

**From:** [corridoreiswebmaster@anl.gov](mailto:corridoreiswebmaster@anl.gov)  
**To:** [Corridoreisarchives;](#)  
**CC:**  
**Subject:** Energy Corridor Programmatic EIS Comment 80108  
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**Attachments:** [Overview\\_Policies\\_Procedures\\_RegionalPlanning\\_ProjectReview\\_ProjectRating\\_ProgressReports\\_07-05\\_80108.pdf](#)

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Thank you for your comment, Jay Loock.

The comment tracking number that has been assigned to your comment is 80108. Please refer to the tracking number in all correspondence relating to this comment.

Comment Date: November 29, 2005 12:01:23PM CDT

Energy Corridor Programmatic EIS Scoping Comment: 80108

First Name: Jay  
Last Name: Loock  
Organization: WECC  
Address: 615 Arapeen Dr  
City: Salt Lake City  
State: UT  
Zip: 84040  
Country: USA  
Email: [jay@wecc.biz](mailto:jay@wecc.biz)  
Privacy Preference: Don't withhold name or address from public record  
Attachment: F:\PCC\Overview\_Policies\_Procedures\_RegionalPlanning\_ProjectReview\_ProjectRating\_ProgressReports\_07-05.pdf

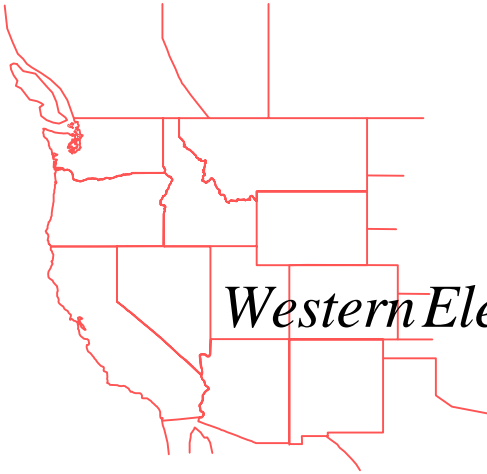
**Comment Submitted:**

WECC's Policies and Procedures for Regional Planning Project Review, Project Rating Review, and Progress Reports address the following purposes:

1. Provide procedures for WECC members and others to report on planned projects and to work together to expand the interconnected system capacity according to member and stakeholder needs;
2. Provide project sponsors with an industry agreed procedure, when completed, can be used to demonstrate regional planning has been performed for proposed projects as may be required to obtain required regulatory approvals;
3. Provide the policies and procedures for notification and reliability assessment requirements related to projects planned within the WECC electric system;
4. Provide agreed upon methods applicable to rating of transmission facilities;
5. To ensure reliable and coordinated integration of existing and new projects such that the use of the system is maximized for all participants.

Please see attachment for more details.

Questions about submitting comments over the Web? Contact us at: [corridoreiswebmaster@anl.gov](mailto:corridoreiswebmaster@anl.gov) or call the Energy Corridor Programmatic EIS Webmaster at (630)252-6182.



*Western Electricity Coordinating Council*

**OVERVIEW OF POLICIES AND  
PROCEDURES FOR REGIONAL PLANNING  
PROJECT REVIEW, PROJECT RATING  
REVIEW, AND PROGRESS REPORTS**

REVISED

April 2005

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# OVERVIEW

## POLICIES AND PROCEDURES FOR REGIONAL PLANNING PROJECT REVIEW, PROJECT RATING REVIEW, AND PROGRESS REPORTS

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## **1.0 Introduction**

*The Policies and Procedures for Regional Planning Project Review, Project Rating Review, and Progress Reports* address the following purposes:

1. Provide procedures for WECC members and others to report on planned projects and to work together to expand the interconnected system capacity according to member and stakeholder needs;
2. Provide project sponsors with an industry agreed procedure, when completed, can be used to demonstrate regional planning has been performed for proposed projects as may be required to obtain required regulatory approvals;
3. Provide the policies and procedures for notification and reliability assessment requirements related to projects planned within the WECC electric system;
4. Provide agreed upon methods applicable to rating of transmission facilities;
5. To ensure reliable and coordinated integration of existing and new projects such that the use of the system is maximized for all participants.

These Policies and Procedures are comprised of three WECC processes:

1. WECC Regional Planning Project Review;

This is a process intended to inform others of the opportunity to participate in or review a project, and to solicit participation. It is intended to avoid duplicate projects and allow a new project to integrate others needs by mutual agreement.

2. WECC Project Rating Review;

This is a process intended to ensure that new projects are integrated into the existing system with a rating while recognizing protected ratings of other facilities.

3. WECC Progress Reports

A process by which project sponsors report potential significant additions and changes to the interconnected system and WECC members are provided the opportunity to review and comment on these additions or changes.

While each of these processes function separately, for significant projects these processes are interrelated and support each other. For example, the Progress Reports process is used for reporting on all projects and also support completion of reporting on regional planning and project rating for significant projects.

## **2.0 Process Outline**

The policies, guidelines, planning process, scenario examples, and study methodology presented in this document are intended to provide guidance to members on the process of planning and placing in service a project as well as to outline member responsibilities with regard to this process. Specifically, this document has been developed to establish the following, for projects:

1. A procedure for reviewing project conformity with WECC's role for coordinating regional planning;
2. Guidelines to demonstrate that regional needs and efficiencies are considered;
3. A consistent and predictable process for planning (who does what, when, etc.) that is well understood and is accepted as standard practice in WECC;
4. Consistent methods for determining and demonstrating project ratings in accordance with NERC/WECC Planning Standards;
5. An Accepted Rating that has been reviewed by the WECC membership;
6. Allows for negotiations to resolve capacity allocation issues between parties; and;
7. A consistent and effective means for resolving disputes over capacity allocation issues should negotiations fail.

The sequencing of Regional Planning and Project Rating processes that the project sponsor normally should follow are shown in Figure 1

### **3.0 The WECC Regional Planning Project Review**

The Regional Planning Review Process encompasses the initial development phase of a project in which regional interest is expressed. The Process addresses how transmission project sponsors should work and interact with other parties when developing a project that has or may have a significant regional benefit or impact. Through this process, WECC members cooperate to identify transmission expansion projects that may be beneficial to the region. By following this process, project sponsors may also address certain issues related to regulatory approval of their projects.

The Regional Planning Review Process should begin as soon as possible and involve all interested project participants. Although it will vary, this phase of the process should start when interested project participants are devising their individual and collective transmission needs. This phase is completed when PCC has made a final determination regarding the project's conformity with the WECC Regional Planning Guidelines.

### **4.0 The WECC Procedure for Project Rating Review**

The purpose of the Procedure for Project Rating Review is to provide a formal process for project sponsors to attain a WECC Accepted Rating and demonstrate how their project will meet the NERC/WECC Planning Standards. This three-phase process addresses planned new facility additions and upgrades or the re-rating of existing facilities, requiring coordination through a review group comprised of the project sponsors and representatives of other systems which may be affected by the project. Section 1.2 of the Procedure for Project Rating Review explains which projects must undergo the three-phase rating process. At the completion of this process, an Accepted Rating is granted by WECC, which affords the project sponsor some protection against erosion of established capacity of this facility when further expansion of the interconnection is proposed or new limitations are discovered.

The Procedure for Project Rating Review is divided into three separate phases. Phase 1 is conducted by the project sponsor and is initiated when the project sponsor submits a report through the WECC Progress Report process or when a formal letter of notification is provided to the PCC and Technical Studies Subcommittee (TSS). Following such notification the project will be included in the next publication of the WECC Significant Additions Report. During Phase 1, the project sponsor is to conduct sufficient studies to demonstrate the proposed non-simultaneous rating of the project and prepares a Comprehensive Progress Report documenting study results and describing project details including a preliminary plan of service. Known simultaneous relationships should also be addressed in the Comprehensive Progress Report. In general, the acceptance of the Comprehensive Progress Report signals the completion of Phase 1, at which time the project is granted a Planned Rating.

Phase 2 encompasses a review of the project's plan of service by a Project Review Group, comprised of interested WECC members. During this phase the Project's Planned Rating is validated and the simultaneous transfer capability effects and the impact of the project on neighboring transmission systems are further assessed. The project sponsor and the Project Review Group must document all the studies and findings in a report called Project Review Group Phase 2 Rating Report. Phase 2 is completed when the Phase 2 Rating Report is accepted and the project is granted an "Accepted Rating."

Phase 3 is the last part of the Project Rating Review Process. Phase 3 is a monitoring phase where major changes in assumptions and conditions are evaluated to assure the "Accepted Rating" is maintained. Phase 3 is completed when the project is placed into service.

## **5.0 Progress Report**

The WECC Progress Report Policies and Procedures provide the policies and procedures for notification and reliability assessment requirements related to projects planned within the WECC electric system. The intent of these policies and procedures are to encompass all generation and transmission projects that may have a significant impact on the reliability of the WECC interconnected electric system. All projects are required to adhere to the WECC Progress Report Policies and Procedures to assure that all WECC members appropriately present those projects not seeking a regional review or an Accepted Rating for peer review..

Projects subject to these policies and procedures include generation projects 200 MW or greater connected to the transmission system through step-up transformers, all new and upgraded transmission facilities with voltage levels over 200 kV or any facilities that may have a significant impact on the reliability of the WECC interconnected electric system. In the context of these policies and procedures, generation projects are to include, but are not limited to, new generation plants, generation repower or upgrades that may significantly alter the operation of the generation facilities. Transmission projects are to include, but are not limited to, new transmission facilities, transmission re-designs or upgrades, permanent removal of existing transmission facilities, or other changes (e.g. operating procedures) that may significantly alter the operation of the transmission facilities.

In general, these WECC Progress Report Policies and Procedures require the following to be submitted and/or completed during the planning of a project.



- Initial Progress Report
- Comprehensive Progress Report
- Supplemental Progress Report
- Review of Progress Reports By All TSS Members
- Informal Reports Presented At TSS Meetings

A Project Rating Report is optional because it is required only if a project desires an Accepted Rating and the Comprehensive Progress Report does not fulfill the requirement. It is required for the completion of Phase 2 of the Project Rating Review.

Approved by Planning Coordination Committee

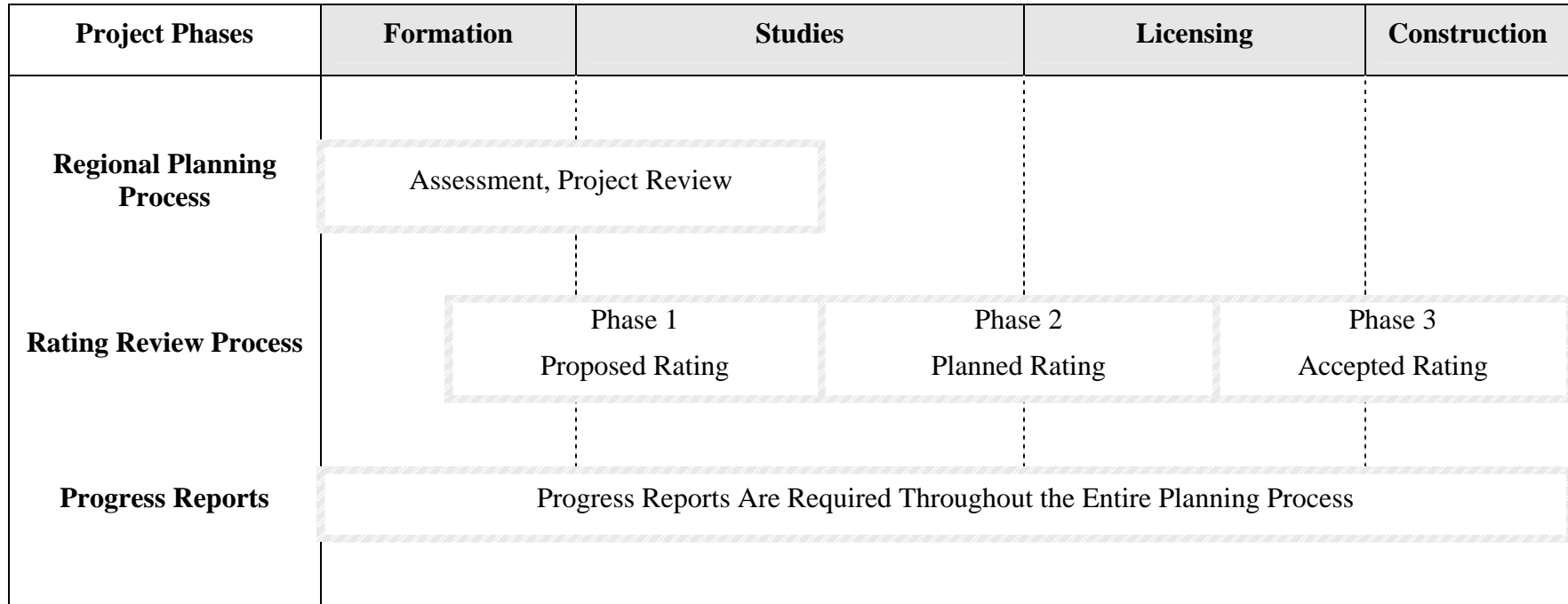
March 3, 2005

Approved by Board of Directors

April 6, 2005

**Figure 1**

**Regional Planning and Project Rating Process Sequence**



**Notes:**

1. “Proposed Rating” – used at the initiation and throughout Phase I of the Project Rating Review Process
2. “Planned Rating” – is the final rating at the conclusion of Phase I of the Project Rating Review Process and used throughout Phase 2 of the Project Rating Review Process
3. “Accepted Rating” – is the final rating at the conclusion of Phase 2 of the Project Rating Review Process and is also the rating that is used when the Project is placed in-service

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## **Appendix A**

### **Definitions**

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## Definitions

**Accepted Rating** - A project rating that has been reviewed and accepted by WECC members. This rating is granted by WECC at the conclusion of reviewed planning studies and will be the rating of the project when it is put in service, if it is built in accordance with Plan of Service specified in the Phase 2 Rating Report. This is a comprehensive rating including both the simultaneous and non-simultaneous transfer capabilities.

**Adversely Impact Transfer Capability** - Adversely impact transfer capability means the reduction of either the Simultaneous or Non-simultaneous Transfer Capability. A new project causes a significant and verifiable adverse impact that needs to be mitigated if it reduces the transfer capability of a rated Project in a Benchmark Case comparison.

**Benchmark Case** - Case(s) that model the existing system (including appropriate recognition of other projects in the Rating Process) in the timeframe of new project and show the maximum transfer capabilities (e.g. the Existing or Accepted Rating) of existing paths that may interact with new project.

**Comparison Cases** - Cases with the new Project showing range of desired operation of new project and illustrating whether or not there are impacts or interaction with existing projects.

**Existing Rating** - Transmission path ratings that were known and used in operation as of January 1, 1994.<sup>1</sup>

**Non-Simultaneous Transfer Capability (or Limit)** - The capability or capacity of a transmission circuit or path, in megawatts, to transfer power reliably and in accordance with prescribed Reliability Criteria independent of concurrent flows on other circuits or paths. It is normally determined with all potentially interacting circuits or paths loaded below the levels at which limitations are observed.

**Other Rating** – A transmission path rating, either proposed or planned, that is not an Accepted or Existing Rating.

**Operating Transfer Capability (OTC)** - The capability or capacity of a transmission circuit or path, in megawatts, to transfer power reliably on a path for the anticipated operating conditions for a season.

**Path** – In the context of the Procedures for Project Rating Review, a path is defined as a facility or facilities, between systems or internal to a system, for which schedules and/or actual flows can be monitored for reliability purposes. Facilities in a path may originate and terminate at the same point (substation or generating station) or at different points. Two or more individual paths can be combined into a single path for rating purposes, although they may be separate scheduling paths. Paths are also often called cutplanes.

**Planned Rating** - The tentative rating assigned to a project that is in Phase 2 of the rating process.

**Plan of Service** - The complete set of facilities, remedial actions, and operating procedures proposed by a sponsor for a particular project, together with their in-service dates.

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<sup>1</sup> WECC's three-phase Accepted Rating Process was implemented after January 1, 1994

**Project** - A project is defined as a new generator or transmission facility or a change in rating of an existing generator or path through facility additions, facility upgrades, facility retirements or the re-rating of existing facilities.

**Proposed Rating** - This is a preliminary rating proposed by a project sponsor.

**Rating Process**- The three phase process described in the Procedures For Project Rating Review.

**Reliability Criteria** – Western Electric Coordinating Council Reliability Criteria

**Simultaneous Transfer Capability (or Limit)** - The capability or capacity of a transmission circuit or path, in megawatts, to transfer power reliably and in accordance with prescribed Reliability Criteria in concert with other interacting paths, circuits, or generators. It is normally defined by its interactive relationship in the form of nomograms (parametric functions) with the flows on other transfer paths or circuits or the outputs of generators.

## **PROCEDURES FOR REGIONAL PLANNING**



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# PROCEDURES FOR REGIONAL PLANNING

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## **1.0 Introduction and Purpose**

This Process identifies how transmission project sponsors should work and interact with their peers when developing a transmission project in which regional interest is expressed. The purpose of the Regional Planning Review Process is to:

1. Foster the development of a broad regional or subregional planning perspective among all stakeholders in the planning process;
2. Promote and encourage a more efficient use and development of the region's or subregion's existing and future facilities to enhance interconnected system operation;
3. Ensure that all relevant regional or subregional planning issues are considered during the planning of transmission projects with regional or subregional significance;
4. Provide procedures and guidelines for coordinated regional and subregional planning;
5. Involve Member Representatives, member executives, regulators, existing planning bodies, environmental groups, land use groups, and other non-utility interest groups in the process;
6. Allow stakeholders to identify opportunities for improved regional transmission efficiencies and make recommendations to achieve them;
7. Provide a voluntary dispute resolution procedure.

