ERCOT Planning Guide

January 1, 2013

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PUBLIC

ERCOT Planning Guide

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Section 1: Overview

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1 OVERVIEW

1.1 Purpose

(1) This Planning Guide is consistent with applicable planning-related requirements of the Public Utility Commission of Texas (PUCT) Substantive Rules, Protocols and the North American Electric Reliability Corporation (NERC) Reliability Standards.

(2) This Planning Guide provides more detail of and establishes planning requirements for organizations and Entities operating in or potentially impacting the reliability of the ERCOT System. These organizations and Entities shall comply with the requirements set forth in this Planning Guide.

(3) In the event of a conflict between the Planning Guide and Protocols, any PUCT Substantive Rules or the NERC Reliability Standards, then such PUCT Substantive Rules, NERC Reliability Standards, and the Protocols shall control.

(4) For application in the ERCOT Region, some NERC Reliability Standards must be adapted to fit the unique characteristics of ERCOT. Defined terminology for NERC Regional Variances, if any, is detailed in the NERC Reliability Standards.

1.2 Process for Planning Guide Revision

1.2.1 Introduction

(1) A request to make additions, edits, deletions, revisions, or clarifications to this Planning Guide, including any attachments and exhibits to this Planning Guide, is called a Planning Guide Revision Request (PGRR). Except as specifically provided in other sections of this Planning Guide, this Section 1.2, Process for Planning Guide Revision, shall be followed for all PGRRs. ERCOT Members, Market Participants, Public Utility Commission of Texas (PUCT) Staff, Texas Reliability Entity (Texas RE) Staff, ERCOT, and any other Entities are required to utilize the process described herein prior to requesting, through the PUCT or other Governmental Authority, that ERCOT make a change to this Planning Guide, except for good cause shown to the PUCT or other Governmental Authority.

(2) The "next regularly scheduled meeting" of the Planning Working Group (PLWG), the Reliability and Operations Subcommittee (ROS), the Wholesale Market Subcommittee (WMS), the Technical Advisory Committee (TAC), or ERCOT Board shall mean the next regularly scheduled meeting for which required Notice can be timely given regarding the item(s) to be addressed, as specified in the appropriate ERCOT Board or committee procedures.

(3) Throughout the Planning Guide, references are made to the ERCOT Protocols. ERCOT Protocols supersede the Planning Guide and any PGRR must be compliant with the

Protocols. The ERCOT Protocols are subject to the revision process outlined in Protocol Section 21, Process for Nodal Protocol Revision.

(4) ERCOT may make non-substantive corrections at any time during the processing of a particular PGRR. Under certain circumstances, however, the Planning Guide can also be revised by ERCOT rather than using the PGRR process outlined in Section 1.2.

(a) This type of revision is referred to as an "Administrative PGRR" or "Administrative Changes" and shall consist of non-substantive corrections, such as typos (excluding grammatical changes), internal references (including table of contents), improper use of acronyms, references to ERCOT Protocols, PUCT Substantive Rules, the Public Utility Regulatory Act (PURA), North American Electric Reliability Corporation (NERC) regulations, Federal Energy Regulatory Commission (FERC) rules, etc., and revisions for the purpose of maintaining consistency between Section 1.2, Process for Planning Guide Revision, and Protocol Section 21, Revision Request Process. Changes to the minimum ERCOT Planning Reserve Margin (PRM) criterion in Section 8.2, Minimum ERCOT Planning Reserve Margin Criterion, as approved by the ERCOT Board, shall also be processed as Administrative PGRRs.

(b) ERCOT shall post such Administrative PGRRs to the ERCOT website and distribute the PGRR to the PLWG at least ten Business Days before implementation. If no Entity submits comments to the Administrative PGRR in accordance with paragraph (1) of Section 1.2.4.3, Planning Working Group Review and Action, ERCOT shall implement it according to paragraph (4) of Section 1.2.6, Planning Guide Revision Implementation. If any ERCOT Member, Market Participant, PUCT Staff, Texas RE Staff or ERCOT submits comments to the Administrative PGRR, then it shall be processed in accordance with the PGRR process outlined in Section 1.2.

1.2.2 Submission of a Planning Guide Revision Request

The following Entities may submit a Planning Guide Revision Request (PGRR):

(a) Any Market Participant;

(b) Any ERCOT Member;

(c) Public Utility Commission of Texas (PUCT) Staff;

(d) Texas Reliability Entity (Texas RE) Staff;

(e) ERCOT; and

(f) Any other Entity that meets the following qualifications:

(i) Resides (or represent residents) in Texas or operates in the Texas electricity market; and

(ii) Demonstrates that Entity (or those it represents) is affected by the Customer Registration or Renewable Energy Credit (REC) Trading Program sections of the ERCOT Protocols.

1.2.3 Planning Working Group

(1) The Planning Working Group (PLWG) shall review and recommend action on formally submitted Planning Guide Revision Requests (PGRRs), provided that:

(a) PLWG meetings are open to ERCOT, ERCOT Members, Market Participants, Texas Reliability Entity (Texas RE) Staff, and Public Utility Commission of Texas (PUCT) Staff; and

(b) Each Market Segment is allowed to participate.

(2) Where additional expertise is needed, the PLWG may request that the Reliability and Operations Subcommittee (ROS) refer a PGRR to existing Technical Advisory Committee (TAC) subcommittees, working groups or task forces for review and comment on the PGRR. Suggested modifications or alternative modifications if a consensus recommendation is not achieved by a non-voting working group or task force, to the PGRR should be submitted by the chair or the chair's designee on behalf of the commenting subcommittee, working group or task force as comments on the PGRR for consideration by PLWG. However, the PLWG shall retain ultimate responsibility for the processing of all PGRRs.

(3) The PLWG shall ensure that the Planning Guide is compliant with the ERCOT Protocols. As such, the PLWG will monitor all changes to the ERCOT Protocols and initiate any PGRRs necessary to bring the Planning Guide in conformance with the ERCOT Protocols. The PLWG will also initiate a Nodal Protocol Revision Request (NPRR) if such a change is necessary to accommodate a proposed PGRR prior to proceeding with that PGRR.

(4) ERCOT shall consult with the PLWG chair to coordinate and establish the meeting schedule for the PLWG. The PLWG shall meet at least once per month, unless no PGRRs were submitted during the prior 24 days, and shall ensure that reasonable advance notice of each meeting, including the meeting agenda, is posted on the ERCOT website.

1.2.4 Planning Guide Revision Procedure

1.2.4.1 Review and Posting of Planning Guide Revision Requests

(1) Planning Guide Revision Requests (PGRRs) shall be submitted electronically to ERCOT by completing the designated form provided on the ERCOT website. ERCOT shall provide an electronic return receipt response to the submitter upon receipt of the PGRR.

(2) The PGRR shall include the following information:

(a) Description of requested revision and reason for suggested change;

(b) Impacts and benefits of the suggested change on ERCOT market structure, ERCOT operations, and Market Participants, to the extent that the submitter may know this information;

(c) Impact Analysis (applicable only for a PGRR submitted by ERCOT);

(d) List of affected Planning Guide sections and subsections;

(e) General administrative information (organization, contact name, etc.); and

(f) Suggested language for requested revision.

(3) ERCOT shall evaluate the PGRR for completeness and shall notify the submitter, within five Business Days of receipt, if the PGRR is incomplete, including the reasons for such status. ERCOT may provide information to the submitter that will correct the PGRR and render it complete. An incomplete PGRR shall not receive further consideration until it is completed. In order to pursue the PGRR, a submitter must submit a completed version of the PGRR.

(4) If a submitted PGRR is complete or once a PGRR is completed, ERCOT shall post the PGRR on the ERCOT website and distribute to the Planning Working Group (PLWG) within three Business Days.

1.2.4.2 Withdrawal of a Planning Guide Revision Request

(1) A submitter may withdraw or request to withdraw a PGRR by submitting a completed Request for Withdrawal form provided on the ERCOT website. ERCOT shall post the submitter's Request for Withdrawal on the ERCOT website within three Business Days of submittal.

(2) The submitter of a PGRR may withdraw the PGRR at any time before the PLWG recommends approval of the PGRR. If the PLWG has recommended approval of the PGRR, the Request for Withdrawal must be approved by the Reliability and Operations Subcommittee (ROS) if the PGRR has not yet been recommended for approval by ROS.

(3) If ROS has recommended approval of the PGRR, the Request for Withdrawal must be approved by the Technical Advisory Committee (TAC) if the PGRR has not yet been approved or recommended for approval by TAC.

(4) If TAC has recommended approval of the PGRR, the Request for Withdrawal must be approved by the ERCOT Board if the PGRR has not yet been approved by the ERCOT Board.

(5) Once a PGRR is approved by the ERCOT Board, such PGRR cannot be withdrawn.

1.2.4.3 Planning Working Group Review and Action

(1) Any ERCOT Member, Market Participant, Public Utility Commission of Texas (PUCT) Staff, Texas Reliability Entity (Texas RE) Staff or ERCOT may comment on the PGRR.

(2) To receive consideration, comments must be delivered electronically to ERCOT in the designated format provided on the ERCOT website within 14 days from the posting date of the PGRR. Comments submitted after the 14 day comment period may be considered at the discretion of PLWG after these comments have been posted. Comments submitted in accordance with the instructions on the ERCOT website, regardless of date of submission, shall be posted to the ERCOT website and distributed electronically to the PLWG within three Business Days of submittal.

(3) The PLWG shall consider the PGRR at its next regularly scheduled meeting after the end of the 14 day comment period. At such meeting, the PLWG may take action on the PGRR. In considering action on a PGRR, the PLWG may:

(a) Recommend approval of the PGRR as submitted or as modified;

(b) Recommend rejection of the PGRR;

(c) If no consensus can be reached on the PGRR, present options for ROS consideration;

(d) Defer decision on the PGRR; or

(e) Recommend that ROS refer the PGRR to a subcommittee, working group or task force as provided in Section 1.2.3, Planning Working Group.

(4) Within three Business Days after PLWG takes action, ERCOT shall issue a PLWG Report reflecting the PLWG action and post it to the ERCOT website. The PLWG Report shall contain the following items:

(a) Identification of submitter;

(b) Planning Guide language recommended by the PLWG, if applicable;

(c) Identification of authorship of comments, if applicable;

(d) Proposed effective date of the PGRR;

(e) Recommended priority and rank for any PGRRs requiring an ERCOT project for implementation; and

(f) PLWG action.

1.2.4.4 Comments to the Planning Working Group Report

(1) Any ERCOT Member, Market Participant, PUCT Staff, Texas RE Staff, or ERCOT may comment on the PLWG Report. Within three Business Days of receipt of comments related to the PLWG Report, ERCOT shall post such comments to the ERCOT website. Comments submitted in accordance with the instructions on the ERCOT website, regardless of date of submission, shall be posted on the ERCOT website within three Business Days of submittal.

(2) The comments on the PLWG Report will be considered at the next regularly scheduled PLWG or ROS meeting where the PGRR is being considered.

1.2.4.5 Planning Guide Revision Request Impact Analysis

(1) ERCOT shall submit to PLWG an initial Impact Analysis based on the original language in the PGRR with any ERCOT-sponsored PGRR. The initial Impact Analysis will provide PLWG with guidance as to what ERCOT computer systems, operations, or business functions could be affected by the PGRR as submitted.

(2) If PLWG recommends approval of a PGRR, ERCOT shall prepare an Impact Analysis based on the proposed language in the PLWG Report. If ERCOT has already prepared an Impact Analysis, ERCOT shall update the existing Impact Analysis, if necessary, to accommodate the language recommended for approval in the PLWG Report.

(3) The Impact Analysis shall assess the impact of the proposed PGRR on ERCOT staffing, computer systems, operations, or business functions and shall contain the following information:

(a) An estimate of any cost and budgetary impacts to ERCOT for both implementation and ongoing operations;

(b) The estimated amount of time required to implement the PGRR;

(c) The identification of alternatives to the PGRR that may result in more efficient implementation; and

(d) The identification of any manual workarounds that may be used as an interim solution and estimated costs of the workaround.

(4) Unless a longer review period is warranted due to the complexity of the proposed PLWG Report, ERCOT shall issue an Impact Analysis for a PGRR for which PLWG has recommended approval prior to the next regularly scheduled PLWG meeting. ERCOT shall post the results of the completed Impact Analysis on the ERCOT website. If a longer review period is required by ERCOT to complete an Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis to the PLWG.

1.2.4.6 Planning Working Group Review of Impact Analysis

(1) After ERCOT posts the results of the Impact Analysis, PLWG shall review the Impact Analysis at its next regularly scheduled meeting. PLWG may revise its PLWG Report after considering the information included in the Impact Analysis or additional comments received on the PLWG Report.

(2) After consideration of the Impact Analysis and the PLWG Report, ERCOT shall issue a revised PLWG Report and post it on the ERCOT website within three Business Days of the PLWG consideration of the Impact Analysis and the PLWG Report. If PLWG revises the proposed PGRR, ERCOT shall update the Impact Analysis, if necessary, and issue the updated Impact Analysis to ROS. If a longer review period is required for ERCOT to update the Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis to ROS.

(3) If the PGRR requires an ERCOT project for implementation, at the same meeting, PLWG shall assign a recommended priority and rank for the associated project.

1.2.4.7 Reliability and Operations Subcommittee Vote and Wholesale Market Subcommittee Review

(1) ROS shall consider any PGRRs that PLWG has submitted to ROS for consideration for which both a PLWG Report and an Impact Analysis (as updated if modified by PLWG under Section 1.2.4.6, Planning Working Group Review of Impact Analysis) have been posted on the ERCOT website. The following information must be included for each PGRR considered by ROS:

(a) The PLWG Report and Impact Analysis; and

(b) Any comments timely received in response to the PLWG Report.

(2) The quorum and voting requirements for ROS action are set forth in the Technical Advisory Committee Procedures. In considering action on a PLWG Report, ROS shall:

(a) Recommend approval of the PGRR as recommended in the PLWG Report or as modified by ROS;

(b) Reject the PGRR;

(c) Defer decision on the PGRR;

(d) Remand the PGRR to the PLWG with instructions; or

(e) Refer the PGRR to another ROS working group or task force or another TAC subcommittee with instructions.

(3) If a motion is made to recommend approval of a PGRR and that motion fails, the PGRR shall be deemed rejected by ROS unless at the same meeting ROS later votes to recommend approval of, defer, remand, or refer the PGRR. If a motion to recommend approval of a PGRR fails via email vote according to the Technical Advisory Committee Procedures, the PGRR shall be deemed rejected by ROS unless at the next regularly scheduled ROS meeting or in a subsequent email vote prior to the meeting, ROS votes to recommend approval of, defer, remand, or refer the PGRR. The rejected PGRR shall be subject to appeal pursuant to Section 1.2.4.13, Appeal of Action.

