**Consideration of Comments on Project 2007-18 ― Reliability-based Control**

The Reliability-based Control Standard Drafting Team thanks all commenters who submitted comments on the proposal to use Area Control Error (ACE) Distribution Factors (ADFs) to address Purpose Statements B and D for Project 2007-18, Reliability-based Control. This proposal is designed to complement the BAAL requirements currently under Field Trial. The proposal was posted for a 30-day public comment period from June 15, 2010 through July 15, 2010. The stakeholders were asked to provide feedback on the standards through a special Electronic Comment Form. There were 17 sets of comments, including comments from 60 different people from approximately 30 companies representing 9 of the 10 Industry Segments as shown in the table on the following pages.

The comments are shown in their original format on the following web page:

<http://www.nerc.com/filez/standards/Reliability-Based_Control_Project_2007-18.html>

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Herb Schrayshuen, at 609-452-8060 or at herb.schrayshuen@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.[[1]](#footnote-1)

### Index to Questions, Comments, and Responses

[**1.** **Do you agree with the 0.5% threshold as the maximum contribution to congestion for a flowgate (path) experiencing congestion risk? If not, please propose a technically-based method of calculating this threshold.** 3](#_Toc265238592)

[**2.** **Do you agree with “L10” concept that the absolute value of a BATL should not become smaller than L10 (a bound comparable to present requirements)? If not, please propose a technically-based method or elimination of “minimum ACE.”** 3](#_Toc265238593)

[**3.** **Insert Do you agree with allowing a BA to exceed a BATL for 15 consecutive minutes? If not, please propose a technically-based time limit for BATLs.** 3](#_Toc265238594)

[**4.** **Do you agree with the proposed update rates, considering that BATLs will be imposed only during times of flowgate (path) congestion risk? {Every hour and every time a path limit changes (tied to the update cycle of IDC and WebSAS)} If not, please propose a technically-based update cycle for BATLs.** 3](#_Toc265238595)

[**5.** **Do you have any other comment, not expressed in questions above, for the RBC SDT?** 3](#_Toc265238596)

The Industry Segments are:

1 — Transmission Owners

2 — RTOs, ISOs

3 — Load-serving Entities

4 — Transmission-dependent Utilities

5 — Electric Generators

6 — Electricity Brokers, Aggregators, and Marketers

7 — Large Electricity End Users

8 — Small Electricity End Users

9 — Federal, State, Provincial Regulatory or other Government Entities

10 — Regional Reliability Organizations, Regional Entities

|  | **Commenter** | **Organization** | **Industry Segment** |
| --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
|  | Group | Guy Zito | Northeast Power Coordinating Council |  |  |  |  |  |  |  |  |  | X |
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| --- | --- | --- | --- | --- |
|  | **Additional Member** | **Additional Organization** | **Region** | **Segment Selection** |
| 1. | Alan Adamson  | New York State Reliability Council, LLC  | NPCC  | 10  |
| 2. | Gregory Campoli  | New York Independent System Operator  | NPCC  | 2  |
| 3. | Kurtis Chong  | Independent Electricity System Operator  | NPCC  | 2  |
| 4. | Sylvain Clermont  | Hydro-Quebec TransEnergie  | NPCC  | 1  |
| 5. | Chris de Graffenried  | Consolidated Edison Co. of New York, Inc.  | NPCC  | 1  |
| 6.  | Gerry Dunbar  | Northeast Power Coordinating Council  | NPCC  | 10  |
| 7.  | Dean Ellis  | Dynegy Generation  | NPCC  | 5  |
| 8.  | Ben Eng  | New York Power Authority  | NPCC  | 4  |
| 9.  | Peter Yost  | Consolidated Edison Co. of New York, Inc.  | NPCC  | 3  |
| 10.  | Michael Schiavone  | National Grid  | NPCC  | 1  |
| 11.  | Brian L. Gooder  | Ontario Power Generation Incorporated  | NPCC  | 5  |
| 12.  | Kathleen Goodman  | ISO - New England  | NPCC  | 2  |
| 13.  | Chantel Haswell  | FPL Group, Inc.  | NPCC  | 5  |
| 14.  | David Kiguel  | Hydro One Networks Inc.  | NPCC  | 1  |
| 15.  | Michael R. Lombardi  | Northeast Utilities  | NPCC  | 1  |
| 16. | Randy MacDonald  | New Brunswick System Operator  | NPCC  | 2  |
| 17. | Bruce Metruck  | New York Power Authority  | NPCC  | 6  |
| 18. | Lee Pedowicz  | Northeast Power Coordinating Council  | NPCC  | 10  |
| 19. | Robert Pellegrini  | The United Illuminating Company  | NPCC  | 1  |
| 20. | Saurabh Saksena  | National Grid  | NPCC  | 1  |

