Gross RMP. 2

ATTACHMENT C

Methodology to Assess Available Transfer Capability

This Attachment C contains the Transmission Provider's methodology to assess the Available Transfer Capability of the Transmission System.

Definitions

Available Transfer Capability (ATC): The measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability less existing transmission Commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin.

ATC Path: Any combination of Point of Receipt and Point of Delivery for which ATC is calculated; and any Posted Path.[1]

Capacity Benefit Margin (CBM): The amount of firm transmission transfer capability preserved by the transmission provider for load-serving entities (LSEs), whose loads are located on that Transmission Service Provider's system, to enable access by the LSEs to generation from interconnected systems to meet generation reliability requirements. Preservation of CBM for a LSE allows that entity to reduce its installed generating capacity below that which may otherwise have been necessary without interconnections to meet its generation reliability requirements. The transmission transfer capability preserved as CBM is intended to be used by the LSE only in times of emergency generation deficiencies.

Existing Transmission Commitments (ETC): Committed uses of a Transmission Provider's Transmission System considered when determining ATC.

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

[1] See 18 CFR § 37.6(b)(1)

Operating Horizon: The pre-schedule/day ahead period of time that begins at the end of the Scheduling Horizon and extends through the end of the last day that has been or is being pre-scheduled.

Operating Transfer Capability (OTC): An adjustment to the TTC of a posted transmission path during the Scheduling and Operating Horizons for seasonal system performance and power flows and or variations in dispatch and load patterns, as well as when the system is in an abnormal operating state, such as during forced or planned line outages. During periods when an OTC value is required, the transmission path scheduling limit will be the OTC instead of the TTC. OTC represents the reliability limit of a transmission path at the point in time and for the duration of the system abnormality.

Planning Horizon: The period of time that begins at the end of the Operating Horizon and extends to ten years from the current day.

Scheduling Horizon: The real-time period that begins with the current hour and extends through the current day, up to 24 hours from the current hour.

Simultaneous Transfer Capability (or Limit): The capability or capacity of a transmission circuit or path, in megawatts, to transfer power reliably and in accordance with prescribed reliability criteria in concert with other interacting paths, circuits, or generators. Simultaneous Transfer Capability is the interactive relationship with the flows on other transfer paths or circuits or the outputs of generators and is typically defined in the form of nomograms (parametric functions).

Total Transfer Capability (TTC): The amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of transmission lines (or paths) between those areas under specified system conditions.

Transmission Reliability Margin (TRM): The amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.

Transmission Service Request (TSR): Valid OATT transmission service requests submitted via OASIS for Point-to-Point Transmission Service under PacifiCorp's tariff.

Determination of ATC

Because PacifiCorp uses the Rated System Path Methodology, the currently effective version of NERC Reliability Standard MOD-029 ("Rated System Path Methodology") shall apply to calculate TTCs and ATCs for ATC Paths. All ATC calculation methodologies derive ATC by first determining TTC, expressed in terms of contract paths, and reducing that figure by existing transmission commitments (i.e., ETC), a margin that recognizes uncertainties with transfer capability (i.e., TRM), and a margin that allows for meeting generation reliability criteria (i.e., CBM).

(1) Description of Mathematical Algorithms Used to Calculate Firm And Non-Firm ATC

ATC calculations are made and posted on PacifiCorp's OASIS for three time horizons as described herein:

Scheduling Horizon: OASIS calculates the ATC after the Operating Horizon closes, typically at 3:00 PM Pacific time the day before transactions are scheduled to occur. In addition, PacifiCorp's OASIS re-calculates ATC continuously during the Scheduling Horizon as new TSRs are confirmed and as soon as schedules are received and approved for existing reservations.

ATC is also recalculated whenever new e-Tags are received and impact either firm or non-firm ATC.

Operating Horizon: PacifiCorp's OASIS re-calculates ATC continuously during the Operating Horizon as new TSRs are confirmed and as soon as schedules are received and approved for existing reservations.

To determine firm and non-firm ATC, the Transmission Provider uses the following algorithms for the Scheduling, Operating and Planning Horizons:

(a) $\text{Firm ATC } (ATC_F) = TTC - ETC_F - CBM - TRM + Postbacks_F + Counterflows_F$

Where:

ATC_F is the firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETC_F is the sum of existing firm commitments for the ATC Path during that period.

CBM is the Capacity Benefit Margin for the ATC Path during that period.

TRM is the Transmission Reliability Margin for the ATC Path during that period.

$Postbacks_F$ are changes to firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

$Counterflows_F$ are adjustments to firm Available Transfer Capability as determined by the Transmission Provider and as specified in PacifiCorp's Available Transfer Capability Implementation Document ("ATCID"). Counterflows are defined as counter schedules. Firm counterflows are set to zero in all horizons.