(4) Within three Business Days after ROS takes action on the PGRR, ERCOT shall issue a ROS Report reflecting the ROS action and post it on the ERCOT website. The ROS Report shall contain the following items:

(a) Identification of the submitter of the PGRR;

(b) Modified Planning Guide language proposed by ROS, if applicable;

(c) Identification of the authorship of comments, if applicable;

(d) Proposed effective date(s) of the PGRR;

(e) Recommended priority and rank for any PGRR requiring an ERCOT project for implementation;

(f) PLWG action; and

(g) ROS action.

(5) The Wholesale Market Subcommittee (WMS) shall monitor and review PGRRs as they work through the PLWG process and may submit comments to the process as appropriate.

1.2.4.8 ERCOT Impact Analysis Based on Reliability and Operations Subcommittee Report

ERCOT shall review the ROS Report and, if necessary, update the Impact Analysis as soon as practicable. ERCOT shall issue the updated Impact Analysis, if applicable, to TAC and post it on the ERCOT website. If a longer review period is required for ERCOT to update the Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis to TAC.

1.2.4.9 PRS Review of Project Prioritization

At the next regularly scheduled Protocol Revision Subcommittee (PRS) meeting after ROS recommends approval of a PGRR that requires an ERCOT project for implementation, the PRS shall assign a recommended priority and rank for the associated project.

1.2.4.10 Technical Advisory Committee Vote

(1) TAC shall consider any PGRRs that ROS has submitted to TAC for consideration for which both a ROS Report and an Impact Analysis (as updated if modified by ROS under Section 1.2.4.8, ERCOT Impact Analysis Based on Reliability and Operations Subcommittee Report) and any new or unresolved comments submitted by WMS that have been posted on the ERCOT website. The following information must be included for each PGRR considered by TAC:

(a) The ROS Report and Impact Analysis;

(b) The recommended priority and rank, if an ERCOT project is required; and

(c) Any comments timely received in response to the ROS Report.

(2) The quorum and voting requirements for TAC action are set forth in the Technical Advisory Committee Procedures. In considering action on a ROS Report, TAC shall:

(a) Recommend approval of the PGRR as recommended in the ROS Report (with due consideration to comments provided by WMS) or as modified by TAC, including modification of the recommended priority and rank if the PGRR requires a project;

(b) Reject the PGRR;

(c) Defer decision on the PGRR;

(d) Remand the PGRR to ROS with instructions; or

(e) Refer the PGRR to another TAC subcommittee or a TAC working group or task force with instructions.

(3) If a motion is made to recommend approval of a PGRR and that motion fails, the PGRR shall be deemed rejected by TAC unless at the same meeting TAC later votes to recommend approval of, defer, remand, or refer the PGRR. If a motion to recommend approval of a PGRR fails via email vote according to the Technical Advisory Committee Procedures, the PGRR shall be deemed rejected by TAC unless at the next regularly scheduled TAC meeting or in a subsequent email vote prior to such meeting, TAC votes to recommend approval of, defer, remand, or refer the PGRR. The rejected PGRR shall be subject to appeal pursuant to Section 1.2.4.13, Appeal of Action.

(4) Within three Business Days after TAC takes action on a PGRR, ERCOT shall issue a TAC Report reflecting the TAC action and post it on the ERCOT website. The TAC Report shall contain the following items:

(a) Identification of the submitter of the PGRR;

(b) Modified Planning Guide language proposed by TAC, if applicable;

(c) Identification of the authorship of comments, if applicable;

(d) Proposed effective date(s) of the PGRR;

(e) Priority and rank for any PGRR requiring an ERCOT project for implementation;

(f) ROS action;

(g) TAC action; and

(h) ERCOT's position on the PGRR.

(5) If TAC recommends approval of a PGRR, ERCOT shall forward the TAC Report to the ERCOT Board for consideration pursuant to 1.2.4.12, ERCOT Board Vote.

1.2.4.11 ERCOT Impact Analysis Based on Technical Advisory Committee Report

ERCOT shall review the TAC Report and, if necessary, update the Impact Analysis as soon as practicable. ERCOT shall issue the updated Impact Analysis, if applicable, to the ERCOT Board and post it on the ERCOT website. If a longer review period is required for ERCOT to update the Impact Analysis, ERCOT shall submit comments with a schedule for completion of the Impact Analysis to the ERCOT Board.

1.2.4.12 ERCOT Board Vote

(1) Upon issuance of a TAC Report and Impact Analysis to the ERCOT Board, the ERCOT Board shall review the TAC Report and the Impact Analysis at the following month's regularly scheduled meeting. For Urgent PGRRs, the ERCOT Board shall review the

TAC Report and Impact Analysis at the next regularly scheduled meeting, unless a special meeting is required due to the urgency of the PGRR.

(2) The quorum and voting requirements for ERCOT Board action are set forth in the ERCOT Bylaws. In considering action on a TAC Report, the ERCOT Board shall:

(a) Approve the PGRR as recommended in the TAC Report or as modified by the ERCOT Board;

(b) Reject the PGRR;

(c) Defer decision on the PGRR; or

(d) Remand the PGRR to TAC with instructions.

(3) If a motion is made to approve a PGRR and that motion fails, the PGRR shall be deemed rejected by the ERCOT Board unless at the same meeting the ERCOT Board later votes to approve, defer, or remand the PGRR. The rejected PGRR shall be subject to appeal pursuant to Section 1.2.4.13, Appeal of Action.

(4) Within three Business Days after the ERCOT Board takes action on a PGRR, ERCOT shall issue a Board Report reflecting the ERCOT Board action and post it on the ERCOT website.

1.2.4.13 Appeal of Action

(1) Any ERCOT Member, Market Participant, PUCT Staff, Texas RE Staff or ERCOT may appeal a PLWG action to recommend rejection of, defer, or recommend referral of a PGRR directly to ROS. Such appeal to the ROS must be submitted electronically to ERCOT by completing the designated form provided on the ERCOT website within ten Business Days after the date of the relevant PLWG appealable event. ERCOT shall reject appeals made after that time. ERCOT shall post appeals on the ERCOT website within three Business Days of receiving the appeal. If the appeal is submitted to ERCOT at least 11 days before the next regularly scheduled ROS meeting, ERCOT shall place the appeal on the agenda of the next regularly scheduled ROS meeting. If the appeal is submitted to ERCOT less than 11 days before the next regularly scheduled ROS meeting, the ROS will hear the appeal at the next subsequent regularly scheduled ROS meeting. An appeal of a PGRR to ROS suspends consideration of the PGRR until the appeal has been decided by ROS.

(2) Any ERCOT Member, Market Participant, PUCT Staff, Texas RE Staff, or ERCOT may appeal a ROS action to reject, defer, remand or refer a PGRR directly to TAC. Such appeal to the TAC must be submitted electronically to ERCOT by completing the designated form provided on the ERCOT website within ten Business Days after the date of the relevant ROS appealable event. ERCOT shall reject appeals made after that time. ERCOT shall post appeals on the ERCOT website within three Business Days of

receiving the appeal. If the appeal is submitted to ERCOT at least 11 days before the next regularly scheduled TAC meeting, ERCOT shall place the appeal on the agenda of the next regularly scheduled TAC meeting. If the appeal is submitted to ERCOT less than 11 days before the next regularly scheduled TAC meeting, TAC will hear the appeal at the next subsequent regularly scheduled TAC meeting. An appeal of a PGRR to TAC suspends consideration of the PGRR until the appeal has been decided by TAC.

(3) Any ERCOT Member, Market Participant, PUCT Staff, Texas RE Staff or ERCOT may appeal a TAC action to reject, defer, remand, or refer a PGRR directly to the ERCOT Board. Appeals to the ERCOT Board shall be processed in accordance with the ERCOT Board Policies and Procedures. An appeal of a PGRR to the ERCOT Board suspends consideration of the PGRR until the appeal has been decided by the ERCOT Board.

(4) Any ERCOT Member, Market Participant, PUCT Staff or Texas RE Staff may appeal any decision of the ERCOT Board regarding a PGRR to the PUCT or other Governmental Authority. Such appeal to the PUCT or other Governmental Authority must be made within any deadline prescribed by the PUCT or other Governmental Authority, but in any event no later than 35 days of the date of the relevant ERCOT Board appealable event. Notice of any appeal to the PUCT or other Governmental Authority must be provided, at the time of the appeal, to ERCOT's General Counsel. If the PUCT or other Governmental Authority rules on the PGRR, ERCOT shall post the ruling on the ERCOT website.

1.2.5 Urgent Requests

(1) The party submitting a Planning Guide Revision Request (PGRR) may request that the PGRR be considered on an urgent timeline ("Urgent") only when the submitter can reasonably show that an existing Planning Guide provision is impairing or could imminently impair ERCOT System reliability or wholesale or retail market operations, or is causing or could imminently cause a discrepancy between a Settlement formula and a provision of the ERCOT Protocols.

(2) The Reliability and Operations Subcommittee (ROS) may designate the PGRR for Urgent consideration if a submitter requests Urgent status or upon valid motion in a regularly scheduled meeting of the ROS. Criteria for designating a PGRR as Urgent are that the PGRR requires immediate attention due to:

(a) Serious concerns about ERCOT System reliability or market operations under the unmodified language; or

(b) The crucial nature of a Settlement activity conducted pursuant to any Settlement formula.

(3) ERCOT shall prepare an Impact Analysis for Urgent PGRRs as soon as practicable.

(4) ROS or the Planning Working Group (PLWG) shall consider the Urgent PGRR and Impact Analysis, if available, at the next regularly scheduled ROS or PLWG meeting, or

at a special meeting called by the ROS or PLWG chair to consider the Urgent PGRR. The Wholesale Market Subcommittee (WMS) may monitor Urgent PGRRs and shall submit comments as appropriate.

(5) If the submitter desires to further expedite processing of the PGRR, a request for voting via email may be submitted to the ROS chair. The ROS chair may grant the request for voting via email. Such voting shall be conducted pursuant to the Technical Advisory Committee Procedures. If ROS recommends approval of an Urgent PGRR, ERCOT shall issue an ROS Report reflecting the ROS action and post it on the ERCOT website within three Business Days after ROS takes action. The TAC chair may request action from TAC to accelerate or alter the procedures described herein, as needed, to address the urgency of the situation.

(6) Any PGRRs that take effect pursuant to an Urgent request shall be subject to an Impact Analysis pursuant to Section 1.2.4.8, ERCOT Impact Analysis Based on Reliability and Operations Subcommittee Report, and ERCOT Board consideration pursuant to Section 1.2.4.12, ERCOT Board Vote.

1.2.6 Planning Guide Revision Implementation

(1) Upon ERCOT Board approval, ERCOT shall implement Planning Guide Revision Requests (PGRRs) on the first day of the month following ERCOT Board approval, unless otherwise provided in the Board Report for the approved PGRR.

(2) For such other PGRRs, the Impact Analysis shall provide an estimated implementation date and ERCOT shall provide Notice as soon as practicable, but no later than ten days prior to the actual implementation, unless a different notice period is required in the Board Report for the approved PGRR.

(3) ERCOT shall implement an Administrative PGRR on the first day of the month following the end of the ten Business Day posting requirement outlined in Section 1.2.1, Introduction.

ERCOT Planning Guide

Section 2: Definitions and Acronyms

June 1, 2012

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2 DEFINITIONS AND ACRONYMS

2.1 DEFINITIONS

Relevant terms and definitions used in the Planning Guide can be found in Protocol Section 2, Definitions and Acronyms. The terms within this Section 2.1 contains terms not defined in Protocols.

LINKS TO DEFINITIONS:

A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z;

List of Acronyms

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Credible Single Contingency for Transmission Planning (for operations planning purposes Credible Single Contingency is defined in the Operating Guides)

(1) A single facility, comprised of transmission line, auto transformer, or other associated pieces of equipment. This includes multiple equipment Outaged or interrupted during a single fault (SFME).

(2) The Forced Outage of a DCKT in excess of 0.5 miles in length (either without a fault or subsequent to a normally-cleared non-three-phase fault) with all other facilities normal.

(3) Any Generation Resource:

(a) A combined-cycle facility shall be considered a single Generation Resource; or

(b) Each unit of a combined-cycle facility will be considered a single Generation Resource if the combustion turbine and the steam turbine can operate separately, as stated in the Resource registration on the Market Information System (MIS) Public Area.

(4) With any single Generation Resource unavailable, and with any other generation preemptively redispatched, the contingency loss of a single Transmission Facility (either without a fault or subsequent to a normally-cleared non-three-phase fault) with all other facilities normal.

(5) Single contingency conditions defined in North American Electric Reliability Corporation (NERC) Reliability Standards and any subsequent revisions.

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Interconnecting Entity (IE)

Any Entity that proposes to interconnect an All-Inclusive Generation Resource with the ERCOT System, upgrade the rated capacity of an existing All-Inclusive Generation Resource by ten MW or greater, re-power an All-Inclusive Generation Resource, or change the Point of Interconnection (POI) of an All-Inclusive Generation Resource.

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Planning Reserve Margin (PRM)

The net of total capacity for the season (summer or winter) less firm peak Load for the season divided by firm peak Load for the season (expressed as a percentage).

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2.2 ACRONYMS AND ABBREVIATIONS

CY	Current Year
FIS	Full Interconnection Study
FY	Future Year
GINR	Generation Interconnection or Change Request
IE	Interconnecting Entity
LTSA	Long-Term System Assessment

PRM	Planning Reserve Margin
TCEQ	Texas Commission on Environmental Quality

ERCOT Planning Guide

Section 3: Regional Planning

June 1, 2012

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3 REGIONAL PLANNING

3.1 Communications

3.1.1 Overview of Major Transmission Planning Activities

The process of planning a reliable and efficient transmission system for the ERCOT Region is composed of several types of activities and studies.

3.1.1.1 Long-Term System Assessment

The Long-Term System Assessment (LTSA) is performed by ERCOT in coordination with the Regional Planning Group (RPG) on a biennial basis (in even-numbered years) and reviewed annually. The study uses scenario analysis techniques to assess the potential needs of the ERCOT System up to 20 years into the future. The role of the LTSA is not to recommend the construction of specific system upgrades, due to the high degree of uncertainty associated with the amount and location of loads and Resources in this timeframe. Instead, the role of the LTSA is to evaluate the system upgrades that are indicated under each of a wide variety of scenarios in order to identify upgrades that are robust across a range of scenarios or might be more economic than the upgrades that would be determined considering only near-term needs in the Five-Year Transmission Plan development.

3.1.1.2 Five-Year Transmission Plan

The Five-Year Transmission Plan is developed annually by ERCOT, in coordination with the RPG and Transmission Service Providers (TSPs). The Five-Year Transmission Plan addresses region-wide reliability and economic transmission needs and the planned improvements to meet those needs for the upcoming five years. These planned improvements include projects previously approved by the ERCOT Board, projects previously reviewed by the RPG, new projects that will be refined at the appropriate time by TSPs in order to complete RPG review, and the local projects currently planned by TSPs. Combined, these projects represent ERCOT's plan addressing the reliability and efficiency of the ERCOT System to meet North American Electric Reliability Corporation (NERC) Reliability Standards, the Protocols, Operating Guides and this Planning Guide. Projects that are included in the Five-Year Transmission Plan are not considered to have been endorsed by ERCOT until they have undergone the appropriate level of RPG Project Review as outlined in Protocol Section 3.11.4, Regional Planning Group Project Review Process, if required.

