

[Capitalized words will have the same meaning as listed in the NERC Glossary of Terms and Rules of Procedures unless defined otherwise within this document.]

INADVERTENT INTERCHANGE

Relationship to Reliability, Industry Practices, and Options for the Future

Introduction

The purpose of this document is to explain why a North American Electric Reliability Corporation (NERC) Reliability Standard is not required for Inadvertent Interchange (also referred to herein as Inadvertent) accounting and that Inadvertent accounting should be addressed through commercial means.

Included within this document are the typical practices that Balancing Authority Areas (BAA) within the NERC area currently follow, which allows for the development of commercial methods to address inadvertent balances. These practices provide a method for isolating and eliminating the source(s) of Inadvertent accounting errors.

Simple data errors (either value or sign) made in the acquisition of Actual Net Interchange or Scheduled Net Interchanges may become operating problems if they become a part of the Reporting ACE calculation. Regarding the deliberate creation or reduction of Inadvertent, this happens through implementation of bilateral or unilateral Inadvertent payback or a false Schedule offset to correct a perceived metering error. Also, Inadvertent is created or reduced because it is calculated using hourly Actual Net Interchange and Scheduled Net Interchanges without compensation for ramps. Finally, Inadvertent is inherently created because generation cannot physically follow the electrical demands of the system with absolute precision. Viewed from a total interconnected network (Interconnection) perspective, when the summation of all Balancing Authority Area Inadvertent within an Interconnection no longer sums to zero, there will exist a generation surplus or deficiency on the Interconnection. Ultimately this shows up in the form of aggregated scheduled frequency deviations, or Time Error.

Does Inadvertent Interchange Relate to Reliability?

Short-term or limited accumulations of Inadvertent Interchange do not cause reliability issues and are a part of normal interconnected operation in a multi-Balancing Authority Area Interconnection.

With the evolution of industry, technical advancements in measurements, and more visibility of the real-time operations, Inadvertent Interchange has little or no reliability impact. However, large and long-held primary Inadvertent Interchange accumulations do impact commercial relationships and their paybacks can create impacts to reliability if not conducted in an appropriate manner.

Causes of Inadvertent Interchange Accumulations

Some of the most common causes of Inadvertent Interchange are:

- 1) data recording errors;
- 2) metering errors;
- 3) scheduling errors;
- 4) ramping representation errors;
- 5) intentional control adjustments (temporary frequency support, smoothing algorithms, and ACE filter gain factors); and,
- 6) unintentional control errors (from both human action and Automatic Generation Control (AGC) errors);

Data Recording Errors

Simple data recording errors (incorrect value or sign) made while recording Actual Net Interchange or Scheduled Net Interchange can become operating reliability problems, depending upon the magnitude of the error, if they become a part of the Reporting ACE calculation. When viewed from the Interconnection perspective, if the sum of all Balancing Authority Areas' Inadvertent Interchange accumulations no longer sum to zero due to these data errors, frequency will be driven high or low, depending on the direction of the imbalance. If not resolved, imbalances due to data errors show up in the form of recurring Time Error. Other sources of error with Actual Net Interchange or Scheduled Net Interchange are identified in the following paragraphs.

Metering Errors

All Tie Lines between Adjacent Balancing Authority Areas should reflect the same coincident values at all times. Adjacent Balancing Authorities sharing a common tie are expected to use common metering with a synchronized freeze at hour-end. This is intended to assure that both Balancing Authorities capture the same value from the meter's register or accumulators. However, errors can occur due to the loss of telemetry by one or both Balancing Authority Areas or in the difference between an integrated analog value being used by one party and a megawatt-hour meter value being used by the other party. Another error may be created when two Adjacent Balancing Authority Areas use different scaling factors. These errors should be addressed through the requirements of the proposed BAL-005-1 and calculation of Reporting ACE, since it requires that hour-ending values be equal but opposite direction between Adjacent Balancing Authority Areas. It is important to note that, with respect to common metering, the requirement under currently-effective BAL-006-2 regarding a Balancing Authority's obligation to ensure that all of its Balancing Authority Area interconnection points are equipped with common megawatt hour meters has been moved to proposed BAL-005-1 at Requirements R1 and R8.