The Planning Coordination Committee (PCC) has the responsibility for oversight and review of the Regional Planning Review Process.

## **2.0 Regional Planning Guidelines**

The Regional Planning Project Report, prepared by the project sponsor, will describe how the project sponsor addresses the following guidelines;

1. Take multiple project needs and plans into account, including identified utilities' and non-utilities' future needs, environmental and other stakeholder interests;
2. Cooperate with others to look beyond specific end points of the sponsors' project to identify broader regional and subregional needs or opportunities;
3. Address the efficient use of transmission corridors (e.g., rights-of-ways, new projects, optimal line voltage, upgrades, etc.);
4. Identify and show how the project improves efficient use of, or impacts existing and planned resources of the region (e.g., benefits and impacts, transmission constraint mitigation);
5. Cooperate with Regional Planning Review Group members in determining the benefits and impacts due to the project;
6. Identify transmission physical and operational constraints resulting from the project or that are removed by the project;
7. Coordinate project plans with and seek input from all interested members, subregional planning groups, power pools, and region-wide planning group(s);

8. Coordinate project plans with and seek input from other stakeholders including utilities, independent power producers, environmental and land use groups, regulators, and other stakeholders that may have an interest;
9. Review the possibility of using the existing system, upgrades or reasonable alternatives to the project to meet the need (including non-transmission alternatives where appropriate);
10. Indicate that the sponsor's evaluation of the project has taken into account costs and benefits of the project compared with reasonable alternatives;
11. Coordinate with potentially parallel or competing projects and consolidate projects where practicable.

### **3.0 WECC Regional Planning Project Review Process**

#### **3.1. Initiating the Process**

Sponsors of a project should start the Regional Planning Project Review Process when a project is in the conceptual level of project development. At the earliest possible time, the project sponsor should notify PCC and TSS members of their desire to initiate the Regional Planning Project Review Process. Notifications should be made prior to submittal of project data for the WECC "Existing Generation and Significant Additions and Changes to System Facilities" (Significant Additions) report. The sponsors of a project shall notify the PCC of the purpose of the project.

The process may also be initiated by PCC determining that regional interest has been expressed or at the request of a member. PCC will maintain a list of projects under consideration by members that are not yet reported in the Significant Additions report so that PCC may determine if regional interest has been expressed.

Upon initiation of the review process, the project sponsor shall invite members to join a Regional Planning Review Group. A project sponsor will form a Regional Planning Review Group when other members indicate interest in participating in or reviewing a project. The purpose of the Regional Planning Review Group is to identify opportunities to incorporate multiple interests and multiple needs into a single project.

#### **3.2. During the Process**

The project sponsor, in coordination with the Regional Planning Review Group, will prepare a Regional Planning Project Report indicating how the project conforms or plans to conform to each of the Regional Planning Guidelines. In reviewing proposed projects relative to the Regional Planning Guidelines, the PCC members, through the Regional Planning Review Group may request that project sponsors perform additional studies or provide their own studies to the Regional Planning Review Group and may recommend the evaluation of alternatives or options that may provide greater regional benefits. Performances of the analyses and responses to PCC requests for information will remain the responsibility of the sponsors. The sponsor shall submit this report to PCC and TSS.

### **3.3. Completing the Process**

At the conclusion of the Regional Planning Review Group's work, the project sponsor will prepare a Regional Planning Project Report to document that it has completed the WECC Regional Planning Project Review Process and met the Guidelines of this Process.

The project sponsor will submit the Regional Planning Project Report to PCC for 30-day review and comment on the conformity with the Regional Planning Guidelines. When comments from this review are addressed, the PCC Chair will notify the Project Sponsor, PCC, and TSS of the completion of the Regional Planning Project Review for the project.

Approved by Planning Coordination Committee

March 3, 2005

Approved by Board of Directors

April 6, 2005

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## **PROCEDURES FOR PROJECT RATING REVIEW**



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# PROCEDURES FOR PROJECT RATING REVIEW

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## **1.0 Introduction**

This document has been developed to establish consistent methods for obtaining Accepted Ratings of rating transmission facilities through:

- A predictable rating process (who does what, when, etc.) that is well understood and is accepted as standard practice in WECC;
- Methods for determining and demonstrating ratings;
- Reviewed by the WECC membership;
- A level field for negotiations to resolve capacity allocation issues between parties.

This procedure describes the transmission rating process that project sponsors and participants shall follow to demonstrate their project meets the NERC/WECC Planning Standards. It is divided into three separate phases and is meant to mirror the development process for projects.

Phase 1 is conducted by the project sponsor and is initiated when the project sponsor submits a report through the WECC Progress Report Policies and Procedures process or when a formal letter of notification is provided to the PCC and Technical Studies Subcommittee (TSS). During Phase 1, the project sponsor is to conduct sufficient studies to demonstrate the proposed non-simultaneous rating of the project and prepares a Comprehensive Progress Report documenting study results and describing project details including a preliminary plan of service.

Phase 2 encompasses a review of the project's plan of service by a Project Review Group, comprised of interested WECC members. During this phase the Project's Planned Rating is validated and the simultaneous transfer capability effects and the impact of the project on neighboring transmission systems are further assessed. The project sponsor and the Project Review Group must document all the studies and findings in a report called Project Review Group Phase 2 Rating Report. Phase 2 is completed when the Phase 2 Rating Report is accepted and the project is granted an "Accepted Rating."

Phase 3 is the last part of the Project Rating Review Process. Phase 3 is a monitoring phase where major changes in assumptions and conditions are evaluated to assure the "Accepted Rating" is maintained. Phase 3 is completed when the project is placed into service.

The three-phase process is intended to address planned new facility additions and upgrades or re-rates of existing facilities that require coordination through a review group comprised of the project sponsors and other members which may be affected by the project. It is recognized that some re-rates of existing transmission paths or the addition of new facilities will not be of significance to others or may not require the formation of a review group. If an Accepted Rating is desired, these projects can be expedited through the three-phase project rating review process described in Section 3.0.

## **2.0 Policies and Guidelines for Project Rating Review**

Principles for establishing a transfer path "Accepted Rating" are encompassed in the following policies and guidelines.

## **2.1. Objectives**

The objectives of the policies and guidelines are to ensure the development of an efficient, reliable electric system and to balance the competing interests of protecting the legitimate ratings of existing facilities while encouraging the economic, reliable, and environmentally sound expansion of the electric system. Ratings of existing facilities deserve a degree of protection; however, this should not discourage needed system expansion. Conversely system expansion should not unfairly penalize existing system facilities.

## **2.2. Policies**

To support these objectives, WECC has adopted the following policies for rating transmission facilities.

1. Parties will plan, design and operate their systems consistent with the criteria and policies of WECC including the following:
  - NERC/WECC Planning Standards
  - Minimum Operating Reliability Criteria
  - Policies and Procedures for Regional Planning Project Review, Project Rating Review, and Progress Reports
2. New facilities and facility modifications should not adversely impact Accepted or Existing Ratings regardless of whether the facility is being rated. New or modified facilities can include transmission lines, generating plants, substations, series capacitor stations, remedial action schemes or any other facilities affecting the capacity or use of the interconnected electric system.

## **2.3. Paths Subject To This Procedure**

Transmission paths shall complete the path rating process specified in this procedure and obtain an Accepted Rating if any of the following criteria apply:

1. The limiting condition (e.g. thermal limit, stability, or voltage) in determining the system operating limit for the path is on another system, and the affected member system requests the path be rated;
2. The path must be operated within the constraints of a nomogram to meet the NERC/WECC Planning Standards, the elements of the nomogram (e.g., path flows or generation levels) are in different systems, and one of those systems or a neighboring member system requests the path be rated;
3. The path owners or operators have requested a seasonal operating transfer capability limit for a new path or the path owners or operators have requested a seasonal operating transfer capability limit that is in excess of the a path's rating (Accepted, Existing, or Other);
4. A facility (e.g., generator, series or shunt reactive equipment, Remedial Action Scheme, etc.) that an Accepted Rating depends upon is modified or retired from service, whether the facility is owned by the same system as the rated path or not.

For the purposes of these criteria, transmission dependent utilities, loads or generators interconnected exclusively to the path operator's system are not considered other systems. In addition, any project may seek a rating under the WECC path rating process on a voluntary basis.

#### **2.4. Protection of Ratings**

The protection of ratings encompasses the following:

1. The amount of power that a rated project can transfer is protected from being diminished due to subsequent projects;
2. Protection for a rating is conferred by obtaining an Accepted Rating or by virtue of having an Existing Rating and is subject to a benchmarking case comparison;
3. If the capability of a path were diminished due to new or modified Transmission or Generation Projects (as demonstrated in benchmark comparison of studies with and without the change) it would constitute an "impact" to a protected rating that will require mitigation;
4. All WECC members shall actively participate in defining in advance of operation, any potential simultaneous transfer limits. The burden of reporting, modeling, and studying the project and assessing its impact on the interconnected system, will be shared, with the sponsors taking the lead and primary responsibility. Other affected members have the responsibility to actively participate in the review process;
5. All parties benefit from interconnected system operation. There may be benefits to interconnected system operation other than increased transfer capability and these benefits should be appropriately recognized;
6. The WECC process for determining the Accepted Rating of a project will:
  - Allow for review of studies by all potentially affected parties, and
  - Comprehensively address both simultaneous and non-simultaneous conditions.
7. WECC requires operating limits to be identified, reviewed, and approved by the Operating Transfer Capability Policy Committee (OTCPC). Facility owners/operators are responsible for establishing operating procedures and notifying the Operating Procedures Review Group (OPRG) that these procedures are in place. The involved parties will expeditiously negotiate operating strategies and/or curtailment allocations prior to initial operation to assure operating within safe limits. Negotiations shall not unduly delay new projects and disputes shall be resolved expeditiously through WECC's Alternate Dispute Resolution (ADR) process or some other process as mutually agreed to by the parties;
8. If all planned facilities, including facilities of other projects upon which the rating studies relied, are not installed for a project or are modified or retired from service, then the project participants should be responsible for the corresponding reduced rating and associated curtailments;
9. New simultaneous limits may be discovered between existing transmission paths even when no facilities or ratings are being changed. The limits may be caused by the

retirement of existing facilities or changes in system load and/or resources that occur over time in several systems. The involved parties will expeditiously negotiate operation strategies and/or curtailment allocations to ensure continued operation within safe limits. Negotiations shall not adversely affect ongoing reliable system operations and disputes shall be addressed by the OTCP or resolved expeditiously through WECC's ADR process or some other process as mutually agreed to by the parties.

## **2.5. Guidelines**

The following guidelines apply with respect to adverse impacts on transfer capability:

1. Sections 6.0 and 7.0 address Principals and Scenario examples for rating transmission facilities. Project sponsors should refer to these for guidance in determining new ratings. It should be recognized that it is not possible to address all situations and issues that may arise in facility ratings. Project sponsors should be prepared to apply judgment in addressing facility rating issues not addressed in Sections 6.0 and 7.0;
2. A new project rating should not adversely impact the transfer capability of the existing system and individual paths in the system. A new project shall not result in a reduction of another project's Existing or Accepted Rating. If it does, the sponsors of the project should work with all adversely affected parties to mitigate transfer capability limitations or to negotiate appropriate and reasonable compensation. The intent is that new projects will be developed in consideration of the existing system and not cause reductions in existing transfer capabilities where mitigation options can be developed. The key consideration is achieving balance. Existing projects deserve a degree of protection; however, existing projects should not discourage needed system expansion. For example, a new project could create a new simultaneous relationship with an existing path or alter an existing simultaneous relationship between existing paths and still meet the intent of the rating process. Conversely system expansion should not unfairly penalize existing system facilities;
3. When a simultaneous transfer conflict occurs between systems that have existing Accepted Ratings, the vintage of the rating should not, in itself, grant preference in determining curtailment allocations;
4. Negotiated agreement between the affected parties is the preferred method for resolving simultaneous transfer conflicts. If negotiations fail, alternative dispute resolution should be considered;
5. Generally, the burden of resolving limitations between projects in Phase 2 of the Project Rating Review Process should be shared between the projects. In allocating curtailments or costs of mitigation, consideration should be given to factors including:
  - State of completion of planning
  - Level of commitment to project
  - Speed of progress
  - Projected completion dates

### **3.0 Project Rating Review Process**

#### **3.1 Objectives**

To fulfill the purpose of these Policies and Procedures, project sponsors should consider potential interactions and problems of simultaneous transfers when performing the planning studies for a project. To facilitate this purpose, WECC has adopted the following Project Rating Review Process to guide the project sponsors through their planning effort.

The Objectives of the WECC Project Rating Review Process are to:

1. Adequately communicate project plans, performance and limitations to all affected parties during the period from project inception to commercial operation;
2. Ensure a reasonable and diligent effort to discover simultaneous limitations and assure their resolution prior to operation;
3. Provide the opportunity for owners of existing or future facilities that may be affected by the project to participate in review of the project studies;
4. Facilitate the conclusion of all necessary studies in a timely manner;
5. Identify operating limitations and facilitate the sponsor's development of mitigation measures with sufficient lead-time to allow development of operating procedures;
6. Integrate projects into the existing system in a manner that will preserve interconnected system reliability and operating efficiency.

#### **3.2 The Rating Process**

The project sponsor is responsible for initiating and following through with the rating process. The Rating Process covers the period of activity from the first announcement of a project (through either the WECC "Existing Generation and Significant Additions and Changes to System Facilities" report or through a letter of notification to PCC and TSS members) to when it is placed in operation. While the sponsor is responsible for initiating and completing the planning process, there is a shared responsibility between the sponsor and the rest of the WECC membership to complete some parts of the process.

The Rating Process consists of three Phases:

##### Phase 1 - Project Definition

This phase includes definition of the proposed project including a proposed rating.

##### Phase 2 - Facility Rating

This phase is to address issues related to the rating, mainly Simultaneous Transfer Capability, but also Non-simultaneous Transfer Capability if issues were not resolved in Phase 1.

##### Phase 3 - Project Implementation

This phase covers the construction period for the project. Phase 3 is deemed complete when the project is placed in service.



The rating process also provides for project sponsors to compress activities when the project rating is not expected to raise significant concerns. This is described in Section 3.3 - Expediting the Process.

Throughout the planning process the sponsor is responsible for adequately communicating and coordinating the development of the project with existing facilities and other projects. WECC provides many opportunities for the project sponsor to communicate information to members and interested parties about the project through informal reports at various committee meetings, as well as the preparation of progress reports.

This project rating process has been established to ensure that the planning process is completed in a timely and orderly manner. The process is pictorially illustrated in Figure 2.

### **3.2.1. Phase 1 - Project Definition**

Phase 1 is to define the proposed project and proposed rating. Phase 1 is often overlapped with the Regional Planning Process and is complete upon acceptance of a Comprehensive Progress Report by TSS.

The project sponsor's initial announcement of a project starts Phase 1 of the planning process. This announcement takes place when the sponsor submits data on the project for the WECC Progress Report Policies and Procedures report or provides a letter of notification. If a letter of notification is used, the letter should include a complete description of the project including the proposed path rating and shall be distributed to all PCC and TSS members (WECC staff will distribute material upon request of the project sponsor). For the purposes of these criteria, transmission dependent utilities, loads or generators interconnected exclusively to the path operator's system are not considered other systems.

### **3.2.2. Phase 1 Requirements**

During Phase 1 the project is in the preliminary phase of development and a definitive plan of service may not be available. The sponsor should be performing the necessary studies to develop a preliminary plan of service and a Planned Rating. Studies should focus on the non-simultaneous rating; however, known simultaneous effects should also be addressed. During Phase 1, the project has only a Proposed Rating and other projects in later phases of the planning process are not obligated to recognize the project in their studies.

### **3.2.3. Completion of Phase 1**

The transition from Phase 1 to Phase 2 is accomplished by notification from the TSS Chair of the completion of all the following:

- PCC has completed its assessment of the project's conformity with WECC's Regional Planning Guidelines (applies only to those projects identified by PCC in which regional interest has been expressed).
- The project sponsor has submitted a full project representation to WECC for inclusion in WECC base cases.

- The project sponsor has distributed a Comprehensive Progress Report accompanied by a letter to TSS and PCC requesting Phase 2 Status for the project.

If the above criteria have been satisfied and no objections have been received within 60 days of WECC's receipt of the request to enter Phase 2, the project sponsor(s) will so notify the TSS Chair and provide evidence that the project has satisfied all requirements. The TSS Chair will consult with the WECC staff and members and, upon determination that all requirements have been met, will notify PCC and TSS members that the Comprehensive Progress Report has been accepted and the project has entered Phase 2 of the planning process. This signals that the project sponsor's preliminary planning studies have been completed and a Planned Rating for the project has been established using accepted methodology.

It is recognized that the rating process can be very complex. Notwithstanding the minimum reporting requirements necessary to qualify for transition to Phase 2, it may not be practical to address all technical questions within the defined Phase 1 scope. Unresolved issues may include:

- Planning and technical issues that are necessary to demonstrate compliance with the Reliability Criteria have been adequately addressed. This includes addressing simultaneous technical interactions between projects, including known interactions and new interactions that are intended to be identified and that have bearing on reliability of the interconnected electric system and development of associated nomograms;
- Adequacy of supply is not a factor in the rating process as a stand-alone requirement. It may be an indirect factor if generation patterns have bearing on the technical rating issues described above. Adequacy of supply issues are to be addressed in other forums;
- Commercial issues are to be addressed outside of the rating process by the affected parties. It is the intent of these policies and procedures that commercial issues be resolved before operation at the new Accepted Rating commences. It is intended that new projects that meet all reliability requirements not be unreasonably delayed by commercial discussions.