(b) Non-Firm ATC (ATC_{NF}) = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + $Postbacks_{NF}$ + $Counterflows_{NF}$

Where:

ATC_{NF} is the non-firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETC_F is the sum of existing firm commitments for the ATC Path during that period.

ETC_{NF} is the sum of existing non-firm commitments for the ATC Path during that period.

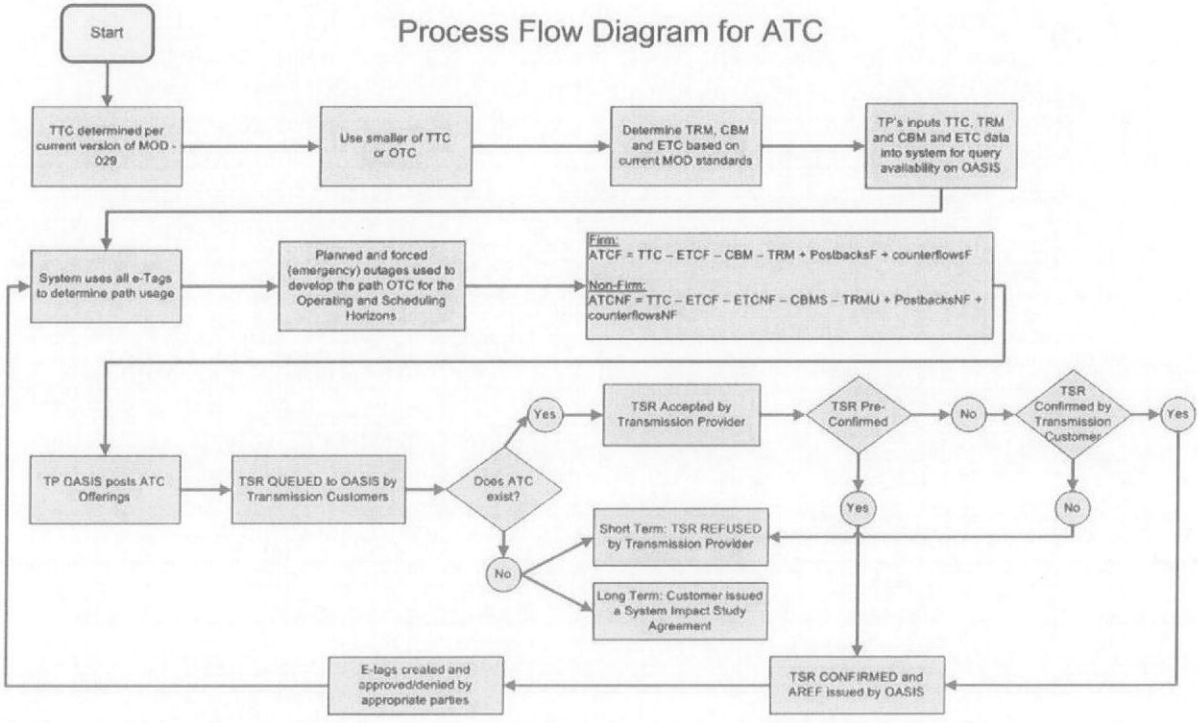
CBM_S is the Capacity Benefit Margin for the ATC Path that has been scheduled during that period.

TRM_U is the Transmission Reliability Margin for the ATC Path that has not been released for sale (unreleased) as non-firm capacity by the Transmission Service Provider during that period.

$Postbacks_{NF}$ are changes to non-firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

$Counterflows_{NF}$ are adjustments to non-firm Available Transfer Capability as determined by the Transmission Provider and as specified in PacifiCorp's ATCID. Counterflows are defined as counter schedules. Firm and non-firm counterflows are added to non-firm ATC in the Operating and Scheduling Horizons.

(2) Process Flow Diagram



(3) Detailed Description of ATC Components

(a) Total Transfer Capability (TTC)

(i) Definition

TTC is defined as the amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of all transmission lines (or paths) between those areas under specified system conditions.

(ii) Calculation Methodology

TTC is calculated pursuant to the currently effective version of NERC Reliability Standard MOD-029 ("Rated System Path Methodology"), Requirement R2.

Planning Horizon
PacifiCorp uses previously established TTC ratings on lines (paths) which have been in effect since January 1, 1994, and no action has been taken to the path rating using a different method; the same approach is also proposed in Requirement R2.7 of the NERC Reliability Standard MOD-029-1 for Rated System Path Methodology.