3.1.1.3 Regional Planning Group Project Reviews

Except for minor transmission projects that have only localized impacts and projects that are directly associated with the interconnection of new Generation Resources, all transmission projects in the ERCOT Region undergo a formal review by the RPG in accordance with Protocol Section 3.11.4, Regional Planning Group Project Review Process. In addition, ERCOT performs

an independent analysis of the need for major transmission projects that are submitted for RPG Project Review. The affirmative result of this review is formal endorsement of the project by ERCOT. This ERCOT project endorsement is intended to support, to the extent applicable, a finding by the Public Utility Commission of Texas (PUCT) that a project is necessary for the service, accommodation, convenience, or safety of the public within the meaning of Public Utility Regulatory Act, TEX. UTIL. CODE ANN. § 37.056 (Vernon 1998 and Supp. 2007) and P.U.C. SUBST. R. 25.101, Certification Criteria.

3.1.1.4 Generation Interconnection Process

This process facilitates the interconnection of new generation units in the ERCOT Region by assessing the transmission upgrades necessary for new generating units to operate reliably. The process to study interconnecting new generation or modifying an existing generation interconnection to the ERCOT Transmission Grid is covered in Section 4, Transmission Planning Criteria. The generation interconnection study process primarily covers the direct connection of generation Facilities to the ERCOT Transmission Grid and directly-related projects. Additional upgrades to the ERCOT Transmission Grid that might be cost-effective as a result of new or modified generation may be initiated by any stakeholder through the RPG Project Review procedure described in Protocol Section 3.11.4, Regional Planning Group Project Review Process, at the appropriate time, subject to the confidentiality provisions in Section 5, Generation Resource Interconnection or Change Request.

3.1.2 Regional Planning Group Project Submission

Transmission projects that are proposed for RPG Review, pursuant to Protocol Section 3.11.4.1, Project Submission, shall be submitted according to the provisions outlined in Section 3.1.2.1, All Projects, through 3.1.2.3, Other Information.

3.1.2.1 All Projects

The submittal of each transmission project (60 kV and above) for RPG Project Review should include the following elements:

(a) The proposed project description including expected cost, feasible alternative(s) considered, transmission topology and Transmission Facility modeling parameter data, and all study cases used to generate results supporting the need for the project in electronic format (powerflow data should be in PTI PSS/E RAWD format). Also, the submission should include accurate maps and one-line diagrams showing locations of the proposed project and feasible alternatives (AutoCad-compatible format preferred);

(b) Identification of the Steady State Working Group (SSWG) or Five-Year Transmission Plan powerflow cases used as a basis for the study and any associated changes that describe and allow accurate modeling of the proposed project;

(c) Description and data for all changes made to the SSWG or Five-Year Transmission Plan cases used to identify the need for the project, such as Generation Resource unavailability and area peak Load forecast;

(d) A description of the reliability and/or economic problem that is being solved;

(e) Desired/needed in-service date for the project, and feasible in-service date, if different; and

(f) The phone number and email address of the single point of contact who can respond to ERCOT and RPG participant questions or requests for additional information necessary for stakeholder review.

3.1.2.2 Projects That Are Not Included in the Current Five-Year Transmission Plan

(1) For projects that are not included in the current Five-Year Transmission Plan, the following elements should be included in the submission. While it is not necessary, if any of these additional elements are available for projects that are included in the Five-Year Transmission Plan, they should be included in the submittal of these projects as well.

(a) Analysis of rejected alternatives, including cost estimates, effect upon transfer capability, and other factors considered in the comparison of alternatives with the proposed project;

(b) Assumptions modeled in performance studies such that credible performance deficiencies can be identified through study;

(c) Results of performance analyses that are consistent with system operating practices and procedures; and

(d) Documentation of the process used to identify specific performance deficiencies (reliability and economic).

(2) Both transmission and non-transmission solutions to performance deficiencies may be considered where applicable.

3.1.2.3 Other Information

If there is any other information, not included above, that the submitter believes is relevant to consideration of the need for any submitted project, they should include that information in the project submission.

3.1.3 Project Evaluation

(1) Proposed transmission projects will be evaluated using a variety of tools and techniques to ensure that the system is able to meet applicable reliability criteria in a cost-effective manner. For most proposed projects, several alternatives will be identified to meet the reliability criteria or other performance improvement objectives that the proposed project is designed to meet. The project alternative with the expected lowest cost over the life of the project is generally recommended, subject to consideration of the expected long-term system needs in the area (as identified in the LTSA), and consideration of the relative operational impacts of the alternatives.

(2) In some cases, one alternative may be to dispatch the system in such a way that all reliability requirements are met, even without the proposed project or any transmission alternative, resulting in a less efficient dispatch than what would be required to meet the reliability requirements if the proposed project was in place. Consideration of the merits of this alternative relative to the proposed transmission project is more complex. To facilitate the discussion and consideration of these alternatives, ERCOT has adopted certain definitions and practices, described in paragraph (4) of Protocol Section 3.11.2, Planning Criteria, and Sections 3.1.3.1, Definitions of Reliability-Driven and Economic-Driven Projects, and 3.1.3.2, Reliability-Driven Project Evaluation below.

3.1.3.1 Definitions of Reliability-Driven and Economic-Driven Projects

(1) Proposed transmission projects are categorized for evaluation purposes into two types:

(a) Reliability-driven projects; and

(b) Economic-driven projects.

(2) The differentiation between these two types of projects is based on whether a simultaneously-feasible, security-constrained generating unit commitment and Dispatch is expected to be available for all hours of the planning horizon that can resolve the system reliability issue that the proposed project is intended to resolve. If it is not possible to forecast a dispatch of the generating units such that all reliability criteria are met without the project, and the addition of the project allows the reliability criteria to be met, then the project is classified as a reliability-driven project. If it is possible to simulate a dispatch of the generating units in such a way that all reliability criteria are met without the project, but the project may allow the reliability criteria to be met at a lower total cost, then the project is classified as an economic-driven project.

3.1.3.2 Reliability-Driven Project Evaluation

For reliability-driven projects, the comparison of project costs generally includes only the relative capital costs of the alternatives. In the case of Tier 1 and 2 projects, any differences in expected ERCOT System production costs between the alternatives may be included in the

consideration of the relative costs of the alternatives, due to larger potential impacts on losses and congestion of these projects.

3.1.4 Five-Year Transmission Plan Development Process

The purpose of the Five-Year Transmission Plan is to provide a coordinated plan for the ERCOT System, in which all planned improvements to the system are documented, and which includes projects that have achieved a level of review that is commensurate with the impact of the projects. The Five-Year Transmission Plan is updated on an annual basis. While unanticipated changes in Load and generation may require additional projects to be needed that were not included in the current Five-Year Transmission Plan, or require additional evaluation of projects included in the current Five-Year Transmission Plan when they are submitted for RPG Project Review, the Five-Year Transmission Plan provides a reasonable and supportable basis for analyses of the planned ERCOT Transmission Grid.

3.1.4.1 Development of Five-Year Transmission Plan

(1) The starting case for the Five-Year Transmission Plan development is created by removing all Tier 1, 2 and 3 projects that have not undergone RPG Project Review from the most recent SSWG summer peak base cases for each year of the planning horizon. The planning process begins with computer modeling studies of the generation and Transmission Facilities and substation Loads under normal conditions in the ERCOT System. Contingency conditions along with changes in Load and generation that might be expected to occur in operation of the ERCOT Transmission Grid are also modeled. To maintain adequate service and minimize interruptions during Outages, model simulations are used to identify adverse results based upon the planning criteria and to examine the effectiveness of various problem-solving alternatives.

(2) The effectiveness of each alternative will be evaluated under a variety of possible operating environments because Loads and operating conditions cannot be predicted with certainty. As a result, repeated simulations under different conditions are often required. In addition, options considered for future installation may affect other alternatives so that several different combinations must be evaluated, thereby multiplying the number of simulations required.

(3) Once feasible alternatives have been identified, the process is continued with a comparison of those alternatives. To determine the most favorable, the short-range and long-range benefits of each must be considered including operating flexibility and compatibility with future plans.

3.1.4.2 Use of Five-Year Transmission Plan

(1) The Five-Year Transmission Plan will generally serve as the basis for all subsequent RPG Project Reviews, both of projects included within the Five-Year Transmission Plan and of other proposed projects. Stakeholders are encouraged to submit, at the start of the Five-Year Transmission Plan development process, any known transmission projects that

are not in the current SSWG base cases and are likely to be submitted within the next year, as work on RPG Project Reviews will be limited while the Five-Year Transmission Plan is being developed and documented. Projects submitted for RPG Project Review after the Five-Year Transmission Plan development has begun and which need ERCOT Independent Review may be delayed. Inputs to the Five-Year Transmission Plan, such as new Generation Resources and updated local transmission projects, may be updated at the time these subsequent studies are performed if ERCOT or stakeholders identify such updates as being needed to appropriately consider the need for the specific project under review. If the project under review is included in the Five-Year Transmission Plan, and no changes are identified which would affect the need for the proposed project through the 21-Day Comment Period described in Section 3.1.5, Regional Planning Group Comment Process, then the Five-Year Transmission Plan will serve as the ERCOT Independent Review of the proposed project, if required.

(2) Tier 1, 2, and 3 projects that are included in the Five-Year Transmission Plan should be submitted for RPG Project Review at an appropriate lead time. Generally, this lead time should be sufficient to allow the review to be completed before the TSP reaches the decision point at which it must initiate the engineering and procurement in order to meet the required in-service date, but not farther in advance than is necessary. In general, these lead times will be three to four months for Tier 3 projects and six to seven months for Tier 1 and 2 projects.

(3) Tier 1, 2 and 3 projects that are included in the Five-Year Transmission Plan but do not reach this decision point before the development of the next year's Five-Year Transmission Plan begins will be removed from the case used to develop the Five-Year Transmission Plan and will be re-evaluated as a part of the development of this subsequent Five-Year Transmission Plan.

(4) Once ERCOT receives a signed Standard Generation Interconnection Agreement (SGIA) or public, financially-binding agreement between the Generation Resource and the TSP under which Generation Resources would be constructed or a letter from a duly authorized official from the Municipally Owned Utility (MOU) or Electric Cooperative (EC) building a Generation Resource, the project will be included in the base cases beyond its expected in-service year in the development of the Five-Year Transmission Plan and RPG Project Reviews.

3.1.5 Regional Planning Group Comment Process

Any stakeholder may initiate an RPG project as accordance with Protocol Section 3.11.4.1, Project Submission. The RPG Project Review procedure is designed to review projects in a manner commensurate with the cost and impact to the market and to system reliability of the project, based on the Tier into which the project is grouped. The RPG Project Review procedure for submitted projects in all Tiers consists of the following steps.

(a) ERCOT will provide electronic copies of RPG Project Review submittals to the RPG within seven days of receipt and solicit comments or questions from the RPG;

(b) All concerns/questions or objections about the submitted project by any stakeholder or ERCOT should be submitted to the RPG within 21 days after ERCOT's transmittal to the RPG;

(c) Each Entity providing comments should provide a "single" complete comment about each project by the end of the 21-day review period rather than sending multiple comments at various times or from various individuals. A single comment will help ERCOT and the project submitter keep track of the comments and develop an appropriate response;

(d) Any questions related to data deficiency should be submitted to ERCOT and the submitter immediately;

(e) If concerns or objections about a project are received, the project will be put into "study mode" until all concerns are resolved or until ERCOT assesses that a reasonable effort has been made to resolve all concerns, generally no more than an additional 28 days;

(f) Project submitters should answer all questions and respond to all concerns in a timely manner;

(g) Comments should be based on Good Utility Practice and sound engineering judgment. Suggestions should be able to be implemented by the TSP constructing and operating the project; and

(h) ERCOT will post all project submissions, the comments received, and other information and databases associated with submitted transmission projects on its website.

3.1.6 Notify PUCT of Recommended Transmission Projects

ERCOT will notify the PUCT of the disposition of all Tier 1 or 2 projects and of the designated TSPs for those projects. ERCOT will then support ERCOT-endorsed projects in future Certificate of Convenience and Necessity (CCN) proceedings required for those projects through the use of filed supporting documents and testimony if necessary.

ERCOT Planning Guide

Section 4: Transmission Planning Criteria

September 1, 2011

4 TRANSMISSION PLANNING CRITERIA

4.1 Introduction

(1) ERCOT employs both reliability criteria and economic criteria in evaluating the need for transmission system improvements. The economic criteria are included in Protocol Section 3.11.2, Planning Criteria. This Planning Guide provides the reliability criteria.

(2) The ERCOT System consists of those generation and Transmission Facilities (60 kV and higher voltages) that are controlled by individual Market Participants and that function as part of an integrated and coordinated system.

(3) To maintain reliable operation of the ERCOT System, it is necessary that all stakeholders observe and subscribe to certain minimum planning criteria. The criteria set forth herein, combined with the applicable North American Electric Reliability Corporation (NERC) Reliability Standards, constitute the aforementioned minimum planning criteria. Tests outlined herein shall be performed to determine conformance to these minimum criteria; however, ERCOT recognizes that events more severe than those outlined in these criteria could cause grid separation and other tests may also be performed.

(4) The complexity and uncertainty inherent in the planning and operation of the ERCOT System make exhaustive studies impracticable; therefore, to gain maximum benefit from the limited number of tests performed, the selection of the specific tests and the frequency of their performance will be made solely upon the basis of the expected value of the reliability information obtainable from the test.

(5) It is the responsibility of each Transmission Service Provider (TSP) to perform steady-state, short circuit and dynamic tests appropriate to ensure the reliability of its Transmission Facilities and implement appropriate solutions. Further, the TSP may recommend additional studies be performed by ERCOT or through the Reliability and Operations Subcommittee (ROS). Additional tests which may affect multiple TSPs or the ERCOT System as a whole may be studied. Upon consideration of such recommendations, ERCOT and the ROS shall coordinate the performance of such studies, as necessary, to assess the reliability of the planned ERCOT System.

(6) ERCOT in coordination with the TSPs shall determine and demonstrate the need for any static and/or dynamic Reactive Power capability in excess of the explicit requirements of the Protocols and Operating Guides that is necessary to ensure compliance with the planning criteria. ERCOT shall establish specific TSP responsibility for any associated facility additions.

(7) The base cases created by the Steady-State Working Group (SSWG), System Protection Working Group (SPWG), and ERCOT are available for use by Market Participants.

(8) If a TSP has its own planning criteria in addition to those defined in this Planning Guide, the TSP shall provide documentation of those criteria to ERCOT. ERCOT shall post the documentation on the Planning and Operations Information website. The TSP shall notify ERCOT of any changes to their planning criteria and provide revised documentation within 30 days of such change.