It is expected that during the 60-day comment period, the involved parties will make a good faith effort to identify issues early in the comment period and resolve their issues of disagreement. It is expected that policy level personnel from the involved parties will strive to resolve issues of disagreement. If at the end of the 60-day period, there still exists unresolved concerns over the Comprehensive Progress Report the project sponsor may agree to address the comments in Phase 2, in which case the Comprehensive Progress Report can be accepted and the project can move into Phase 2, provided that all other Phase 2 entry requirements have been satisfied. Otherwise, the project will remain in Phase 1.

Notification by the TSS Chair of the acceptance of the Comprehensive Progress Report and the Planned Rating indicates completion of Phase 1 and transition to Phase 2.

### **3.2.4. Phase 2 - Facility Rating**

Phase 2 of the Rating Process is to:

- Demonstrate conformance with NERC/WECC Planning Standards;
- Identify the non-simultaneous transfer capability and simultaneous path transfer capability limits for a specific plan of service;
- Address the mitigation of adverse impacts on simultaneous and non-simultaneous transfer capability relative to the existing system;
- If applicable, resolve comments on the Comprehensive Progress Report.

### **3.2.5. Phase 2 Requirements**

During Phase 2, the project sponsor will lead a Project Review Group comprised of interested WECC member representatives. Prior to or during this phase the project sponsor will request TSS, PCC, and OC member interest in forming a Project Review Group. A 30-day period (starting from WECC's distribution of the letter) will be allowed for recipients of the letter to respond with their interest in participating in the Review Group. This letter may be mailed at the same time as the Comprehensive Progress Report is mailed, although the deadline for expressing interest in participating in the Review Group cannot be before the deadline for comments on the progress report. Details concerning the formation of the Project Review Group are discussed in Section 3.5, Formation of Project Review Group. Members with interest in the project rating should participate in the Project Review Group, as it is the Project Review Group comments that will determine the outcome of Phase 2 and transition to Phase 3.

Phase 2 is the appropriate phase in which adverse impacts are discussed and mitigation plans established. If a new transmission project potentially impacts an Existing Rating or an Accepted Rating then it is expected that mitigation plans be developed in Phase 2 by the project sponsor to alleviate the adverse impact. A change, for example, that affects the effectiveness of a Remedial Action Scheme (RAS) is expected to be addressed in Phase 2 if the RAS effectiveness has a direct adverse affect on an Existing or Accepted Rating. The essential burden of mitigating or compensating for new problems relative to the existing system lies with the project sponsor. Allocations of ratings are considered to be commercial issues and are not addressed by the WECC transmission path rating process.

All projects with Planned Ratings should consider each other as appropriate in their planning studies. Once a project has entered Phase 2 it has attained a Planned Rating and is considered on an equal basis with other projects similarly situated in Phase 2. Projects in Phase 2 are not ranked according to degree of disagreement regarding specific project issues. The term "similarly situated" refers to the relative timing of projects based on the stage of study that each project is in within Phase 2. For example, if a Phase 2 project has substantially completed studies, it would be further ahead in the process compared to a project that has just begun its studies. These projects would not be "similarly situated."

### **3.2.6. Completion of Phase 2**

A 30-day period for comments from the Project Review Group on the Phase 2 Project Rating Report (starting from WECC distribution of the report) will be allowed. This may be shortened if all members of Project Review Group are satisfied with the Phase 2 Project Rating Report.

After addressing the concerns and issues raised by the review group or after making a good faith effort to do so, the project sponsor will distribute the Phase 2 Rating Report to PCC, TSS, and OC. PCC members will have 30 days to comment on conformance with this Procedure. The PCC comments will not encompass adverse impacts or mitigation plans, as these are the responsibility of the Review Group. Completion of Phase 2 can be addressed in a number of ways:

1. If all comments received pertaining to the project's conformance with WECC criteria, policies, and procedures have been resolved, the project sponsor will so notify the PCC Chair and formally request Phase 3 status. This request can be made at the same time as the Phase 2 Project Rating Report is distributed to the Project Review Group for the final 30 day comment period. The PCC Chair will, upon determination that the requirements have been met, notify the PCC, TSS, and OC members that the Phase 2 Rating Report has been accepted and the project has entered Phase 3 of the planning process;
2. If comments from a review group member concerning the project's compliance with WECC criteria, policies, and procedures are received that cannot be resolved, the disagreements will be handled in accordance with the resolution process provided in the WECC Progress Report Policy and Procedure. Disputes that cannot be resolved through the progress reporting procedure should be resolved using WECC's Alternative Dispute Resolution (ADR) process or by some other process as mutually agreed upon by the parties;
3. In the event that outstanding issues have not been resolved using the processes described above, the PCC Chair will determine, through a formal balloting process, whether PCC members are satisfied that the project has met all requirements of Phase 2 of the path rating process. The PCC Chair will consult with the WECC Board Chair and WECC CEO regarding Phase 2 completion determined in this manner.

Upon determination that Phase 2 has been completed, the PCC Chair, in consultation with the TSS Chair and WECC staff, will notify the PCC, TSS, and OC members that the Phase 2 Rating Report has been accepted and the project has entered Phase 3 of the project rating review process. The final accepted Project Rating Report will be attached to this notification. The acceptance of the Phase 2 Rating Report will complete Phase 2 and establish an Accepted Rating that must be considered by other projects in all phases of the planning process.

### **3.2.7. Phase 3**

Phase 3 is entered upon successful completion of Phase 2. This phase includes construction and assumes the sponsor is committed to the project. The essential

planning activity during this phase is maintenance and monitoring of the Accepted Rating and assuring that the project will be completed in a timely manner in accordance with the plan of service presented in the Phase 2 Rating Report. For a project consisting only of a rerating of the existing system, Phase 3 would simply entail instituting the rating.

A project in Phase 3 will be considered to be part of the "existing system" for the purposes of a project being planned. All other projects in earlier phases of the planning process must treat Phase 3 projects as part of the existing system. Because a Phase 3 project is considered a peer with the existing system, if new simultaneous transfer limitations are discovered, their resolution will be shared among the parties as if the project were complete.

The project's Accepted Rating is only "at risk" due to its failure to complete its own plan of service as presented in the Phase 2 Rating Report or the failure of other projects that were relied on in establishing the rating or failure to follow its own milestone schedule. If the schedule for project completion is delayed or interrupted, the project sponsor may be required to repeat or update Phase 2 of the planning process. This is further described under Monitoring Project Progress.

When construction is complete (or in the case of up-rates of existing facilities - when all operating procedures, etc. are accepted by the Operating Procedures Review Group and in place) and the project is placed in operation, the planning process will also be complete and the project will be a fully accepted part of the existing system.

### **3.3. Expediting the Process**

The Rating Process is designed to provide for an orderly completion of steps with adequate times for member participation and comments for significant or complex projects. However, in some cases in which the project sponsor anticipates that there will be few comments or that comments can be addressed and incorporated in the project without delays, the project sponsor may seek to expedite the process of achieving an Accepted Rating. Expediting the process results in simultaneous acceptance by PCC of both the Phase 1 and Phase 2 requirements. One example of a project seeking expeditious treatment is the up-rating of an existing transmission path accomplished by changing an operating procedure or installing a new remedial action scheme.

Expediting the process involves combining several of the rating process steps. The Letter of Notification, the Comprehensive Progress Report, and the request for interest in forming a Review Group may all be combined into a single mailing. Project sponsor notification at the beginning of the process shall include a clear statement of the desire to expedite the process. PCC members concerned that expediting the process will not give adequate opportunity for rating review should notify the project sponsor and PCC Chair as soon as possible.

While all the timelines for the individual steps would still apply, they may be done concurrently and the Project Review Group may be formed before comments are due on the Comprehensive Progress Report. For example, the WECC Progress Report Policies and Procedures requires a 60 day comment period for the Comprehensive Progress Report

which can be concurrent with the 30 day period required for forming the Project Review Group and the 30 day period for PCC to comment on the conformance with this procedure. However, while these two processes are allowed to overlap, the deadline for expressing interest in participating in a Review Group cannot end before the end of the 60-day comment period for the Comprehensive Progress Report has expired. Acceptance of completion of Phase 2 and transition into Phase 3 is as described above. If the Phase 2 Rating Report is unchanged from the Comprehensive Progress Report, the project sponsor should send a letter stating such to PCC and TSS.

Expediting the process has the advantage of facilitating the process of achieving an Accepted Rating for a straightforward project. However, during the expediting of a project rating process, the project remains in Phase 1. Consequently, the project does not achieve any status with respect to projects in Phase 2. Should significant or unanticipated issues arise, the project sponsor may find that the process cannot be expedited and may request Phase 2 status and follow the Phase 2 process discussed in Section 3.2.

If the proposed path rating change is planned to occur within 6 months after WECC notification, the Compliance Monitoring and Operating Practices Subcommittee (CMOPS) and the Technical Operations Subcommittee (TOS) should be included in the various rating process mailings.

#### **3.4. Monitoring Project Progress**

Granting of Phase 2 status or an Accepted Rating to a project/project sponsor obligates other WECC members to various levels of recognition and accommodation in the planning of other projects. In exchange for this, a project sponsor is responsible for maintaining the project's Phase 2 status and rating with a continuous demonstration of steady progress toward commercial operation through continued compliance with the WECC Progress Reporting Procedure.

A Phase 2 status may be lost if a project in Phase 2 shows no evidence of any activity (for example, correspondence with or meeting of the project review group, conducting studies required in Phase 2) for a period of 24 months after the achievement of Phase 2 status. In this case, the project will revert to Phase 1 status upon review by TSS. The TSS Chair will notify the project sponsor of loss of Phase 2 status. The project sponsor can revive the project's Phase 2 status by providing evidence that Phase 2 studies and/or project review group meetings are being conducted.

Accepted Rating Status may be lost if a delay in meeting any project milestones by 12 months or more occurs or a change in the project's plan of service adversely impacts the Accepted Rating.

If either of these conditions occur, the project sponsor will promptly notify TSS, PCC, and the Project Review Group. The project sponsor will consult with the Project Review Group to determine if the project status will revert back to Phase 2 with a Planned Rating or remain in Phase 3 with an Accepted Rating. Also, a determination will be made if additional study work is necessary. The project sponsor will promptly notify PCC and TSS regarding the determination of the Project Review Group.

### **3.5. Formation of a WECC Project Review Group**

A WECC Project Review Group is formed to facilitate review of planning studies for a project in Phase 2 of the Project Rating Review Process. The Project Review Group provides WECC members the opportunity to meaningfully contribute to the plan of service for the project and identify concerns with potential impacts of the project.

Timing of the Project Review Group formation is at the sponsor's discretion, but should generally be soon after the project enters Phase 2. While the Project Review Group will normally complete its task at the end of Phase 2, the Project Review Group members should stand ready to help the project sponsor resolve additional simultaneous transfer related issues should they occur and to determine if the project status should revert back to Phase 2 as described under the Section 3.4, "Monitoring Project Progress."

While participation in a Project Review Group is voluntary and open to all WECC members, it is recommended that, at a minimum, the Project Review Group membership include all parties who have expressed an interest in joining the Project Review Group. The responsibility for forming the Project Review Group belongs to the project sponsor, but the responsibility for facilitating an objective, positive and effective Project Review Group is shared by all WECC members.

The Project Review Group's main area of interest lies in identifying all non-simultaneous and simultaneous impacts and methods for mitigating these for both the existing system (including Phase 3 projects) and other projects in Phase 2. Project Review Group participants are responsible to provide any necessary information required to prepare the simultaneous transfer studies, which should be fully supported by studies and/or mitigation measures. Likewise, it is the responsibility of the project sponsor to adequately address all appropriate issues raised by the Project Review Group members or as they arise during the course of the study process.

Mitigation methods may include, but should not be limited to additional facilities, remedial action measures, and operating nomograms. The implementation of the findings of the Project Review Group will be at the discretion of the project sponsor, however, the project sponsor is responsible for adjusting the project's rating, if appropriate. The functions of the Project Review Group are technical in nature and should not address curtailment procedures. While the project sponsor is responsible for addressing curtailment procedures, they should be addressed through negotiations outside of the Project Review Group.

It should be recognized that some projects will be more difficult to evaluate than others which may require a significant effort by the project sponsor and the Project Review Group members. The Project Review Group is a shared responsibility between the project sponsor and the WECC members and as such, the project sponsor is not obligated to "study the world." Should circumstances arise where studies being requested go beyond the capability of the project sponsor, the project sponsor may, at its discretion, request a Project Review Group member(s) to run some of the studies as may be needed.

**Figure 2**  
**Project Rating Review Process**

	Phase 1 started by Project announcement through Significant Additions Report. This establishes the “Proposed Rating”	Phase 2 started by acceptance of a Comprehensive Progress report by TSS. This establishes the “Planned Rating”	Phase 2 completed when the WECC Phase 2 Rating Report is accepted by PCC. This establishes the “Accepted Rating”	Commercial Operation
Planning Phase	Phase 1	Phase 2	Phase 3	
Project Activities	Planning	Planning & Permitting	Permitting & Construction	
Study Emphasis	Sponsor’s Independent Studies	WECC Review Group Rating Studies support Simultaneous and Non-Simultaneous Ratings	Monitoring Progress	
Study Considerations	Other project not obligated to recognize new project in their studies	All projects with Planned Ratings shall recognize each other as appropriate	Other projects MUST treat project as part of the existing system provided it continues to meet milestones	



## **4.0 Philosophy and Principles For Transmission Path Rating Methods**

### **4.1. Introduction**

A project is defined as a new transmission path or a change in rating of an existing path through facility additions, facility upgrades, or the re-rating of existing facilities. The primary focus the Procedures For Project Rating Review is to establish a set of well defined principles for determining Accepted Ratings for Transmission Paths. These principles are intended to foster a consistent "transmission rating method," that will provide a level playing field for the traditional utility as well as the non-utility organizations that are participating in the planning and operation of the WECC interconnected bulk electric system. All participants are expected to follow the principles; consequently, they must be practical, technically sound, unambiguous, and promote efficient utilization of the system while maintaining the standards within the Reliability Criteria. The determination of an Accepted Rating for a path is important for several reasons, including but not limited to, assuring reliable operation, determining access or contract rights, and establishing scheduling limits.

### **4.2. Philosophy**

To determine the Accepted Rating for a path, the method described below and in the Progress Report Policies and Procedures should be followed. This should apply to all paths whether they are considered "internal" or "external". Ratings are pre-outage, all facilities in service, and may be achieved through the use of appropriate Remedial Action Schemes. The adoption of a consistent study method should ensure that the Accepted Rating of a Transmission Path:

- Is technically sound;
- Can be used in actual operation, and;
- Is consistent with the flow achievable on the Transmission Path.

This method does not constrain how parties may commercially allocate the rating of a path among its owners. In addition, this method does not constrain how owners of interacting paths may allocate curtailments among their paths.

The WECC Project Review Group described in the Procedures for Project Rating Review is responsible for insuring that these guidelines are being followed in developing an Accepted Rating. The Project Review Group is also responsible for insuring that the study plan and base cases represent realistic conditions.

The planning process should address potential unscheduled flow impacts at least to some extent. One reasonable way to address unscheduled flow is to establish Transmission Path ratings at a level where no system reliability problems exist and schedules will be limited by the maximum flow that can occur on the path under realistic (although perhaps optimistic) conditions. This rating philosophy embodies a Maximum Flow Test (MFT), and precludes having schedules on the transfer path that exceed the resulting Accepted Rating. Consequently, this aspect of the planning process is a positive step in limiting unscheduled

flow that would otherwise be higher if the Accepted Rating is not constrained by the MFT. With the concurrence of all affected parties, the sponsor may use some method other than the MFT. All sponsors must inform PCC of what method they intend to use including an explanation in principle of what the proposed method is intended to accomplish.

It is the desire of all parties to afford some measure of protection for path ratings. Protection is a fundamental element of what an Accepted Rating provides. An Accepted Rating is fully peer reviewed, recognized in future planning studies, and directly usable in operations for both scheduled and actual flows. An Accepted Rating addresses both simultaneous and non-simultaneous transfer capabilities, and may involve the use of nomograms or remedial action schemes. It is not acceptable for a new project to cause a reduction in an Accepted Rating unless mitigated or compensated by the new project. Notwithstanding this protection philosophy, compliance with the Reliability Criteria will always be the overriding consideration.

### **4.3. Principles**

The following principles are the basis for the methodology to be used in determining the Accepted Rating of a Transmission Path.

#### **4.3.1. Reliability Limited Ratings**

An Accepted Rating is determined to limit the scheduled and actual use of a transmission path to levels that meet the WECC Reliability Criteria For Transmission System Planning.

#### **4.3.2. Realistic Simulation**

Studies and analyses performed to determine the Accepted Rating of a transfer path must use realistic simulations, i.e., the use of fictitious devices will not be allowed and the system conditions represented must be realistic, in the judgment of the Project Review Group. Considerable latitude is intended to be allowed in determining realistic conditions. When remedial action schemes are used, they should be modeled as they will be applied in operation.

