

Appendix 9C1

Transmission Loading Relief Procedure – Eastern Interconnection

Version 2b

[Appendix 9C1B, “Interchange Transaction Reallocation During TLR Levels 3a and 5a”]
[Appendix 9C1C, “Interchange Transaction Curtailments During TLR 3b”]
[“Parallel Flow Calculation Procedure Reference Document”]

Appendix Subsections

- A. General Requirements
 - B. Transmission Loading Relief (TLR) Levels
 - C. Interchange Transaction Curtailment Order
 - D. Transaction Management and Curtailment Process
 - E. Principles for Mitigating Constraints On and Off the Contract Path
 - F. Transaction Contribution Factor Calculation
 - G. Transaction Curtailment Formula
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Terms

Transaction Reallocation (or Reallocation). The total or partial curtailment of TRANSACTIONS during TLR Level 3a or 5a to allow TRANSACTIONS using higher priority TRANSMISSION SERVICE to be implemented.

Curtailment Threshold. The minimum TRANSFER DISTRIBUTION FACTOR which, if exceeded, will subject an INTERCHANGE TRANSACTION to curtailment to relieve a transmission facility CONSTRAINT.

Introduction

The NERC Transmission Loading Relief (TLR) Procedure is an EASTERN INTERCONNECTION-wide procedure to allow the RELIABILITY COORDINATORS to:

1. Respect TRANSMISSION SERVICE reservation priorities, and
2. Mitigate potential or actual OPERATING SECURITY LIMIT violations.

Transmission Provider Obligations

NERC recognizes that TRANSMISSION PROVIDERS are subject to obligations under FERC-approved tariffs or other agreements, and nothing in these procedures shall be interpreted as changing those obligations. This Appendix uses the term “transmission reservation” to mean transmission arranged under the FERC pro forma tariff as well as under other transmission agreements.

Relationship between TLR Procedure and FERC pro forma Tariff

The TLR Procedure has been incorporated into the transmission tariff of many TRANSMISSION PROVIDERS, and is on file with the Federal Energy Regulatory Commission. The TLR Procedure follows the curtailment provisions of the pro forma tariff with regards to Non-firm and Firm Point-to-Point Transmission Service, and Network Integration Transmission Service.

Introduction

TLR Procedure curtails Transactions. The pro forma tariff’s curtailment provision addresses the curtailment of the *transmission service* over the CONSTRAINED FACILITIES, not curtailment of the generation product being sold via that service. The tariff does not consider the effect of the curtailment on the load-serving entity; instead, it considers the obligations of the TRANSMISSION PROVIDER(S) in providing or curtailing the Transmission Service. The NERC TLR Procedure translates the curtailment of the Transmission Service into a curtailment of the actual MW flow over the constraint.

Considerations for Firm Point-to-Point Transmission Service.

Transactions using Firm Point-to-Point Transmission Service are afforded the highest priority. Therefore, in many situations, the TLR Procedure will allow these Transactions to start during the implementation of a TLR 2, 3a, 3b, and 4. Please refer to **Sections B.2. through B.5.** and “**Appendix 9C1C – Interchange Transaction Curtailments During TLR Level 3b**” for details.

Re-dispatch considerations. Regarding the curtailment of transmission use by Firm Point-to-Point Transmission Service, the TLR Procedure follows the Federal Energy Regulatory Commission’s pro forma tariff that TRANSMISSION PROVIDERS are not obligated to re-dispatch their own resources to maintain TRANSACTIONS using Firm Point-to-Point Transmission Service before they are curtailed on a pro-rata basis with transmission use for Network Integration Transmission Service and Native Load.

Curtailment of Service to Network and Native Load customers. The TLR Procedure includes the calculation of the Transaction Contribution Factor (TCF), which determines the portion of the CONSTRAINED FACILITY’S loading due to Firm Point-to-Point Transmission Service. This is one part of the calculation that the RELIABILITY COORDINATOR must perform to ensure that this curtailment is comparable and non-discriminatory with the curtailment of Network Integration Transmission Service and Transmission Service for Native Load. (See **Section F, “Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service”**)

Appendix 9C1 – Transmission Loading Relief Procedure

Introduction

Summary of TLR Levels

TLR Level	RELIABILITY COORDINATOR Action	Comments	
1	Notify RELIABILITY COORDINATORS of potential OPERATING SECURITY LIMIT violations		System Secure
2	Hold INTERCHANGE TRANSACTIONS at current levels to prevent OPERATING SECURITY LIMIT violations	Of those transactions at or above the CURTAILMENT THRESHOLD, only those under existing Transmission Service reservations will be allowed to continue, and only to the level existing at the time of the hold. Transactions using Firm Point-to-Point Transmission Service are not held. See Section B.1.	
3a	Reallocation Transactions using Non-firm Point-to-Point Transmission Service are curtailed to allow Transactions using higher priority Point-to-Point Transmission Service	Curtailed follows Transmission Service priorities. Higher priority transactions are enabled to start by the REALLOCATION process. See Section B.3.	
3b	Curtail Transactions using Non-firm Point-to-Point Transmission Service to mitigate Operating Security Limit Violation	Curtailed follows Transmission Service priorities. There are special considerations for handling Transactions using Firm Point-to-Point Transmission Service. See Section B.4.	Security Limit Violation
4	Reconfigure transmission system to allow Transactions using Firm Point-to-Point Transmission Service to continue	There may or may not be an OPERATING SECURITY LIMIT violation. There are special considerations for handling Transactions using Firm Point-to-Point Transmission Service. See Section B.5.	
5a	Reallocation Transactions using Firm Point-to-Point Transmission Service are curtailed (pro rata) to allow new Transactions using Firm Point-to-Point Transmission Service to begin (pro rata).	Attempts to accommodate all Transactions using Firm Point-to-Point Transmission Service, though at a reduced (“pro rata”) level. Pro forma tariff also requires curtailment / REALLOCATION on pro rata basis with Network Integration Transmission Service and Native Load. See Section B.6.	System Secure
5b	Curtail Transactions using Firm Point-to-Point Transmission Service to mitigate Operating Security Limit Violation	Pro forma tariff requires curtailment on pro rata basis with Network Integration Transmission Service and Native Load. See Section B.7.	
6	Emergency Action	Could include demand-side management, re-dispatch, voltage reductions, interruptible and firm load shedding. See Section B.8.	Security Limit Violation
0	TLR Concluded	Restore transactions. See Section B.9.	
			System Secure

Unless explained otherwise, “curtailment” refers to those INTERCHANGE TRANSACTIONS whose DISTRIBUTION FACTOR on the CONSTRAINED FACILITY exceeds the CURTAILMENT THRESHOLD.

Introduction

Posting TLR Events

When the RELIABILITY COORDINATOR initiates the TLR Procedure, he will notify all other RELIABILITY COORDINATORS via the RCIS¹. Furthermore, the TLR Level will be posted to the appropriate NERC web page(s).

Notification – TLR Level 1

This Level is an alert to inform the marketplace and other RELIABILITY COORDINATORS that curtailments are likely to occur. The RELIABILITY COORDINATOR should announce a TLR 0 once the Notification level is no longer necessary.

Hold – TLR Level 2

If an OPERATING SECURITY LIMIT violation is imminent, the RELIABILITY COORDINATOR shall direct his CONTROL AREAS to maintain INTERCHANGE TRANSACTIONS such that, of those transactions that are at or above the CURTAILMENT THRESHOLD, only those under existing Transmission Service reservations will be allowed to continue, and only to the level existing at the time of the hold. During TLR Level 2, the RELIABILITY COORDINATOR will allow existing INTERCHANGE TRANSACTIONS to increase, or new INTERCHANGE TRANSACTIONS to begin, if they help mitigate the CONSTRAINT. TRANSACTIONS using Firm Point-to-Point Transmission Service will be allowed to start.

TLR Level 2 is a transient state, which requires a quick decision to proceed to higher TLR Levels (3 and above) to allow INTERCHANGE TRANSACTIONS to be implemented according to their transmission reservation priority. The time for being in TLR Level 2 should be no more than 30 minutes, with the understanding that there may be circumstances where this time may be exceeded. If the time in TLR Level 2 exceeds 30 minutes, the RELIABILITY COORDINATOR must document this action on the TLR Log. When faced with a new INTERCHANGE TRANSACTION using higher priority Point-to-Point Transmission Service, the RELIABILITY COORDINATOR **must immediately proceed to TLR Level 3a** to curtail those INTERCHANGE TRANSACTIONS using lower priority Point-to-Point Transmission Service. He must give preference to those INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service, followed by those using higher priority Non-firm Point-to-Point Transmission Service. The RELIABILITY COORDINATORS shall monitor and coordinate the timing of the curtailment and reallocation process.