4.1.1 Reliability Criteria

4.1.1.1 Planning Assumptions

The Credible Single Contingency for Transmission Planning studies will be performed for reasonable variations of Load level, generation schedules, planned transmission line Maintenance Outages, and anticipated power transfers. At a minimum, this should include projected Loads for the upcoming summer and winter seasons and a five-year planning horizon. The TSPs involved should plan to resolve any unacceptable study results through the provision of Transmission Facilities, the temporary alteration of operating procedures (i.e., Remedial Action Plans (RAPs)), Special Protection Systems (SPSs), or other means as appropriate.

4.1.1.2 Performance Requirements for Credible Single Contingencies for Transmission Planning

Credible Single Contingencies for Transmission Planning as defined in Section 2.1, Definitions, of this Planning Guide, shall not result in the following:

(a) Cascading or uncontrolled Outages;

(b) Instability of Generation Resources at multiple plant locations; or

(c) Interruption of service to firm demand or generation other than that isolated by the Credible Single Contingency for Transmission Planning, following the execution of all automatic operating actions such as relaying and SPSs. Furthermore, the loss should result in no damage to or failure of equipment and, following the execution of specific non-automatic predefined operator-directed actions (i.e., RAPs), such as generation schedule changes or curtailment of interruptible Load, should not result in applicable voltage limits or thermal ratings associated with the Transmission Facility being exceeded.

4.1.1.3 Voltage Stability Margin

Voltage stability margin shall be sufficient to maintain post-transient voltage stability under the following study conditions for each ERCOT or TSP-defined areas:

(a) A 5% increase in Load above expected peak supplied from resources external to the ERCOT or TSP-defined areas; and NERC Category A or B operating conditions; and

(b) A 2.5% increase in Load above expected peak supplied from resources external to the ERCOT or TSP-defined areas and NERC Category C operating conditions.

4.1.2 ERCOT Application of NERC Standards for System Assessments

4.1.2.1 Category C

(1) Bus Section Definition - "Bus Section" shall be interpreted to mean any section of bus work, which would be isolated by normal relay/breaker operation when faulted.

(2) Manual System Adjustments Definition - "Manual System Adjustments" shall be interpreted to include only operator actions that:

(a) Would be made no later than one hour after clearing of the first fault;

(b) Are made using remote control capability or communications with other operators having such capability;

(c) Include circuit switching, changes in the schedules of Generation Resources operating at clearing of the first fault, and changes in the schedules of other Generation Resources that can contribute within one hour; and

(d) Exclude the physical repair or replacement of damaged equipment and the starting of any Generation Resource that cannot contribute within one hour.

(3) Planned Loss of Demand or Curtailed Firm Transfer Definition - All Load interruption, generator tripping, or generation schedule changes must be either automatic or prearranged with associated written operating procedures. Actions must be executable in time to avoid any equipment damage or safety violations, but in any case within 30 minutes of fault clearing.

(4) Cascading Outage Definition - Cascading Outages are defined as the uncontrolled loss of any system facilities or load, whether because of thermal overload, voltage collapse, or loss of synchronism, except those occurring as a result of fault isolation.

(5) Implementation Guidelines - Evaluation of all the possible combination of facility Outages under Category C is not required. Each TSP with bulk Transmission Facilities will evaluate one or more Category C contingencies annually. The contingencies selected may be based on the results of related studies or actual events. In either case, the selected contingencies must indicate more severe results or impacts based on the engineering judgment of the facility owner, ERCOT or any TSP. An explanation of why

any remaining contingencies would produce less severe system results shall be available as supporting information.

4.1.2.2 Category D

(1) For the purpose of evaluating the consequences resulting from a Category D event, a Large Load or Major Load Center is an electrical demand of between 50 and 500 MW. This may be a large single Load or a group of electrically close Loads. The loss of this demand will not include any other system elements other than those directly connected.

(2) Evaluations of Category D contingencies are not required to be performed annually. Evaluations should be performed for the following:

(a) Contingencies previously studied for which the conditions assumed in the study have changed significantly and which may adversely affect the results of the study; and

(b) Contingencies not previously studied that, based on the results of related studies or actual events may in the engineering judgment of the facility owner, ERCOT or any TSP, have unacceptable consequences.

ERCOT Planning Guide

Section 5: Generation Resource Interconnection or Change Request

March 1, 2012

5 GENERATION RESOURCE INTERCONNECTION OR CHANGE REQUEST

5.1 Introduction

(1) This Section 5, Generation Resource Interconnection or Change Request, defines the requirements and processes used to facilitate new or modified generation interconnections with the ERCOT System. The requirements outlined in this Section 5 are designed to:

(a) Determine the facilities required to directly interconnect new or modified generation to the ERCOT System;

(b) Ensure that the interconnection of the new or modified generation is accomplished in a manner that maintains the reliability of the ERCOT System and is in compliance with the North American Electric Reliability Corporation (NERC) Reliability Standards, Protocols, this Planning Guide and the Operating Guides;

(c) Increase the quality of communications between Interconnecting Entities (IEs), Transmission Service Providers (TSPs), and ERCOT;

(d) Provide for the best available information on future capacity additions for use in identifying, forecasting, and analyzing both short and long-range ERCOT capabilities, demands, and reserves; and

(e) Provide accurate initial data about the proposed Generation Resource to ERCOT to ensure that ERCOT and stakeholders have the information necessary for planning purposes.

(2) The requirements and processes in this Section 5 conform to all applicable Public Utility Commission of Texas (PUCT) rules, NERC Reliability Standards, Protocols, and provisions in this Planning Guide and the Operating Guides. In the event of a conflict between this Section 5 and any PUCT rules, NERC Reliability Standards, and the Protocols, then such PUCT rules, NERC Reliability Standards, or Protocols shall control.

5.1.1 Applicability

(1) The requirements in this Section 5, Generation Resource Interconnection or Change Request, are applicable, to the following:

(a) Any Entity proposing a new All-Inclusive Generation Resource, including a storage device, with an aggregate power output (gross Generation Resource output minus auxiliary Load directly related to the Generation Resource) of ten MW or greater, planning to interconnect to transmission in the ERCOT System; or

(b) Resource Entities that are seeking to:

(i) Upgrade the summer or winter Net Dependable Capability of an All-Inclusive Generation Resource by ten MW or greater within a single year;

(ii) Re-power an All-Inclusive Generation Resource of ten MW or greater; or

(iii) Change or add a Point of Interconnection (POI) of an All-Inclusive Generation Resource of ten MW or greater.

(2) Interconnection requirements for on-site Distributed Generation (DG) are not subject to this Section 5 but are addressed in P.U.C. SUBST. R. 25.211, Interconnection of On-Site Distributed Generation (DG), and P.U.C. SUBST. R. 25.212, Technical Requirements for Interconnection and Parallel Operation of On-Site Distributed Generation.

5.2 Generation Interconnection Process

The ERCOT generation interconnection process is designed in accordance with P.U.C. SUBST. R. 25.198, Initiating Transmission Service, which delegates to ERCOT the responsibility for implementing the transmission interconnection process.

5.2.1 Generation Interconnection or Change Request Application

(1) Any Entity seeking to interconnect a new All-Inclusive Generation Resource of ten MW or greater to the ERCOT System, upgrade the summer or winter Net Dependable Capability of an All-Inclusive Generation Resource by ten MW or greater within a single year, re-power an All-Inclusive Generation Resource of ten MW or greater, or change or add a Point of Interconnection (POI) of an All-Inclusive Generation Resource of ten MW or greater, as described in Section 5.1.1, Applicability, must submit the Resource registrations forms which are available on the ERCOT website and applicable fees described in Section 5.7.2, Interconnection Study Fees.

(2) All Generation Interconnection or Change Request (GINR) applications and supporting data submissions shall be delivered to ERCOT by standard mail, facsimile (fax), or email. Applications and supporting data shall be sent as discrete file attachments. The application with signature may be submitted in PDF form if desired but the supporting data shall be sent as a Microsoft Excel file attachment so that data may be easily extracted to reduce transcription errors.

(3) All GINR applications sent via email shall have the words “Generation Interconnection or Change Request” in the first line of the address field or in the subject field of an email request.

(4) The Interconnecting Entity (IE) shall include in the GINR application all information necessary to allow for timely development, design, and implementation of any electric system improvements or enhancements required by ERCOT and the Transmission

Service Provider (TSP) to reliably meet the interconnection requirements of the proposed Generation Resource. This information shall be of sufficient detail for use in determining transfer capabilities, operating limits (including stability), and planning margins to provide both reliability and operating efficiency as well as facilitating coordinated planning for future transmission system additions.

(5) ERCOT will notify the IE within seven Business Days through telephone call or email if the GINR application fails to include the applicable fees or the information that is necessary to perform the initial screening interconnection studies.

(6) If the IE fails to respond to ERCOT's inquiries within ten Business Days, the GINR will be deemed incomplete and rejected. ERCOT shall notify the IE if such condition occurs.

(7) Once the application has been deemed materially complete, ERCOT will date-stamp the application, add the interconnection request to the ERCOT interconnection list, and notify the IE of receipt of the completed application within ten Business Days. The IE should note that the date stamp is not a reservation of transmission capacity, either planned or unplanned.

(8) An ERCOT designated point of contact will be assigned to oversee the interconnection study process and answer questions concerning the interconnection screening study and process. Once assigned, the ERCOT designated point of contact will contact the IE and will be the primary ERCOT contact for interconnection studies. If during the course of the studies, additional information is needed by ERCOT from the IE, ERCOT will immediately notify the IE and the IE will have ten Business Days to answer the request for additional information without impacting the study timeline.

(9) Prior to the initial contact from the ERCOT designated point of contact, IEs should direct questions concerning the generation interconnection or change process to GINR@ercot.com. The IE should contact its assigned Wholesale Client Services Representative with any queries that are not related to the interconnection studies.

(10) If proposed Generation Resources that would use the same physical transmission interconnection are to be built in stages with in-service dates more than one year apart, each stage should be treated as a separate interconnection request but may be included in the same study.

5.2.2 Generation Interconnection or Change Request Submission Requirements

(1) In order to consider the GINR, a Security Screening Study Fee shall be submitted to ERCOT along with the GINR application as prescribed in Section 5.2.1, Generation Interconnection or Change Request Application. The Security Screening Study Fee is non-refundable. The IE may wire funds to ERCOT to comply with the fee requirements.

(2) For instructions on how to wire the funds to ERCOT, send an email to GINR@ercot.com requesting the account and wiring information.

(3) If submitting the payment via standard mail, please make the check payable to the Electric Reliability Council of Texas, Inc. Please contact GINR@ercot.com to alert ERCOT to this method of submission for the application.

(4) All standard mail submissions for the application, data, or fees shall be sent to the following address:

ERCOT, Inc.
ATTN: Generation Interconnection Request
System Planning
2705 West Lake Drive
Taylor, TX 76574-2136

(5) Submission of the application and data via email shall be addressed to GINR@ercot.com. All data for studies shall be submitted electronically.

(6) ERCOT will assign a unique name to all GINRs according to the following convention:

yrINRxxxxp

where: yr is the calendar year the generation is anticipated to be online

INR indicates interconnection request

xxxx is a sequence number beginning with 0001 (reset for each year)

p is an optional, sequential alphabetical identifier beginning with 'a' to be used for phased projects

(7) All correspondence relating to a specific GINR, security screening or Full Interconnection Study (FIS) shall reference the unique project identification number once it has been assigned by ERCOT.

5.3 Full Interconnection Study Request

(1) Any Interconnecting Entity (IE) seeking a Full Interconnection Study (FIS) for interconnection to the ERCOT System must submit the following to ERCOT:

(a) A Notice to proceed with the FIS;

(b) The Resource registration form (Excel spreadsheet) with applicable information required for interconnection studies as described in Section 6.8, Resource Registration Procedures;

(c) A Stability Modeling Fee as prescribed in Section 5.7.3, Stability Modeling Fee; and

(d) Proof of site control as described in Section 5.4.9, Proof of Site Control.

(2) Transmission Service Providers (TSPs) may charge additional fees for their interconnection studies.

(3) All FIS requests and supporting data submissions shall be delivered to ERCOT by email. The supporting data shall be sent as discrete file attachments.

(4) The IE shall include the associated project identification number (INR number) in the subject field of the email.

(5) The IE shall include in the FIS request all information necessary to allow for timely development, design, and implementation of any electric system improvements or enhancements required by ERCOT and the TSP to reliably meet the interconnection requirements of the proposed generation. This information shall be of sufficient detail for use in determining transfer capabilities, operating limits (including stability), and planning margins to provide both reliability and operating efficiency as well as facilitating coordinated planning for future transmission system additions.

(6) Upon receipt of the FIS request, the ERCOT designated point of contact will continue to be the primary ERCOT contact for the IE, ensuring Resource registration data is communicated to the TSP. The ERCOT designated point of contact will initiate a meeting between the TSP(s) and the IE. If during the course of the studies, additional information is needed from the IE, ERCOT will immediately notify the IE and the IE will have ten Business Days to answer the request for additional information without impacting the study timeline.

5.3.1 Full Interconnection Study Submission Requirements

(1) When an FIS is requested, a Stability Modeling Fee must be submitted to ERCOT as prescribed by Section 5.7.3, Stability Modeling Fee. The Stability Modeling Fee is non-refundable. The IE may wire funds to ERCOT to comply with the fee requirements.

(2) For instructions on how to wire the funds to ERCOT, send an email to GINR@ercot.com requesting the account and wiring information.

(3) If submitting the payment via standard mail, please make the check payable to the Electric Reliability Council of Texas, Inc. Please contact GINR@ercot.com to alert ERCOT to this method of submission for the application.

(4) Submission of the data via email shall be addressed to GINR@ercot.com. All design data shall be submitted electronically.

(5) The IE shall use the Resource registration form to submit planning study data and to reduce duplication/redundancy of forms. Key portions of the Resource registration form include, but are not limited to, the following tabs:

(a) Site information;

(b) Unit information;

(c) Reactive capability;

(d) Planning;

(e) Protection; and

(f) Subsynchronous resonance.

(6) The Resource registration form and all updates shall be submitted by the IE and sent to the assigned ERCOT designated point of contact and to GINR@ercot.com. ERCOT will forward this information along with a change report to the TSP(s) for use in the FIS. While the TSP may request information necessary to perform the FIS from the IE directly, the IE must provide this information to the TSP in order to facilitate the completion of the FIS in a timely manner. The IE must also contemporaneously submit to ERCOT an update to the Resource registration form containing the information.

(7) The planning submissions of the Resource registration form are considered planning data and should accurately reflect the design of the facility. Please note this process does not meet the Resource registration submissions requirements contained in the Protocols, but the use of this format is intended to facilitate the preparation of the data required for that process and the continuity of data between the interconnection study process and the data submitted for Resource registration.

5.3.2 Modifications to Request

(1) The IE shall maintain communication with ERCOT and the TSP at all stages of the generation interconnection process. The IE must also immediately notify both ERCOT and the TSP of any changes that would affect the technical attributes and/or timeline of the project, including, but not limited to the following elements:

(a) Capacity;

(b) In-service date;

(c) Location;

(d) Generator type;

(e) Interconnection agreement execution; and

(f) Air permit acquisition.