#### **4.3.3. Flow Limited Ratings**

Certain Transmission Paths may not be limited by reliability considerations. For example, a path may be limited by the amount of available resources, or parallel a lower impedance path. Where this occurs, these paths will be described as flow limited (as opposed to reliability limited). When testing for this condition, considerable latitude in the base case assumptions is allowed in maximizing the flow on the path being rated. After the flow on the path has been maximized with the above consideration and a reliability limit has not been reached, a Maximum Flow Test (MFT) is defined as having been passed for the path being rated. This maximum flow achieved is called a flow limited rating and is protected.

An advantage to defining this maximum flow as a flow limited rating is that this produces a reasonable way to address potential unscheduled flow in the planning

process. By defining this as a "rating," schedules will be limited by the maximum flow that can occur on the path under realistic conditions.

However, if the MFT is not applied then with the concurrence of all affected parties, the sponsor may use some other method to determine a path rating. The project sponsors must inform PCC of what method they propose to use during Phase 2 of the rating process, including an explanation in principle of what the proposed method is intended to accomplish. The intent is to allow potentially affected parties not already on the Project Review Group to come forward.

#### **4.3.4. Accepted Rating Protection**

A new project shall not cause a reduction in an Accepted Rating (e.g., because of a reliability criteria consideration) unless mitigated by or compensated by the project. However, if a facility is retired from service (e.g., generator, shunt reactive equipment, Remedial Action Scheme, etc.), all path ratings that rely on the facility must be reviewed and reduced to the extent the System Impacts of such retirements are not mitigated. Just as with the addition of facilities, planning for the retirement of facilities must be closely coordinated with affected systems (e.g., through the Progress Reporting or Project Rating Review procedures) to allow adequate time to mitigate any Adverse Impacts and negotiate any commercial issues (e.g., which system should be responsible for the costs of mitigation). If a path's Accepted Rating relied upon the facilities that are not part of the path's Plan of Service, and if those facilities are retired, modified, or never built, the Accepted Rating is subject to review in the same manner as if changes had occurred in the path's Plan of Service.

A transmission path's Accepted Rating will not be lowered because its maximum achievable flow is reduced (i.e. the path can no longer meet the Maximum Flow Test) due to system changes made by others except for certain changes as described in the previous paragraph. System owners that make such changes shall be responsible for mitigating any adverse impacts on the other system.

Transmission path owners that make changes to their system that increase the flow on a path with a flow limited rating can receive a higher Accepted Rating consistent with the Maximum Flow Test. This same principle applies if the flow on the path is increased by a project initiated by another party; although, in that case, it should be recognized that the higher Accepted Rating relies upon and is subject to the operation of the other party's facilities.

#### **4.3.5. Application To Existing Systems**

Although the primary focus of the Procedures For Project Rating Review and the Progress Report Policies and Procedures is to determine the way to establish ratings for new projects, existing transmission paths cannot be ignored. Existing transmission paths have been rated using various methodologies and guidelines, some of which are inconsistent with the method proposed in this document. These inconsistencies are primarily in the areas of flow limited paths, use of fictitious elements, and Latent Capacity.

This document is intended to assure the development of an efficient, reliable electric system and to balance the competing interests of protecting the legitimate ratings of existing facilities while encouraging the economic and environmentally sound expansion of transmission capacity. The following principles guide how existing transmission paths are treated within the WECC rating process.

1. Transmission path ratings that were known and used in operation as of January 1, 1994, will be classified as Existing Ratings.
2. A sponsor of a new project who is impacted by an Existing Rating and is in Phase 2 of the WECC rating process may ask that the Existing Rating be reviewed. The Project Review Group is responsible for deciding if, and how, the Existing Rating will be demonstrated.
3. If an owner desires to establish an Accepted Rating for an existing Transmission Path, the then current WECC approved guidelines will be followed.
4. A Transmission Path's Existing Rating will not be lowered because of reduced maximum achievable flow on the path due to system changes made by others.
5. Transmission path owners that make changes to their system that reduce the maximum achievable path flow, will have their Existing Rating reduced by the amount the path's flow was reduced.

#### **4.3.6. Latent Capacity**

Latent Capacity is the transfer capability that may be acquired by improving an existing path without adding new lines to the path. Latent Capacity is not protected, it cannot be used in operation, and it is not recognized nor incorporated by others in their rating studies. The only means of protecting Latent Capacity is to pursue a committed project through the three phase WECC rating process presented in Part 2 of this document.

Project sponsors, as appropriate, should identify and document Latent Capacity. Documenting information on Latent Capacity may be useful for:

- Promoting appropriate decisions in generator siting;
- Facilitating Regional Planning;
- Fulfilling transmission access request requirements;
- Establishing one's intent to expand the transmission system;
- Gaining expedited review by a Project Review Group provided the Latent Capacity has been adequately reviewed and documented and the Project Review Group determines that the original documentation is still applicable;
- Providing some assistance in contract negotiations.

#### **4.3.7. Margin**

If planning margin beyond that afforded by the WECC Reliability Criteria is considered necessary, the project sponsor or participant/member of a Project Review

Group may establish the additional planning margin requirement when determining a path rating. To allow potentially affected parties not on the Project Review Group to come forward, the project sponsors must inform PCC of their intent regarding the requirement for additional planning margin during Phase 2 of the rating process, including a justification of why the additional planning margin is needed. The justification for additional planning margin should specifically address the following points:

1. Explain how the amount of planning margin is related to risk.
2. Describe how the amount of planning margin applied to a path rating is related to the level of uncertainty in determining the rating.
3. Define the rationale for the amount of additional planning margin recommended.
4. Explain how it would be consistently applied.

In cases where the Project Review Group concurs that additional planning margin is appropriate, the rationale will be forwarded to the Reliability Subcommittee for consideration in determining if there is a need to modify the WECC Reliability Criteria.

#### **4.3.8. Neutrality of Path Definitions**

When a new facility interacts with an existing path, whether the new facility is included in the path for rating purposes or remains outside of the path, it should be operationally transparent to an adjacent party (outside of either path). One option is to include the new facility in the existing path and manage the expanded path as a single unit. A second option is to define the new facility as a new path and define the relationship with the existing path in a nomogram. As long as all parties agree to operate within a nomogram, then an equivalent result should be obtained as viewed by an adjacent party.

#### **4.3.9. Reverse Flow**

It may be impossible to achieve a desired MFT if one is trying to rate a line in a direction counter to prevailing flows. Parties faced with such a circumstance could still schedule transactions over the path in the opposite direction using a net scheduling approach. Once the rating of a Transmission Path has been established, scheduled transactions over the path are permitted in either direction providing the net schedule at any time does not exceed the path rating in either direction. For example, if the path rating has only been established in one direction, schedules are still permitted in both directions as long as the net schedule is in the same direction as the path rating direction and does not exceed the path rating.

## **5.0 Phase 2 Accepted Rating Comprehensive Study Plan**

### **5.1. Introduction**

The purpose of this study plan is to provide a consistent, comprehensive study methodology for the path or project sponsor to follow in establishing an Accepted Rating for either an existing Transmission Path or a Transmission Path which includes a new project.

The following generic study plan is an example describing activities appropriate to rating a major transmission project. Not all of these proposed activities are necessary for all projects. Sponsors studying smaller projects should use this as a "shopping list" to pick the activities that are right for their needs.

## **5.2. Study Objectives**

### **5.2.1. Satisfy Reliability Criteria**

In establishing an Accepted Rating for an existing path or for a path with a new project, the Accepted Rating should satisfy the NERC/WECC Planning Standards and this document as well as other appropriate WECC criteria.

### **5.2.2. Affirm Plan of Service For a New Project**

1. If a new project is planned, the Project Review Group should review and comment on the Plan of Service.
2. The Project Review Group should establish a consensus that the Plan of Service supports the Accepted Rating.

### **5.2.3. Acquire An Accepted Rating**

1. In establishing the Accepted Rating for a Transmission Path, the non-simultaneous and simultaneous transfer capabilities should be determined.
2. The impact of the new project on other projects or paths with Existing Ratings, Planned Ratings similarly situated in Phase 2, or Accepted Ratings should be determined.
3. The project sponsor should obtain concurrence from the Project Review Group regarding the study results.
4. A Phase 2 Rating report should be prepared for submittal to the WECC Planning Coordination Committee based on the findings of the Project Review Group.

## **5.3. Major Study Assumptions and System Representation**

### **5.3.1. Project Description**

Detailed information regarding the Plan of Service should be provided and should include the technical and physical characteristics of the project such as:

1. Associated generation (if any)
2. Line voltage, line length, other line characteristics
3. Use of series capacitors, series compensation level, location of capacitor banks within the line, capacitor over voltage protection type (varistor or conventional gap)
4. Phase Shifters

5. Shunt reactive compensation
6. SVCs (with ratings)
7. Remedial Action Schemes
8. Other, if any

### **5.3.2. Other Phase 2 Projects Included**

The project sponsor should provide a list of planned projects in Phase 2 of the Regional Planning Project Rating Review Process that could affect or be affected by the project under consideration.

### **5.3.3. Regional/Area Loads and Resources**

System studies should be performed using the latest available load and resource data for the WECC interconnected system for the time frame being studied. In general, the load level modeled for the base cases should be typical for the time of year being evaluated. Sufficient generation should be represented to accommodate the interchange patterns described and in accordance with the individual system's plans or operating policies. Interchange transfers should reflect the objectives of the case.

### **5.3.4. System Representation**

The path or project sponsors should explain how the system, both transmission and generation, will be modeled. The Project Review Group should approve the representation. For further guidance, see the System Review Work Group (SRWG) System Representation Guidelines in the SRWG Handbook.

The following are general guidelines for system representation:

1. Full loop representation is to be used with the entire WECC system modeled.
2. All system elements will be in service for the assumed initial conditions.
3. System transfer levels for major WECC paths should be agreed upon and listed. Additional transfer paths should be included as appropriate.
4. Voltage criteria should be applied in accordance with existing practice by the respective utilities or the operating agents.
5. The phase shifter methodology to be followed for all applicable phase shifters should be identified.
6. A list of the series compensation assumptions for the major EHV lines should be provided.
7. A detailed system representation of the study area should be modeled when appropriate.

### **5.3.5. System Stressing/Loading**

1. Loading on the subject path will be accomplished in such a way as to achieve the Accepted Rating of the path. In achieving the simultaneous transfer capability on the subject path, affected parallel Transmission Paths will not be loaded above their applicable Transfer Capability. The intent here is to set guidelines in developing reasonable base cases.
2. The Transfer Capability of a path is based on the amount of power that flows on a path and not how much schedule change was required to load the path to its rating.
3. Possible methods in which power will be made available for stressing the subject path include:
  - a. Sending Region
    - i. Available generating units should be added in a reasonable manner within the appropriate areas.
    - ii. Loads should be decreased in a reasonable manner as agreed to by the Project Review Group within the appropriate areas. The amount of load reduction should be documented.
  - b. Receiving Region
    - i. Those generators to be decreased in a reasonable manner should be specified within the appropriate areas.
    - ii. Load should be increased in a reasonable manner as agreed to by the Project Review Group within the appropriate areas. The amount of load increase should be documented.

## **5.4. Study Methodology**

Power flow, stability and post-transient studies will be performed in accordance with the NERC/WECC Planning Standards, this document, WECC Post-Transient Study Methodology and local utility criteria and guidelines. General study guidelines follow in Section 5.5.

### **5.4.1. Development of Base Cases**

1. Select base cases from the most recent WECC cases available for the study time frame and conditions.
2. The Project Review Group should update the base cases to reflect the most accurate system line configuration, generation, and load representation for each appropriate individual control area for the study time period.
3. Incorporate all appropriate study assumptions agreed to by the Project Review Group into the base cases.
4. Represent significant non-utility generators.



5. Considerable latitude in the base case assumptions is allowed in maximizing the flow on the path being rated. The Project Review Group is responsible for insuring that the representation is realistic.

**5.4.2. If an Accepted Rating is Needed for an Existing Path:**

1. Determine the non-simultaneous transfer capability.
  - a. The objective of this phase of the study is to demonstrate that the path being rated meets the WECC Reliability Criteria and specific regional criteria where appropriate.
  - b. Stress the subject path to its proposed or expected non- simultaneous transfer capability and take outages. All parallel path flows should be at flow levels that result in non-interaction with the path being rated. If a limit due to a Reliability Criteria violation has not been reached or has been exceeded, increase/decrease, as appropriate, the stress level for the subject Transmission Path until a limit is reached.
  - c. If the ability to increase flow on the path is exhausted (due to lack of generation, parallel path overloading, etc.) prior to reaching a reliability limit, then the maximum flow achieved on the path is defined to be the non-simultaneous transfer capability and the path is considered to be flow limited.
2. Conduct screening studies to determine which parallel paths are to be evaluated on a simultaneous basis.
  - a. If the interacting paths are already identified, then the screening studies described below are not required.
  - b. If the interacting paths are not already identified, then a screening study should be conducted. Using the base case that established the non-simultaneous transfer capability, take the most critical outage on the path that established the path's non-simultaneous transfer capability. As a minimum study requirement, identify all parallel paths that pick up a ten percent increment or more based on that parallel path's rating due to the outage. Phase shifters should be in a non-regulating mode. It should be noted that this screening test is not intended to be the only consideration in determining the affect on parallel paths.
3. Determine the simultaneous transfer capability.
  - a. The objective of this phase of the study is to demonstrate that the path being rated meets the WECC Reliability Criteria under simultaneous conditions.
  - b. Using the base case that established the non-simultaneous transfer capability, individually stress every affected parallel path to its non-simultaneous transfer capability on a path by path basis (whether reliability or flow based).

- c. After each path is at its individual non-simultaneous transfer capability, take outages and look for criteria violations. This step is performed on a path by path basis. If a violation occurs, determine a simultaneous nomogram describing the safe operating range. If criteria violations are not observed, then a simultaneous interaction problem does not exist.
4. Conduct sensitivity studies.

Sensitivity studies should be conducted as agreed to by the Project Review Group and as they relate to the study objectives.

#### **5.4.3. If an Accepted Rating is Needed for a Path with a New Project:**

1. Conduct pre-project benchmark studies, if needed.
  - a. Pre-project benchmark studies for the non-simultaneous and/or simultaneous transfer capabilities should be performed for the subject path (and, if necessary, other paths) if the system performance and/or the existing transfer capability without the project in service is unknown.
2. Determine post-project non-simultaneous transfer capability.
  - a. The objective of this phase of the study is to demonstrate that the proposed plan of service for the project is adequate to meet the WECC Reliability Criteria and specific regional criteria where appropriate.
  - b. Stress the path with the new project to its proposed or expected non-simultaneous transfer capability and take outages. All parallel path flows should be at flow levels that result in non-interaction with the path being rated. If a limit due to a reliability criteria violation has not been reached or has been exceeded, increase/decrease, as appropriate, the stress level for the Transmission Path until a limit is reached.
  - c. If the ability to increase flow on the path is exhausted (due to lack of generation, parallel path overloading, etc.) prior to reaching a reliability limit, then the maximum flow achieved on the path is defined to be the non-simultaneous transfer capability and the path is considered to be flow limited.
3. Conduct screening studies to determine which parallel paths are to be evaluated on a simultaneous basis.
  - a. If the interacting paths are already identified, then the screening studies described below are not required.
  - b. If the interacting paths are not already identified, then a screening study should be conducted. Using the base case that established the non-simultaneous transfer capability, take the most critical outage on the path that established the non-simultaneous transfer capability. As

a minimum study requirement, identify all parallel paths that pick up an increment of ten percent or more based on the affected path's rating due to the outage. Phase shifters should be in a non-regulating mode. It should be noted that this screening test is not intended to be the only consideration in determining the affect on parallel path.

4. Determine simultaneous transfer capability.
  - a. The objective of this phase of the study is to demonstrate that the proposed plan of service for the project is adequate to meet the WECC Reliability Criteria under simultaneous conditions.
  - b. Using the base case that established the non-simultaneous transfer capability, stress every affected parallel path to its non-simultaneous transfer capability on a path by path basis (whether reliability or flow based).
  - c. After each path is at its individual non-simultaneous transfer capability, take outages and look for criteria violations. If a violation occurs determine a simultaneous nomogram describing the safe operating range. If criteria violations are not observed, then a simultaneous interaction problem does not exist.

5. Conduct sensitivity studies.

Sensitivity studies should be conducted as agreed to by the Project Review Group and as they relate to the study objectives.

## **5.5. Study Guidelines**

### **5.5.1. General Principles**

In general, companies involved will base the criteria applied to the Transmission Paths on the current criteria in use. These criteria should be made available to the Project Review Group and consistently applied.

### **5.5.2. Power Flow Guidelines**

Power flow studies should be performed utilizing the following guidelines:

1. Phase Shifter Operation
  - a. Phase shifters should be operated according to operating procedures established by the owners. The Project Review Group should agree to deviations to the procedures.
  - b. For line outages, phase shifters should be operated at pre-outage phase angles unless resultant flows exceed established limits. If emergency loadings are exceeded, the owner of the overloaded phase shifter should be consulted about the impact of the disturbance on their system to determine an appropriate action to reduce the overload. The action could include reducing transfers.