Scheduling Errors

All Interchange Schedules between Adjacent Balancing Authorities should reflect the same value with opposite direction. Errors can occur due to improper entry of data (time, amount, direction, duration, etc.) or improper updates in real-time. While these errors may occur, it is

not acceptable for two Balancing Authorities to knowingly operate to dissimilar Schedules (“to agree to disagree”). These types of errors should be addressed through the requirements of the proposed BAL-005-1 and calculation of Reporting ACE.

Ramping Representation Errors - Accounting Anomaly

The practice of using block (contract) Scheduled Net Interchanges instead of integrated Scheduled Net Interchanges (the ramping effect) and subtracting the block values from integrated Actual Net Interchange creates a “built-in” false error. Longer duration ramps have the potential to produce larger errors. This is a false error because it gives the perception that an error occurred when, in fact, the Balancing Authority may have had perfect control and, yet, Inadvertent Interchange was created. These types of errors should be addressed through the requirements of the proposed BAL-005-1 and calculation of Reporting ACE.

Intentional Control Errors – Frequency Support [expected]

Frequency continually changes as system load or generation changes. Balancing Authority Areas have a responsibility to support frequency by acting in opposition to these changes. When measured frequency is different than the Scheduled Frequency (due to Demand changes or generation change) Balancing Authority Areas throughout an Interconnection adjust dispatch to arrest the frequency changes and support frequency until it is restored to its Scheduled value, in accordance with BAL-001, BAL-002, and BAL-003. During this period each Balancing Authority Area adjusts its resources to create more or less energy than is needed to serve its area Demand in order to support frequency, thus creating Inadvertent Interchange. In contrast to previous errors, intentional control errors are created by other standard requirements as opposed to being mitigated by them.

Unintentional Control Errors [unexpected]

If a Balancing Authority has insufficient regulating resources committed to follow its Demand variability and provide frequency support, Inadvertent Interchange may result. Poor control algorithms, generation outages, or generation deviation from Scheduled output could also cause Inadvertent Interchange to accumulate.

Further, unintentional control errors are inherently created with the most basic physical model of power generation, namely system inertia. A generating unit is unable to follow load with absolute precision due to the amount of energy that is required to change a generating units output and the instantaneous nature of load pickup that can occur. As load on the system changes, Balancing Authorities are varying their generation levels to meet this load, and a generator cannot follow a load with exact precision. The aggregation of these small differences in generation and load balance can create inadvertent energy on the system.

Finally, an incorrectly calibrated frequency meter will send a false indication to a Balancing Authority Area’s AGC causing it to operate uncoordinated with other Balancing Authority Areas in the Interconnection. This will result in Inadvertent accumulations for the Balancing Authority Area with the erroneous frequency input and unwanted accumulations by other Balancing Authority Areas in the Interconnection. However, the proposed BAL-005-1 should limit the impacts of incorrectly calibrated frequency meters.

Since the BAL Standards all require the Balancing Authorities to calculate ACE in accordance with the definitions, and within these Standards, there are requirements to mitigate errors used in the calculation of ACE, the resulting Inadvertent should be caused by the generation physically not being able to follow the precise electrical demands of the system.

Inadvertent Interchange

Inadvertent is zero for an hour when the Actual Net Interchange is equal to the Scheduled Net Interchange for that hour. The goal of each Balancing Authority is to appropriately manage its Inadvertent accumulations. Accomplishing this goal requires that settlement policies within their Interconnection exist.