(2) The IE shall update the Resource registration form as soon as possible following any change to the proposed facility and shall submit the updated information to ERCOT and the TSP. On March 1 and September 1 of each year, any IE that has submitted an FIS request shall submit to ERCOT, for each proposed facility, an electronic copy of a

notarized attestation that, to the best of the attesting party's knowledge, the Resource registration form data are correct. The attestation shall be sent by email to GINR@ercot.com. This obligation to update continues even after any interconnection agreement is signed. IEs must immediately notify ERCOT and the relevant TSP(s) of any change in ownership and shall provide conclusive documentary evidence of the ownership change (such as a purchase/sale agreement).

(3) If, after receipt of the updated Resource registration form, ERCOT or the TSP determines that any subsequent changes to the project may affect the reliable operation of the ERCOT System or otherwise warrant new studies, then ERCOT may require additional studies to be performed before the proposed Generation Resource is allowed to interconnect to the ERCOT System. The IE and TSP(s) shall develop a schedule for completing the additional studies. The TSP shall provide the FIS studies to ERCOT and the other TSPs through the confidential email list. If these additional studies show that the project would not meet the operational standards specified in the Protocols, this Planning Guide, the Operating Guides, or Other Binding Documents, ERCOT may require the IE to demonstrate its compliance with these standards as a condition for energization of the proposed Resource.

(4) If the IE increases the requested amount of capacity of the proposed Generation Resource by more than 20% of the amount requested in the screening study, ERCOT shall require the IE to submit a new GINR for the additional capacity or for the entire project. ERCOT may, at its discretion, require the IE to submit a new GINR for significant capacity decreases or capacity increases of less than 20%, particularly if other changes to the request are also made, such as changes to the in-service date. ERCOT's determination as to whether new studies are needed in no way affects the ongoing obligations of the IE and TSP to comply with North American Electric Reliability Corporation (NERC) Reliability Standards, Protocols, this Planning Guide and the Operating Guides.

(5) The IE shall notify ERCOT of the status of any applicable Texas Commission on Environmental Quality (TCEQ) air permits. The IE shall also notify ERCOT and the TSP of any relevant change in the status of any permit application, including issuance of the permit or delay in receiving the permit. The IE shall notify ERCOT when it has given the TSP Notice to proceed with the FIS.

5.4 Study Processes and Procedures

5.4.1 Security Screening Study

(1) For each Generation Interconnection or Change Request (GINR), ERCOT will conduct a steady-state Security Screening Study, including power-flow and transfer studies, based on the expected in-service year to identify potential generation dispatch limitations based on the site proposed by the Interconnecting Entity (IE). The Security Screening Study is a high level review of the project and generally includes a number of initial assumptions from both ERCOT and the IE. In accordance with P.U.C. SUBST. R. 25.198, Initiating Transmission Service, ERCOT will establish the scope of the Security Screening Study.

(2) The results of this study will provide an indication of the level at which the proposed Generation Resource can expect to operate simultaneously with other known Generation Resources in the area before significant transmission additions or enhancements may be required. During the course of this study, ERCOT may consult with the affected Transmission Service Provider(s) (TSP(s)), if needed, to identify the most efficient means of providing transmission service.

(3) During the Security Screening Study phase of the GINR process, and in accordance with the Protocols, all data, documents, and other information required by ERCOT from an IE related to a request for GINR are considered Protected Information pursuant to Protocol Section 1.3.1.1, Items Considered Protected Information, to the extent that such information is not otherwise publicly available. Accordingly, ERCOT shall not publicly release any of the protected data, documents, or other information during the Security Screening Study phase except to TSPs. Information about GINRs in the Security Screening Study phase will only be released publicly in aggregated amounts.

(4) Upon completion of the Security Screening Study, ERCOT will present the IE with a preliminary report indicating future transmission additions or enhancements that may be required to accommodate the proposed additional generation or Generation Resource modification at the specified in-service year. This report will inform the IE about any additional transmission improvements estimated to be required for the continued security and reliability of the ERCOT System. This report does not imply any commitment by ERCOT or any TSP to recommend or construct these transmission additions or enhancements.

(5) Within 180 days of the date ERCOT notifies the IE of the Security Screening Study results, the IE must notify ERCOT in writing of its desire to pursue a Full Interconnection Study (FIS), or the GINR will be withdrawn. ERCOT will notify the TSP(s) and will begin initiation and coordination of the FIS only after receiving this Notification from the IE.

(6) After the expiration of the 180-day period, an IE must submit a new GINR for a Security Screening Study and must again pay the appropriate fee. The IE will also be required to submit any updates or changes in the project's data to ERCOT.

5.4.2 Full Interconnection Study

(1) An FIS consists of the set of steady-state, dynamic, short-circuit, and facility studies that are necessary to determine whether additional Transmission Facilities are needed to reliably interconnect the new or modified Generation Resource to the ERCOT System. The FIS is not intended to determine the deliverability of power from the proposed Generation Resource to market or the facilities required to ensure that the proposed Generation Resource does not experience any congestion-related curtailment.

(2) The IE must provide the appropriate Stability Modeling Fee and proof of site control.

(3) The IE can decide to request an FIS at any time after ERCOT deems the initial GINR application complete and before the completion of the Security Screening Study. Requesting both studies at the same time may shorten the overall time to complete the GINR process due to overlap of work on both studies.

(4) A confidential email list, known as the Transmission Owner Generation Interconnection email list, will be set up to facilitate communication of confidential GINR-related information among TSP(s) and ERCOT. Membership to this email list will be limited to ERCOT and appropriate TSP personnel.

5.4.2.1 Full Interconnection Study Process Overview

(1) Within five Business Days of receiving Notice to proceed with an FIS, proof of site control and the correct fee(s) from the IE, ERCOT will designate a TSP to lead the FIS and will contact that TSP to schedule an FIS scope meeting. ERCOT will select the lead TSP based upon a preliminary analysis of the most likely Point of Interconnection (POI). If an IE has previously developed a generation project in ERCOT with the selected TSP, the IE, ERCOT, and the TSP may agree to forgo the scope meeting. If they so agree, the timeline for the IE and TSP to reach agreement on the FIS scope will start on the date ERCOT notifies the TSP of the IE's decision to proceed with the FIS.

(2) ERCOT will promptly send Notification of the FIS to all other TSP(s) via the confidential Transmission Owner Generation Interconnection email list. It is the responsibility of each TSP to determine if the proposed project would have a material impact on its Transmission Facilities and to decide whether and to what extent it should participate in the FIS.

(3) Each TSP desiring to participate in the FIS shall promptly notify the lead TSP. The lead TSP must include all interested TSPs in the FIS to the extent such involvement is reasonable.

(4) At the FIS scope meeting, the IE will present the proposed GINR and ERCOT will review the results of the Security Screening Study. The lead TSP will facilitate a general discussion of the preliminary study scope of work for the FIS.

(5) The IE and the TSP(s) must reach agreement on the FIS scope within 60 days of the FIS scope meeting. The assistance of more than one TSP may be required in areas where Transmission Facilities are provided by multiple TSPs. In these cases it may be necessary for the IE to execute study agreements with multiple TSPs

(6) The FIS scope agreement must include all assumptions, timetables, study cost estimates and payment schedules, and the determination of all requirements for interconnection. The FIS must include all studies required by this section. The IE and the TSP(s) shall consider the Security Screening Study and other preliminary studies and documents provided by the IE when developing the FIS scope. The IE and TSP(s) may divide the FIS into distinct study phases, each requiring IE approval to proceed.

(7) The TSP(s) shall send the FIS scope to the confidential Transmission Owner Generation Interconnection email list for review and comment by ERCOT and other TSP(s). Comments must be made within ten Business Days.

(8) If the IE and TSP(s) cannot agree to the FIS study scope within the 60-day period, ERCOT will attempt to mediate an agreement. If mediation is unsuccessful, ERCOT will consider whether the IE's GINR should be terminated. If the request is terminated, the IE will be required to file a new GINR and pay all appropriate fee(s) for any new generation project.

5.4.2.2 Full Interconnection Study Elements

(1) The FIS consists of a series of distinct study elements. The specific elements that will be included in a particular FIS will be stated in the FIS study scope agreement. The primary purpose of the FIS is to determine the most effective and efficient manner in which to achieve the proposed GINR while continuing to maintain the reliability of the ERCOT System by ensuring compliance with all North American Electric Reliability Corporation (NERC) Reliability Standards, Protocols, this Planning Guide and the Operating Guides. The scenarios and base cases being used for these studies to determine potential transmission limitations will be documented in the FIS study scope.

(2) Each proposed All-Inclusive Generation Resource that requires a separate physical transmission interconnection will be treated as an individual study to be analyzed separately from all other such requests unless otherwise agreed by the IE and TSP(s) in the interconnection study scope agreement.

(3) The FIS process includes developing and analyzing various computer model simulations of the existing and proposed ERCOT generation/transmission system. The results from these simulations will be utilized by the TSP(s) to determine the impact of the proposed interconnection.

(4) The TSP(s) will also examine normal transmission operations as well as potentially adverse, or contingency, conditions in order to identify and analyze the reliability and effectiveness of various interconnection design alternatives in alleviating or mitigating any undesirable performance of the interconnection under a variety of operating conditions. The study should include analysis demonstrating the adequate reliability of any temporary interconnection configurations.

(5) In comparing interconnection alternatives, the TSP(s) will consider such information as interconnection cost and construction schedule, impact to short and long-range reliability, operational flexibility, and compatibility with future transmission plans. The TSP(s) may consider interconnection alternatives not suggested by the IE.

(6) The TSP(s) may reserve the right to update the final FIS report to reflect changes to the ERCOT System (i.e. new Standard Generation Interconnection Agreements (SGIAs)) after the report is completed and before the SGIA is executed.

(7) All studies undertaken will be performed in compliance with all applicable Public Utility Commission of Texas (PUCT) rules, NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides, Good Utility Practice, and the guidelines below unless otherwise directed by ERCOT.

5.4.3 Steady-State Analysis

(1) The steady-state interconnection study base case shall be created from the most recently approved Steady State Working Group (SSWG) base case. TSP(s) or ERCOT may remove any future (currently nonexistent) facility from the steady-state interconnection study base case if either determines that the facility may significantly affect the interconnection study results and the facility has not already undergone appropriate review by the Regional Planning Group (RPG). In addition, ERCOT and TSP(s) may include other publicly disclosed GINRs in the steady-state interconnection study base case. ERCOT may request a list of the interconnection requests included in the FIS by the TSP(s).

(2) The TSP(s) shall perform contingency analyses as required by the NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides and identify any additional facilities that may be necessary to ensure that expected system performance conforms to these standards. All facilities necessary to reliably interconnect the proposed generation will be determined and clearly identified in the report for this part of the FIS. Any other facility that cannot be constructed or otherwise completed in time to accommodate the initial commercial operations date of the generation will be identified and reported to the IE along with any likely limitations of generation output that may result.

(3) Loss-of-generation analyses shall assume that the lost generation will be replaced from all remaining Generation Resources in proportion to their nominal capacity (i.e., inertial response), and shall consider the generation limit of each Generation Resource.

(4) The lead TSP is responsible for completing an analysis of any contingency events or Outages that could result in a violation of the NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides, regardless of which TSP owns the facilities involved. The results of this analysis will be shared with TSP(s) that have facilities involved in planning criteria violations and those affected TSP(s) will be responsible for attempting to verify the validity of the anticipated violations.

5.4.4 System Protection (Short-Circuit) Analysis

(1) The FIS scope agreement will specify locations where available short-circuit fault duty will be identified, calculated, and documented.

(2) If any of the required transmission system improvements associated with the GINR result in violations of the TSP's short circuit criteria, the TSP shall plan and provide facilities to address such violations. The TSP will determine the maximum available fault currents at

the interconnection substation for determining switching device interrupting capabilities and protective relay settings.

5.4.5 Dynamic and Transient Stability (Unit Stability, Voltage, Subsynchronous Resonance) Analysis

(1) At the discretion of the TSP(s) or ERCOT, the TSP will perform transient stability studies if necessary to meet NERC Reliability Standards, Protocols, this Planning Guide or the Operating Guides applicable to the Generation Resource or the ERCOT System.

(2) If the TSP(s) in charge of these stability studies decides not to conduct the studies, the TSP(s) must provide a written justification in lieu of the study report. When performing such studies, all existing or publicly committed Generation Resource in the area of the study will normally be represented at full net output, although some Combined Cycle Generation Resources or coal plants might be modeled at full gross output (including auxiliary load). Any resulting increase in generation will be balanced as addressed in the FIS scope agreement.

(3) Stability study base cases shall be formed from the latest available approved SSWG base cases consistent with the most recently approved Dynamics Working Group (DWG) stability data base. The initial transmission configuration in the area of study included in a stability study base case shall be identical to that used in the steady-state studies of the same period. Any previously identified transmission improvements that will not be in service prior to the in-service date of the proposed Generation Resource shall not be included in the stability study base case.

(4) Transient stability studies will analyze the performance of the proposed Generation Resource and the ERCOT System in terms of angular stability, voltage stability and excessive frequency excursions. Additional studies may include small signal stability, subsynchronous resonance or critical clearing time analyses where the number of cycles for which a transmission line can sustain a fault without causing loss of synchronism of any of the Resource is compared to the response of the protection systems. Such studies should incorporate reasonable and conservative assumptions regarding plant operating conditions. Proposed analyses shall be identified and defined in the FIS scope agreement.

(5) All stability studies shall be performed in accordance with NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides, and the results shall identify any additional facilities or other action(s) necessary to ensure conformance with that standard.

5.4.6 Facility Study

(1) At a minimum, the facility study provides complete details and estimated cost of the facility requirements for the direct interconnection of the proposed Generation Resource project to the TSP.

(2) The facility study will provide conceptual design descriptions, construction milestones, and detailed cost estimates for all direct interconnection-related transmission and substation facilities proposed to be installed in accordance with the findings and recommendations of the FIS.

5.4.7 Economic Study

(1) ERCOT shall perform an independent economic analysis of the transmission projects that are identified through this process as being needed for the direct connection of the proposed Generation Resource and that are expected to cost more than $25,000,000. This economic analysis is performed only for informational purposes, and no ERCOT endorsement will be provided.

(2) If the lead TSP determines that the costs of the recommended direct interconnection facilities for the proposed Generation Resource are expected to exceed $25,000,000, the lead TSP will communicate this finding to ERCOT and other TSP(s) via the confidential Transmission Owner Generation Interconnection email list within ten Business Days of such determination. This communication will include all available information upon which that finding is based, including but not limited to:

(a) A description of the direct interconnection facilities;

(b) Information necessary to modify a power-flow case to include those facilities;

(c) Any information obtained from the IE that would be helpful in modeling the proposed Generation Resource for the study; and

(d) The estimated cost of the facilities.