¹ We are using the term Reliability Coordinator Information System (RCIS) in this Appendix in the general sense for whatever information system that has been established for disseminating TLR information. In some cases, it could actually be the Interchange Distribution Calculator system.

Introduction

Curtailing – TLR Levels 3a, 3b, 5a, 5b

Curtailments are required for two reasons:

1. To allow an INTERCHANGE TRANSACTION using a higher priority Transmission Service to begin when it would otherwise cause an OPERATING SECURITY LIMIT Violation (called “Reallocation” – TLR Level 3a, and 5a), and
2. To mitigate an imminent or existing OPERATING SECURITY LIMIT Violation (TLR Level 3b and 5b).²

Should curtailment become necessary by using TLR 3b or 5b to mitigate a potential or actual OPERATING SECURITY LIMIT violation, INTERCHANGE TRANSACTIONS whose Transfer Distribution Factors (TDF) across the specific CONSTRAINED FACILITY are at or above the CURTAILMENT THRESHOLD shall be curtailed whenever practicable on a proportional basis and according to these Procedures as explained in **Section G, “Transaction Curtailment Formula.”** The order of INTERCHANGE TRANSACTION curtailment is explained in **Section C., “Interchange Transaction Curtailment Order.”** Some TRANSACTIONS using Firm Point-to-Point Transmission Service will be allowed to start during TLR 3b. See **Section B, “Transmission Loading Relief (TLR) Levels,”** and **Appendix 9C1C, “Interchange Transaction Curtailments During TLR Level 3b,”** for details.

These curtailments will remain in effect until such time as the CONSTRAINT has been mitigated, allowing the INTERCHANGE TRANSACTIONS to be restored.

Reconfiguration – TLR Level 4

Before the RELIABILITY COORDINATOR orders curtailment of INTERCHANGE TRANSACTIONS using Firm Point-to-Point TRANSMISSION SERVICE (TLR Level 5a or 5b), he will request the TRANSMISSION PROVIDERS in his RELIABILITY AREA to attempt to reconfigure their transmission systems to allow the INTERCHANGE TRANSACTIONS to continue. Transmission reconfiguration may be implemented as long as it does not jeopardize the operating security of the INTERCONNECTION. Transactions using Non-firm Point-to-Point Transmission Service will be curtailed or held from starting. Some Transactions using Firm Point-to-Point Transmission Service will be allowed to start. See **Section B, “Transmission Loading Relief (TLR) Levels,”** and **Section F, “Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service”** for details.

Emergency Procedures – TLR Level 6

If the RELIABILITY COORDINATOR is unable to mitigate the CONSTRAINT through the use of TLR Levels 3, 4, or 5, then he has the authority to immediately direct the CONTROL AREAS to take actions such as re-dispatch generation, reconfigure transmission, or reduce load to mitigate the critical condition until INTERCHANGE TRANSACTIONS can be reduced utilizing the TLR **Interchange Transaction Curtailment Order**, or other methods, to return the system to a reliable state. All CONTROL AREAS shall comply with all requests from their RELIABILITY COORDINATOR. However, the CONTROL AREA operator should immediately notify his RELIABILITY COORDINATOR if the RELIABILITY COORDINATOR’S request is unclear or would seem to cause an operating problem.

² This includes mitigation of contingency overloads.

Introduction

Return to Normal Operations – TLR Level 0

The RELIABILITY COORDINATOR that is experiencing the CONSTRAINT within its RELIABILITY AREA shall notify all RELIABILITY COORDINATORS via the RCIS when the adverse conditions are mitigated and the system is in a “normal” state.

Considerations for Constraints On and Off the Contract Path

Interchange Transaction Priority **ON the Contract Path**

If the CONSTRAINED FACILITY is on the contract path, the curtailment priority will be equal to the TRANSMISSION SERVICE priority of the link on which the CONSTRAINED FACILITY is located. [Section E., “Principles for Mitigating Constraints On and Off the Contract Path”]

Interchange Transaction Priority **OFF the Contract Path**

If the CONSTRAINED FACILITY is not on the contract path of the INTERCHANGE TRANSACTION, the curtailment priority will be equal to the *lowest* Transmission Service priority of the links on the contract path. (This means that an INTERCHANGE TRANSACTION using Firm Point-to-Point Transmission Service on all contract path links is considered a “firm” INTERCHANGE TRANSACTION even if the CONSTRAINED FACILITY is off the contract path.)

Re-dispatch and Other Congestion Management Options

Some TRANSMISSION PROVIDERS offer re-dispatch or other congestion management options that allow a Transmission Customer to mitigate the effect of its INTERCHANGE TRANSACTION on the CONSTRAINED FACILITY. If the Transmission Customer elects to use such an option, the RELIABILITY COORDINATOR must treat the INTERCHANGE TRANSACTION accordingly in the curtailment scheme. (Note: “Local” congestion management procedures require approval by NERC if they are to be used in lieu of the TLR Procedure prescription. See Policy 9.C. Requirement 3.2.1.1.)

A. General Requirements

1. **Initiation only by RELIABILITY COORDINATOR.** The NERC Transmission Loading Relief Procedure may be initiated only by a RELIABILITY COORDINATOR at 1) the RELIABILITY COORDINATOR’S own request, or 2) upon the request of a Transmission Provider or CONTROL AREA.
2. **Mitigating transmission constraints.** The TLR Procedure may be used to mitigate potential or actual OPERATING SECURITY LIMIT violations on any transmission facility modeled in the INTERCHANGE DISTRIBUTION CALCULATOR. [See also Section 6.1, “Interchange Transactions not in the IDC.”]
 - 2.1. **Requesting relief on tie facilities.** Any TRANSMISSION PROVIDER or CONTROL AREA who operates the tie facility may request relief from its RELIABILITY COORDINATOR.
 - 2.1.1. **INTERCHANGE TRANSACTION priority on tie facilities.** The priority of the INTERCHANGE TRANSACTION(S) to be curtailed is determined by the Transmission Service reserved on the Transmission Provider’s system who requested the relief.
3. **Order of TLR Levels and taking emergency action.** The RELIABILITY COORDINATOR may not necessarily follow the TLR Levels in their numerical order (See Section B, “TLR Levels”). Furthermore, if a RELIABILITY COORDINATOR deems that a transmission loading condition could jeopardize bulk system reliability, the RELIABILITY COORDINATOR has the authority to enter TLR Level 6 directly, and immediately direct the CONTROL AREAS to take such actions as re-dispatch generation, or reconfigure transmission, or reduce load to mitigate the critical condition until INTERCHANGE TRANSACTIONS can be reduced utilizing the TLR Transaction Curtailment Procedures, or other methods, to return the system to a secure state.
4. **Notification of TLR Procedure implementation.** The RELIABILITY COORDINATOR initiating the use of the TLR Procedure must notify other RELIABILITY COORDINATORS and CONTROL AREAS, and must post the initiation and progress of the TLR event on the appropriate NERC web page(s).
 - 4.1. **Notifying other RELIABILITY COORDINATORS.** The RELIABILITY COORDINATOR initiating the TLR Procedure shall inform all other RELIABILITY COORDINATORS via the RELIABILITY COORDINATOR Information System (RCIS) that the TLR Procedure has been implemented.
 - 4.1.1. **Actions expected.** The RELIABILITY COORDINATOR initiating the TLR Procedure shall indicate the actions expected to be taken by other RELIABILITY COORDINATORS. [See also: Policy 3B and 3D for CONTROL AREA Requirements during curtailments.]
 - 4.2. **Notifying TRANSMISSION PROVIDERS and CONTROL AREAS.** RELIABILITY COORDINATORS must keep the TRANSMISSION PROVIDERS and CONTROL AREAS in his RELIABILITY AREA informed when entering and leaving any TLR level.
 - 4.3. **Notifying Control Areas.** The RELIABILITY COORDINATOR for the SINK CONTROL AREA is responsible for directing that CONTROL AREA to curtail the INTERCHANGE TRANSACTIONS as specified by the RELIABILITY COORDINATOR implementing the TLR Procedure. [See Policy 3.D. for Control Area curtailment notification details.]