The retired NERC Policy 1F supported the short-term and long-term goals by stating: “Each balancing authority shall be active in preventing unintentional Inadvertent Interchange accumulations. Each Balancing Authority shall also be diligent in reducing accumulated Inadvertent balances in accordance with Operating Policies.” This policy set no limits on the amount of Inadvertent that could be accumulated or when it must have been paid back. This policy was not a reliability policy, but was an accounting policy and should be resolved through commercial means.

Interchange Accounting

- 1. Accounting of Interchange.** Accounting of energy between Balancing Authorities residing within the same Interconnection is both simple and complicated. In theory, Inadvertent Interchange is the difference between Actual Net Interchange and the Scheduled Net Interchange over a given period, usually an hour. Mathematically, it is the time integral of the deviation of a Balancing Authority's Actual Net Interchange from its Scheduled Net Interchange:

$$NI_I = NI_A - NI_S$$

Where,

NI_I is Inadvertent Interchange. In accordance with NERC convention, negative values of Inadvertent Interchange denote a condition of importing energy or under-generation and positive values denote exporting energy or over-generation.

NI_A is Actual Net Interchange. It is the algebraic sum of the hourly integrated energy on a Balancing Authority's Tie Lines including Pseudo-ties. Actual Net Interchange is positive for power leaving the system and negative for power entering it.

NI_S is Scheduled Net Interchange. It is defined as the mutually prearranged net energy on a Balancing Authority's Tie Lines including Dynamic Schedules or fixed Schedules for any jointly owned or contracted generation. The Scheduled Net Interchange is positive

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for power scheduled to be delivered from the Balancing Authority Area and negative for power Scheduled to be received into the Balancing Authority Area.

2. **Actual Net Interchange Energy Accounting.** Actual Net Interchange (metered interchange) between two Adjacent Balancing Authority Areas over a common Tie Line is accounted for at a specific point in the line. Furthermore, both Balancing Authorities shall agree on the amount of energy flow through this point, including any Pseudo-Tie flows that may exist between the two Balancing Authority Areas. Therefore, the sum of metered energy accounted by both Balancing Authority Areas over this Tie Line nets to zero. Since this is true for all Balancing Authority Areas within the same Interconnection, the algebraic sum of all metered energy within the same Interconnection is also zero.
3. **Scheduled Net Interchange Energy Accounting.** All Interchange Schedules shall have an agreed-upon Interchange Transaction size (megawatts), a start and end time, a beginning and ending ramp time and rate, and type required for delivery and receipt of power and energy between the Source and Sink Balancing Authorities involved in the transaction. Dynamic Schedules and fixed Schedules for jointly owned or contracted generation between Balancing Authority Areas should be agreed to on an hour-by-hour basis, and included in the Scheduled Net Interchange of both Balancing Authority Areas. The algebraic sum of Scheduled Net Interchange accounted by both Balancing Authority Areas must equal zero. Since every Interchange Schedule is agreed to by all involved delivering and receiving Balancing Authority Areas within an Interconnection, the algebraic sum of all Scheduled Net Interchange is also zero.
4. **Inadvertent Interchange Energy Accounting.** As stated previously, Inadvertent Interchange is the difference between Actual Net Interchange and Scheduled Net Interchanges over a given period. Since the algebraic sum of all Actual Net Interchange and the algebraic sum of all Scheduled Net Interchanges for any given period is zero within an Interconnection, the sum of all inadvertent interchange is also zero.

When Reporting ACE is properly implemented according to principles 2 and 3 included in the NERC definition, the above four conditions will result. This balancing of Inadvertent energy accounting allows effective payback methods to be implemented.

Inadvertent Interchange Energy Accounting Practices

The practices set forth in this section outline the methods required to reconcile energy accounting and inadvertent interchange balances.

For a Balancing Authority Area to properly monitor and account for Inadvertent Interchange, all Balancing Authority Areas must follow the same methodology within that Interconnection.