(3) The IE shall provide to ERCOT any requested information necessary to accurately represent the Generation Resource in the economic study.

(4) ERCOT will generally complete this economic study within 90 days, and will inform the TSP(s) and IE if additional time is required. ERCOT will provide the results of the economic study to the IE and to the TSP(s) via the confidential "Transmission Owner Generation Interconnection" email list.

5.4.8 FIS Study Report and Follow-up

(1) The TSP(s) will present a preliminary report of its findings and recommendations for each of the study elements to ERCOT, to the IE and to the other TSP(s) via the confidential Transmission Owner Generation Interconnection email list.

(2) Any questions, comments, proposed revisions, or clarifications by any party shall be made in writing to the TSP(s) within ten Business Days after the issuance of each study report, which may cover one or more study elements. ERCOT can extend this review

period by an additional 20 Business Days by notifying the affected TSP(s) and the IE that it needs additional time to review the report.

(3) After considering the information received from ERCOT and other TSPs, the study element(s) report will be deemed complete and a final report shall be provided to the IE, ERCOT, and all TSPs. The ten Business Day review period will be used by ERCOT to determine if any transmission upgrades proposed and clearly identified in the Steady-State Study Report need to be submitted to the RPG review process. Section 3.11, Transmission Planning, of the Protocols provides more information on the process to review transmission upgrades that are unrelated to the direct connection of new or modified generation.

(4) The TSP issuing the final FIS element report shall indicate that the report is the final report required by the FIS. At the end of the ten Business Day review period following the issuance of the final FIS element report, the FIS will be deemed complete and the IE and TSP may execute an SGIA. If an economic study of the direct interconnection facilities is required, pursuant to Section 5.4.7, Economic Study, and has not yet been completed, the IE and TSP may agree that the completion of the economic study is not required before the FIS is deemed complete.

(5) Should the IE wish to proceed with the proposed GINR, the IE must execute an SGIA with the respective TSP within 180 days following the completion of the FIS (includes all major study element reports).

(6) If during the time after the FIS is completed, and before the SGIA is executed, changes occur that substantially differ from the assumptions used for the FIS, ERCOT and the TSP(s) shall determine the impact of the changes on the results of the FIS. All changes should be submitted to ERCOT on the Resource registration form for a change comparison. If the proposed direct interconnection is negatively affected by the changes, the TSP(s) will make appropriate modifications to the FIS.

5.4.9 Proof of Site Control

(1) Before ERCOT will proceed with the initiation of an FIS, the IE must submit to ERCOT proof of site control. To establish proof of site control, the IE must demonstrate through an affiliated company, through a trustee, or directly in its name that:

(a) The IE is the owner in fee simple of the real property to be utilized by the facilities for which any new generation interconnection is sought;

(b) The IE holds a valid written leasehold interest in the real property to be utilized by the facilities for which new generation interconnection is sought;

(c) The IE holds a valid written option to purchase or obtain a leasehold interest in the real property to be utilized by the facilities for which new generation interconnection is sought; or

(d) The IE holds a duly executed written contract to purchase or obtain a leasehold interest in the real property to be utilized by the facilities for which new generation interconnection is sought.

(2) The IE must notify ERCOT of any substantive change in status of the arrangement used to demonstrate site control.

(3) The IE must maintain site control throughout the duration of the FIS and until execution of an SGIA. Otherwise, ERCOT will consider the GINR withdrawn as of the date of the loss of site control unless the applicant can show within 30 days that it has re-established site control or has established control of a new site that would not result in any material modification of any interconnection study requested under the current application.

5.4.10 Confidentiality

(1) Once an FIS is requested by the IE, in accordance with Protocol Section 1.3.1.2, Items Not Considered Protected Information, the following information about the potential project will become public:

(a) Project identification number (INR Number) (the unique name assigned according to Section 5.2.2, Generation Interconnection or Change Request Submission Requirements);

(b) Facility nameplate capacity;

(c) Anticipated in-service date;

(d) Facility fuel type; and

(e) County where facility is located.

(2) All other data, documents or other information regarding the GINR, including the identity of the IE, will remain Protected Information until ERCOT receives written Notice from the IE that this information may be made public or until an SGIA is executed. Since the FIS scope agreement contains possibly confidential cost estimates and represents an agreement between the IE and the lead TSP, it will remain Protected Information and will not be released to parties other than those who are members of the confidential Transmission Owner Generation Interconnection email list except as required in a court of law or by regulatory authorities having jurisdiction. Once classified as a public project through one of these steps, ERCOT will post on the ERCOT website the project description, all FIS reports, the results of the economic analysis of direct interconnection facilities costing over $25,000,000, and any information developed throughout the interconnection study process about transmission improvement projects that may be submitted for RPG review as a result of the new generation.

(3) The lead TSP will notify the RPG email list within ten Business Days of the signing of an SGIA when the cost of the direct interconnection facilities is greater than $25,000,000.

5.5 Interconnection Agreement

5.5.1 Standard Generation Interconnection Agreement

(1) If the Interconnecting Entity (IE) decides to proceed with the construction and completion of the proposed generation project and interconnection within the 180-day period following the completion of the Full Interconnection Study (FIS), it shall execute a Standard Generation Interconnection Agreement (SGIA) with its respective Transmission Service Provider (TSP) as a condition for obtaining transmission service, as required by P.U.C. SUBST. R. 25.195, Terms and Conditions for Transmission Service. The IE and the TSP shall use the SGIA. A template of the SGIA can be found on the ERCOT website.

(2) Before an SGIA is signed, all studies included in the FIS scope must be completed, unless mutually agreed by the IE and the TSP. The IE and TSP must meet and maintain compliance with all North American Electric Reliability Corporation (NERC) Reliability Standards, Protocols, and the requirements of this Planning Guide and the Operating Guides concerning interconnection.

(3) ERCOT does not participate in the IE's and TSP's negotiation of the SGIA. The TSP must transmit a copy of the signed SGIA to ERCOT within ten Business Days of execution and to the Public Utility Commission of Texas (PUCT) within 30 days of execution. The IE should also provide ERCOT with the status of its air permits when it receives an air permit for its project, and should notify ERCOT when it gives the TSP the Notice to proceed.

5.5.2 Other Arrangements for Transmission Service

In certain situations, the IE and the TSP may agree to allow the TSP to begin design or construction of facilities prior to the execution of the SGIA, or to allow the IE to delay issuing a Notice to proceed until sometime after the SGIA is signed. The TSP shall submit documentation of any alternative arrangements of this type to ERCOT within ten Business Days of executing the alternative arrangement.

5.5.3 Provisions for Municipally Owned Utilities and Cooperatives

(1) A Municipally Owned Utility (MOU) or Electric Cooperative (EC) developing a proposed Generation Resource that will interconnect to its own transmission system is not required to execute an SGIA. However, an MOU or EC must execute an SGIA if its proposed Generation Resource would interconnect with another TSP's facilities.

(2) A letter from a duly authorized official from the MOU or EC confirming the Entity's intent to construct and operate the proposed Generation Resource will be deemed by ERCOT to be sufficient as a public commitment by the MOU or EC and will have the same impact as an SGIA for all purposes.

5.6 Compliance with Operational Standards

As permitted by paragraph (3) of Protocol Section 16.5, Registration of a Resource Entity, if at any time before initial synchronization of an All-Inclusive Generation Resource, ERCOT reasonably determines that the Resource may violate operational standards established in the Protocols, this Planning Guide, the Operating Guides, and Other Binding Documents, ERCOT may require the affected Resource Entity to demonstrate to ERCOT's reasonable satisfaction that the Generation Resource can comply with these standards before the Generation Resource is permitted to synchronize. ERCOT may refuse to allow synchronization of an All-Inclusive Generation Resource if the Resource Entity cannot demonstrate that the Generation Resource can comply with these standards.

5.7 Interconnection Data, Fees, and Timetables

5.7.1 Generation Resource Data Requirements

(1) The Interconnecting Entity (IE) shall submit with its Generation Interconnection or Change Request (GINR) the most current actual facility information (generation, substation, and transmission/subtransmission if applicable) or best available expected performance data for the physical and electrical characteristics of all proposed facilities (in sufficient detail to provide a basis for modeling) up to the Point of Interconnection (POI) with a Transmission Service Provider (TSP).

(2) Failure to supply the required data may delay ERCOT processing of the interconnection application and studies. Recommendations resulting from these studies that are based on outdated, false, or bad data may adversely affect the safety and reliability of the ERCOT System and can result in damage to generation or transmission equipment. The IE and subsequently, the Resource Entity associated with any approved Generation Resource, must promptly submit any updates to ERCOT to ensure the long-term adequacy, reliability, and safety of the ERCOT System, as required by the Protocols, this Planning Guide, the Operating Guides, and North American Electric Reliability Corporation (NERC) Reliability Standards. Failure to comply may result in financial penalties.

(3) In an effort to produce the best available Security Screening Study and Full Interconnection Study (FIS), ERCOT suggests that IEs begin collecting all appropriate engineering and equipment data from manufacturers as soon as the IE selects its major equipment for the proposed project.

(4) While the duty to update data may require additional information, at a minimum, the IE should submit the following data and information to be provided to ERCOT at each step of the process:

(a) Application and Security Screening Study:

(i) Generation Resource Information Sheet; and

(ii) Generation Interconnection Screening Study Request Data Sheet.

(b) FIS:

(i) Updates to the above information (if necessary);

(ii) Applicable information required for interconnection studies as described in the Resource registration form instructions in all tabs applicable to the Generation Resource type within the Resource registration form;

(iii) Provision of the appropriate dynamic model for the proposed Generation Resource (some standard dynamic model forms are posted on the ERCOT website);

(iv) If alternative models are required to appropriately represent the proposed Generation Resource, an alternative model may be provided by the IE, subject to verification by the lead TSP and ERCOT; and

(v) In order to perform stability (transient and voltage) analyses, the IE shall provide unit stability information and data to the TSP(s) and ERCOT. The Dynamics Working Group Procedural Manual contains more detail and IE dynamics data requirements. Data submitted for transient stability models shall be compatible with ERCOT standard models (Siemens/PTI PSS/E and Powertech Labs Inc TSAT, VSAT and SSAT). If no compatible model exists, the IE shall work with a consultant or software vendor to develop and supply accurate/appropriate models along with other associated data. These models shall be incorporated into the standard model libraries of both software packages. It is recommended that generation owners and developers encourage manufacturers and software vendors to work together to develop and maintain these important models.

(c) Prior to start of construction:

(i) Any significant design changes in the generator(s) or main power transformer(s) of the proposed Generation Resource shall be provided to ERCOT and the TSP to ensure compatibility with the existing transmission system.

(d) Prior to commercial service:

(i) Registration and official Resource registration form submittal;

(ii) Updates to Resource registration form information based on “as-built” or “as-tested” data in all cases; and

(iii) Proof of meeting ERCOT requirements (reactive, low-Voltage Ride-Through (VRT) standards, stability models, Power System Stabilizer (PSS)).

(e) During continuing operations:

(i) The IE shall provide ERCOT and the TSP with any equipment data changes which result from equipment replacement, repair, or adjustment. Unless otherwise required in the Protocols, this Planning Guide or the Operating Guides, the IE shall provide such data to ERCOT and the TSP no later than 60 days prior to the date of the actual change in equipment characteristics or during annual data update filings whichever occurs first. This requirement shall also apply to all future owners throughout the service life of the project/plant.

5.7.2 Interconnection Study Fees

(1) P.U.C. SUBST. R. 25.198, Initiating Transmission Service, states in part that the customer requesting transmission service shall be responsible for all costs associated with the completion of the Security Screening Study and the FIS.

(2) The ERCOT Security Screening Study fee is a non-refundable fee associated with each specific interconnection request. The amount of this fee is listed in the ERCOT Fee Schedule of the Protocols. The appropriate Security Screening Study fee must be remitted for each GINR (i.e., each individual interconnection location, in-service date, and additional Generation Resource capacity at this specific interconnection location) at the time the application is submitted to ERCOT.

(3) The check should be made payable to the Electric Reliability Council of Texas, Inc.

5.7.3 Stability Modeling Fee

(1) The ERCOT Stability Modeling Fee is a non-refundable fee based on the MW of additional installed capacity and is paid directly to ERCOT when an FIS is requested. The amount of this fee is listed in the ERCOT Fee Schedule of the Protocols.

(2) This fee will reimburse ERCOT for the development of stability software models for each proposed Generation Resource and allow for continually updating current models as new equipment changes are made. The check should be made payable to the Electric Reliability Council of Texas, Inc.

(3) Payment of the Stability Modeling Fee to ERCOT does not release an IE from its obligation to provide ERCOT accurate and appropriate stability software models and data (including load data) for each of its proposed generation plants.

5.7.4 Full Interconnection Study Fee/Cost

(1) The FIS fee/cost shall be paid directly to the TSP(s) completing the studies associated with the FIS by the IE. The fee/cost will be agreed on and specified in the study scope

agreement. The TSP(s) shall directly invoice the IE for the reasonable costs associated with undertaking and completing the FIS.

(2) ERCOT recommends that the Generation Resource and the TSP provide for a payment methodology and include a cancellation provision in the FIS scope agreement.

(3) If the IE cancels the proposed Generation Resource during the term of the FIS, the IE is required to immediately notify ERCOT and the lead TSP. The lead TSP should immediately notify any other TSPs that may be participating in the study, via the confidential Transmission Owner Generation Interconnection email list.

(4) The IE is responsible for all costs associated with any work performed or non-cancelable commitments made prior to notifying ERCOT and the TSP(s) of the termination date of the project. ERCOT highly recommends the TSP(s) receive the study fee before proceeding with work.

5.7.5 Interconnection Process Timetables

(1) P.U.C. SUBST. R. 25.198, Initiating Transmission Service, provides deadlines for ERCOT and TSP(s) to complete and report on the required interconnection studies provided that the IE submits all required data and appropriate fee(s). Therefore, the IE must ensure that ERCOT and the TSP(s) performing these studies receive all required data in order to establish reasonable study models and assumptions that provide meaningful results and recommendations for interconnecting the proposed generating project.

(2) Because the FIS is generally the critical path item in the GINR process, ERCOT recommends that a timetable for the FIS be developed and included in the study scope agreement. In addition, major improvements to the transmission system resulting from interconnection requests should be identified as early in the process as possible so project validity can be considered before the parties go forward with extensive interconnection studies. Once the FIS is underway, the parties may determine whether an adjustment to the original estimated completion date is necessary. Should a schedule adjustment become necessary, the parties must provide Notice to ERCOT and the TSP(s) as soon as practicable, indicating the revised expected completion date.

(3) The following timetable complies with P.U.C. SUBST. R 25.198. It is intended to serve as a guideline only and the times stated are not requirements unless stated elsewhere in this section. If the number of days shown is less than 30, these are Business Days; if the number of days shown is 30 days or more, these are calendar days.