 |
|  | Group | Carol Gerou | MRO's NERC Standards Review Subcommittee |  |  |  |  |  |  |  |  |  | X |
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| --- | --- | --- | --- | --- |
|  | **Additional Member** | **Additional Organization** | **Region** | **Segment Selection** |
| 1. | Mahmood Safi  | Omaha Public Utility District  | MRO  | 1, 3, 5, 6  |
| 2. | Chuck Lawrence  | American Transmission Company  | MRO  | 1  |
| 3. | Tom Webb  | WPS Corporation  | MRO  | 3, 4, 5, 6  |
| 4. | Jason Marshall  | Midwest ISO Inc.  | MRO  | 2  |
| 5. | Jodi Jenson  | Western Area Power Administration  | MRO  | 1, 6  |
| 6.  | Ken Goldsmith  | Alliant Energy  | MRO  | 4  |
| 7.  | Dave Rudolph  | Basin Electric Power Cooperative  | MRO  | 1, 3, 5, 6  |
| 8.  | Eric Ruskamp  | Lincoln Electric System  | MRO  | 1, 3, 5, 6  |
| 9.  | Joseph Knight  | Great River Energy  | MRO  | 1, 3, 5, 6  |
| 10.  | Joe DePoorter  | Madison Gas & Electric  | MRO  | 3, 4, 5, 6  |
| 11.  | Scott Nickels  | Rochester Public Utilties  | MRO  | 4  |
| 12.  | Terry Harbour  | MidAmerican Energy Company  | MRO  | 6, 1, 3, 5  |

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|  | Group | Howard Rulf | We Energies |  |  | X | X | X |  |  |  |  |  |
|

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| --- | --- | --- | --- | --- |
|  | **Additional Member** | **Additional Organization** | **Region** | **Segment Selection** |
| 1. | Janet Porter  |  | RFC  | 3, 4, 5  |
| 2. | Brian Heimsch  |  | RFC  | 3, 4, 5  |

 |
|  | Group | Dave Folk | FirstEnergy | X |  | X | X | X | X |  |  |  |  |
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|  | **Additional Member** | **Additional Organization** | **Region** | **Segment Selection** |
| 1. | Sam Ciccone  | FE  | RFC  |  |
| 2. | Doug Hohlbaugh  | FE  | RFC  |  |

 |
|  | Group | Jason Marshall | Midwest ISO Standards Collaborators |  | X |  |  |  |  |  |  |  |  |
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| --- | --- | --- | --- | --- |
|  | **Additional Member** | **Additional Organization** | **Region** | **Segment Selection** |
| 1. | Joe O'brien  | NIPSCO  | RFC  | 1  |
| 2. | Kirit Shah  | Ameren  | SERC  | 1  |
| 3. | Joe Knight  | Great River Energy  | MRO  | 1, 3, 5, 6  |
| 4. | Randi Woodward  | Minnesota Power  | MRO  | 1  |

 |
|  | Group | Denise Koehn | Bonneville Power Administration | X |  | X |  | X | X |  |  |  |  |
|

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| --- | --- | --- | --- | --- |
|  | **Additional Member** | **Additional Organization** | **Region** | **Segment Selection** |
| 1. | Jamie Murphy  | BPA, Tx Technical Operations  | WECC  | 1  |
| 2. | Dave Kirsch  | BPA, Tx Technical Operations  | WECC  | 1  |
| 3. | John Anasis  | BPA, Tx Technical Operations  | WECC  | 1  |