1. Accounting Procedures

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- 1.1. On-Peak and Off-Peak Accounting Periods.** Each Balancing Authority is obligated to maintain its Inadvertent Interchange accounting within two periods, namely, On-Peak and Off-Peak.
 - 1.2. Interchange Schedules.** All hourly Schedules and Schedule changes shall be agreed upon between the Balancing Authority Areas involved prior to implementation in regard to common magnitude, rate of change, starting time, and ending time.
 - 1.3. Dynamic Schedules.** Dynamic Schedules integrated on an hourly basis shall be agreed upon by the Balancing Authority Areas involved subsequent to the hour, but in such a manner as not to impact Inadvertent accounts. This is accomplished by assuring that the hourly actual and scheduled Interchange quantities agree between all delivering and receiving parties.
 - 1.4. Daily Accounting.** Each Balancing Authority shall agree with its Adjacent Balancing Authority Area as to the hourly values of actual Interchange (megawatt hour) scheduled interchange (megawatt hour) for On-Peak and Off-Peak periods.
 - 1.5. Monthly Accounting.** Having agreed to the On-Peak and Off-Peak period hourly values on a daily basis, Balancing Authorities should expect the summation of accumulated values for the month to balance to zero for each Interconnection.
 - 1.6. Adjustments for Error.** Adjustments shall be made each month to correct for differences between hourly megawatt hour meter totals and the hourly integrated totals derived from register readings at the Tie Line meters.
 - 1.6.1 Differences.** Adjacent Balancing Authorities shall agree upon the difference determined above and assign this correction to the proper On-Peak and Off-Peak period and in equal quantities in the opposite directions.
 - 1.6.2 Adjustments.** Adjustments necessary due to known metering errors, franchised territories, transmission losses or other special circumstances shall be made in the same manner as 1.6.1.
- 2. NAESB Standard WEQ-007 Business Practices Requirements:**
- 2.1. Inadvertent Interchange payback.** Each Balancing Authority shall be diligent in reducing Inadvertent Interchange accumulations. Balancing Authorities shall payback Inadvertent Interchange accumulations by one of the following methods:
 - 2.1.1. Energy “in-kind” payback.** Inadvertent Interchange accumulated during “On-Peak” hours shall only be paid back during “On-Peak” hours. Inadvertent Interchange accumulated during “Off-Peak” hours shall only be paid back during “Off-Peak” hours.

- 2.1.1.1. Bilateral payback.** Inadvertent Interchange accumulations may be paid back via an Interchange Schedule with another Balancing Authority.
- 2.1.1.1.1. Opposite balances. The Source Balancing Authority Area and Sink Balancing Authority Area must have Inadvertent Interchange accumulations in the opposite direction.
- 2.1.1.1.2. Payback terms. The terms of the Inadvertent Interchange payback shall be agreed upon by all involved Balancing Authorities and Transmission Service Providers.
- 2.1.1.2. Unilateral payback.** Inadvertent Interchange accumulations may be paid back unilaterally controlling to a target of non-zero ACE. Controlling to a nonzero ACE ensures that the unilateral payback is accounted for in the CPS1 calculations. The unilateral payback control offset is limited to Balancing Authority Areas' L₁₀ limit and shall not burden the Interconnection.
- 2.1.2. Other payback methods.** Upon agreement by all Regional entities within an Interconnection, other methods of Inadvertent Interchange payback may be utilized. The Western Interconnection established a regional reliability standard BAL-004-WECC-02 – Automatic Time Error Correction in which Primary Inadvertent Interchange payback are effectively conducted in a manner that does not adversely affect the reliability of the Interconnection.
- 2.1.3. Implementation of the following Reporting ACE equation by all Regions entities** within an Interconnection would result in automatic Inadvertent payback for that interconnection independent of Time Error Correction as implemented on the Western Interconnection.

$$\text{Reporting ACE} = (\text{NI}_A - \text{NI}_S) - 10B (F_A - F_S) - I_{ME} + I_{AIP}$$

Where:

I_{AIP} (Automatic Inadvertent Payback) is the addition of a component to the Reporting ACE equation that modifies the control point for the purpose of continuously paying back Inadvertent Interchange to correct accumulated Inadvertent accounts without correcting for Time Error.

$$I_{AIP} = \frac{\prod_{\text{on/off peak}}^{accum}}{H} \quad \text{when operating in Automatic Inadvertent Payback mode.}$$

The absolute value of I_{AIP} shall not exceed L_{max}.