A. General Requirements

- 4.3.1. Notification order.** Within a Transmission Service priority level, the SINK CONTROL AREAS whose INTERCHANGE TRANSACTIONS have the largest impact on the CONSTRAINED FACILITIES shall be notified first if practicable.
- 4.4. Updates.** At least once each hour, or when conditions change, the RELIABILITY COORDINATOR implementing the TLR Procedure shall update all other RELIABILITY COORDINATORS (via the RCIS). TRANSMISSION PROVIDERS and CONTROL AREAS who have had Interchange Transactions impacted by the TLR will be updated by their RELIABILITY COORDINATOR.
- 5. Obligations.** All RELIABILITY COORDINATORS must comply with the request of the RELIABILITY COORDINATOR who initiated the TLR Procedure, unless the initiating RELIABILITY COORDINATOR agrees otherwise.
- 5.1. Use of TLR Procedure with “local” procedures.** A RELIABILITY COORDINATOR may implement a local transmission loading relief or congestion management procedure simultaneously with an INTERCONNECTION-wide procedure. However, he is obligated to follow the curtailments as directed by the INTERCONNECTION-wide procedure. If the RELIABILITY COORDINATOR desires to use a local procedure as a substitute for curtailments as directed by the INTERCONNECTION-wide procedure, he may do so only if such use is approved by the NERC Operating Reliability Subcommittee and Operating Committee.³
- 6. Consideration of Interchange Transactions.** The administration of the TLR Procedure is guided by information obtained from the Interchange Distribution Calculator (IDC).
- 6.1. Interchange Transactions not in the IDC.** RELIABILITY COORDINATORS shall also treat known INTERCHANGE TRANSACTIONS that may not appear in the IDC in accordance with the procedures in this document.
- 6.2. Transmission elements not in IDC.** When a RELIABILITY COORDINATOR is faced with an overload on a transmission element that is not modeled in the IDC, the RELIABILITY COORDINATOR shall use the best information available to curtail INTERCHANGE TRANSACTIONS in order to operate the system in a reliable manner. The RELIABILITY COORDINATOR shall use his best efforts to ensure that INTERCHANGE TRANSACTIONS with a TRANSFER DISTRIBUTION FACTOR of less than the CURTAILMENT THRESHOLD on the transmission element not modeled in the IDC are not curtailed.
- 6.3. Questionable IDC results.** Any RELIABILITY COORDINATOR (or TRANSMISSION PROVIDER through his RELIABILITY COORDINATOR) who believes the curtailment list from the IDC for a particular TLR event is incorrect shall use his best efforts to communicate those adjustments necessary to bring the curtailment list into conformance with the principles of this Procedure to the initiating RELIABILITY COORDINATOR. Causes of questionable IDC results may include:

³ Examples would be 1) a local procedure that curtails INTERCHANGE TRANSACTIONS in a different order or ratio than the INTERCONNECTION-wide procedure, or 2) a local re-dispatch procedure.

A. General Requirements

- Missing INTERCHANGE TRANSACTIONS that are known to contribute to the CONSTRAINT.
- Significant change in transmission system topology
- TDF matrix error.

Impacts of questionable IDC results *may* include:

- Curtailment that would have no effect on, or aggravate the constraint.
- Curtailment that would initiate a constraint elsewhere.

If other RELIABILITY COORDINATORS are involved in the TLR event, agreement must be reached with the initiating RELIABILITY COORDINATORS on any adjustments to the curtailment list.

- 6.4. Curtailment that would cause a constraint elsewhere.** If the RELIABILITY COORDINATOR is aware that an INTERCHANGE TRANSACTION curtailment directed by the IDC would cause a constraint to occur elsewhere, after consulting with those RELIABILITY COORDINATORS who initiated the curtailment, he may exempt that INTERCHANGE TRANSACTION from curtailment.
- 6.5. Re-dispatch options.** The RELIABILITY COORDINATOR shall ensure that INTERCHANGE TRANSACTIONS that are linked to re-dispatch options are protected from curtailment in accordance with the re-dispatch provisions. [See also: Policy 9C. Req. 3.2.1.1 on use of local procedures.]
- 6.6. Reallocation.** During a TLR Level 3A, TRANSACTIONS of higher priority that meet the Approved-tag Submission Deadline for Reallocation will be considered for REALLOCATION (see Appendix 9C1B, “Interchange Transaction Reallocation During TLR Levels 3a and 5a.”) During a TLR Level 5A, TRANSACTIONS using Firm Transmission Service will considered for REALLOCATION be if they have met the same tag submission deadlines.
- 7. IDC updates.** Any INTERCHANGE TRANSACTION adjustments or curtailments that result from using this Procedure must be entered into the IDC as explained in Policy 9.C. Requirement 1.1.
- 8. Logging.** The RELIABILITY COORDINATOR shall complete the NERC Transmission Loading Relief Procedure Log (**Section I**) whenever he invokes TLR Level 2 or above, and send a copy of the log via e-mail to the NERC staff within two business days of the TLR event. The staff will post these logs on the NERC web site upon receipt.
- 9. TLR Event Review.** The RELIABILITY COORDINATOR shall report the TLR event to the NERC Market Interface Committee and Operating Reliability Subcommittee in accordance with TLR review processes established by NERC as required.
- 9.1. Providing information.** CONTROL AREAS within the RELIABILITY COORDINATOR’S RELIABILITY AREA, and all other RELIABILITY COORDINATORS, including CONTROL AREAS within their respective RELIABILITY AREAS, shall provide information, as requested by the initiating RELIABILITY COORDINATOR, in accordance with TLR review processes established by NERC.

This report log is being automated and this language will be revised if needed.

Appendix 9C1 – Transmission Loading Relief Procedure

A. General Requirements

- 9.2. **Market Interface Committee reviews.** The Market Interface Committee may conduct reviews of certain TLR events based on the size and number of INTERCHANGE TRANSACTIONS that are affected, the frequency that the TLR Procedure is called for a particular CONSTRAINED FACILITY, or other factors.
- 9.3. **Operating Reliability Subcommittee reviews.** The Operating Reliability Subcommittee will conduct reviews to ensure proper implementation and for “lessons learned.”

B. Transmission Loading Relief (TLR) Levels

Introduction

This section describes the various levels of the TLR Procedure. The description of each level begins with the circumstances that define the TLR Level, followed by the procedures to be followed.

The decision that a RELIABILITY COORDINATOR makes in selecting a particular TLR Level often depends on the transmission loading condition and whether the INTERCHANGE TRANSACTION is using Non-firm Point-to-Point Transmission Service or Firm Point-to-Point Transmission Service. There are further considerations that depend on whether the Constrained Facility is on or off the contract path. (**Section E., “Principles for Mitigating Constraints On and Off the Contract Path”**) It is important to note, as explained in the Introduction, that an INTERCHANGE TRANSACTION using Firm Point-to-Point Transmission Service on all contract path links is considered a “firm” INTERCHANGE TRANSACTION even if the CONSTRAINED FACILITY is off the contract path.

TLR Levels

1. **TLR Level 1 – Notify RELIABILITY COORDINATORS of potential Operating Security Limit Violations.**

1.1. **Circumstances:**

- The transmission system is secure.
- The RELIABILITY COORDINATOR foresees a transmission or generation contingency or other operating problem within his RELIABILITY AREA that could cause one or more transmission facilities to approach or exceed their OPERATING SECURITY LIMIT.

1.2. **Notification procedures.** The RELIABILITY COORDINATOR shall notify all RELIABILITY COORDINATORS via the Reliability Coordinator Information System as soon as the condition is foreseen. All affected RELIABILITY COORDINATORS shall check to ensure that INTERCHANGE TRANSACTIONS are posted in the INTERCHANGE DISTRIBUTION CALCULATOR.

2. **TLR Level 2 – Hold transfers at present level to prevent Operating Security Limit Violations**

2.1. **Circumstances for entering this level:**

- The transmission system is secure,
- One or more transmission facilities are expected to approach, or are approaching, or are at their OPERATING SECURITY LIMIT.