 |
|  | Individual | Brent Ingebrigtson | E.ON U.S. | X |  | X |  | X | X |  |  |  |  |
|  | Individual | Linda Perez | WECC RC |  |  |  |  |  |  |  |  |  | X |
|  | Individual | Mike Mraz | Arizona Public Service Company | X |  |  |  |  |  |  |  |  |  |
|  | Individual | Steve Rueckert | Western Electricity Coordinating Council |  |  |  |  |  |  |  |  |  | X |
|  | Individual | James Brew | Nucor Corporation |  |  |  |  |  |  | X |  |  |  |
|  | Individual | Sirajul Chowdhury | California ISO |  |  |  |  |  |  |  |  |  |  |
|  | Individual | Robert Blohm | Consultant |  |  |  |  |  |  |  | X |  |  |
|  | Individual | Denver York | East Kentucky Power Cooperative | X |  | X |  | X |  |  |  |  |  |
|  | Individual | Kasia Mihalchuk | Manitoba Hydro | X |  | X |  | X | X |  |  |  |  |
|  | Individual | Thad Ness | American Electric Power (AEP) | X |  | X |  | X | X |  |  |  |  |
|  | Individual | Doug Hils | Duke Energy | X |  |  |  |  |  |  |  |  |  |

1. **Do you agree with the 0.5% threshold as the maximum contribution to congestion for a flowgate (path) experiencing congestion risk? If not, please propose a technically-based method of calculating this threshold.**

**Summary Consideration:**

Industry comments suggest that the SDT should clarify language explaining the proposal, did not provide adequate technical justification for this threshold, and did not provide adequate explanation of the proposal’s interactions with existing IDCWG processes and procedures. The SDT has attempted to answer each concern as detailed in the individual responses below.

0.5% of flowgate (path) rating provides a basis for determining a conservative limit (lower bound) for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ACE Distribution Factors (ADFs) are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion. The SDT will continue to evaluate whether a less conservative limit is appropriate based on future comments from industry similar to the consensus gained on the thresholds chosen for congestion relief on the Interconnections.

The SDT believes this proposal coordinates with IDCWG work and does not conflict with TLR and/or other IDCWG processes because those efforts identify transactions that contribute to flowgate (path) flows. This proposal limits flowgate (path) actual flows contributed by a Balancing Authority’s non-zero ACE, which is unrelated to transactions. Likewise, IDCWG efforts address flows caused by transactions and therefore do not address flows created by non-zero ACE.