PacifiCorp may also conduct seasonal assessment studies of the transmission system which may require adjustment to the path TTC creating a Seasonal Operating Transfer Capability (Seasonal OTC) of the Bulk system. These studies establish the next season's maximum transfer capacity for selected transmission paths. When conducting a Seasonal OTC study, PacifiCorp follows the WECC policy of using a critical outage for a load condition and generation pattern defined by WECC to establish the OTC that meets reliability criteria

Operating Horizon
Under certain operating conditions, primarily planned and forced outages causing deviations from the "system normal" TTC, the posted TTC becomes the Operating Transmission Capability (OTC). OTC is an adjustment to TTC in the Operating Horizon for all planned outages which affect the transmission system's reliable transfer capability. Planned outages are modeled by operations engineers using load flow software. The impacted path's

TTC is adjusted to an effective OTC for the duration of the outage established using the load flow result.

(iii) Databases Used in TTC Assessments

PacifiCorp uses the applicable WECC developed system power flow base cases. To establish summer TTC, the peak summer case is used. Conversely, to establish a winter TTC, the winter peak case is used. PacifiCorp considers the information in the databases to be Critical Energy Infrastructure Information.

(iv) Assumptions Used in TTC Assessments.

The assumptions that PacifiCorp uses in its TTC assessments, including load levels, generation dispatch, and modeling of planned and contingency outages, are set out in Requirement R2 of the currently effective version of NERC Reliability Standard MOD-029 ("Rated System Path Methodology").

During the Scheduling and Operating Horizons, OASIS automatically modifies the posted TTC under certain operating conditions, primarily planned and forced outages. Under these conditions, the posted TTC becomes the Operating Transmission Capability (OTC), which is the amount of electric power that can be moved or transferred reliably at the point in time and for the duration of the system abnormality. A TTC for ATC Paths is modified to an OTC when a path is impacted by a planned or unplanned (emergency) transmission outage. In these instances the posted TTC on OASIS is decremented automatically whenever a new transmission outage is delivered to OASIS from PacifiCorp's Outage Management Software (COMPASS). The Outage Coordinator selects the appropriate path(s) or equipment for each outage and if the outage affect(s) a posted paths operating capability, OASIS will generate a path OTC which will be automatically posted and utilized in the ATC formula for calculation during the scheduling and operating horizons for the duration of the outage event.

(b) Existing Transmission Commitments (ETC)

(i) Definition

Existing transmission commitments (ETC) are committed uses of a Transmission Provider's Transmission System considered when determining ATC.

(ii) Calculation Methodology

When calculating ETC for firm Existing Transmission Commitments (ETC_F) for a specified period for an ATC Path, PacifiCorp uses the algorithm below:

$$ETC_F = NL_F + NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

NL_F is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

$NITS_F$ is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_F is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP_F is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

ROR_F is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal.

OS_F is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

When calculating Non-Firm ATC, PacifiCorp includes each of the components of non-firm Existing Transmission Commitments (ETC_{NF}) for a specified period for an ATC Path, using the algorithm below:

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

$NITS_{NF}$ is the non-firm capacity set aside for Network Integration Transmission Service serving Load (*i.e.*, secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_{NF} is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's OATT.

PTP_{NF} is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS_{NF} is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm Transmission Service as specified in the ATCID.

PacifiCorp does not set aside or reserve either (1) non-firm capacity for grandfathered Transmission Service and contracts for energy and/or Transmission Service executed prior to the effective date of PacifiCorp's OATT or (2) non-firm capacity for any other service, contract, or agreement otherwise not specified, and so both of these values will be zero.

Native and Network Load requirements are modeled using the megawatt quantity and other terms which are determined consistent with the OATT and the Transmission Customers' annual Loads and Resources (L&R) submittals. Network service allocations are studied and adjusted annually based upon Transmission Customers' L&R submittals. For the Planning Horizon, network service allocations on posted path(s) are used to represent forecasted annual growth of Native Load and Network Load over the Planning Horizon. The methodology used to determine the capacity set aside for Native and Network

Loads is a spreadsheet analysis. PacifiCorp's system is composed of multiple load and resource "bubbles," which are sections of PacifiCorp service territory with an unconstrained contiguous transmission system. Some bubbles may be as large as a state, such as the Utah bubble (also known as "PACE"). Network reservations were assigned to each network resource located internally to these bubbles. For transmission connections between bubbles, various generation and line contingencies were studied and network capacity allocations were provided for excess generation located in one bubble and needed to serve load in an adjacent bubble. For transmission connections to adjacent control areas into load bubbles network capacity allocations were only allocated for remote network resources or firm purchases which qualify for designation as network resources.

(iii) Incorporation of Point-To-Point Transmission Service Requests

Existing, confirmed requests for Point-to-Point Transmission Service are modeled in the Planning Horizon using the specified megawatt quantity, Point(s) of Receipt, and Point(s) of Delivery.