2.2. **Holding procedures.** The RELIABILITY COORDINATOR may hold the implementation of any additional INTERCHANGE TRANSACTIONS that are at or above the CURTAILMENT THRESHOLD. However, the RELIABILITY COORDINATOR should allow additional INTERCHANGE TRANSACTIONS that flow across the CONSTRAINED FACILITY if their flow reduces the loading on the Constrained Facility or has a Transfer Distribution Factor less than the CURTAILMENT THRESHOLD. All INTERCHANGE TRANSACTIONS using

Treatment of Firm Transactions.

B. Transmission Loading Relief (TLR) Levels

Firm Point-to-Point Transmission Service will be allowed to start.

2.2.1. TLR Level 2 is a transient state, which requires a quick decision to proceed to higher TLR Levels (3 and above) to allow INTERCHANGE TRANSACTIONS to be implemented according to their transmission reservation priority. The time for being in TLR Level 2 should be no more than 30 minutes, with the understanding that there may be circumstances where this time may be exceeded. If the time in TLR Level 2 exceeds 30 minutes, the RELIABILITY COORDINATOR must document this action on the TLR Log.

3. TLR Level 3a – Reallocation of Transmission Service by curtailing INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service to allow INTERCHANGE TRANSACTIONS using higher priority Transmission Service.

3.1. Circumstances for entering this level:

- The transmission system is secure
- One or more transmission facilities are expected to approach, or are approaching, or are at their OPERATING SECURITY LIMIT
- TRANSACTIONS using Non-firm Point-to-Point Transmission Service are flowing that are at or above the Curtailment Threshold on those facilities.
- The Transmission Provider has previously approved a higher priority Point-to-Point Transmission Service reservation over which a Transmission Customer wishes to begin an INTERCHANGE TRANSACTION. (See **Section 3.2** below)

3.2. Reallocation procedures to allow INTERCHANGE TRANSACTIONS using higher priority Point-to-Point Transmission Service to start. The RELIABILITY COORDINATOR with the constraint shall give preference to those INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service, followed by those using higher priority Non-firm Point-to-Point Transmission Service as specified in **Section C. “Interchange Transaction Curtailment Order.”** INTERCHANGE TRANSACTIONS that have been held or curtailed as prescribed in this Section shall be reallocated (reloaded) according to their Transmission Service priorities when operating conditions permit. The specifications for performing this Reallocation, as well as the Tagging requirements, are found in **Appendix 9C1B, “Interchange Transaction Reallocation During TLR Level 3a and 5a.”**

3.2.1. INTERCHANGE TRANSACTIONS using higher priority Non-firm or Firm Transmission Service will displace INTERCHANGE TRANSACTIONS with lower priority Transmission Service.

3.2.2. INTERCHANGE TRANSACTIONS using Non-firm Transmission Service will not be curtailed to allow the start or increase of another INTERCHANGE TRANSACTION having the same priority Non-firm Transmission Service.

3.2.3. If there are insufficient INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that can be curtailed to allow for INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service to begin, the RELIABILITY COORDINATOR will proceed to TLR Level 5a. (See **Section 6, “TLR Level 5a,”** and **Appendix 9C1B “Interchange Transaction**

B. Transmission Loading Relief (TLR) Levels

Curtailments During TLR Levels 3a and 5a,” for Reallocation of Interchange Transactions using Firm Point-to-Point Transmission Service)

3.2.4. Reloading of curtailed INTERCHANGE TRANSACTIONS will precede starting of new or increased INTERCHANGE TRANSACTIONS.

3.2.4.1. Interchange Transactions whose tags were submitted to the Tag Authority prior to the TLR Level 2 or Level 3a being called, but were subsequently held from starting, are considered to have been curtailed and thus would be reloaded the same time as the curtailed INTERCHANGE TRANSACTIONS.

3.2.5. Transmission capability available for reloading or starting will be filled by eligible TRANSACTIONS on a pro-rata basis.

3.2.6. Transactions whose tags meet the Approved-tag Submission Deadline for Reallocation (see **Appendix 9C1B, “Interchange Transaction Reallocation During TLR Level 3a and 5a,” Section B**) will be considered for reallocation for the upcoming hour. Tags submitted after this deadline will be considered for reallocation the following hour.

4. TLR Level 3b – Curtail INTERCHANGE TRANSACTIONS using Non-Firm Transmission Service Arrangements to mitigate an OPERATING SECURITY LIMIT Violation

4.1. Circumstances for entering this level:

- One or more transmission facilities are operating above their OPERATING SECURITY LIMIT, or
- Such operation is imminent and it is expected that facilities will exceed their security limit unless corrective action is taken, or
- One or more Transmission Facilities *will* exceed their OPERATING SECURITY LIMIT upon the removal from service of a generating unit or another transmission facility
- TRANSACTIONS using Non-firm Point-to-Point Transmission Service are flowing that are at or above the Curtailment Threshold on those facilities.

4.2. Holding new INTERCHANGE TRANSACTIONS. The RELIABILITY COORDINATOR shall hold all new INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that are at or above the CURTAILMENT THRESHOLD during the period of the OPERATING SECURITY LIMIT Violation. INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service will be allowed to start if they are submitted to the IDC within specific time limits as explained in **Appendix 9C1C, “Interchange Transaction Curtailments During TLR Level 3b.”**

4.3. Curtailment procedures to mitigate an OPERATING SECURITY LIMIT. The RELIABILITY COORDINATOR shall curtail INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that are at or above the CURTAILMENT THRESHOLD as specified in **Section C. “Interchange Transaction Curtailment Order.”**

B. Transmission Loading Relief (TLR) Levels

5. TLR Level 4 – Reconfigure Transmission

5.1. Circumstances for entering this level:

- One or more Transmission Facilities are above their OPERATING SECURITY LIMIT, or
- Such operation is imminent and it is expected that facilities will exceed their security limit unless corrective action is taken

5.2. Holding new INTERCHANGE TRANSACTIONS. The RELIABILITY COORDINATOR shall hold all new INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that are at or above the Curtailment Threshold during the period of the OPERATING SECURITY LIMIT Violation. INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service will be allowed to start if they are submitted to the IDC by 00:25 or the time at which the TLR Level 4 is called, whichever is later.

5.3. Reconfiguration procedures. Following the curtailment of all INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that are at or above the CURTAILMENT THRESHOLD in Level 3b that impact the CONSTRAINED FACILITIES, if an OPERATING SECURITY LIMIT violation is imminent or occurring, the RELIABILITY COORDINATOR(IES) shall request that the affected TRANSMISSION PROVIDERS reconfigure transmission on their system, or arrange for reconfiguration on other transmission systems, to mitigate the constraint. Specific details are explained in **Section E., “Principles for Mitigating Constraints On and Off the Contract Path”**

6. TLR Level 5a – Reallocation of Transmission Service by curtailing INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service on a pro rata basis to allow additional INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service.

6.1. Circumstances:

- The transmission system is secure
- One or more transmission facilities are at their OPERATING SECURITY LIMIT
- All INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that are at or above the CURTAILMENT THRESHOLD have been curtailed.
- The TRANSMISSION PROVIDER has been requested to begin an INTERCHANGE TRANSACTION using previously arranged Firm Transmission Service that would result in an OPERATING SECURITY LIMIT Violation.
- No further transmission reconfiguration is possible or effective.

6.2. Reallocation procedures to allow new INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service to start. Reallocation of INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service is a three-step process as follows:

6.2.1. Step 1 – Identify available re-dispatch options. The RELIABILITY COORDINATOR shall assist the Transmission Provider(s) in identifying those known re-dispatch options that are available to the Transmission Customer that will mitigate the loading on the CONSTRAINED FACILITIES. If such re-dispatch options are deemed insufficient to mitigate loading on the CONSTRAINED FACILITIES, the RELIABILITY COORDINATOR shall proceed to implement these options while proceeding to Steps 2 and 3 below.