| **Organization** | **Yes or No** | **Question 1 Comment** |
| --- | --- | --- |
| American Electric Power (AEP) | No | It is hard to determine what the reliability basis is for this threshold. It is unclear what operational impacts this would cause or division of BAs into zones to achieve proper implementation/desired effect.  |
| **Response:** 0.5% of the flowgate (path) full-scale meter rating is the practical accuracy of installed metering packages. Therefore, 0.5% of flowgate (path) rating constitutes the smallest practical contribution of actual flowgate (path) flow. This value and direction of contributed flow, when translated through Area Control Error (ACE) Distribution Factors (ADFs), determines the value of each Balancing Authority’s ACE that would create the associated flow on the specific flowgate (path). The resulting value of ACE and its sign would constitute a limit to minimize measurable contribution to flowgate (path) actual flows contributing to congestion. Therefore,0.5% of flowgate (path) rating provides a basis for determining a conservative limit (lower bound) for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ADFs are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion. Use of 0.5% of flowgate (path) rating does not affect division of Balancing Authorities into zones. |
| Midwest ISO Standards Collaborators | No | No technical justification of this number is provided in this whitepaper. A detailed analysis needs to be conducted and presented to industry to justify this or any other number. Given the extensive work being done by the IDCWG to add more granularity to the model down to the generator level in the gen-to-load project, we would like to have a better idea of how this work will not conflict with the work of the IDCWG or whether the work of the IDCWG will achieve the results desired under this process but just in a different way. It is unclear whether such bounds are needed for those Balancing Authorities who have seams agreements for addressing flows on coordinated flowgates where more-specific generator action is taken - perhaps this methodology should be supported in instances where agreements are not already in place to address impact on coordinated flowgates. |
| **Response:** .5% of the flowgate (path) full-scale meter rating is the practical accuracy of installed metering packages. Therefore, 0.5% of flowgate (path) rating constitutes the smallest practical contribution of actual flowgate (path) flow. This value and direction of contributed flow, when translated through Area Control Error (ACE) Distribution Factors (ADFs), determines the value of each Balancing Authority’s ACE that would create the associated flow on the specific flowgate (path). The resulting value of ACE and its sign would constitute a limit to minimize measurable contribution to flowgate (path) actual flows contributing to congestion. Therefore,0.5% of flowgate (path) rating provides a basis for determining a conservative limit (lower bound) for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ADFs are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion. The SDT will continue to evaluate whether a less conservative limit is appropriate based on future comments from industry similar to the consensus gained on the thresholds chosen for congestion relief on the Interconnections. The SDT believes this proposal coordinates with IDCWG work and does not conflict with TLR and/or other IDCWG processes because those efforts identify transactions that contribute to flowgate (path) flows. This proposal limits flowgate (path) actual flows contributed by a Balancing Authority’s non-zero ACE, which is unrelated to transactions. Likewise, IDCWG efforts address flows caused by transactions and therefore do not address flows created by non-zero ACE. The SDT agrees that operation by Balancing Authorities using seams agreements to address flowgate (path) flows, which are outside and/or in addition to TLR and IDCWG processes, must be considered before finalizing a proposal. The SDT has not concluded if or how to address such agreements, but is gathering information as it considers this issue. |
| Northeast Power Coordinating Council | No | See comments to Question 5. |
| E.ON U.S. | No | See Response to Question 5 |
| **Response:** Please refer to response to comments in Question 5. |
| Bonneville Power Administration | No | There should be no maximum contribution to congestion. If a BA’s impact is greater than .5% then they should be assigned that contribution. Please explain reasoning behind .5% maximum threshold? If anything, a threshold should be established which indicates that if the impact is below this level, then the contribution can be ignored.  |
| **Response:** The SDT agrees with your comments and did not intend to imply otherwise. .5% of the flowgate (path) full-scale meter rating is the practical accuracy of installed metering packages. Therefore, 0.5% of flowgate (path) rating constitutes the smallest practical contribution of actual flowgate (path) flow. This value and direction of contributed flow, when translated through Area Control Error (ACE) Distribution Factors (ADFs), determines the value of each Balancing Authority’s ACE that would create the associated flow on the specific flowgate (path). The resulting value of ACE and its sign would constitute a limit to minimize measurable contribution to flowgate (path) actual flows contributing to congestion. Therefore,0.5% of flowgate (path) rating provides a basis for determining a conservative limit (lower bound) for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ADFs are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion.If a Balancing Authority’s ACE is closer to zero than such a limit, the SDT proposes to ignore its contribution to flowgate (path) congestion.  |
| Duke Energy | No | 1. Without further analysis of the value, and absent a technical justification for using the threshold proposed, we feel that the industry would be more receptive to accepting a value consistent with what is currently utilized in the industry for curtailment of transactions using a similar methodology with distribution factors. If what is acceptable today under similar processes is different in the individual Interconnections, then this methodology may need to accommodate the threshold used on an Interconnection basis.
2. Given the extensive work being done by the IDCWG to add more granularity to the model down to the generator level in the gen-to-load project, we would like to have a better idea of how this work will not conflict with the work of the IDCWG or whether the work of the IDCWG will achieve the results desired under this process but just in a different way.