2. Thermal Capacity Limits
  - a. No transmission element will be loaded above 100% of its continuous rating under normal conditions.
  - b. For a single contingency loss of an element(s), no transmission element will be loaded above its emergency rating. A list of continuous and emergency ratings for applicable facilities should be developed by the Project Review Group and included in the study documentation.
3. System Voltage Limits
  - a. System stresses will be limited such that the NERC/WECC Planning Standards will govern voltage deviation for loss of a system element. All deviations from the WECC Reliability Criteria should be listed.
  - b. Document important base case voltage criteria in this section. Also include a list of minimum acceptable bus voltages for outages. Provide a list of bus voltages to be monitored. The Project Review Group should review and approve this list to ensure all meaningful buses are monitored.
4. Important path flows should be monitored and listed in this section. The Project Review Group should review and approve this list to ensure that all meaningful paths are being monitored.

### **5.5.3. Stability Guidelines**

Stability studies should be performed as needed to establish the stability transfer limit and to ensure system stability following a critical fault on the system. These studies would facilitate the development of the dynamic voltage support requirements.

#### **1. Fault Damping**

Three phase fault damping should be applied according to the appropriate operating agent's guidelines.

#### **2. Machine Representation**

- a. Representation of generators in the WECC Transient Stability Program should be consistent with available generator data modeled in current WECC base cases. Machines greater than 20 MVA should be represented.
- b. The power system stabilizers that are normally in service within the WECC system should be modeled for the appropriate case selected.

#### **3. System Disturbance**

System disturbances for stability studies should be initiated by a three-phase-to-ground fault on the EHV bus adjacent to the major interconnection point and/or power plant of interest. A single line-to-ground fault should be studied as a sensitivity if requested by the Project Review Group. The list of

outages to be studied should be agreed upon by the Project Review Group and listed in the report.

#### 4. Fault Clearing Time

- a. Faults on the transmission lines being evaluated will be cleared in accordance with guidelines provided by the appropriate members of the Project Review Group.
- b. Backup clearing time for stuck breaker operation will be provided by the appropriate members of the Project Review Group.

#### 5. Series Capacitors

Particular attention should be paid to modeling the correct performance of series capacitors. The protective schemes (i.e., bypass arc gaps, zinc oxide varistor) on the series capacitors vary widely and consequently can affect the system performance differently. The series capacitors should be modeled as they will perform in actual use.

#### 6. Evidence of System Stability

The system will be considered stable if the following conditions are met:

##### a. Machine Synchronism

All machines in the system remain in synchronism as demonstrated by the relative rotor angles.

##### b. System Damping

A stability simulation is deemed to exhibit positive damping if a line defined by the peak of the machine relative rotor angle swing curve will intersect a second line connecting the valley of the curves with an increase in time. Corresponding lines on bus voltage swing curves will also intersect with an increase in time. Duration of a stability simulation is ten seconds unless a longer time is required to ascertain stability.

##### c. Transient Voltage Criteria

- i. Major transmission bus voltages and machine terminal voltages should meet the appropriate guidelines following the disturbance. The Project Review Group should review and approve a list of the buses to be monitored.
- ii. System transient voltage performance must meet the WECC Reliability Criteria as a minimum.

##### d. Stability Plot List

A standardized stability plot list should be included with the study plan. This list should be approved by the Project Review Group to ensure all meaningful quantities are monitored.

#### **5.5.4. Post-transient Governor Power Flow Study**

Post-transient power flow analysis should be done when requested by the Project Review Group. This analysis should be consistent with “Voltage Stability Assessment Methodology” and “Voltage Stability Criteria, Undervoltage Load Shedding and Reactive Reserve Monitoring Methodology” documents. The analysis should demonstrate conformance of the Plan of Service with the NERC/WECC Planning Standards.

#### **5.5.5. Remedial Actions**

All remedial action schemes (RAS) required to obtain the Accepted Rating should be described in detail and modeled as they will be applied in operation.

### **5.6. Documentation of Study Conclusions**

The purpose of the Project Review Group Phase2 Project Rating Report is to document the study results and conclusions and to demonstrate how a project affects the overall system performance as defined by WECC requirements. The report should demonstrate conformance with WECC Reliability Criteria.

The report documenting the Accepted Rating should also provide a general background about the existing system or project. The background could include historical information, a general project description, project need and use, and project participation.

The content of the Phase 2 Rating Report is detailed in Project Rating Review Process.

## **6.0 Process Scenarios**

### **6.1. Fast Track Project**

The following process scenarios are intended to provide guidance on how a project sponsor could proceed through the rating process for projects of various complexities.

#### **6.1.1. Phase 1**

1. Member A has conducted internal studies and determined that installing a generation shedding scheme will increase the Accepted Rating of its path. The lead time to order and install the necessary equipment is 3 months.
2. One month later, member A completes additional studies and submits a comprehensive report to all TSS, PCC and OC members announcing the proposed increase in rating of its path. The cover letter advises TSS, PCC, and OC members of member A’s desire to expedite the process and requests expressions of interest in joining a Project Review Group. Since the equipment will be installed within three months, Member A should also copy these notices to members of the Compliance Monitoring and

Operating Practices Subcommittee (CMOPS) and the Technical Operations Subcommittee (TOS) to facilitate the review process.

3. The project has entered and remains in Phase 1.
4. During the 60-day period, there are no comments on the proposed rating or expediting the process and no expressions of interest in a Project Review Group.

#### **6.1.2. Phase 2**

Since all requirements to enter Phase 3 have been met, this project proceeds directly from Phase 1 into Phase 3. Member A notifies the PCC Chair that all requirements to enter Phase 3 have been met.

#### **6.1.3. Phase 3**

1. The PCC Chair, upon determination that the project has met all requirements to enter Phase 3, notifies all TSS, PCC and OC members that the project has entered Phase 3, and that the comprehensive report is considered to be the Phase 2 Rating Report. The project has an Accepted Rating.
2. If member A has installed the necessary equipment, the new Accepted Rating can be used immediately - 60 days after submitting its report and notifications to WECC.

### **6.2. Project with Minor Comments**

#### **6.2.1. Phase 1**

1. Member A lists a new transmission line in the "Existing Generation and Significant Additions and Changes to System Facilities." The Project is now in Phase 1.
2. After a period of time (no time limit given), member A submits a Comprehensive Progress Report to all TSS, PCC and OC members with a letter requesting Phase 2 status. The Report includes a full project description suitable for modeling the project in WECC base cases. The cover letter also requests expressions of interest in a Project Review Group (hoping there will be no interest).
3. The Report shows no criteria violations at the Planned Rating and details how the project will curtail to maintain the Accepted Rating of an existing path with a known simultaneous rating conflict.
4. Within the 60-day review period, member B requests that some additional contingencies in member A's system be studied, and that the voltage and frequency at several of B's load buses be monitored.
5. Member A conducts the requested studies, provides the study results to member B and requests confirmation within a reasonable time frame that they have no objections to the Planned Rating.

6. Member B confirms within the stated time period that they are satisfied and do not express an interest in joining a Project Review Group.
7. No other members express an interest in forming a Project Review Group.

#### **6.2.2. Phase 2**

Since all requirements to enter Phase 3 have been met, this project proceeds directly from Phase 1 into Phase 3. Member A notifies PCC and TSS members that the project's Comprehensive Progress Report is considered to be the Phase 2 Rating Report and that the project has met all requirements to enter Phase 3. PCC will have 30 days to comment regarding conformance with these procedures.

#### **6.2.3. Phase 3**

Based on the resolution of all comments, and no interest in formation of a Project Review Group and no comments from PCC, the PCC Chair notifies PCC and TSS members that the project has entered Phase 3 and is granted an Accepted Rating.

### **6.3. Complex High Impact Project**

#### **6.3.1. Phase 1**

1. Member A lists a new transmission line in the "Existing Generation and Significant Additions and Changes to System Facilities." The Project is now in Phase 1.
2. The Regional Planning Policy Committee finds that the project conforms with the Regional Planning Guidelines.
3. Some time later (no time limit given), member A submits a Comprehensive Progress Report to all TSS and PCC members with a letter requesting Phase 2 status. The Report includes a full project description suitable for modeling the project and it is represented in WECC base cases.
4. The Report shows no criteria violations at the Planned Rating for numerous contingencies within member A's system, and details how the project will curtail to maintain the Accepted Rating of an existing path with a known simultaneous rating conflict.
5. Within the 60-day review period, member B requests that some additional contingencies in member A's system be studied, and that the voltage and frequency at several of B's load buses be monitored.
6. Member A conducts the requested studies, and provides the study results to member B. Member A found some problems, and agrees to address those issues in Phase 2. Member A notifies the TSS Chair that the project has met all requirements to enter Phase 2.



### **6.3.2. Phase 2**

1. The TSS Chair, in consultation with the WECC Staff, verifies that all requirements have been met. The TSS Chair notifies all PCC and TSS members that the project has entered Phase 2 of the planning process and the project is conferred a Planned Rating.
2. Member A writes to all members of PCC, TSS and OC, requesting expressions of interest in participating in a Project Review Group, and allows at least 30 days response time. Some interest is expressed and meetings are scheduled.
3. The Project Review Group meets several times. The members identify a number of additional studies and potential simultaneous limits that they wish addressed. Simultaneous limits are discovered and studies are continued over the next year. Member A modifies the project to partially mitigate the simultaneous limits and identifies the curtailments necessary to mitigate remaining simultaneous operating problems.
4. At the last meeting of the Project Review Group, all members are satisfied except for member C who feels that additional study work is required.
5. Member A submits a Phase 2 Rating Report to all members of TSS, PCC and OC.
6. No protests from the members of the Project Review Group (including member C) are received within 30 days and any PCC member's concerns regarding conformance with the procedure have been addressed. Member A notifies the PCC Chair that the project has met all requirements to enter Phase 3.

### **6.3.3. Phase 3**

When the PCC Chair determines that all requirements for entering Phase 3 have been met, the PCC Chair notifies all TSS, PCC and OC members that the Phase 2 Rating Report has been accepted and the project has entered Phase 3. The project has an Accepted Rating.

## **6.4. Project With Dispute Resolution**

### **6.4.1. Phase 1**

1. Member A lists a new transmission line in the "Existing Generation and significant Additions and Changes to System Facilities." The Project is now in Phase 1.
2. Some time later (no time limit given), member A submits a Comprehensive Progress Report to all TSS and PCC members with a letter requesting a Phase 2 status. The Report includes a full project description suitable for modeling the project in WECC base cases.

3. The Report shows no criteria violations at the Planned Rating for numerous contingencies within member A's system.
4. Within the 60-day review period, member B requests that some additional contingencies in Member A's systems be studied, and that the voltage and frequency at several of B's load buses be monitored.
5. Members A and B agree to form a Project Review Group and address the concerns in Phase 2. Member A notifies the TSS Chair that the project has met all requirements to enter Phase 2.

#### **6.4.2. Phase 2**

1. The TSS Chair, in consultation with the WECC Staff, verifies that all requirements have been met. The TSS Chair notifies all PCC and TSS members that the project has entered Phase 2 of the planning process and the project is conferred a Planned Rating.
2. Member A writes to all members of PCC, TSS and OC, requesting expressions of interest in participating in a Project Review Group, and allows at least 30 days response time.
3. A Project Review Group is formed and meets several times. The group members identify a number of additional studies and potential simultaneous limits that they wish addressed.
4. A criteria violation in member B's system is discovered under high simultaneous transfers. Member A proposes to mitigate the problem by paying for the installation of a shunt capacitor on B's system. Member B does not like the idea.
5. Member A drafts a review group report proposing the shunt capacitor mitigation. After review and editing, a majority of the Project Review Group accepts the report with the shunt capacitor mitigation. Member B votes against the report.
6. The report is submitted to PCC with a request for Phase 3 status.
7. Member B files a protest within 30 days claiming the proposed mitigation is unacceptable.
8. PCC withholds acceptance pending resolution of B's protest. PCC raises no concerns regarding conformance with the procedure. The PCC Chair informs A and B that they must agree to resolve the dispute either between themselves, through the TSS process, or with outside assistance.
9. The parties choose arbitration and accept WECC assistance in providing an arbitrator and associated support. Both parties state their cases per the process set up by the arbitrator. The arbitrator picks A's proposed resolution.
10. The results are sent to the PCC Chair and any PCC member's concerns regarding conformance with this procedure have been addressed,

member A notifies the PCC Chair that the project has met all requirements to enter Phase 3.

#### **6.4.3. Phase 3**

1. When the PCC Chair determines that all requirements for entering into Phase 3 have been met, the PCC Chair notifies all TSS, PCC and OC members that the dispute has been resolved. The Phase 2 Rating Report is accepted by PCC, and the project enters Phase 3.

The project now has an Accepted Rating.

2. A and B implement the mitigation as described in the Phase 2 Rating Report.
3. Member A begins commercial operation at the rating set in the Phase 2 Rating Report.

### **6.5. Rating Determined By Alternative Method**

#### **6.5.1. Phase 1**

1. Member A has conducted internal studies and determined the Proposed Rating of its flow limited path using some method other than the Maximum Flow Test (MFT).
2. Member A completes additional studies and submits a comprehensive report to all TSS, PCC, and OC members, announcing the Proposed Rating of its path. In the mailing, Member A includes a description of the alternative method they used and what the proposed method is intended to accomplish. The cover letter requests Phase 2 status and expressions of interest in joining a Project Review Group.
3. The project has entered Phase 1. During the 60-day period, the only comments received are questions about the alternative method used. Several members express interest in a Project Review Group. Since formation of a Project Review Group has been requested, questions about the alternative method will be addressed in the Phase 2 process. The project sponsor so notifies the TSS Chair.

#### **6.5.2. Phase 2**

1. After verification with the WECC Staff that no comments were received about the deficiency of the comprehensive report, the TSS Chair notifies all PCC and TSS members that the project has entered Phase 2 of the planning process and the project is conferred a Planned Rating.
2. Member A informs PCC, TSS and OC that a Project Review Group is being formed and gives details about the alternative method that will be used in the Rating Studies.

3. The Project Review Group meets and all the affected parties concur that the Project Sponsor may use this method for determining the path's rating.
4. At the last meeting of the Project Review Group, all members are satisfied.
5. Member A submits a Phase 2 Rating Report to all members of TSS, PCC and OC.
6. No protests from the members of the Project Review Group are received within 30 days and any PCC member's concerns regarding conformance with this procedure have been addressed, member A notifies the PCC Chair that the project has met all requirements to enter Phase 3.

### **6.5.3. Phase 3**

When the PCC Chair determines that all requirements for entering Phase 3 have been met, the PCC Chair notifies all TSS, PCC and OC members that the Phase 2 Rating Report has been accepted and the project has entered Phase 3. The project has an Accepted Rating.

## 7.0 Principle Scenarios

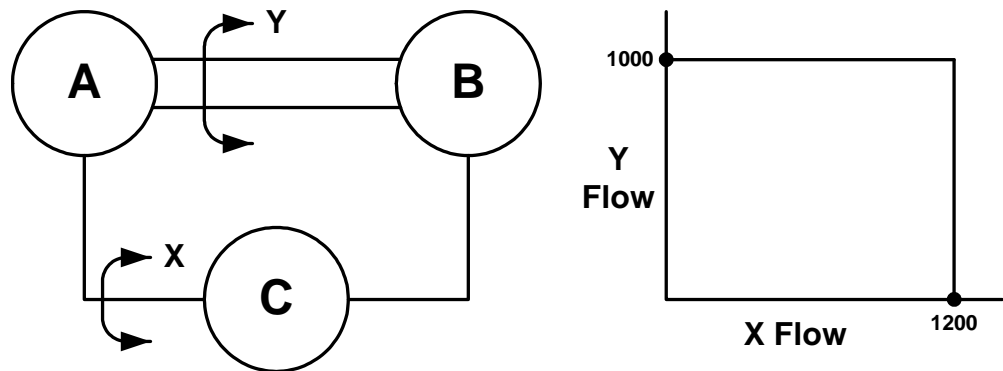
### 7.1. Neutrality of Path Definition

#### 7.1.1. Principle to Illustrate:

Section 4.3.8: "When a new facility interacts with an existing path, whether the new facility is included in the path for rating purposes or remains outside of the path, it should be operationally transparent to an adjacent party (outside of either path)."

#### 7.1.2. Existing Situation:

A and B have a rating in the A to B direction (Path Y) and have established a rating of 1000 MW on Path Y and 1200 MW on Path X.



#### 7.1.3. Change to the Existing Situation:

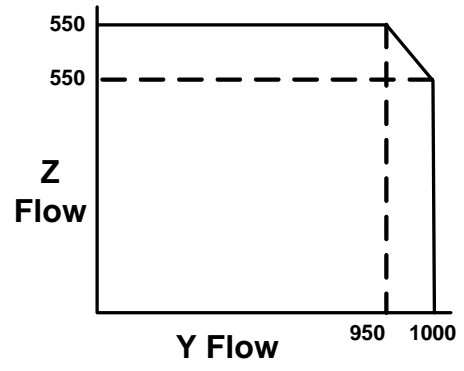
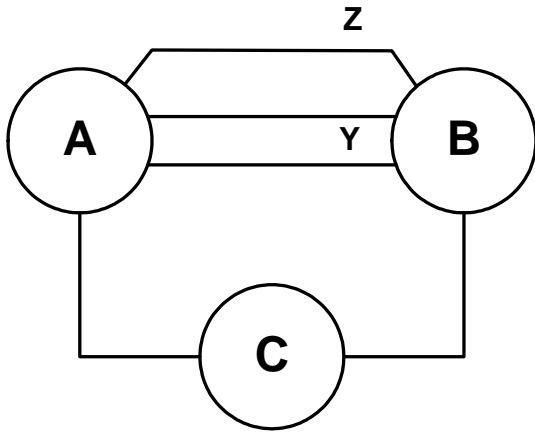
1. Owner D builds Line Z between B and A.
2. Line Z has a non-simultaneous rating of 550 MW.
3. From the MFT analysis it is found that the maximum possible flow across Z + Y is 1500 MW.