B. Transmission Loading Relief (TLR) Levels

- 6.2.2. Step 2** – The RELIABILITY COORDINATOR shall calculate the percent of the overload on the CONSTRAINED FACILITY caused by both Firm Point-to-Point Transmission Service (at or above the CURTAILMENT THRESHOLD) and the TRANSMISSION PROVIDER’S Network Integration Transmission Service and Native Load, as required by the TRANSMISSION PROVIDER’S filed tariff. This is described in **Section F, “Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service.”**
- 6.2.3. Step 3 – Curtail Interchange Transactions using Firm Transmission Service.** The RELIABILITY COORDINATOR shall curtail or reallocate on a pro-rata basis (based on the MW level of the MW total to all such INTERCHANGE TRANSACTIONS), those INTERCHANGE TRANSACTIONS as calculated in **Section 7.2.2** over the CONSTRAINED FACILITIES. (See also **Appendix 9C1B, “Interchange Transaction Reallocation During TLR 3a and 5a.”**) The RELIABILITY COORDINATOR shall assist the Transmission Provider in curtailing Transmission Service to Network Integration Transmission Service customers and Native Load if such curtailments are required by the Transmission Provider’s tariff. Available re-dispatch options will continue to be implemented.

7. TLR Level 5b – Curtail INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service to mitigate an OPERATING SECURITY LIMIT Violation.

7.1. Circumstances:

- One or more Transmission Facilities are operating above their OPERATING SECURITY LIMIT, or
- Such operation is imminent, or
- One or more Transmission Facilities *will* exceed their OPERATING SECURITY LIMIT upon the removal from service of a generating unit or another transmission facility.
- All INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service that are at or above the CURTAILMENT THRESHOLD have been curtailed.
- No further transmission reconfiguration is possible or effective.

7.2. Curtailment of INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service is a three-step process as follows:

7.2.1. Step 1 – Identify available re-dispatch options. The RELIABILITY COORDINATOR shall assist the Transmission Provider(s) in identifying those known re-dispatch options that are available to the Transmission Customer that will mitigate the loading on the CONSTRAINED FACILITIES. If such re-dispatch options are deemed insufficient to mitigate loading on the CONSTRAINED FACILITIES, the RELIABILITY COORDINATOR shall proceed to implement these options while proceeding to Steps 2 and 3 below.

7.2.2. Step 2 – The RELIABILITY COORDINATOR shall calculate the percent of the overload on the CONSTRAINED FACILITY caused by both, Firm Point-to-Point Transmission Service (at or above the CURTAILMENT THRESHOLD) and the TRANSMISSION PROVIDER’S Network Integration Transmission Service and Native Load, as required by the TRANSMISSION PROVIDER’S filed tariff. This is

B. Transmission Loading Relief (TLR) Levels

described in Section F, “Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service.”

7.2.3. Step 3 – Curtailment of Interchange Transactions using Firm Transmission Service. At this point, the RELIABILITY COORDINATOR shall begin the process of curtailing INTERCHANGE TRANSACTIONS as calculated in Section 7.2.2 over the CONSTRAINED FACILITIES using Firm Point-to-Point Transmission Service until the OPERATING SECURITY LIMIT violation has been mitigated. The RELIABILITY COORDINATOR shall assist the Transmission Provider in curtailing Transmission Service to Network Integration Transmission Service customers and Native Load if such curtailments are required by the TRANSMISSION PROVIDERS’ tariff. Available re-dispatch options will continue to be implemented.

8. TLR Level 6 – Emergency Procedures

8.1. Circumstances:

- One or more Transmission Facilities are above their OPERATING SECURITY LIMIT.
- One or more Transmission Facilities *will* exceed their OPERATING SECURITY LIMIT upon the removal from service of a generating unit or another transmission facility.

8.2. Implementing emergency procedures. If the transmission loading condition is deemed critical to bulk system reliability by a RELIABILITY COORDINATOR, the RELIABILITY COORDINATOR has the authority to immediately direct the CONTROL AREAS in his RELIABILITY AREA to re-dispatch generation, or reconfigure transmission, or reduce load to mitigate the critical condition until INTERCHANGE TRANSACTIONS can be reduced utilizing the TLR Procedures or other procedures to return the system to a secure state. All CONTROL AREAS shall comply with all requests from their RELIABILITY COORDINATOR.

9. TLR Level 0 – TLR concluded

9.1. Interchange TRANSACTION restoration and notification procedures. The RELIABILITY COORDINATOR initiating the TLR Procedure shall notify all RELIABILITY COORDINATORS within the INTERCONNECTION via the RCIS when the OPERATING SECURITY LIMIT violations are mitigated and the system is in a “normal” state, allowing INTERCHANGE TRANSACTIONS to be reestablished at his discretion. Those with the highest transmission priorities shall be reestablished first if possible.

C. Interchange Transaction Curtailment Order

Curtailment of Interchange Transactions Using Non-firm Transmission Service

The RELIABILITY COORDINATOR will direct the curtailment of INTERCHANGE TRANSACTIONS using Non-firm TRANSMISSION SERVICE that are at or above the CURTAILMENT THRESHOLD for the following TLR Levels:

1. **TLR Level 3a.** Enable INTERCHANGE TRANSACTIONS using a higher Transmission reservation priority to be implemented, or
2. **TLR Level 3b.** Mitigate an OPERATING SECURITY LIMIT violation.

The INTERCHANGE TRANSACTION curtailment priority is determined by its TRANSMISSION SERVICE reservation over the constrained facility(ies) as shown in the box on the right.

The curtailment priority for INTERCHANGE TRANSACTIONS that do not have a Transmission Service reservation over the constrained facility(ies) is the lowest priority of the individual reserved transmission segments.

Transmission Service Priorities	
Priority 0.	Next-hour Market Service – NX*
Priority 1.	Service over secondary receipt and delivery points – NS
Priority 2.	Hourly Service – NH
Priority 3.	Daily Service – ND
Priority 4.	Weekly Service – NW
Priority 5.	Monthly Service – NM
Priority 6.	Network Integration Transmission Service from sources not designated as network resources – NN
Priority 7.	Firm Point-to-Point Transmission Service – F and Network Integration Transmission Service from Designated Resources – FN

Curtailment of Interchange Transactions Using Firm Transmission Service

The RELIABILITY COORDINATOR will direct the curtailment of INTERCHANGE TRANSACTIONS using Firm TRANSMISSION SERVICE that are at or above the CURTAILMENT THRESHOLD for the following TLR Levels:

1. **TLR Level 5a.** Enable additional INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service to be implemented after all INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Service have been curtailed, or
2. **TLR Level 5b.** Mitigate an OPERATING SECURITY LIMIT violation that remains after all INTERCHANGE TRANSACTIONS using Non-firm Transmission Service has been curtailed under TLR Level 3b, and following attempts to reconfigure transmission under TLR Level 4.

E. Principles for Mitigating Constraints On and Off the Contract Path

Introduction

Reserving transmission service for an INTERCHANGE TRANSACTION along a “contract path” may not reflect the actual distribution of the power flows over the transmission network from generation source to load sink. INTERCHANGE TRANSACTIONS arranged over a contract path may, therefore, overload transmission elements on other electrically parallel paths. The RELIABILITY COORDINATORS must agree on how the NERC Transmission Loading Relief Procedure will handle these INTERCHANGE TRANSACTIONS to, first, ensure the operational security of the INTERCONNECTION and, second, respect the obligations of the TRANSMISSION PROVIDERS’ tariffs.

The curtailment priority of an INTERCHANGE TRANSACTION depends on whether the CONSTRAINED FACILITY is on or off the contract path, and, if on the contract path, the Transmission Service of the link with the CONSTRAINED FACILITY.

The RELIABILITY COORDINATOR must also consider 1) the tariff obligations of the Transmission Provider with the CONSTRAINED FACILITY, 2) the Transmission Customer’s re-dispatch or other congestion management arrangements, and 3) arrangements among the TRANSMISSION PROVIDERS for handling certain CONSTRAINTS. Refer to examples beginning on page A9C1-21.

Principles for Constraints ON the Contract Path

Principle 1. If the transmission link with the CONSTRAINED FACILITY is Non-firm Point-to-Point Transmission Service, the entire INTERCHANGE TRANSACTION is considered non-firm, even if other links in the contract path are firm. When the CONSTRAINED FACILITY is on the contract path, the INTERCHANGE TRANSACTION takes on the transmission service priority of the Transmission Service link with the CONSTRAINED FACILITY regardless of the Transmission Service priority on the other links along the contract path.