I_{ATEC} shall be zero when operating in any other AGC mode.

- L_{max} is the maximum value allowed for I_{AIP} set by each BAA between 0.2*|B_i| and L₁₀, 0.2*|B_i| ≤ L_{max} ≤ L₁₀.
- L₁₀ = 1.65 * ε₁₀ √((-10B_i)(-10B_s)).

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- ϵ_{10} is a constant derived from the targeted frequency bound. It is the targeted root-mean-square (RMS) value of ten-minute average frequency error based on frequency performance over a given year. The bound, ϵ_{10} , is the same for every Balancing Authority Area within an Interconnection.
- H = Number of hours used to payback Inadvertent Interchange energy.
- B_i = Frequency Bias Setting for the Balancing Authority Area (MW / 0.1 Hz).
- B_S = Sum of the minimum Frequency Bias Settings for the Interconnection (MW / 0.1 Hz).
- Inadvertent Interchange is II_{actual} is the hourly Inadvertent Interchange for the last hour.
- II_{accum} is the Balancing Authority Area's accumulated II_{actual} in MWh. An On-Peak and Off-Peak accumulation accounting is required,

where:

$$II_{accum}^{on/offpeak} = \text{last period's } II_{accum}^{on/offpeak} + II_{actual}$$

Implementation of Automatic Inadvertent Payback as shown above would also require a modification to the Reporting ACE definition in the NERC Glossary to allow for its implementation in the Reporting ACE equation.

3. Inadvertent Interchange over Direct Current Tie Lines between Separately Synchronous Interconnections

For the purpose of NERC inadvertent interchange calculations, there shall be no contribution to a Balancing Authority's Reporting ACE or Inadvertent accumulation due to a direct current tie connecting Adjacent Balancing Authorities operating in separate Interconnections.

4. Summary of Accounting Rules

4.1. Summation of Interchange Schedules. The summation of all Interchange Schedules within an Interconnection shall total zero for any period of time.

4.2. Summation of Actual Net Interchange. The summation of all Actual Net Interchange within an Interconnection shall total zero for any period of time.

4.3. Summation of inadvertent interchange for Interconnection. The summation of all Inadvertent Interchange within an Interconnection shall total zero for any period of time.

5. Accounting Examples

Daily, total Net Actual Interchange for each hour accumulated during the On-Peak and Off-Peak periods. Do the same with the Scheduled Net Interchanges. By period, subtract the totaled Scheduled Net Interchange from the totaled Actual Net Interchange. This will yield On-Peak and Off-Peak Inadvertent accumulations for the day. The addition of these two accumulations is the Balancing Authority's Inadvertent Interchange accumulation for

the day. All Balancing Authorities must keep an accurate, continuous record of their current balances of On-Peak, Off-Peak, and (net) Inadvertent for the day, month, and accumulative to date, to meet accounting requirements

Need for a Reliability Standard

It is recognized that Tie Line Bias operation results in the creation of Inadvertent Interchange. The need for action required for reliable system operation is reflected in the requirements in the proposed BAL-005-1. Actions to resolve potential reliability problems associated with Inadvertent is addressed in the BAL-005 requirements. Inadvertent accumulation is an equity issue that cannot be solved with a reliability requirement.

NERC Reliability Standards are based on principles that define the foundation of reliability for the North American Bulk Electric System. Each Standard enables or supports one or more of these principles, thereby ensuring that each Reliability Standard serves a purpose in support of reliability of the North American Bulk Electric System.