#### 7.1.4. Alternative 1:

Z is combined with Y for rating purposes and the rating of the combined path under the MFT is 1500 MW.

#### 7.1.5. Alternative 2:

1. Owner D does not want to include the new line with Y for rating purposes, but rather chooses to be a separate path.
2. Z remains a separate path and establishes a nomogram with a non-simultaneous limit of 550 MW. Z arranges with Y to keep the combined Z + Y schedule at or below 1500 MW.



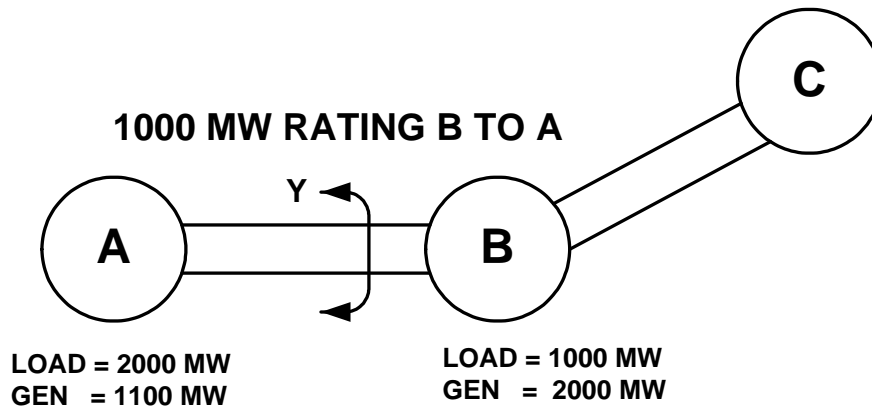
## 7.2. Reverse Flow

### 7.2.1. Concept to Illustrate:

Section 4.3.9: "It may be impossible to achieve a desired MFT if one is trying to rate a line in a direction counter to prevailing flow. Parties faced with such a circumstance could still schedule transactions over the path in the opposite direction using a net scheduling approach. Once the rating of a Transmission Path has been established, scheduled transactions over the path are permitted in either direction providing the net schedule at any time does not exceed the path rating in either direction. For example, if the path rating has only been established in one direction, schedules are still permitted in both directions as long as the net schedule is in the same direction as the path rating direction and does not exceed the path rating."

### 7.2.2. Existing Situation:

1. System A is resource deficient by 900 MW.
2. System B has surplus generation of 1000 MW.
3. System C is energy deficient at various times (primarily hydro).
4. System A has a high load factor system and always imports at least 500 MW from B.
5. Maximum achievable flow from B to A on Y is 1000 MW which meets Reliability Criteria. Using the Maximum Flow Test (MFT) the maximum rating is 1000 MW.



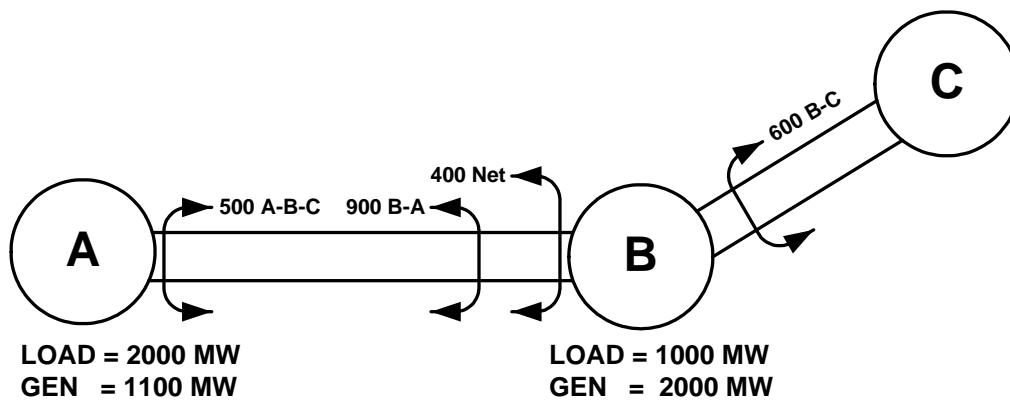
### 7.2.3. Change to Situation:

System D builds a 500 MW plant adjacent to system A.

### 7.2.4. Application of Principle:

D arranges to schedule up to 500 MW in the A to B direction as long as the net schedule is in the rated direction (B to A) and does not exceed that rating.

Since A is always importing, D will always have a schedule to net against. If the situation changes such that A does not import, then it will be possible to establish an A to B rating using the MFT.

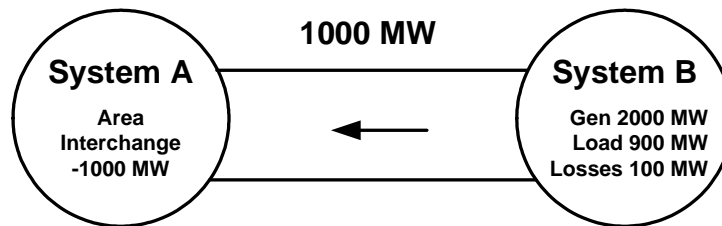




### 7.3. Flow Limited Ratings - Flow Limited By Available Resources (Using MFT Method)

#### 7.3.1. Principle To Illustrate:

Section 4.3.3 Accepted Rating is limited by a shortage of available resources; reliability limit not reached.



#### 7.3.2. Existing Situation:

1. System B, being resource limited, has a maximum of only 1000 MW of generation surplus to its system.
2. The path A-B is a two line intertie system with nominal capability of 1200 MW per line.
3. The outage of either line in path A-B or any other outage in system A or B does not result in a criteria violation.

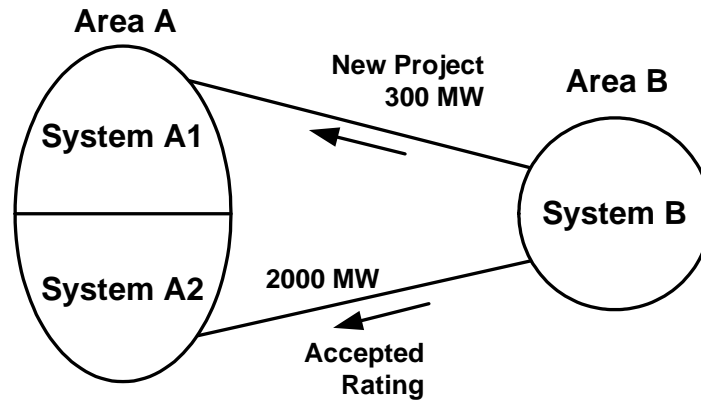
#### 7.3.3. Application of Principle:

Path A-B is given a 1000 MW Accepted Rating although it possibly could be rated higher if more resources were available in System B. The path A-B has passed the Maximum Flow Test (MFT) and the rating achieved is called a flow limited rating and is protected.

## 7.4. Flow Limited Ratings - Flow Limited By Low Impedance Parallel Path

### 7.4.1. Principle to Illustrate:

Section 4.3.3 Accepted rating on New Project is limited by existing system reaching a limit before New Project reaches its limit.



### 7.4.2. Existing Situation:

The Accepted Rating of path A2-B (low impedance path) is thermally limited at 2000 MW.

### 7.4.3. Change to Existing Situation:

1. The New Project is being planned as a higher impedance path with a nominal rating of 500 MW.
2. With the addition of the New Project, due to the network and location of resources, path A2-B will overload when the New Project is increased above 300 MW.

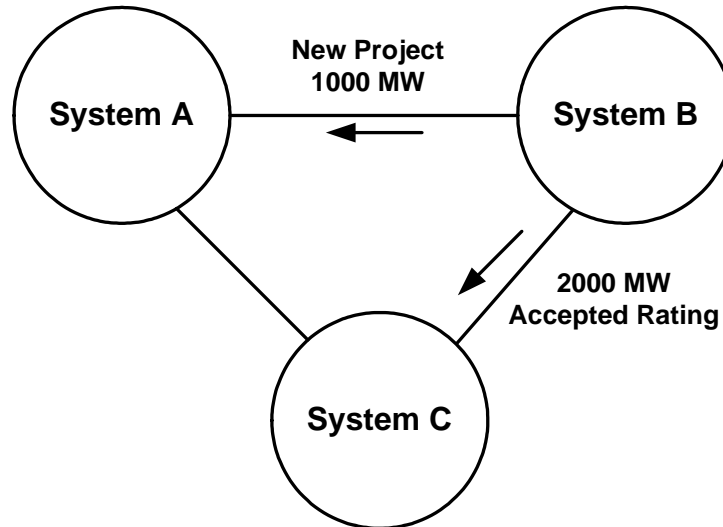
### 7.4.4. Application of Principle:

Path A1-B is given a flow limited Accepted Rating of 300 MW and is protected. It may be possible to uprate path A1-B in the future if a higher flow can be demonstrated after completion of appropriate studies and review.

## 7.5. Accepted Rating Protection - Reliability Criteria Violation

### 7.5.1. Principle to Illustrate:

Section 4.3.4. "A new project shall not cause a reduction in an Accepted Rating (e.g., because of a reliability criteria consideration) unless mitigated by or compensated by the project."



### 7.5.2. Existing Situation:

Path B-C has an Accepted Rating of 2000 MW limited by a criteria violation for contingencies on that path.

### 7.5.3. Change to Existing Situation:

1. The New Project on path A-B has completed studies and proposed a Planned Rating of 1000 MW.
2. System C determines that the capability of path B-C has been reduced due to a contingency on path B-C which no longer meets the Reliability Criteria (low swing voltage in system A for example). It also shows that path B-C meets the Reliability Criteria at the Accepted Rating prior to addition of the new project.
3. System C claims its protected rating on path B-C has been impacted and should be mitigated.

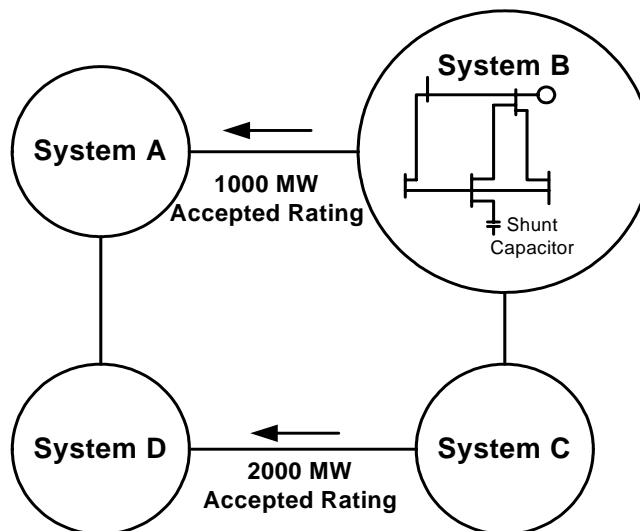
### 7.5.4. Application of Principle:

Path A-B must mitigate the adverse impact on path B-C by reducing the rating of path A-B or by other means (addition of shunt reactive, addition of series capacitors, etc.)

## 7.6. Accepted Rating Protection - Reliability Criteria Violation. Acceptable Reduction in Accepted Rating Caused By Another Party

### 7.6.1. Principle to Illustrate:

Section 4.3.4. "If a facility is retired from service (e.g., generator, shunt reactive equipment, Remedial Action Scheme, etc.) all path ratings that rely on the facility must be reviewed and reduced to the extent the System Impacts of such retirement are not mitigated." Further, "However, if a path's Accepted Rating relied upon the facilities that are not part of the path's Plan of Service, and if those facilities are retired, modified, or never built, the Accepted Rating is subject to review in the same manner as if changes had occurred in the path's Plan of Service."



### 7.6.2. Existing Situation:

The Accepted rating for path B-A is 1000 MW and the Accepted Rating for path C-D is 2000 MW.

### 7.6.3. Change to Existing Situation:

1. System B announces that it is planning to remove a shunt capacitor in its system and shows that path A-B meets the Reliability Criteria and the Accepted Rating has not changed, nor are there any Reliability Criteria violations for contingencies in System B.
2. However, system C determines that the removal of the shunt capacitor in system B causes path C-D to violate the Reliability Criteria and claims that the rating should be protected.
3. System B establishes that the shunt capacitor was installed before path C-D received its Accepted Rating and that the rating study relied upon that capacitor.

### 7.6.4. Application of Principle:

System C is not entitled to retain its Accepted Rating because of the change made by system B. In essence, system C was making use of the shunt capacitor to support its Accepted Rating on path C-D. System B is not responsible for mitigating the reduction of the Accepted Rating of path C-D.

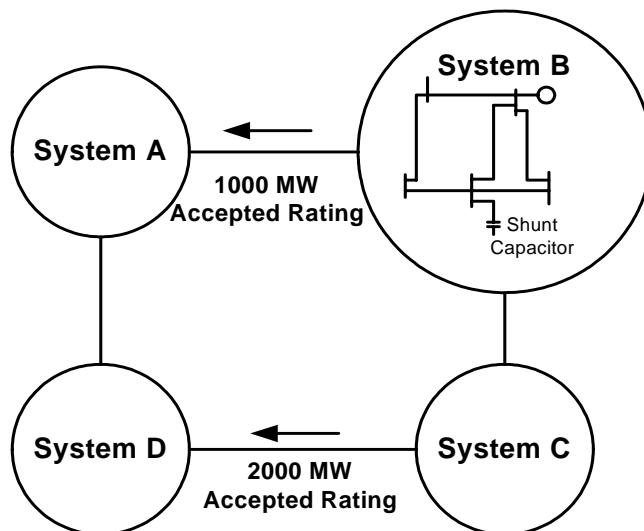
## 7.7. Accepted Rating Protection - Reliability Criteria Violation. Retention of Accepted Rating for Facility Removal by Another Party

### 7.7.1. Principles to Illustrate

Section 2.3: “Transmission paths shall complete the path rating process specified in this procedure and obtain an Accepted Rating if any of the following criteria apply:

4. A facility (e.g., generator, series or shunt reactive equipment, Remedial Action Scheme, etc.) that an Accepted Rating depends upon is retired from service, whether the facility is owned by the same system as the rated path or not.

Section 4.3.4. “However, if a facility is retired from service (e.g., generator, shunt reactive equipment, Remedial Action Scheme, etc.) all path ratings that rely on the facility must be reviewed and reduced to the extent the System Impacts of such retirement are not mitigated.”



### 7.7.2. Existing Situation

The Accepted Rating for path B-A is 1000 MW and the Accepted Rating for path C-D is 2000 MW.

### 7.7.3. Changes to Existing System

1. System B announces that it is planning to remove a shunt capacitor in its system and shows that path A-B meets the Reliability Criteria and the Accepted Rating has not changed, nor are there any Reliability Criteria violations for contingencies in System B.

2. However, system C determines that the removal of the shunt capacitor in system B causes path C-D to violate the Reliability Criteria and claims that the rating should be protected.
3. System C establishes that system B installed the shunt capacitor as part of the plan of service for path A-B, as documented in the Phase 2 Rating Report.

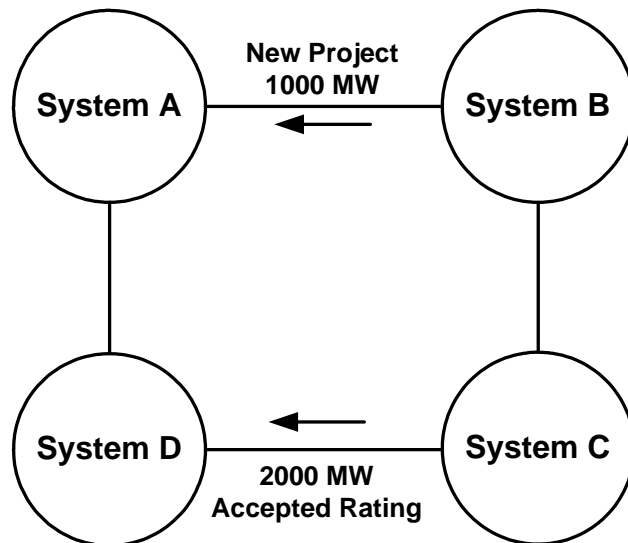
#### **7.7.4. Application of Principle**

System B must mitigate the Adverse Impact on path C-D by reducing the rating of Path A-B or by other means (retention or replacement of the shunt capacitor, etc.).

## 7.8. Accepted Rating Protection - Failure to Meet Maximum Flow Test (MFT) - Retention of Accepted Rating as a Result of Changes Made By Another Party

### 7.8.1. Principle to Illustrate:

Section 4.3.4. "A transmission path's Accepted Rating will not be lowered because its maximum achievable flow is reduced due to system changes made by others..."



### 7.8.2. Existing Situation:

Path C-D has an Accepted Rating of 2000 MW and is limited by the Maximum Flow Test (no Reliability Criteria violation).

### 7.8.3. Change to Existing Situation:

1. The New Project on path B-A proposes a Planned Rating of 1000 MW. Phase 2 studies show acceptable performance.
2. System C determines that the maximum achievable flow on path C-D has been reduced to a maximum of 1500 MW due to the New Project. System C also shows that prior to the New Project it could load path C-D to its Accepted Rating of 2000 MW.