Task	Responsible Entity	Time Required to Complete (Days)
Acknowledgement of GINR Application	ERCOT	1 to 10
Notification of Additional Information Needed to	ERCOT	1 to 15

Task	Responsible Entity	Time Required to Complete (Days)
Complete Application		
Perform Security Screening Study (after application is deemed complete)	ERCOT	10 to 90
Decision to Pursue FIS (following issuance of Security Screening Study by ERCOT)	IE	Up to 180
Develop Scope Agreement for FIS (following IE's Notification to ERCOT of desire for FIS and remittance of appropriate fees)	IE, ERCOT, and TSP(s)	Up to 60
Perform FIS (following agreement on scope)		40 to 300
Steady-State and Transfer Analysis	TSP(s)	10 to 90
System Protection Analysis (following Steady-State Analysis)	TSP(s)	10 to 30
Dynamic and Transient Stability Analysis (following System Protection Study)	TSP(s)	10 to 90
Facility Study	TSP(s)	10 to 90
Study Report Review and Acceptance (following issuance of FIS)	IE, ERCOT, and TSP(s)	10 to 15
Negotiate and Execute SGIA (following acceptance of FIS)	IE and TSP	180

5.8 GENERAL AND TECHNICAL STANDARDS

5.8.1 Other Standards

The North American Electric Reliability Corporation (NERC) Reliability Standards, the Protocols, this Planning Guide and the Operating Guides also contain provisions that apply to Generation Resources.

5.8.2 Transformer Tap Position

The Interconnecting Entity (IE) will contact the Transmission Service Provider (TSP) providing the interconnection before the main power transformers are placed into service and will work with the TSP to select the tap position on the main power transformers. The Generation Resource will confirm the use of this tap position with the TSP and ERCOT. The main power transformer will be considered the step-up to the transmission level voltage of the interconnection.

ERCOT Planning Guide

Section 6: Data/Modeling

August 1, 2012

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6 DATA/MODELING

6.1 Steady-State Model Development

(1) To adequately simulate steady-state system conditions, it is necessary to establish and maintain steady-state data and simulation ready study cases in accordance with the Steady State Working Group Procedure Manual. These case models, known as steady-state base cases, shall contain appropriate equipment characteristics and system data, and shall represent projected system conditions that provide a starting point for each required season and year.

(a) The Annual Planning Model base cases, which represent the annual peak load conditions, as prescribed in Protocol Section 3.10.2, Annual Planning Model, shall be developed annually, updated on a quarterly basis, and may be updated as needed on an interim basis. Each Annual Planning Model base case, quarterly updates, and interim updates shall be posted on the Market Information System (MIS) Secure Area and the Planning and Operations Information website to ensure availability of the most accurate steady-state base cases.

(b) Additional steady-state base cases, such as seasonal base cases, shall also be developed annually, updated on a quarterly basis, and may also be updated as needed on an interim basis. These derivative base cases, quarterly updates, and interim updates shall be posted on the Planning and Operations Information website to ensure availability of the most accurate steady-state base cases.

(c) Interim updates that are posted as described in paragraphs (1)(a) and (1)(b) above shall be in the form of a Power System Simulator for Engineering (PSS/E) formatted incremental change file.

(d) All steady-state base cases and incremental change files on the MIS Secure Area and Planning and Operations Information website shall be available for use by Market Participants.

(e) The Steady State Working Group Procedure Manual describes each base case that is required to be built. The schedule for posting all steady-state base cases shall be made available on the MIS Secure Area.

(2) Transmission Service Providers (TSPs) and ERCOT shall develop the steady-state base cases. The steady-state base cases are derived from the Network Operations Model to ensure consistency of key characteristics, including Ratings, impedance and connectivity for Transmission Facilities that are common between the Network Operations Model and each steady-state base case. Minor differences between the models will occur for several reasons. For example:

(a) The Network Operations Model is converted from a “breaker, switch, and AC line segment” convention to an equivalent steady-state base case “bus and branch” convention. This conversion reduces the number of breakers/switches that may

be included in the steady-state base case model and may combine buses separated by breakers/switches in the Network Operations Model.

(b) Additional detailed modeling may be added to the converted Network Operations Model for planning purposes.

(c) Future projects are added to the converted Network Operations Model that do not exist in the Network Operations Model past the model build date used to extract a snapshot from the Network Operations Model.

(3) Using the Network Model Management System (NMMS), ERCOT and TSPs shall create steady state models that represent current and planned system conditions from the following data elements:

(a) Each TSP, or its Designated Agent, shall provide its respective transmission network steady-state model data, including load data.

(b) ERCOT shall utilize the latest available Resource Entity and Private Use Network model data submitted to ERCOT by the Resource Entity and the Private Use Network owners through the Resource registration process.

(c) ERCOT shall utilize available complete model data for future Generation Resources once ERCOT receives a signed Standard Generation Interconnection Agreement (SGIA) or public, financially-binding agreement between the generator and TSP under which the proposed Facilities of Generation Resource would be constructed or a letter from a duly authorized official from the Municipally Owned Utility (MOU) or an Electric Cooperative (EC) confirming the Entity's intent to construct and operate the proposed Generation Resource.

(d) ERCOT shall determine the operating state of Generation Resources (MW, MVAr) using a security-constrained economic dispatch tool.

(e) ERCOT shall determine the import/export levels of asynchronous transmission interconnections based on historical data.

6.2 Dynamics Model Development

(1) To adequately simulate dynamic and transient events in the ERCOT System, it is necessary to establish and maintain dynamics data and simulation-ready study cases representing the dynamic capability and frequency characteristics of machines and equipment connected to the ERCOT System.

(2) Dynamics data is the network data and mathematical models required in accordance with the Reliability and Operations Subcommittee (ROS)-approved Dynamics Working Group Procedure Manual for simulation of dynamic and transient events in the ERCOT System.

(3) For Resource Entities, dynamics data includes the data needed to represent the dynamic and transient response of Resource Entity-owned devices and/or Loads including but not limited to generating units, plants, and other equipment when connected to the ERCOT System including the data for any privately owned transmission system or collection system used to connect the Resource to the ERCOT System.

(4) For Transmission Service Providers (TSPs), dynamics data needed to represent the dynamic and transient capability of TSP-owned devices including but not limited to Load shedding relays, protective relays, FACTS devices (e.g., DVARS, SVC, STATCOM, SMES), Direct Current Ties (DC Ties), variable-frequency transformers automatically switched shunts, and transformers with automatic load tap changers.

(5) All dynamics data must be compatible with the current version of the planning model software as described in the Dynamics Working Group Procedure Manual.

(6) The Facility owner shall provide appropriate dynamics data to ERCOT including the data for a planned Facility.

(7) Dynamics data for a planned Facility will be updated by the Facility owner upon completion of the design for the Facility.

(8) Updated dynamics data for an existing Facility shall be provided to ERCOT when field tests, inspections, or other information demonstrates that the dynamics data should be changed to accurately represent the dynamic characteristics of the Facility.

(9) Dynamics Data is considered Protected Information pursuant to Protocol Section 1.3, Confidentiality.

(10) Dynamics data shall be provided with the legal authority to provide the information to all TSPs. If any of the information is considered Protected Information, the Facility owner shall indicate as such.

6.2.1 Dynamics Data Requirements for Resources

(1) A Resource Entity shall submit new or updated dynamics data in accordance with Section 5, Generation Resource Interconnection or Change Request. The Resource Entity shall provide all dynamics data as described in the Dynamics Working Group Procedure Manual. The Resource Entity shall provide an accurate and appropriate model and model parameters. Resource Entities are encouraged to use standard models to represent the Resource's dynamic and transient capability and response. If no appropriate standard model is available, the Resource Entity shall submit a model, model documentation, and the associated model parameters to ERCOT for inclusion in simulation-ready study cases as described in the Dynamics Working Group Procedure Manual.

(2) A Resource Entity is responsible for tuning and validating the parameters that go into their models to ensure that the models produce an accurate representation of a device's capability and response. If ERCOT, the interconnecting TSP, or the Dynamics Working

Group (DWG) identifies inappropriate or incomplete dynamics data, ERCOT shall take action to resolve discrepancies with the Resource Entity.

6.2.2 Dynamics Data Requirements for Load Resources

(1) ERCOT shall provide the updated Load Resource relay models.

(2) Load Resource relay models shall be updated as describe in the Dynamics Working Group Procedure Manual.

6.2.3 Dynamics Data Requirements for and Transmission and/or Distribution Service Providers

(1) The owner of under-frequency Load shedding equipment shall provide necessary data to model under frequency Load shedding relays for their portion of the ERCOT System as described in the Dynamics Working Group Procedure Manual.

(2) The owner of under voltage Load shedding equipment shall provide necessary data to model under voltage Load shedding relays for their portion of the ERCOT System as described in the Dynamics Working Group Procedure Manual.

(3) When requested by ERCOT or a Transmission and/or Distribution Service Provider (TDSP), the owner of protective relays, control systems, and Special Protection Systems (SPSs) shall provide dynamics data needed to simulate their action.

(4) The DWG shall document appropriate Load model data as described in the Dynamics Working Group Procedure Manual for use in dynamic simulations.

(5) The owner of a dynamic element connected to the transmission system shall provide the dynamic data needed to simulate the action of the device in dynamic simulations to ERCOT and the TDSP to which the element is connected. Examples of dynamic elements include, but are not limited to, static-Volt-Ampere reactive (VAr) compensators, DC Ties, variable frequency transformers, switched shunt devices, and transformers with automatic tap changers.

6.2.4 Dynamics Data Screening and Maintenance

(1) In order to maintain simulation-ready base cases and associated dynamics data files for use in dynamic simulations, the DWG, in consultation with ERCOT, shall perform dynamic simulations, called flat-start simulations, as described in the Dynamics Working Group Procedure Manual.

(2) The schedule for producing the flat start simulations will be reviewed annually and submitted to the ROS.

(3) Transmission owners shall review the completeness and applicability of dynamics data used in the flat start simulation for equipment connected to their system. The model should be appropriate for the equipment and the data shall be appropriate for the model.

(4) ERCOT shall contact the appropriate TSP or Resource Entity to resolve any dynamics data problems, incomplete or missing data, encountered while preparing the flat start simulation.

(5) Upon completion of each flat start simulation, ERCOT shall distribute an electronic copy of all files necessary to replicate the flat start simulation as described in the Dynamics Working Group Procedure Manual to the DWG.

(6) ERCOT and the DWG shall document assumptions made, data created, and data changed during the creation of a flat start simulation.

(7) ERCOT shall be responsible for storing all of the dynamics data and shall maintain a repository of dynamics data with tuned parameters and any submitted revisions.

(8) Within 30 days of receipt, ERCOT shall forward all dynamics data received to the TSP to which the dynamics device is connected.

6.2.5 Dynamics Data Recorder

ERCOT, in consultation with the DWG, shall prepare a list of locations, based on criteria contained in the Dynamics Working Group Procedure Manual, which require the installation of devices capable of recording ERCOT Transmission Grid events with sufficient resolution to serve as a benchmark for dynamic simulations.

6.3 Process for Developing Short Circuit Cases

This Section describes the process for the development of the short circuit cases used for planning purposes. Section 6, Disturbance Monitoring and System Protection, of the Operating Guides describes other non-planning aspects relating to system protection and disturbance monitoring requirements.

(a) ERCOT shall collect the short circuit data sets or data updates developed by each Transmission Service Provider (TSP) and shall compile and maintain the short circuit cases.

(b) During the first quarter of each calendar year, ERCOT shall compile and distribute the Current Year (CY) short circuit case to the System Protection Working Group (SPWG).

(c) During the second quarter of each calendar year, ERCOT shall compile and distribute the Future Year (FY) short circuit cases for years two through five to the SPWG.

(d) The transmission and generation systems of each Facility owner in ERCOT shall be represented completely including positive and zero sequence data. Generation Resource data shall be provided by the Resource Entity.

(e) New Generation Resources will be included in the short circuit cases once ERCOT receives either:

(i) A signed Standard Generation Interconnection Agreement (SGIA) or a public, financially-binding agreement between the generator and the TSP under which the proposed Generation Resource would be constructed; or

(ii) A letter from a duly authorized official from the Municipally Owned Utility (MOU) or an Electric Cooperative (EC) confirming the Entity's intent to construct and operate the proposed Generation Resource.

(f) Each common bus within both the short circuit case and the corresponding load flow case shall have a matching bus name and matching bus number. Each additional bus added to the short circuit case as necessary to perform short circuit studies shall be assigned a name and bus number that does not conflict with pre-existing names and bus numbers used in the current set of load flow cases.

(g) The positive sequence impedance of Transmission Elements used in both the load flow and short circuit cases shall be the same.

(h) Zero sequence data shall include mutual impedance of multi-circuit transmission lines and of adjacent circuits within the same right-of-way, unless the TSP considers such impedance to be insignificant for studies made from this data.

6.4 Transmission Project Information and Tracking Report and Data Requirements

6.4.1 Transmission Project Information and Tracking Report

(1) The ERCOT Transmission Project and Information Tracking (TPIT) report presents the current quarterly status of the transmission projects (60 kV and above) that have a material impact to the flow of power in the ERCOT System. The TPIT report communicates the status to the stakeholders through the TPIT Database. The TPIT Database has four primary sections:

(a) Future Projects;

(b) Completed Projects;

(c) Cancelled Projects; and

(d) Five-Year Transmission Plan Projects.

(2) Transmission projects listed in the current TPIT Future Projects and Completed Project sections are generally modeled in the current set of Steady State Working Group (SSWG) Load flow cases used for transmission planning studies except for, but not limited to the following exceptions:

(a) Any project that requires Regional Planning Group (RPG) review and has not completed the review process;

(b) Any project with a projected in-service date beyond the five-year planning horizon; or

(c) Any project that consists of only a Special Protection System (SPS) (which is not typically modeled);

(d) In addition, each project listing includes a data field that delineates whether that project is included in the aforementioned SSWG cases.

6.4.2 ERCOT Responsibilities

ERCOT shall prepare TPIT updates using data supplied by each Transmission Service Provider (TSP), or it's Designated Agent. ERCOT shall maintain a section within the TPIT Database that describes each data element as well as identify the Entity responsible for supplying the data within each data element. The updated TPIT Database shall be posted quarterly on the Market Information System (MIS) Public Area. The format and schedule for data collection and verification of the TPIT Database shall be determined by ERCOT and communicated to the appropriate Market Participants in a timely manner.

6.4.3 TSP Responsibilities

TPIT provides information on transmission projects that are included in current TSP plans or included in the ERCOT Five-Year Transmission Plan. Each TSP shall provide information for its transmission projects to ERCOT as outlined in the TPIT Procedures.

6.4.4 Five-Year Transmission Plan Projects in Transmission Project Information and Tracking Report

Each year, with input from stakeholders, ERCOT develops a Five-Year Transmission Plan that identifies a set of reliability-driven and economic-driven transmission projects based on the current SSWG planning Base Cases. Transmission projects identified in the Five-Year Transmission Plan are typically at varying stages within the planning process and thus, are subject to change. When a Five-Year Plan Transmission Plan project is deemed appropriate for inclusion in the SSWG planning Base Cases, the TSP shall initiate inclusion of the project in the Future Projects section of TPIT, and ERCOT shall assign a TPIT project number. The project shall also remain in the Five-Year Transmission Plan section of the TPIT.