Even though FERC Order 693 directs the ERO to develop modifications to BAL-006 to add requirements to address certain issues associated with Inadvertent, Inadvertent accumulation does not cause the Interconnection to be unreliable. However, if a Balancing Authority Area's Inadvertent accumulation is extremely large, it may drive most of the other accumulations held by other Balancing Authority Areas in the Interconnection to become uncomfortably large in the opposite direction. This may drive unilateral paybacks resulting in a topological shift in transmission loadings to the point of becoming a reliability problem. Normally, there is no reliability issue associated with Inadvertent.

The proposed BAL-005-1 requirements, along with the requirements of BAL-001, BAL-002, and BAL-003, establish the reliability requirements for Balancing Authorities to ensure that a Balancing Authority does not excessively depend on other Balancing Authorities in the Interconnection to meet their Demand or Interchange obligations.

The NERC Resources Subcommittee and Inadvertent Interchange Working Group, which serve at the pleasure of the NERC Operating Committee, will continue to monitor Inadvertent Interchange, in conjunction with the aforementioned suite of balancing Reliability Standards, to ensure that Inadvertent accumulations do not result in adverse impacts on reliability.

FERC Order No. 693 was issued prior to other changes in the industry, such as the modified BAL-001-2 and the new BAL-003-1, along with the work on BAL-002-2 and the proposed BAL-005-1. All of these changes are designed to ensure that Balancing Authority Areas do not excessively depend on other Balancing Authority Areas in the Interconnection to meet their Demand obligations. Some of the changes are designed to allow for Inadvertent while supporting Interconnection frequency and reducing the need to move generation in one direction or the other (over-generating or under-generating). To allow for these changes, while enhancing reliability, the drafting team is proposing a commercial method to resolve Inadvertent while accommodating the requirements of Order 693. In light of other requirements and proposed requirements under the BAL Reliability Standards, the drafting team is recommending a

commercial requirement rather than a reliability requirement. The Commission has already established such a procedure when handling imbalance charges within the Open Access Tariffs.

Commercial Requirement

If all the requirements within proposed BAL-005-1 are met continuously by the Balancing Authority Areas, reliability requirements are met and thus Inadvertent Interchange accumulations are a commercial issue.

A commercial requirement is necessary to:

- 1) Establish a tracking mechanism for Inadvertent Interchange accumulations (currently provided through CERTS Inadvertent application), and
- 2) Encourage settlements within a reasonable time period.

These reasons are explained in the following paragraphs.

Quality Control

Inadvertent data requires the ability to measure the accuracy and effectiveness of meters, scheduling systems, and energy management systems, as indicated in the requirements of the proposed BAL-005-1. As such, it provides a check and balance for the measurement systems.

Data Accuracy

Inadvertent data requires that all Balancing Authority Areas within an Interconnection have accurate data for timely management of Inadvertent accumulations and a process for reducing accumulated Inadvertent balances.

Diagnostic Tool to Validate Performance

Inadvertent Interchange is a source of independent data for diagnostic purposes as recommended by the U.S.-Canada Power System Outage Task Force. NERC Reliability Standards BAL-001, BAL-002, and BAL-003 are used to evaluate Balancing Authority reliability performance.

The proposed Reliability Standard BAL-005-1 contains requirements for a system operator to examine real-time system inputs to determine if a metering problem exists, a Schedule is incorrectly entered, or the frequency indication is erroneous.

From an Interconnection viewpoint, Inadvertent accumulations over a given time period (e.g., several months) can occur without making an Interconnection unreliable. An Interconnection may have operated within the prescribed safe frequency range; however, one Balancing Authority Area may have been over-generating, while another was under-generating. Thus the Interconnection was reliable and balanced. The resulting accumulated Inadvertent becomes an equity issue.