### 7.8.4. Application of Principle:

Path C-D retains the protection for its Accepted Rating of 2000 MW. The New Project on path B-A gains an Accepted Rating of 1000 MW. The Simultaneous limit is 2500 MW. By the time the New Project commences operation, the owners of path B-A and path C-D must make operating agreements to insure path C-D is kept whole in scheduling rights (2000 MW) while not violating simultaneous transfer limits between paths B-A and C-D. Alternatively, the New Project may change its plan of service to mitigate the impacts on path C-D.



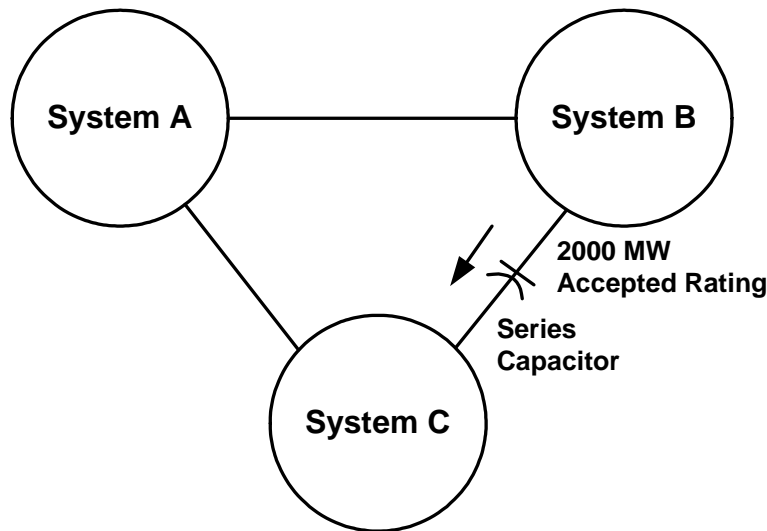
**7.9. Accepted Rating Protection - Failure to Meet Maximum Flow Test (MFT) - Reduction of Accepted Rating as a Result of Changes Made By Path Owner/Operator**

**7.9.1. Principle to Illustrate:**

Section 1.2: “Transmission paths shall complete the path rating process specified in this procedure and obtain an Accepted Rating if any of the following criteria apply:

4. A facility (e.g., generator, series or shunt reactive equipment, Remedial Action Scheme, etc.) that an Accepted Rating depends upon is retired from service, whether the facility is owned by the same system as the rated path or not.

Section 4.3.4. “If a facility is retired from service (e.g., generator, shunt reactive equipment, Remedial Action Scheme, etc.) all path ratings that rely on the facility must be reviewed and reduced to the extent the System Impacts of such retirement are not mitigated.”



**7.9.2. Existing Situation:**

Path B-C has an Accepted Rating of 2000 MW.

**7.9.3. Change to Existing Situation:**

1. Owners of path B-C remove the series capacitor that is part of path B-C.
2. System B completes studies that show that path B-C will no longer load to its Accepted Rating.

**7.9.4. Application of Principle:**

The owners of path B-C re-rate their path to establish a new lower Accepted Rating.

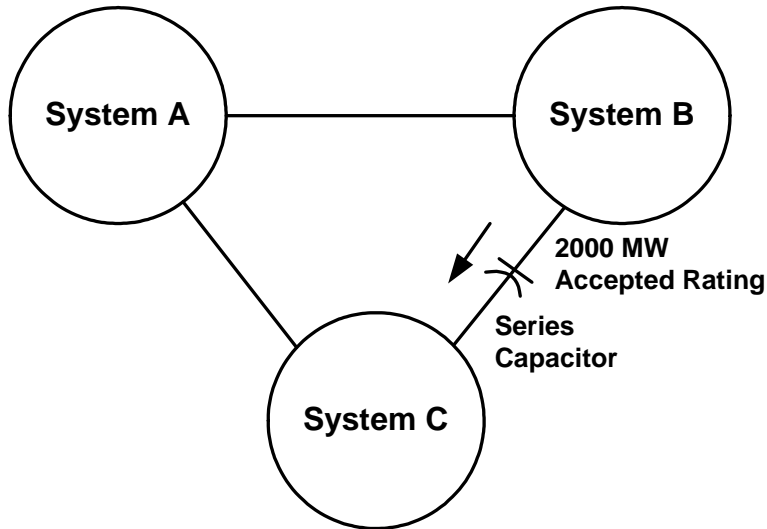
**7.10. Accepted Rating Protection - Failure to Meet Maximum Flow Test (MFT) - Reduction of Accepted Rating as a Result of Changes Made By Both the Path Owner/Operator and Other Parties**

**7.10.1. Principle to Illustrate:**

Section 1.2: “Transmission paths shall complete the path rating process specified in this procedure and obtain an Accepted Rating if any of the following criteria apply:

4. A facility (e.g., generator, series or shunt reactive equipment, Remedial Action Scheme, etc.) that an Accepted Rating depends upon is retired from service, whether the facility is owned by the same system as the rated path or not.

Section 4.3.4. “However, if a facility is retired from service (e.g., generator, shunt reactive equipment, Remedial Action Scheme, etc.) all path ratings that rely on the facility must be reviewed and reduced to the extent the System Impacts of such retirement are not mitigated .” Further, “However, if a path’s Accepted Rating relied upon the facilities that are not part of the path’s Plan of Service, and if those facilities are retired, modified, or never built, the Accepted Rating is subject to review in the same manner as if changes had occurred in the path’s Plan of Service.”



**7.10.2. Existing Situation:**

1. Path B-C has a previously established Accepted Rating of 2000 MW.
2. Owners of path B-C perform new studies that show path B-C will now load to only 1900 MW due to the development of parallel systems. There are no reliability problems at this flow.

**7.10.3. Change to Existing Situation:**

1. Owners of path B-C remove the series capacitor that is part of path B-C.

2. System B completes studies that show that path B-C will load to only 1400 MW with the series capacitors removed. There are no reliability problems at this flow.
3. The decrement in rating due to the removal of the series capacitors is 500 MW.

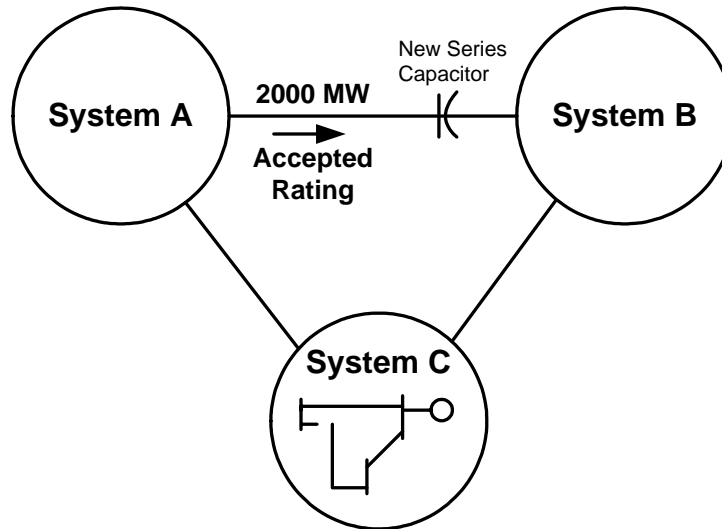
**7.10.4. Application of Principle:**

The owners of path B-C rerate their path to establish a new lower Accepted Rating. The owners of path B-C cannot assume the original rating of 2000 MW is still valid simply because the flow reduction to 1900 MW was not in their control (due to parallel system changes). The new Accepted Rating is 1400 MW unless 1) they can establish that the reduction was due to Adverse Impacts caused by specific actions of other systems that should be mitigated in accordance with these procedures, and 2) mitigation for the 100 MW flow reduction is implemented. (See Section 7.7.).

## 7.11. Accepted Rating Protection - Increase in Accepted Rating Caused By Path Owner/Operator

### 7.11.1. Principle to Illustrate:

Section 4.3.4. "Transmission path owners that make changes to their system that increase the flow on a path with a flow limited rating can receive a higher Accepted Rating consistent with the Maximum Flow Test."



### 7.11.2. Existing Situation:

Path A-B has an Accepted Rating of 2000 MW and is limited by the Maximum Flow Test (no Reliability Criteria violations).

### 7.11.3. Change to Existing Situation:

The owners of path A-B complete studies showing that the series capacitor they have planned to add to path A-B will increase the Accepted Rating of that path to 2500 MW.

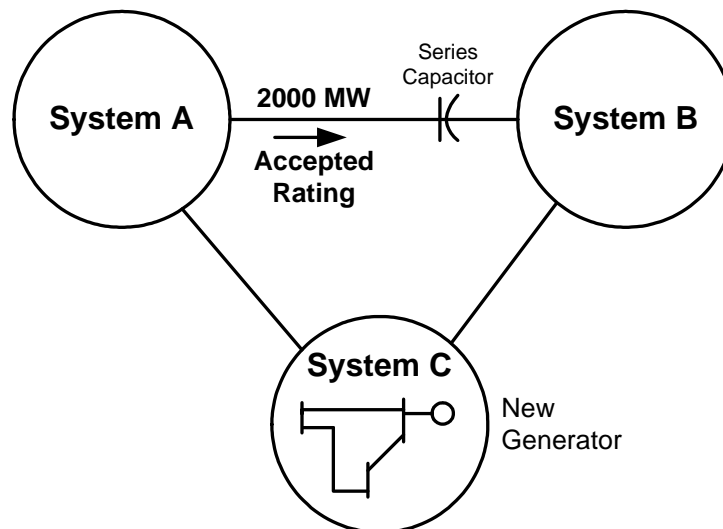
### 7.11.4. Application of Principle:

Path A-B owners may obtain a higher Accepted Rating for path A-B if they can demonstrate increased flow due to a project they have planned and satisfy the other requirements of these procedures.

## 7.12. Accepted Rating Protection - Increase in Accepted Rating Caused By Another Party

### 7.12.1. Principle to Illustrate:

Section 4.3.4. "Transmission path owners that make changes to their system that increase the flow on a path with a flow limited rating can receive a higher Accepted Rating consistent with the Maximum Flow Test. This same principle applies if the flow on the path is increased by a project initiated by another party; although in that case, it should be recognized that the higher Accepted Rating relies upon and is subject to the operation of the other party's facilities." Further, "However, if a path's Accepted Rating relied upon the facilities that are not part of the path's Plan of Service, and if those facilities are retired, modified, or never built, the Accepted Rating is subject to review in the same manner as if changes had occurred in the path's Plan of Service."



### 7.12.2. Existing Situation:

Path A-B has an Accepted Rating of 2000 MW and is limited by the Maximum Flow Test (no Reliability Criteria violations).

### 7.12.3. Change to Existing Situation:

The owners of path A-B complete studies showing that the addition of the new generator in system C would allow an increase in the Accepted Rating of path A-B to 2500 MW.

### 7.12.4. Application of Principle:

Path A-B owners may obtain a higher Accepted Rating for path A-B if they demonstrate increased flow due to a project planned by another party (i.e., the new generator in system C) and satisfy the other requirements of these

procedures. The OTC under this new Accepted Rating will be dependent on the operation of the new generator.

Approved by Planning Coordination Committee      March 3, 2005

Approved by WECC Board of Directors      April 6, 2005

## **Appendix A**

### **Rating Methods Discussion and Background**



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The following explanatory sections address several major issues in the transmission rating process. The intent is to guide transmission studies toward a uniform basis for ratings.

### **A-1 Parallel Path Stress Levels**

The nature of AC electrical networks is such that the loss of a loaded transmission line in one path impacts all parallel paths. Each parallel path will pick up a portion of the power that was flowing in inverse proportion to its impedance relative to the other parallel paths. This ability of paths to affect each other has led to the development of "nomograms" that describe the simultaneous capacity relationships between parallel paths.

The sponsor of a new rating has an obligation to address, and potentially mitigate, all criteria violations on parallel paths that are identified by affected parties. This could imply multiple studies being run with every potentially affected path fully loaded. However, that would be an unrealistic and unreasonable study burden, both on the sponsor and on the Review Group participants that are responsible for identifying problems. Therefore, WECC suggests using a screening test procedure as a minimum study requirement. Screening studies should be performed that identify all parallel paths that pick up an increment of 10% or more (based on that parallel path's rating) for an outage on the path being rated with all phase shifters in a non-regulating mode. This screening test is not intended to be used as a margin criteria nor does it imply that a change of 10% is required before mitigation is appropriate. Once these affected paths are identified, both parties (the sponsor of the new rating and the owner of the affected facility) need to jointly decide how to determine the simultaneous capability of both paths. There are several possible outcomes of this determination - no simultaneous studies are required, joint studies will be performed, the sponsor will perform the studies with input from the affected party, or the affected party will perform the studies.

The obligation of the sponsor to perform screening studies does not remove the responsibility that the owners of parallel paths have to identify for themselves the impact that a new facility or rating will have on their systems. All Members need to make a determination for themselves as to whether or not they are impacted and need to insure that proper levels of stress are represented on their Transmission Paths in all applicable studies.

### **A-2 Latent Capacity**

Transfer capability is considered "latent" when it can be acquired by improving an existing path without adding new lines to the path. Some examples of possible improvements include:

1. Installing shunt devices that improve the voltage profile and/or system damping;
2. Placing existing unutilized equipment into service;
3. Implementing a remedial action scheme; or
4. Adding new generation.

It has been suggested that the ability to uprate a system should be protected similar to the Accepted Rating. However, several concerns arise regarding the protection of Latent Capacity. They are:

- The planning process for new facilities would become extremely complicated. New projects would have to deal not only with existing owners' rights but also with claimed Latent Capacity rights. Planning studies would have to be done with base cases that use fictitious devices to represent the system in an ideal state with no Latent Capacity left.

- There are no published Latent Capacity numbers. Claims to Latent Capacity would have to be demonstrated by some other procedure. This would produce an unacceptable burden of new work with little benefit.
- There are no published plans for placing future equipment in service. Planners would not know how to study future systems to ensure that no utility is negatively affected.

One of the major objectives promulgated in the rating process is that an Accepted Rating could be used in operation. Thus the principles of realism, demonstration of flow, and no use of fictitious devices have been developed. In this context, the determination of Latent Capacity violates some or all of these principles. Latent Capacity does not exist until improvements are made and therefore cannot be used in operation.

For planning, regulatory and other reasons members may find that identifying and documenting Latent Capacity would be useful. Some possible uses are:

- Knowledge of Latent Capacity may promote appropriate decisions in generator siting; facilitate Regional Planning; or assist in fulfilling transmission access requests.
- Latent Capacity that has been adequately reviewed and documented may gain expedited review if the Review Group determines that the original documentation is still applicable.

At their option, project sponsors may identify and document the Latent Capacity in the Phase 2 Rating Report.

Latent Capacity is not protected; it cannot be used in operation; and it is not recognized nor incorporated by others in their rating studies. The only means of protecting Latent Capacity is to have a committed project and pursue that project through the three stage WECC rating process.

### **A-3 Maximum Flow Test**

The ability of a path to acquire flow within an electric system is an intrinsic property of the electric system. The actual flow on a path is a result of the impedance ratios of the transmission lines in the electric system and the circumstances of geographic load and generation patterns, phase shifter operation etc. Adverse unscheduled flow performance reflects a mismatch between scheduling practice (which is a commercial decision and from an electric point of view, arbitrary) and this intrinsic property.

The Planning Coordination Committee has decided that the rating process should include an examination of flow distributions to recognize physical properties of the system and should address potential unscheduled flow impacts, at least to some extent. A reasonable way to address unscheduled flow is to establish Transmission Path ratings at a level where no system reliability problems exist and schedules will be limited by the maximum flow that can occur on the path under realistic conditions.

The Rating Methods Task Force (RMTF) has given careful consideration to how a rating should be related to scheduled and/or actual flows. For several reasons, the group decided that ratings should be developed on the basis of actual flows rather than schedules. First, RMTF's position is that a rating should reflect a path's ability to carry flow. (The relationship between actual flow and scheduled flow is an unscheduled flow issue. Additionally, assigning path capabilities to schedules rather than actual flow actually rewards those paths that maximize unscheduled flows, thus

penalizing parallel paths.) Second, associating a rating with a schedule implies that the path should have that rating only when that particular schedule is in place. This would severely limit the usability of the rating. And third, there are too many scheduling entities and combinations of schedules that produce the same flow on a given path for it to be practical to state a rating in terms of schedules.

The RMTF has developed procedures and guidelines based on a path's ability to carry power and demonstrate adherence to the NERC/WECC Planning Standards. To prove adherence to the Criteria, the owner(s) must demonstrate through simulation that power will flow equal to the desired rating and meet all applicable Reliability Criteria.

### 1. Flow Limited Ratings

The rating of a non-flow controlled Transmission Path should be capped by the flow that can be achieved with realistic generation and load patterns (no use of fictitious devices or operating practices).

The suggested way to calculate a flow based rating limitation is the Maximum Flow Test (MFT). This test consists of developing a power flow test case that depicts a reasonable condition that produces a flow on the path at least equal to or greater than the proposed rating.

MFT attributes:

- A. The MFT should not use fictitious devices or have overloaded transmission facilities.
- B. Considerable latitude is allowed in the development of the test case. A load and generation dispatch pattern favorable to the rating is appropriate, if reasonable.
- C. Since the Accepted Rating is limited by the MFT, any capacity above the MFT is Latent Capacity.

### 2. Realistic Simulation

The RMTF believes considerable latitude is appropriate in the assumptions used to build the power flow case that sets the upper limit on the flow and the rating. The only requirement is that the case must represent a realizable geographic load and generation pattern within recognized operating procedures and be accepted by the Review Group for that path. It is acknowledged that the likelihood of the particular load/resource pattern occurring in actual system operation may be low.