Discussion. The TRANSMISSION PROVIDER simply has to call its RELIABILITY COORDINATOR, request the TLR Procedure be initiated, and allow the curtailments of all INTERCHANGE TRANSACTIONS that are at or above the CURTAILMENT THRESHOLD to progress until the relief is realized. Firm Point-to-Point Transmission Service links elsewhere in the contract path do not obligate TRANSMISSION PROVIDERS providing Non-firm Point-to-Point Transmission Service to treat the transaction as firm. For curtailment purposes, the INTERCHANGE TRANSACTION’S priority will be the priority of the TRANSMISSION SERVICE link with the CONSTRAINED FACILITY. (See Principle #2 below.)

Principle 2. If the transmission link with the CONSTRAINED FACILITY is Firm Point-to-Point Transmission Service, the entire INTERCHANGE TRANSACTION is considered firm, even if other links in the contract path are non-firm.

Discussion. The curtailment priority of an INTERCHANGE TRANSACTION on a contract path link is not affected by the transmission service priorities arranged with other links on the contract path. If the CONSTRAINED FACILITY is on a Firm Point-to-Point Transmission Service contract path link, then the curtailment priority of the INTERCHANGE TRANSACTION is considered firm regardless of the transmission service arrangements elsewhere on the contract path. If the TRANSMISSION PROVIDER provides its services

E. Principles for Mitigating Constraints On and Off the Contract Path

under the FERC pro forma tariff, it may also be obligated to offer its Transmission Customer alternate receipt and delivery points, thus allowing the Customer to curtail its Transmission Service over the CONSTRAINED FACILITIES.

For Constraints OFF the Contract Path

Principle 3. If any of the transmission links on the contract path are Non-firm Point-to-Point Transmission Service, the INTERCHANGE TRANSACTION is considered non-firm by the system with the CONSTRAINED FACILITY that is not on the contract path, and takes on the *lowest* transmission service priority of all TRANSMISSION SERVICE links along the contract path.

Discussion. An INTERCHANGE TRANSACTION arranged over a contract path where one or more individual links consist of Non-firm Point-to-Point Transmission Service is considered to be a non-firm INTERCHANGE TRANSACTION for CONSTRAINED FACILITIES off the contract path. Sufficient INTERCHANGE TRANSACTIONS that are at or above the CURTAILMENT THRESHOLD will be curtailed before any INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service are curtailed. The priority level for curtailment purposes will be the *lowest* level of transmission service arranged for on the contract path.

Principle 4. If *all* of the transmission links on the contract path with the CONSTRAINED FACILITY are Firm Point-to-Point Transmission Service, then the INTERCHANGE TRANSACTION is considered firm and will *not* be curtailed to relieve a CONSTRAINT off the contract path until all non-firm INTERCHANGE TRANSACTIONS that are at or above the CURTAILMENT THRESHOLD have been curtailed.

Discussion. If the entire contract path is Firm Point-to-Point Transmission Service, then the TLR procedure will treat the INTERCHANGE TRANSACTION as firm even for CONSTRAINTS off the contract path and will not curtail that INTERCHANGE TRANSACTION until all non-firm INTERCHANGE TRANSACTIONS that are at or above the CURTAILMENT THRESHOLD have been curtailed. However, TRANSMISSION PROVIDERS off the contract path are not obligated to reconfigure their transmission system or provide other congestion management procedures unless special arrangements are in place. Because the INTERCHANGE TRANSACTION is considered firm “everywhere,” the RELIABILITY COORDINATOR may attempt to arrange for TRANSMISSION PROVIDERS or CONTROL AREAS to reconfigure transmission or provide other congestion management options, even if they are off the contract path, to try to avoid curtailing the INTERCHANGE TRANSACTION that is using the Firm Point-to-Point Transmission Service.

Examples

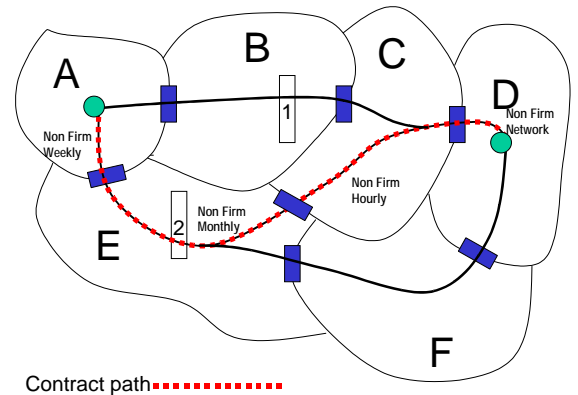
This section explains, by example, the obligations of the TRANSMISSION PROVIDERS on and off the contract path when calling for Transmission Loading Relief. (References to Principles refer to **Section E, “Principles for Mitigating Constraints On and Off the Contract Path,”** on the preceding pages.) When Reallocating or curtailing INTERCHANGE TRANSACTIONS using Firm Point-to-Point Transmission Service under TLR Level 5a or 5b, the TRANSMISSION PROVIDER may be obligated to perform comparable curtailments of its TRANSMISSION SERVICE to Network Integration and Native Load customers. See **Section F, “Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service”**.

Scenario:

- INTERCHANGE TRANSACTION arranged from system A to system D, and assumed to be at or above the CURTAILMENT THRESHOLD
- Contract path is A-E-C-D (except as noted)
- Locations 1 and 2 denote CONSTRAINTS

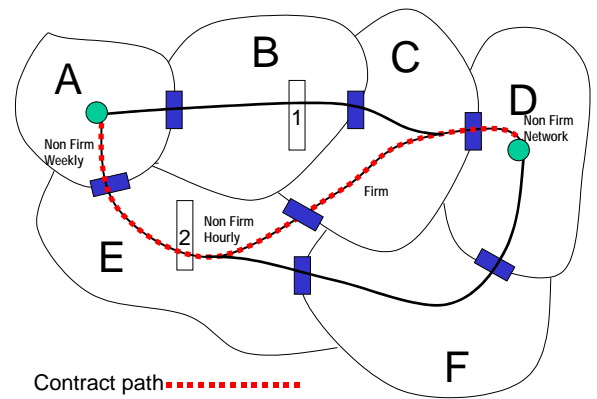
Case 1: E is a non-firm Monthly path, C is non-firm Hourly; E has CONSTRAINT at #2.

- E may call RELIABILITY COORDINATOR for TLR Procedure to relieve overload at CONSTRAINT #2.
- INTERCHANGE TRANSACTION A-D may be curtailed by TLR action as though it was being served by **Non-firm Monthly Point-to-Point Transmission Service**, even though it was using Non-firm Hourly Point-to-Point TRANSMISSION SERVICE from C. That is, it takes on the priority of the link with the CONSTRAINED FACILITY along the contract path. (Principle 1)



Case 2: E is a non-firm hourly path, C is firm; E has CONSTRAINT at #2.

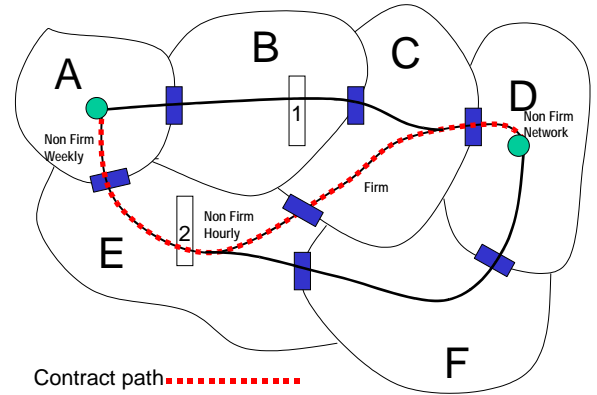
- Although C is providing Firm Service, the CONSTRAINT is not on C’s system; therefore E is not obligated to treat the Interchange Transaction as though it was being served by Firm Point-to-Point Transmission Service.
- E may call RELIABILITY COORDINATOR for TLR Procedure to relieve overload at CONSTRAINT #2.
- INTERCHANGE TRANSACTION A-D may be curtailed by TLR action as though it was being served by Non-firm Hourly Point-to-Point Transmission Service, even though it was using firm service from C. That is, when the constraint is on the contract path, the Interchange Transaction takes on the priority of the link with the CONSTRAINED FACILITY. (Principle 1)



E. Principles for Mitigating Constraints On and Off the Contract Path

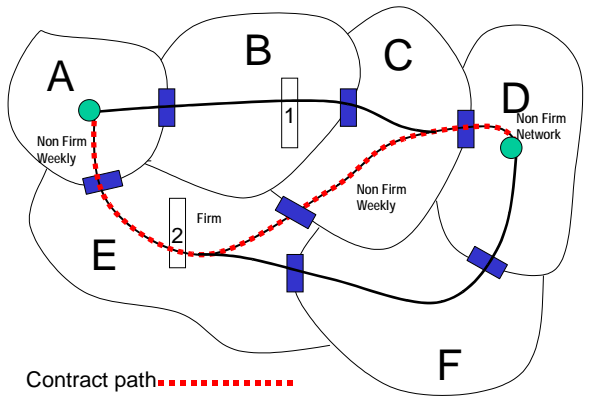
Case 3: E is a non-firm hourly path, C is firm, B has CONSTRAINT at #1.

