and control potential for existing lines, thereby boosting their ability to respond to customer demands and unforeseen problems. New long distance lines may not decrease reliability and would, it is hoped, increase reliability beyond that required by WECC, particularly if they are oversized. Reliability benefits from an oversized line may disappear over time if new flows consume excess transfer capacity. The economic value of reliability investments may be quantified by determining the value of a reduced likelihood of forced outages.

Quantifying transmission investment benefits and estimating where they fall is a challenge and matter of judgment. Where construction of a new transmission line is linked to the construction of specific powerplants, there is greater ability to identify the benefits from fuel diversification and reduced costs to load serving entities. One can also identify the generators that benefit from the new line.

Where additional transmission investment is not linked to construction of specific power plants, it is more difficult to determine the extent to which additional investment will provide fuel diversity benefits and lower power costs to utilities since the types of generation built and the cost of power will be determined by market forces. It would also be more difficult to recover part of the investment from generators in advance of construction. If new lines are built and generators secure transmission service over the lines, revenues charged for use of the line can offset construction costs.

The following diagram illustrates the potential range of benefits from a transmission project and the subset of such benefits that were modeled using the ABB Market Simulator model.



Benefits of new transmission investment can accrue to:

- Load serving entities and their customers;
- New generators who can now reach markets, and communities and states hosting new generation;
- Existing generators who can reach new markets;
- Communities and states where development occurs; and
- All transmission system users where the transmission investment improves system-wide reliability.