In allowing this latitude, the RMTF recognizes that there may be many hours in the year when the actual load and generation distribution may not result in the actual flow approaching the rating even if the path is scheduled to its limit. This mismatch between schedule and flow does create unscheduled flow. However, the elimination of fictitious devices and capping the rating at the maximum optimistic flow that can be obtained represents an effort to address unscheduled flow issues in the planning and rating process. The RMTF realizes that this does not resolve the unscheduled flow problem, but it is a step in the right direction.

### 3. Alternative Methods

With the concurrence of all affected parties to a rating, the sponsor may apply some test other than the MFT to demonstrate unscheduled flow impact is within an acceptable level.

If the sponsor proposes to use some test other than the MFT they should notify PCC and explain the alternative test in sufficient detail prior to completing Phase 2.

#### 4. Phase Shifter Operation

If a path has flow control elements, such as phase shifters, then its rating must be within the range of loading that can be achieved with realistic generation and load patterns without violating the capabilities of the devices. Also, the owner must have procedures to assure the devices will be operated consistent with the principles on which the path was rated.

#### 5. Reverse Flow

It may be impossible to meet an actual flow test if one is trying to rate a line in a direction counter to prevailing flows. Parties faced with such a circumstance should develop a net scheduling/allocation approach. It should be remembered that, once the rating of a transmission path has been established, scheduled transactions over the path are permitted in either direction providing the net schedule at any time does not exceed the path rating. For example, if the path rating has only been established in one direction, schedules are still permitted in both directions as long as the net schedule is in the same direction as the path rating direction and does not exceed the path rating.

#### 6. Allocation

The RMTF position that the relationship between flow and schedule is not significant to the path rating process need not be carried over into allocation determinations on lines that make up a path. Allocation of rights on a path is a commercial issue which the owners of the path may need to resolve; however, it does not affect the rating of the path. The allocation method need not bear any resemblance to the rating method.

### **A-4 Flow Test Exemption**

A transmission path's Accepted Rating is established by determining the highest flow on the path that meets the WECC Reliability Criteria. The majority of transmission facilities in WECC have ratings that are limited by reliability constraints that will be referred to as system limited. A few EHV transmission facilities in WECC will have ratings that are limited by the highest flow on the path under realistic conditions, and are not system limited. These paths and their ratings will be referred to as flow limited. A flow limited path is restricted, not by a reliability problem, but by the impedance of the path, lack of generation, load, etc.

A path's Maximum Achievable Flow (MAF) is the highest flow that can be obtained under realistic conditions where a reliability limit is not reached. Because of system changes, the MAF may change over time; it may become less than the Accepted Rating. The following principles guide how flow limited ratings are protected:

#### 1. Meet WECC Reliability Criteria

Having an Accepted Rating does not exempt a company from having to operate the system in a manner that meets the WECC Reliability Criteria. If it is demonstrated that a WECC Reliability Criteria violation occurs when a Transmission Path flow is less than its Accepted Rating, changes must be made to ensure the system will not be operated under those conditions. An MFT exemption applies strictly to flow limited ratings.

## 2. System Changes Made by Others

A Transmission Path's Accepted Rating will not be lowered because the MAF on the path is reduced due to system changes made by others (i.e., the path can no longer meet the MFT). The rating should not be reduced for the following reasons:

- A. Existing path owners should not incur a reduced rating due to changes made by other systems that provided no benefit to the path owner.
- B. Existing path owners did not have control of the decision to make the system changes.
- C. The system is still being operated reliably.
- D. Existing path owners and those who have rights on that path need some assurance the rating of the path will not be reduced due to changes made by others.

The potential drawback to this principle is scheduling the Path to the same level as before the system changes could presumably cause increased unscheduled flow.

## 3. System Changes Made by Path Owners

A Transmission Path's Accepted Rating will be lowered if its owner makes changes to the system that reduce the path's flow. The Accepted Rating will be reduced by the amount the flow was decreased. The path owner's made their decision with the knowledge the path rating would be reduced.

The potential drawback to this principle is there may be cases where an owner decides not to make an improvement to its system that would benefit the interconnected system, because the owner does not want to take a reduction in the Accepted Rating of a path. The RMTF believes these cases would be infrequent.

## 4. Remote Systems Indifferent to Path Definition

When an existing path's flow is reduced by a new parallel line, remote systems should be operationally indifferent to whether the new line is defined in or out of the existing path.

If a new project is built parallel to an existing Transmission Path, the new project's sponsor may decide not to be included in the existing path. Regardless of the sponsor's decision, the existing path will not have its rating reduced and the path rating(s) will be established in such a way that companies outside of both paths will be indifferent to whether the new project is included in the existing path or not.

### **A-5 Fictitious Elements**

WECC has established the principle that fictitious elements are not to be used in either simultaneous or non-simultaneous rating studies.

The concept of prohibiting fictitious elements does not pertain to planned facilities, i.e., those facilities that are expected to be in-service at the time represented in the rating study. Planned facilities may be used to obtain an Accepted Rating however, that rating may only be used when those facilities are in-service.

If there are changes to the planned facility's project plan or schedule, then the section on Monitoring Project Progress in Regional Planning Project Rating Review Process (Part 2B

of this document) will apply as if the change was made to the facility being rated. It may be required to repeat or update the requirements for Phase 2 of the rating process.

For example, a company that is building a new transmission line may use rating studies that include a future generator. If the generator is delayed, it may be necessary to repeat the rating studies to obtain a new Accepted Rating without the generator and/or to establish the Accepted Rating at the new in-service date of the generator.

Fictitious elements are facilities or operation procedures used in rating studies that are modeled unrealistically or that do not exist. Examples of fictitious elements are:

- Generators (e.g., a generator that does not exist at time of rating)
- Load (e.g., unrealistic load conditions)
- Lines (e.g., change to the impedance of a line)
- Phase shifters (e.g., unplanned phase shifter or operation beyond its physical capability)
- Shunt elements (e.g., add a non-existent SVC)
- Series elements (e.g., add unplanned series capacitors to a line)
- Opening/switching lines (e.g., open a line that is normally closed)
- Remedial action schemes (e.g., institute a scheme with no agreement from the provider)

Fictitious elements may change and distort study results. At one extreme, fictitious elements may have little or no effect on the resultant ratings, and thus need not be represented. At the other extreme, they may grossly exaggerate the capability of the path being rated, either in terms of ability to meet the performance criteria or to increase the flow limit of the path.

Because the intent of the rating process is to develop an Accepted Rating that can be used in operation, it is necessary to reject the use of fictitious elements in rating studies. The Accepted Rating that is granted by the rating process can only be used when all facilities that were represented in the rating studies are in-service.

The prohibition against the use of fictitious elements does not apply to reporting of Latent Capacity. Because the determination and reporting of Latent Capacity is strictly for information purposes, the owners may model the system in whatever manner they choose.

## **A-6 System Representation**

One of the objectives of the rating methods is to allow WECC members to establish accurate, fair and equitable ratings. System representation, the way transmission facilities, generators, etc. are modeled, plays a key role in fulfilling this objective.

For rating studies, members should use the full loop and the most recent WECC standard power flow and stability base cases in their studies. The advantages of using the standard base cases are that members are familiar with them and every system representation should have similar amounts of detail, accuracy and modeling (if the member follows the published system representation guidelines).

If a member replaces the representation of its system with a different representation (presumably with more details and more accurate data) and if the rating depends on this new representation, the member must demonstrate that the new representation is appropriate and be willing to submit the new representation to all future WECC base cases. In the unlikely event that the new representation affects the established transfer capabilities of other paths adversely, the member must resolve the adverse impacts with those whose path capabilities are affected during the Phase 2 review process.



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**WECC PROGRESS REPORT POLICIES  
AND  
PROCEDURES**

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# **WECC PROGRESS REPORT POLICIES AND PROCEDURES**

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## 1.0 Introduction

This document is intended to provide the policies and procedures for notification and reliability assessment requirements related to projects planned within the WECC electric system. WECC members are expected to be in full compliance with this WECC document on Progress Report Policies and Procedures.

## 2.0 Policies

Entities sponsoring new generation are Project Sponsors and may be WECC members or non-WECC members. Insofar as a non-WECC member sponsoring a generation project requests interconnection to the WECC interconnected system, the WECC member accountable for generation interconnection administration (Interconnecting Utility) shall take reasonable steps as the Interconnecting Utility to facilitate and when applicable assist in the implementation of the policies and procedures specified herein.

Projects subject to these policies and procedures include:

- All generation projects (200 MW or greater) connected to the transmission system through step-up transformers. In the context of these policies and procedures, such projects include, but are not limited to, new generation plants, generation repower or upgrades that may significantly alter the operation of the generation facilities;
- All new and upgraded transmission facilities with (voltage levels over 200 kV. Such projects include, but are not limited to, new transmission facilities, transmission re-designs or upgrades, permanent removal of existing transmission facilities, or other changes (e.g. operating procedures) that may significantly alter the operation of the transmission facilities;
- Any facilities below these thresholds that may have a significant impact on the reliability of the WECC interconnected electric system.

The Project Sponsor or Interconnecting Utility shall begin providing appropriate notification of projects in accordance with the procedures stated herein to WECC soon after the project sponsor has made the project public<sup>2</sup>. The Project Sponsor or Interconnecting Utility is encouraged to make the project public at the earliest possible date.

The Project Sponsor or Interconnecting Utility shall perform technical studies to ensure the WECC electric system, with the project in place, meets the NERC/WECC Planning Standards, WECC Reliability Criteria, and provide comprehensive progress reports of the technical studies to WECC, in accordance with the procedures stated herein. In the event WECC members have reliability-related concerns with a project, the Project Sponsor or Interconnecting Utility shall be responsible for addressing the concerns under the auspices of WECC's Technical Studies Subcommittee (TSS) in accordance with the procedures outlined herein. Project sponsors are encouraged voluntarily to solicit interest in forming a project review group as the venue for performing the technical studies and developing the comprehensive progress report.

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<sup>2</sup> A project sponsor can make a project public via trade journals, news releases, public notice in a newspaper, information released in an open public forum, issuance of a significant permit (air quality or water rights) by a government agency to the project sponsor or notification to the interconnecting utility that the project will be moving beyond the system impact study phase.

### **3.0 Procedures**

The following procedures cover requirements for reporting project status and technical studies. The purpose of these project progress and study reports is to encourage early communication of plans and to maintain flexibility for changes during the period of advanced planning. These reports should contain enough meaningful data to stimulate constructive discussion with the intent to share information and experience with WECC members.

### **4.0 Progress Reports**

#### **4.1. Initial Progress Report**

Soon after a project is made public, the Project Sponsor or Interconnecting Utility shall submit, in electronic form if possible, the Initial Progress Report to the WECC Technical Staff and to TSS members. The content of the Initial Progress Report will depend on the design status of the system upgrade, addition or project, but, as a minimum, should include:

1. A brief physical description of the project, including points of interconnection, equipment capacities and voltages, and expected ratings.
2. The planned operating date.
3. The project status, including where the project is situated in the planning process and a tentative schedule for completion.
4. Facility owner(s) name, a contact person including title or position, address, telephone number and e-mail address that can answer questions and comments or direct them to persons who can provide responses.

To the extent applicable, the Project Sponsor or Interconnecting Utility may want to coordinate the Initial Progress Report submittal requirements with data reporting requirements of the WECC Regional Planning Process.

#### **4.2. Comprehensive Progress Report**

At an opportune point in the project schedule (after the project is made public), that would allow meaningful opportunity for WECC member review and input to the project, the Project Sponsor or Interconnecting Utility shall submit the Comprehensive Progress Report to the WECC Technical Staff and TSS members. The Project Sponsor or Interconnecting Utility would be considered in compliance with these procedures if the Comprehensive Progress Report was submitted at a point in the project development process that would allow changes to the plan of service if so indicated by WECC member review and input.

The purpose of the Comprehensive Progress Report is to demonstrate that the project is in compliance with the NERC/WECC Planning Standards and WECC Reliability Criteria. The content of the Comprehensive Progress Report should include, as a minimum:

1. The requirements specified under Initial Progress Report.
2. A one-line and geographic diagram of the project showing points of interconnection, metering points, adjacent path locations and control area boundaries.

3. A block diagram, transfer functions, equations and complete definition of the model or models needed to study the new facility using power flow and transient stability computer programs. This information is not required if the necessary model or models are already available in the WECC power flow and stability programs.
4. A statement describing the transfer capability associated with the project, including the impact on other systems, the impact on existing transfer path ratings, and the compliance with the NERC/WECC Planning Standards and WECC Reliability Criteria. This statement should include a declaration which indicates if the project will require (or not require) obtaining an accepted<sup>3</sup> transmission path rating (or rerating).
5. A description of the interconnected system conditions and or requirements on which the proposed transfer capability rating is based and/or required by the project.
6. Identify operating conditions including flows on key transmission lines and paths, load levels, and generation status that allow the project to operate within the guidelines defined in the NERC/WECC Planning Standards and WECC Reliability Criteria. These operating conditions must also satisfy the WECC policy requiring that studies be done to demonstrate reliable performance under specific operating conditions prior to actual operation under these specific operating conditions.
7. Identify potential impacts to transmission facilities including non-simultaneous ratings and simultaneous path interactions. It is not the purpose of the Report to identify mitigation measures or requirements to mitigate.
8. A representative list of power flow and stability cases run that demonstrate compliance with NERC/WECC Planning Standards and WECC Reliability Criteria.
9. Representative power flow outage results and stability plots that demonstrate compliance with the NERC/WECC Planning Standards and WECC Reliability Criteria.
10. A project milestone schedule that covers the current period through initial operation of the project. This schedule should be sufficiently detailed to allow for monitoring by the TSS members.

#### **4.3. Supplemental Progress Reports**

The Project Sponsor or Interconnecting Utility shall submit the Supplemental Progress Report to the WECC Technical Staff and TSS Chairman only on an annual basis for years in which an Initial Progress Report or Comprehensive Progress Report were not submitted. These reports are to be filed annually for projects where there have been no significant changes in plan of service, capacity, or in-service dates since the Comprehensive Progress

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<sup>3</sup> Project sponsors or responsible parties desiring to obtain an accepted path rating (or path rerating) should comply with the detailed procedure contained in the WSCC Procedures for Regional Planning Project Review and Rating Transmission Facilities document.



Report was filed. These reports also should include non-significant additions or revisions to the projects. The Annual Supplemental Progress Reports as a minimum, should include:

1. The requirements specified under Initial Progress Report and any additions or changes related to these requirements.
2. Changes to any or all items specified under the previously submitted Comprehensive Progress Report.

In the event of major design changes or project delays that may alter a projects impact on the overall system, a complete (updated) Comprehensive Progress Report should be submitted, following the procedures for Comprehensive Progress Reports.

#### **4.4. Review of Progress Reports**

To provide a mechanism for the review of the progress reports and an assessment of conformance with WECC criteria, policies, and procedures, the following process should be used:

1. The Project Sponsor or Interconnecting Utility shall submit the appropriate progress report in accordance with the respective procedure by March 1 of each year.
2. The WECC Technical Staff shall compile and send to all TSS members a report showing the date and status of the last Comprehensive Progress Report for the various projects and the name of the person to whom requests for this report should be sent. Also included will be a list of projects that appear in the "Significant Additions and Changes to System Facilities Report" for which no progress reports have been submitted.
3. Members are encouraged to review as many progress reports as possible. Comments and/or questions concerning progress reports should be directed to the person named by the project sponsor or responsible party. Copies of correspondence relating to the compliance with WECC criteria, policies, and procedures should be sent to the TSS Chairman or his designated representative.
4. If a progress report is not submitted or if compliance with WECC criteria, policies, and procedures is not adequately demonstrated, any reviewing member may request TSS to review the project in question by addressing a letter requesting such to the TSS Chairman. Such requests for TSS review would be expected only after extensive communication between the reviewing party and the reporting party resulting in disagreements of conformance with WECC criteria, policies, and procedures.
5. If TSS review is requested, the TSS Chairman shall appoint an Ad Hoc committee to review the progress report in question. The Ad Hoc committee shall report to TSS its findings on whether or not the project in question warrants further review.
6. If further review is necessary, TSS may then request the Project Sponsor or Interconnecting Utility to provide TSS members with the necessary studies to demonstrate compliance with WECC criteria, policies, and procedures.

7. The TSS Chairman will solicit written and verbal comments from TSS members regarding their review of the progress reports and conformance of the projects with WECC criteria, policies, and procedures. The outcome of the TSS review will provide the basis of the annual TSS review of progress reports to PCC. The TSS Chairman will present results of the annual TSS review to PCC at their final meeting of year.

## **5.0 Informal Reports Presented at TSS Meetings**

Member systems shall provide brief written or verbal informal project update reports during each TSS meeting.

The TSS chairman shall select one or more major projects of current interest to TSS members to be reported on at each TSS meeting. These more formal presentations should be no longer than 15 minutes each, with additional time allowed for questions and answers. The presentations can be oral and/or written and should contain as a minimum:

1. Map showing location, ownership and voltage.
2. Schematic diagram including major equipment ratings.
3. Area load, generation, and interchange schedules used in technical studies.
4. Transfer capability associated with the project and/or effects on other transfer capabilities.
5. Demonstrate compliance with the NERC/WECC Planning Standards and WECC Reliability Criteria.
6. A description of the interconnected system conditions and/or requirements on which the proposed transfer capability rating is based and/or required by the project.

Approved by Technical Studies Subcommittee \_\_\_\_\_

Approved by Planning Coordination Committee \_\_\_\_\_ March 3, 2005

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