- B may call RELIABILITY COORDINATOR for TLR Procedure to relieve overload at CONSTRAINT #1.
- INTERCHANGE TRANSACTION A-D may be curtailed by TLR action as though it was being served by Non-firm Hourly Transmission Service, even if it was using firm Transmission Service elsewhere on the path. When the constraint is off the contract path, the Interchange Transaction takes on the lowest priority reserved on the contract path. (Principle 3)



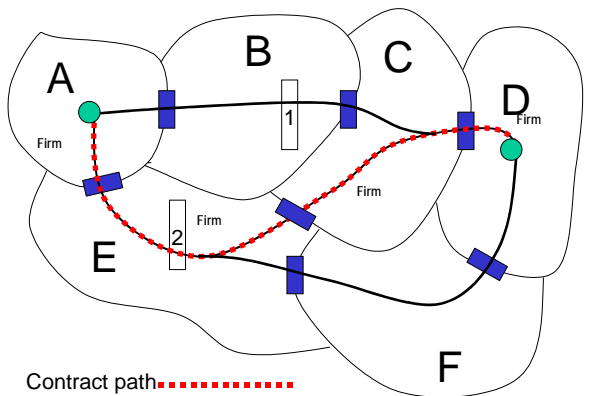
Case 4: E is a firm path; A, D, and C are Non-firm; E has CONSTRAINT at #2.

- Interchange Transaction A – D is considered Firm priority for curtailment purposes.
- E may then call RELIABILITY COORDINATOR for TLR, which would curtail all INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service first.
- E is obligated to try to reconfigure transmission to mitigate CONSTRAINT #2 in E before E may curtail the INTERCHANGE TRANSACTION as ordered by the TLR. (Principle 2)



Case 5: The entire path (A-E-C-D) is firm; E has CONSTRAINT at #2.

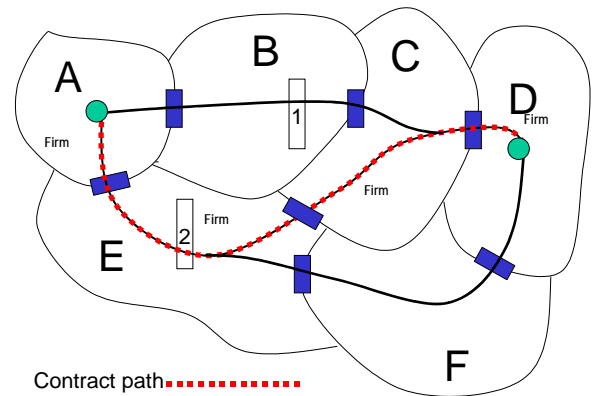
- INTERCHANGE TRANSACTION A – D is considered Firm priority for curtailment purposes.
- E may call RELIABILITY COORDINATOR for TLR, which would curtail all INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service first.
- E is obligated to curtail INTERCHANGE TRANSACTIONS using Non-firm Point-to-Point Transmission Service, and then reconfigure transmission on its system, or, if there is an agreement in place, arrange for reconfiguration or other congestion management options on another system, to mitigate CONSTRAINT #2 in E before the firm A-D transaction is curtailed. (Principle 2)
- A, C, D, may be requested by E to try to reconfigure transmission to mitigate CONSTRAINT #2 in E at E's expense. (Principle 2)



E. Principles for Mitigating Constraints On and Off the Contract Path

Case 6: The entire path (A-E-C-D) is firm; B has CONSTRAINT at #1.

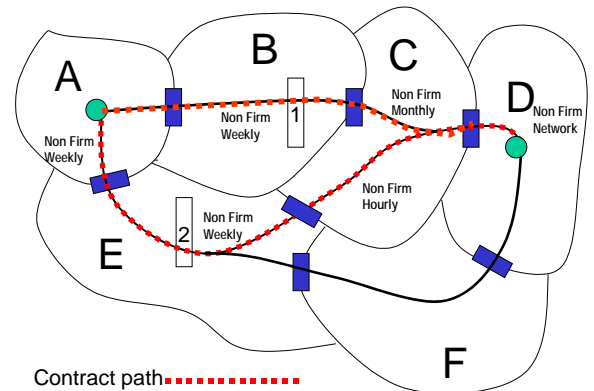
- INTERCHANGE TRANSACTION A – D is considered Firm priority for curtailment purposes.
- B may call RELIABILITY COORDINATOR for TLR Procedure for all *non-firm* INTERCHANGE TRANSACTIONS that contribute to the overload at CONSTRAINT #1.



- Following the curtailment of all non-firm INTERCHANGE TRANSACTIONS, the RELIABILITY COORDINATOR (ies) will determine which CONTROL AREA(S) will reconfigure their transmission, if possible, to mitigate constraint #1. (Principle 4)
- A-D transaction may be curtailed as a result. However, the A-D transaction is treated as a firm INTERCHANGE TRANSACTION and will be curtailed only after non-firm INTERCHANGE TRANSACTIONS. (Note: This means that the firm contract path is respected by all parties, including those not on the contract path.) (Principle 4)

Case 7: Two A-to-D transactions using A-B-C-D and A-E-C-D; A and B are non-firm; B has CONSTRAINT at #1

- B is not obligated to reconfigure transmission to mitigate CONSTRAINT at #1. (Principle 1)
- B may call for TLR Procedure to relieve overload at CONSTRAINT #1.
- If both A – D Interchange Transactions have the same TDF across Constraint #1, then they both are subject to curtailment. However, INTERCHANGE TRANSACTION A – D using the A-B-C-D path is assigned a higher priority (priority NW on B), and would not be curtailed until after the Interchange Transaction using the path A-E-C-D (priority NH on the contract path as observed by B who is off the contract path).



F. Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service

[See also “Parallel Flow Calculation Procedure Reference Document”]

Introduction

The provision of Point-to-Point (PTP) transmission service, Network Integration (NI) transmission service and service to Native Load (NL) results in parallel flows on the transmission network of other TRANSMISSION PROVIDERS. When a transmission facility becomes constrained, NERC Policy 9C, Appendix 9C1, calls for curtailment of INTERCHANGE TRANSACTIONS to allow INTERCHANGE TRANSACTIONS of higher priority to be scheduled (REALLOCATION) or to provide transmission loading relief (CURTAILMENT). An INTERCHANGE TRANSACTION is considered for REALLOCATION or CURTAILMENT if its TRANSFER DISTRIBUTION FACTOR (TDF) exceeds the TLR CURTAILMENT THRESHOLD.

In compliance with the Pro Forma tariffs filed with FERC by TRANSMISSION PROVIDERS, INTERCHANGE TRANSACTIONS using Non-firm PTP transmission service are curtailed first (TLR Level 3a and 3b), followed by transmission reconfiguration (TLR Level 4), and then the curtailment of INTERCHANGE TRANSACTIONS using Firm PTP transmission service, NI transmission service and service to NL (TLR Level 5a and 5b). The NERC TLR Procedure requires that the curtailment of Firm PTP transmission service be accompanied by the comparable curtailment of NI transmission service and service to NL to the degree that these three transmission services contribute to the CONSTRAINT.