Tracking Mechanism for Accumulations

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Since Inadvertent always sums to zero for an Interconnection, every megawatt hour of positive Inadvertent held by one Balancing authority area is balanced with a megawatt hour of negative Inadvertent held by another. Therefore, a Balancing Authority Area holding an amount of Inadvertent accumulation forces other Balancing Authority Areas to hold a collective amount of Inadvertent accumulation in the opposite direction.

Balancing Authority Areas should track their accumulations of Inadvertent Interchange to assure equity among the Balancing Authority Areas within the Interconnection is maintained. Monthly and accumulated Inadvertent Interchange balances are presently tracked and reported via a CERTS Inadvertent Interchange Reporting Application. This reporting process should be maintained to insure that accurate Inadvertent balances are recorded and available for analysis.

Reasonable Time Limit for Settling Accumulations

While the retired NERC Policy 1F encourages Balancing Authorities to “be diligent in reducing accumulated Inadvertent balances”, it does not indicate the time period that these reductions must occur. Is it acceptable to hold accumulated Inadvertent balances for years?

Inadvertent Interchange Payback Schemes

An Inadvertent Interchange accumulation means that demands in the Balancing Authority Area with a negative accumulation of Inadvertent interchange are in part supplied off-schedule by generators in the other Balancing Authority Areas. Symmetrically, generators in an area with a positive accumulation of Inadvertent interchange supply Demands in some other areas off-schedule. Effectively, the Inadvertent Interchange accumulation means systematic over-generation or under-generation in the corresponding Balancing Authority Area. This economic imbalance can be settled either through the financial mechanisms, or unilateral or bilateral Inadvertent interchange payback schemes discussed previously. However, any commercial mechanism must be an agreed to and coordinated scheme and applied equally to everyone within the Interconnection. If any Balancing Authority does something different than what has been agreed for the Interconnection, then a reliability problem may arise.

Options

Unilateral Payback Schemes

In the unilateral payback scheme, a Balancing Authority Area unilaterally and intentionally over-generates or under-generates over a certain time interval, in accordance with an agreed upon process or NAESB standard, to pay the corresponding negative or positive Inadvertent Interchange accumulation back to the Interconnection. This scheme can be automated as it is done in the Western Interconnection through the Reliability Standard BAL-004-WECC-02.

Bilateral Payback Schemes

In the bilateral scheme, two Balancing Authority areas, one with a positive and one with a corresponding negative Inadvertent Interchange accumulation, agree upon the time and the size of a scheduled inadvertent Interchange payback. Unlike the unilateral Inadvertent Interchange

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payback, this scheme must be balanced and not impact the Interconnection active power balance or Interconnection frequency.

Automatic Payback Schemes

In an Automatic Payback scheme as described in 2.1.3 of this document, all Balancing Authorities in an Interconnection agree to “payback” the same proportion of their accumulated Inadvertent in each hour. Since the accumulated Inadvertent on and off peak accounts are balanced, the resulting Reporting ACE adjustments would also be balanced and have no reliability effect on the Interconnection active power balance or Interconnection frequency.

The payback procedures must be conducted separately for the on-peak and off-peak hours.

Financial Settlement

With a financial settlement mechanism, a price must be established for each Interconnection. One could equate a financial settlement to the current imbalance charges within entities Open Access Transmission Tariffs (OATT). The OATT provisions settle under and over-generation for the specific Balancing Authority Areas through a specific price while maintaining the reliability of the Interconnection. Inadvertent is an imbalance for the Interconnection. A commercial price could be established for the Interconnection, where the over-generating Balancing Authority area would receive a payment while the under-generating Balancing Authority Area would pay.

The commercial price for each Interconnection could be established through a FERC process or through a NAESB process. However, the commercial rules and procedures should be clear and defined.

The financial arrangements could be administered through a third party established by FERC for the Interconnection. Rules would need to be established on various issues, such as timing, the amount of inadvertent a Balancing Authority area could accumulate over a given period, and others. However, one could use the current OATT imbalance charge process as a guideline to establish such a financial settlement for Inadvertent.