(iv) Accounting for Rollover Rights

PacifiCorp, in the absence of Transmission Customer notice to terminate rights, assumes that a Transmission Customer will exercise rollover for existing long-term Transmission rights. To account for this assumption, transmission in the amount of the confirmed TSR is set aside. If a Transmission Customer does not exercise its rollover right, that amount may be removed from the ETC.

(v) Process For Ensuring that Non-Firm Capacity is Released Properly

Transmission reservations that are not scheduled will be made available and posted on OASIS as Non-Firm ATC.

Requests for Non-Firm Point-to-Point Transmission Service are made in accordance with section 18.3 of the Tariff. The OASIS system assigns a scheduling AREF (an assignment reference number) for these requests. Non-firm ATC on each posted path is continuously recalculated to include any unscheduled firm ATC for such path and posted on PacifiCorp's OASIS. PacifiCorp's OASIS system automatically updates ATC on a path as e-Tags are

received and approved from both firm and non-firm Transmission Customers. The OASIS adjusts ATC continuously in both the Scheduling and Operating Horizons.

To accommodate the fact that firm rights holders are allowed to adjust schedules in the Operating Horizon, which releases ATC for non-firm use, non-firm Transmission Customers may, during the Scheduling Horizon, purchase capacity up to the path's total TTC. Any non-firm use leading to any over-subscription of non-firm use is curtailed prior to the start of the scheduling hour (no later than 20 minutes to the hour).

(c) Transmission Reliability Margin (TRM)

(i) Definition

Transmission Reliability Margin (TRM) is the amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.

(ii) Calculation Methodology

TRM is calculated pursuant to the requirements of the currently effective version of NERC Reliability Standard MOD-008 ("TRM Calculation Methodology").

(iii) Databases Used in TRM Assessments

The power flow studies used in PacifiCorp's TTC assessments are based on system base cases developed through the WECC.

(iv) Conditions Under Which TRM Used

Consistent with NERC Reliability Standard MOD-008 Requirement R1.1, TRM may be established by using the following components of uncertainty:

- Aggregate Load forecast.
- Load distribution uncertainty.

- Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages).
- Allowances for parallel path (loop flow) impacts.
- Allowances for simultaneous path interactions.
- Variations in generation dispatch (including, but not limited to, forced or unplanned outages, maintenance outages and location of future generation).
- Short-term System Operator response (Operating Reserve actions).
- Reserve sharing requirements.
- Inertial response and frequency bias.

PacifiCorp uses at least two of the above-listed criteria in its calculation of TRM: 1) allowances for unscheduled flow (loop flow), and 2) simultaneous limitations associated with operation under a nomogram. These are consistent with the WECC criteria used in the calculation of TRM. Such criteria are also consistent with currently-effective NERC Reliability Standard MOD-008, which permits allowances for equivalent criteria, including parallel path impacts (also referred to as loop flow) and simultaneous path interactions. PacifiCorp's TRM calculation methodology does not account for reliability components used to establish TTC.

A) Allowances for unscheduled flow or parallel path impacts (loop flow) are accounted for in TRM as follows:

1) Planning Horizon:

TRM may be assigned in the Planning Horizon when studies show simulated flows that exceed ETC values. TRM is assigned to the maximum flow identified above existing ETC requirements for paths that exhibit this characteristic.

2) Operating Horizon:

TRM may be assigned when actual flows in the Operating Horizon are observed to exceed the maximum ETC on a path without phase shifter control devices, and more than one time in any 4-month period.

Under such circumstances, a TRM value equal to the maximum flow above the ETC up to the path TTC is established and posted.

B) Allowances for simultaneous path interactions (associated with operation under a nomogram) are accounted for in TRM as follows:

1) Planning Horizon:

When a transmission path has a nomogram relationship with another path, the Non-Simultaneous and Simultaneous Transfer Capabilities are first determined from studies using the methods described in 3.a.i above. The difference between the Non-Simultaneous and Simultaneous Transfer Capability is then considered TRM and posted on the impacted path/s.

2) Operating Horizon:

Posted TRM derived in the Planning Horizon is released for non-firm use in the Operating Horizon.

The full list of TRM reserved on posted paths may be found as System Data (ATC information) and can be viewed on the PacifiCorp OASIS.

3) Scheduling Horizon:

Posted TRM derived in the Planning Horizon is released for non-firm use in the Scheduling Horizon.

(d) Capacity Benefit Margin (CBM):

PacifiCorp does not reserve CBM on its own behalf or for other Transmission Customers without a specific request for CBM. PacifiCorp's Capacity Benefit Margin Implementation Document (CBMID) is posted on OASIS as required by currently effective NERC Reliability Standard MOD-004 ("Capacity Benefit Margin").