Basic Principles

A methodology, called the Per Generator Method Without Counter Flow, or simply the Per Generator Method, has been programmed into the INTERCHANGE DISTRIBUTION CALCULATOR (IDC) to calculate the portion of parallel flows on any CONSTRAINED FACILITY due to service to NL of each CONTROL AREA (CA). The basic principles followed to assure comparable REALLOCATION or CURTAILMENT of firm transmission services are:

1. All firm transmission services (i.e. PTP, NI and service to NL) that contribute to the flow on any CONSTRAINED FACILITY by an amount greater than or equal to the CURTAILMENT THRESHOLD must be curtailed on a pro rata basis.
2. For Firm PTP transmission services, the TRANSFER DISTRIBUTION FACTORS (TDFs) must be greater than or equal to the CURTAILMENT THRESHOLD.
3. For NI transmission service and service to NL, the generator-to-load distribution factors (GLDFs) must be greater than or equal to the CURTAILMENT THRESHOLD. The GLDF on a specific CONSTRAINED FACILITY for a given generator within a CONTROL AREA is defined as the generator's contribution to the flow on that flowgate when supplying the load of that CONTROL AREA.
4. The Per Generator Method assigns the amount of CONSTRAINED FACILITY relief that must be achieved by each CONTROL AREA's NI transmission service or service to NL. It does not specify how the reduction will be achieved.
5. The Per Generator Method places an obligation on all CONTROL AREAS in the Eastern Interconnection to achieve the amount of CONSTRAINED FACILITY relief assigned to them.
6. The implementation of the Per Generator Method must be based on transmission and generation information that is readily available.

F. Parallel Flow Calculation Procedure for Reallocating or Curtailing Firm Transmission Service

Calculation Method

The calculation of the flow on a CONSTRAINED FACILITY due to NI transmission service or service to NL is based on the Generation Shift Factors (GSFs) of a CONTROL AREA’S assigned generation and the Load Shift Factors (LSFs) of its native load, relative to the system swing bus. The GSFs are calculated from a single bus location in the IDC model. The LSFs are defined as a general scaling of the native load within each CONTROL AREA. The Generator to Load Distribution Factor (GLDF) is calculated as the GSF minus the LSF. The IDC reports all generators assigned to native load for which the GLDF is greater than or equal to the CURTAILMENT THRESHOLD.

The “**Parallel Flow Calculation Procedure Reference Document**” provides additional information about the criteria used to include generators in the IDC calculation process.

Example of Results of Calculation Method

An example of the output of the IDC calculation of curtailment of firm transmission service is provided below for the specific CONSTRAINED FACILITY identified in the Book of Flowgates as Flowgate 1368. In this example, a total Firm PTP contribution to the CONSTRAINED FACILITY, as calculated by the IDC, is assumed to be 21.8 MW.

The table below presents a summary of each CONTROL AREA’S responsibility to provide relief to the CONSTRAINED FACILITY due to its NI transmission service and service to NL contribution to the CONSTRAINED FACILITY. In this example, CONTROL AREA LAGN would be requested to curtail 17.3 MW of its total of 401.1 MW of flow contribution on the CONSTRAINED FACILITY. See the “**Parallel Flow Calculation Procedure Reference Document**” for additional details regarding the information illustrated in the table (e. g. Scaled P Max and Flowgate NNL MW).

In summary, INTERCHANGE TRANSACTIONS would be curtailed by a total of 21.8 MW and NI transmission service and service to NL would be curtailed by a total of 178.2 MW by the five CONTROL AREAS identified in the table. These curtailments would provide a total of 200.0 MW of relief to the CONSTRAINED FACILITY.

Sink RA	Service Point	Scaled P Max	Flowgate NNL MW	Current NNL Relief	NNL Responsibility		NNL Responsibility Acknowledgement	
					Inc/Dec	Current Hr	Acknowledge Time	Total MW Resp.
EES	EES	8429.7	2991.4	0.0	128.9	128.9	13:44	128.9
EES	LAGN	1514.0	718.6	0.0	31.0	31.0	13:44	31.0
SOCO	SOCO	5089.2	401.1	0.0	17.3	17.3	13:44	17.3
SWPP	CLEC	235.7	18.0	0.0	0.8	0.8	13:42	0.8
SWPP	LEPA	22.8	4.1	0.0	0.2	0.2	13:42	0.2
Total		15291.4	4133.2	0.0	178.2	178.2		178.2

G. Transaction Curtailment Formula

Example

This example is based on the premise that a transaction should be curtailed in proportion to its TDF on the CONSTRAINTS. Its effect on the interface is a combination of its size in MW and its effect based on its distribution factor.

Column	Description
1. Initial Transaction	INTERCHANGE TRANSACTION before the TLR Procedure is implemented.
2. Distribution Factor	Proportional effect of the Transaction over the constrained interface due to the physical arrangement and impedance of the transmission system.
3. Impact on the Interface	Result of multiplying the Transaction MW by the distribution factor. This yields the MW that flow through the constrained interface from the Transaction. Performing this calculation for each Transaction yields the total flow through the constrained interface from all the INTERCHANGE TRANSACTIONS. In this case, 760 MW.
4. Impact Weighting Factor	“Normalization” of the total of the Distribution Factors in Column 2. Calculated by dividing the Distribution Factor for each Transaction by the total of the Distribution Factors.
5. Weighted Maximum Interface Reduction	Multiplying the Impact on the Interface from each Transaction by its Impact Weighting Factor yields a new proportion that is a combination of the MW Impact on the Interface and the Distribution Factor.
6. Interface Reduction	Multiplying the amount we need to reduce the flow over the constrained interface (280 MW) by the normalization of the Weighted Maximum Interface Reduction yields the actual MW reduction that each Transaction must <i>contribute</i> to achieve the total reduction.
7. Transaction Reduction	Now we have to divide by the Distribution Factor to see how much the Transaction must be reduced to yield the result we calculated in Column 7. Note that the reductions for the first two INTERCHANGE TRANSACTIONS (A-D (1) and A-D (2) are in proportion to their size since their distribution factors are equal.
8. New Transaction Amount	Subtracting the Transaction Reduction from the Initial Transaction yields the New Transaction Amount.
9. Adjusted Impact on Interface	A check to ensure the new constrained interface MW flow has been reduced to the target amount.

Appendix 9C1 – Transmission Loading Relief Procedure

H. Transaction Curtailment Formula

Allocation based on Weighted Impact									
	1	2	3	4	5	6	7	8	9
Transaction ID	Initial Transaction	Distribution Factor	(1)*(2) Impact On Interface	(2)/(2TOT) Impact weighting factor	(3)*(4) Weighted Max Interface Reduction	(5)*(Relief Requested) / (5 Tot) Interface Reduction	(6)/(2) Transaction Reduction	(1)-(7) New Transaction Amount	(8)*(2) Adjusted Impact On Interface
Example 1									
A-D(1)	800	0.6	480	0.34	164.57	209.73	349.54	450.46	270.27
A-D(2)	200	0.6	120	0.34	41.14	52.43	87.39	112.61	67.57
B-D	800	0.15	120	0.09	10.29	13.11	87.39	712.61	106.89
C-D	100	0.2	20	0.11	2.29	2.91	14.56	85.44	17.09
E-B	100	0.05	5	0.03	0.14	0.18	3.64	96.36	4.82
F-B	100	0.15	15	0.09	1.29	1.64	10.92	89.08	13.36
	2100	1.75	760		219.71	280.00	553.45	1546.55	480.00
Example 2									
A-D(1)	1000	0.6	600	0.52	313.04	262.16	436.93	563.07	337.84
B-D	800	0.15	120	0.13	15.65	13.11	87.39	712.61	106.89
C-D	100	0.2	20	0.17	3.48	2.91	14.56	85.44	17.09
E-B	100	0.05	5	0.04	0.22	0.18	3.64	96.36	4.82
F-B	100	0.15	15	0.13	1.96	1.64	10.92	89.08	13.36
	2100	1.15	760		334.35	280.00	553.45	1546.55	480.00
Example 3									
A-D(1A)	200	0.6	120	0.17	20.28	52.43	87.39	112.61	67.57
A-D(1B)	200	0.6	120	0.17	20.28	52.43	87.39	112.61	67.57
A-D(1C)	200	0.6	120	0.17	20.28	52.43	87.39	112.61	67.57
A-D(1D)	200	0.6	120	0.17	20.28	52.43	87.39	112.61	67.57
A-D(2)	200	0.6	120	0.17	20.28	52.43	87.39	112.61	67.57
B-D	800	0.15	120	0.04	5.07	13.11	87.39	712.61	106.89
C-D	100	0.2	20	0.06	1.13	2.91	14.56	85.44	17.09
E-B	100	0.05	5	0.01	0.07	0.18	3.64	96.36	4.82
F-B	100	0.15	15	0.04	0.63	1.64	10.92	89.08	13.36
	2100	3.55	760		108.31	280.00	553.45	1546.55	480.00