6.5 Annual Load Data Request

(1) The Transmission and/or Distribution Service Provider (TDSP) or its Designated Agent must provide Load data each year to allow necessary ERCOT System reliability analysis and planning and to meet requirements of North American Electric Reliability Corporation (NERC). Each TDSP or its Designated Agent is responsible for providing historical and forecasted Load data to ERCOT for all Loads connected to its system as outlined in the Annual Load Data Request Form Instructions. Data supplied in the Annual Load Data Request (ALDR) is considered Protected Information.

(2) Some or all of the following factors may be considered when developing Load forecast data:

(a) Economic;

(b) Demographic;

(c) Customer trends;

(d) Conservation;

(e) Improvements in the efficiency of electrical energy uses;

(f) Other changes in the end uses of electricity; and

(g) Weather effects.

(3) Each Distribution Service Provider (DSP) or its Designated Agent directly interconnected with the ERCOT Transmission Grid shall provide annual Load forecasts to ERCOT as outlined in the Annual Load Data Request Form Instructions.

(4) For each substation not owned by either a Transmission Service Provider (TSP) or a DSP, the owner shall provide a substation Load forecast to the directly-connected TSP sufficient to allow it to adequately include that substation in its ALDR response.

(5) The TDSP or its Designated Agent shall coordinate with the appropriate working group as described in the Annual Load Data Request Form Instructions for issues with data submissions.

(6) Load data that is incomplete, not timely submitted on the schedule, or not in the format defined in the Annual Load Data Request Form Instructions will be considered missing data. For these missing Load data, ERCOT shall calculate Loads based on historical data and insert these Loads into the Load flow cases during Data Set A and Data Set B annual updates.

6.6 Intentionally Left Blank

6.7 Data Dictionary

(1) The Data Dictionary provides additional bus data that is not included in the Steady State Working Group (SSWG) power flow cases or network model data. The Steady State Working Group Procedure Manual defines the requirements for the planning portion of the Data Dictionary.

(2) The following items pertain to data updates:

(a) Transmission Service Providers (TSPs) shall submit all pertinent Data Dictionary data for each bus in its transmission system for SSWG models as specified in the Steady State Working Group Procedure Manual.

(b) ERCOT shall provide pertinent Resource Entity data for the Data Dictionary.

(c) Interim information is provided pursuant to Section 6.4.1, Transmission Project Information and Tracking Report. TSPs may revise bus data for the Data Dictionary as necessary to reflect changes.

(3) ERCOT shall make available a copy of the Data Dictionary on the Planning and Operations Information website per the Steady State Working Group Procedure Manual and in accordance with the schedule posted on the Market Information System (MIS) for Annual Planning Model Data Submittal.

6.8 Resource Registration Procedures

In accordance with Protocol Sections 3.7, Resource Parameters, 3.10, Network Operations Modeling and Telemetry, and 16.5, Registration of a Resource Entity, a Resource Entity shall register each All-Inclusive Generation Resource with ERCOT. The Resource Entity shall submit Resource registration data and information through the registration process made available on the ERCOT website and the Market Information System (MIS) Public Area.

6.8.1 Resource Registration

(1) A Resource Entity shall properly complete the Resource registration for each Generation Resource that contains all pertinent data for all Generation Resources at that site prior to inclusion in applicable systems that model Resources. Load Resources represented by the Resource Entity shall be registered through the Resource registration process.

(2) ERCOT shall post a detailed Resource Registration Guide on the ERCOT website that provides detailed instructions and explanations for the various data types required for Resource registration.

(3) ERCOT shall make available related documents for Resource registration on the ERCOT website and shall notify Market Participants when changes are made to the Resource registration process and requirements, including the Resource registration forms and Resource Registration Guide.

(4) As required by Section 5, Generation Resource Interconnection or Change Request, Generation Resources shall provide accurate initial data for inclusion in the ERCOT Network Operations Model. The data will be used to model future generation for Steady-State Working Group (SSWG), Dynamics Working Group (DWG), and System Protection Working Group (SPWG) base cases.

(5) A Resource Entity shall revise the Resource registration form as necessary to reflect changes in any data related to a Generation or Load Resource.

6.8.2 Resource Registration Process

(1) A Resource Entity shall submit and authorize the Resource registration form as described in the Resource Registration Guide located on the ERCOT website.

(2) Upon receipt of the Resource registration form, ERCOT shall review the completeness and provide notice of acceptance and/or deficiencies to the Resource Entity.

(3) ERCOT shall provide notice to the Resource Entity if the Resource registration form is approved, which is not the same as an "approved" Network Operations Model Change Request (NOMCR). The approval of the Resource registration form only means that the registered data moves to the next step of being converted to a NOMCR.

(4) If ERCOT's notice reports deficiencies, the Resource Entity shall make necessary changes specified and re-submit the Resource registration form and as many times as necessary until approval of the total set of registered data is granted.

(5) Upon approval of the Resource registration form, ERCOT shall provide the Resource Entity with the model ready date for which the Resource registration form will be implemented in production.

(6) If a Resource Entity desires that the approved Resource registration form become effective earlier than the schedule established in Protocol Section 3.10.4, ERCOT Responsibilities, it may submit a request for interim update as described in the Resource Registration Guide.

ERCOT Planning Guide

Section 7: [RESERVED]

May 1, 2011

7 [RESERVED]

ERCOT Planning Guide

Section 8: Planning Reserve Margin

June 1, 2012

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8 PLANNING RESERVE MARGIN

8.1 ERCOT Planning Reserve Margin

ERCOT shall calculate the Planning Reserve Margin (PRM) for each Peak Load Season (summer months are June, July August and September; winter months are December, January and February) using the following equation:

$$\mathbf{PRM}_{s,i} = \mathbf{(TOTCAP}_{s,i} \mathbf{- FIRMPKLD}_{s,i}\mathbf{i) / FIRMPKLD}_{s,i}$$

The above variables are defined as follows:

Variable	Unit	Definition
PRM $_{s, i}$	%	*Planning Reserve Margin*—The Planning Reserve Margin for the peak Load season *s* for year *i*.
TOTCAP $_{s, i}$	MW	*Total Capacity*—Total Capacity available during the peak Load season *s* for the year *i*.
FIRMPKLD $_{s, i}$	MW	*Firm Peak Load*—Firm Peak Load for the peak Load season *s* for the year *i*.
i	None	Year.
s	None	Peak Load Season as defined above.

8.2 Minimum ERCOT Planning Reserve Margin Criterion

The minimum ERCOT Planning Reserve Margin (PRM) criterion is 13.75%. ERCOT shall periodically review and recommend to the ERCOT Board any changes to the minimum ERCOT PRM to ensure adequate reliability of the ERCOT System.

8.3 ERCOT Planning Reserve Margin Calculation Methodology

ERCOT shall prepare and publish on the ERCOT website, at least annually, a report containing an estimate of the Planning Reserve Margin (PRM) for the current summer and winter Peak Load Seasons as well as a minimum of ten future summer and winter peak Load periods. The format and content of this report shall be developed by ERCOT, subject to Technical Advisory Committee (TAC) approval. The estimate of the PRM shall be based on the methodology in Section 8.3.1, Peak Load Estimate, and Section 8.3.2, Total Capacity Estimate.

8.3.1 Peak Load Estimate

ERCOT shall prepare, at least annually, an estimate of the total peak Load for both summer and winter peak Load periods for the current year and a minimum of ten future years using an econometric forecast, taking into account econometric inputs, weather conditions, demographic data and other variables as deemed appropriate by ERCOT. The firm peak Load forecast shall be determined by the following equation:

$$\mathbf{FIRMPKLD}_{s,i} = \mathbf{TOTPKLD}_{s,i} - \mathbf{LRRRS}_{s,i} - \mathbf{LRNSRS}_{s,i} - \mathbf{ERS}_{s,i} - \mathbf{CLR}_{s,i} - \mathbf{ENERGYEFF}_{s,i}$$

The above variables are defined as follows:

Variable	Unit	Definition
$FIRMPKLD_{s,i}$	MW	*Firm Peak Load Estimate*—The Firm Peak Load Estimate for the Peak Load Season *s* for the year *i.*
$TOTPKLD_{s,i}$	MW	*Total Peak Load Estimate*—The Total Peak Load Estimate for the Peak Load Season *s* for the year *i.*
$LRRRS_{s,i}$	MW	*Load Resource providing Responsive Reserve (RRS)*—The amount of RRS a Load Resource is providing for the Peak Load Season *s* for the year *i.*
$LRNSRS_{s,i}$	MW	*Load Resource providing Non-Spinning Reserve (Non-Spin)*— The amount of Non-Spin a Load Resource is providing for the Peak Load Season *s* for the year *i.*
$ERS_{s,i}$	MW	*Emergency Response Service (ERS)*— The amount of ERS for the peak Load Season *s* for the year *i* based on: (a) For the winter Peak Load Season of the current year, the amount of ERS procured by ERCOT for the October to January ERS Contract Period using the simple average of two time period procurements (Business Hours and Non-Business Hours); (b) For the summer Peak Load Season of the current year, the amount of ERS procured by ERCOT for the May procurement (Business Hours); and (c) For all subsequent years and Peak Load Seasons, escalate the amount of ERS from the previous Season by 10%.
$CLR_{s,i}$	MW	*Amount of Controllable Load Resource*—Amount of Controllable Load Resource that is available for Dispatch by ERCOT during the current year *i* for the Peak Load Season *s* not already included in LRRRS or LRNSRS.
$ENERGYEFF_{s,i}$	MW	*Amount of Energy Efficiency Programs Procured*—Amount of energy efficiency programs procured by Transmission and/or Distribution Service Providers (TDSPs) pursuant to P.U.C. SUBST. R. 25.181, Energy Efficiency Goal, for the peak Load Season *s* for the year *i.*
i	None	Year.
s	None	Peak Load Season (summer or winter as defined above).

8.3.2 Total Capacity Estimate

The total capacity estimate shall be determined based on the following equation:

$$\mathbf{TOTCAP}_{s,i} = \mathbf{INSTCAP}_{s,i} + \mathbf{PUNCAP}_{s,i} + \mathbf{WINDCAP}_{s,i} + \mathbf{RMRCAP}_{s,i} + \mathbf{DCTIECAP}_{s,i} + \mathbf{SWITCHCAP}_{s,i} + \mathbf{MOTHCAP}_{s,i} + \mathbf{PLANNON}_{s,i} + \mathbf{PLANWIND}_{s,i} - \mathbf{UNSWITCH}_{s,i} - \mathbf{RETCAP}_{s,i}$$

The above variables are defined as follows:

Variable	Unit	Definition
$INSTCAP_{s,i}$	MW	*Seasonal Net Max Sustainable Rating*—The Seasonal net max sustainable rating for the Peak Load Season *s* as reported in the approved Resource asset registration

Variable	Unit	Definition
		process for each operating Generation Resource for the year *i* excluding Wind-powered Generation Resources (WGRs), Resources operating under Reliability Must-Run (RMR) Agreements, and Generation Resources capable of "switching" from ERCOT Region to another power region.
$PUNCAP_{s, i}$	MW	*Private Use Network Capacity*—The Private Use Network capacities as provided to ERCOT pursuant to Protocol Section 3.10.7.3, Modeling of Private Use Networks.
$WINDCAP_{s, i}$	MW	*Effective Load Carrying Capability of WGRs*—The effective Load carrying capability of all existing WGRs as determined by ERCOT for the Peak Load Season *s* for the year *i*.
$RMRCAP_{s, i}$	MW	*Seasonal Net Max Sustainable Rating for Generation Resource providing RMR Service*—The seasonal net max sustainable rating for the peak Load Season *s* as reported in the approved Resource asset registration process for each Generation Resource providing RMR Service for the year *i* until the approved exit strategy for the RMR Resource is expected to be completed.
$DCTIECAP_{s, i}$	MW	*Seasonal Net Max Sustainable Rating for Direct Current Tie (DC Tie) Resource*—The seasonal net max sustainable rating for the peak Load Season *s* as reported in the approved Resource asset registration process for each DC Tie Resource for the year *i* multiplied by 50%.
$SWITCHCAP_{s, i}$	MW	*Seasonal Net Max Sustainable Rating for Switching Generation Resource*—The seasonal net max sustainable rating for the Peak Load Season *s* as reported in the approved Resource asset registration process for each Generation Resource for the year *i* that can electrically connect (i.e., "switch") from the ERCOT Region to another power region.
$MOTHCAP_{s, i}$	MW	*Seasonal Net Max Sustainable Rating for Mothballed Generation Resource*—The seasonal net max sustainable rating for the Peak Load Season *s* as reported in the approved Resource asset registration process for each Mothballed Generation Resource for the year *i* based on the lead time and probability information furnished by the owners of Mothballed Generation Resources pursuant to Protocol Section 3.14.1.9, Generation Resource Return to Service Updates.
$PLANNON_{s, i}$	MW	*New, non-Wind Generating Capacity*—The amount of new, non-wind generating capacity for the peak Load Season *s* and year *i* that: (a) has a Texas Commission on Environmental Quality (TCEQ)-approved air permit, and (b) has a signed Standard Generation Interconnect Agreement (SGIA), or a public, financially-binding agreement between the Resource owner and Transmission Service Provider (TSP) under which generation interconnection facilities would be constructed; or for a Municipally Owned Utility (MOU) or Electric Cooperative (EC), a public commitment letter to construct a new Resource.
$PLANWIND_{s, i}$	MW	*Effective Load Carrying Capability of New Intermittent Renewable Resource (IRR) Capacity*—The effective Load carrying capability of new IRR capacity as determined by ERCOT for the Peak Load Season *s* and year *i* that has an SGIA or other public, financially-binding agreement between the Resource owner and TSP under which generation interconnection facilities would be constructed or, for a MOU or EC, a public commitment letter to construct a new IRR.
$UNSWITCH_{s, i}$	MW	*Capacity of Unavailable Switchable Generation Resource*—The amount of capacity reported by the owners of a switchable Generation Resource that will be unavailable to ERCOT during the Peak Load Season *s* and year *i* pursuant to paragraph (2) of Protocol Section 16.5.4, Maintaining and Updating Resource Entity Information.
$RETCAP_{s, i}$	MW	*Capacity Pending Retirement*—The amount of capacity in Season *s* of year *i* that is pending retirement based on information that has been submitted on a Notification of Suspension of Operations form pursuant to Protocol Section 3.14.1.11, Budgeting Eligible Costs, but is under review by ERCOT pursuant to Protocol Section 3.14.1.2,

Variable	Unit	Definition
		ERCOT Evaluation, that has not otherwise been considered in any of the above defined categories.
i	None	Year.
s	None	Peak Load Season (summer or winter as defined in Section 8.1, ERCOT Planning Reserve Margin).

ERCOT Planning Guide

Section 9: [RESERVED]

May 1, 2011

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