3. It is unclear whether such bounds are needed for those Balancing Authorities who have seams agreements for addressing flows on coordinated flowgates where more-specific generator action is taken - perhaps this methodology should be supported in instances where agreements are not already in place to address impact on coordinated flowgates.
 |
| **Response:** 1).5% of the flowgate (path) full-scale meter rating is the practical accuracy of installed metering packages. Therefore, 0.5% of flowgate (path) rating constitutes the smallest practical contribution of actual flowgate (path) flow. This value and direction of contributed flow, when translated through Area Control Error (ACE) Distribution Factors (ADFs), determines the value of each Balancing Authority’s ACE that would create the associated flow on the specific flowgate (path). The resulting value of ACE and its sign would constitute a limit to minimize measurable contribution to flowgate (path) actual flows contributing to congestion. Therefore,0.5% of flowgate (path) rating provides a basis for determining a conservative limit (lower bound) for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ADFs are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion. The SDT will continue to evaluate whether a less conservative limit is appropriate based on future comments from industry similar to the consensus gained on the thresholds chosen for congestion relief on the Interconnections.The SDT believes transaction curtailments are based on jdentifying transactions that contribute more than X% of the transaction value to flow on specific flowgates (paths). The X% varies by Interconnection and may vary depending on severity or level of congestion relief needed. While this has been accepted as a basis for identifying transactions contributing to congestion, the SDT believes the 0.5% of flowgate (Path) rating is a better basis to use when limiting non-zero ACE that is contributing to congestion. 1. The SDT believes this proposal coordinates with IDCWG work and does not conflict with TLR and/or other IDCWG processes because those efforts identify transactions that contribute to flowgate (path) flows. This proposal limits flowgate (path) actual flows contributed by a Balancing Authority’s non-zero ACE, which is unrelated to transactions. Likewise, IDCWG efforts address flows caused by transactions and therefore do not address flows created by non-zero ACE.
2. The SDT agrees that operation by Balancing Authorities using seams agreements to address flowgate (path) flows, which are outside and/or in addition to TLR and IDCWG processes, must be considered before finalizing a proposal. The SDT has not concluded if or how to address such agreements, but is gathering information as it considers this issue.
 |
| Arizona Public Service Company | Yes |  |
| California ISO | Yes |  |
| FirstEnergy | Yes |  |
| MRO's NERC Standards Review Subcommittee | Yes |  |
| We Energies | Yes |  |
| Manitoba Hydro | Yes | We experience many TLR’s to eliminate SOL’s as a result of an adjacent system taking advantage AGC control perfromance limits. As a result, flowgate limits already contain a component of TRM that accounts for AGC deviations under the standards. A 0.5% allowable limit would place the AGC deviations on a comparable reliability threshold for the curtailment of other impacts on the interface.  |
| **Response:** The SDT appreciates your support of this threshold. |
| Consultant | Yes | This concept of “maximum (allowed) contribution” metering-error threshold is the same as “minimum ACE” which is confused with “minimum BATL” in question 2 below.  |
| **Response**: .5% of the flowgate (path) full-scale meter rating is the practical accuracy of installed metering packages. Therefore, 0.5% of flowgate (path) rating constitutes the smallest practical contribution of actual flowgate (path) flow. This value and direction of contributed flow, when translated through Area Control Error (ACE) Distribution Factors (ADFs), determines the value of each Balancing Authority’s ACE that would create the associated flow on the specific flowgate (path). The resulting value of ACE and its sign would constitute a limit to minimize measurable contribution to flowgate (path) actual flows contributing to congestion. Therefore,0.5% of flowgate (path) rating provides a basis for determining a conservative limit (lower bound) for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ADFs are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion.While the 0.5% of flowgate (path) rating is related to “minimum ACE” by the transformation using ADFs, it is not the same value. For example, the ACE value that results from this transformation using ADFs may be modified by additional considerations before becoming a candidate for a Balancing Authority ACE Transmission Limit (BATL). The “minimum BATL” is not the same as these previously discussed values. The term “minimum BATL” was intended to discuss the concept of providing a range of ACE values around zero to ensure necessary regulating flexibility for each Balancing Authority regardless of other ACE restrictions that might be applicable from the aforementioned ADF-related transformation.  |

1. **Do you agree with “L10” concept that the absolute value of a BATL should not become smaller than L10 (a bound comparable to present requirements)? If not, please propose a technically-based method or elimination of “minimum ACE.”**

**Summary Consideration:**

Most industry comments suggest the industry recognizes, and broadly supports, the need to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some band regardless of other reliability concerns.

In spite of support of the concept, industry comments question the appropriateness of using L10 to set a minimum band for ACE and state that L10 has not been technically justified. However, the industry proposed no technically justified alternative, although there was a suggestion to determine the value empirically under a field test.

The SDT believes it is necessary to provide BAs with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some band regardless of other reliability concerns. However, The SDT has not determined a technically justified range of ACE values. The SDT will continue to consider this issue as it refines its proposal.

| **Organization** | **Yes or No** | **Question 2 Comment** |
| --- | --- | --- |
| MRO's NERC Standards Review Subcommittee |  | Is staying with utilization of L10 as a “minimum ACE” in keeping with the intent to establish new, improved, methods of BA control? |
| **Response:** Staying with L10 may not “establish new [and] improved methods of Balancing Authority control”. However, the SDT believes it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. The SDT proposed a value familiar to the industry, since it would retain the present level of reliability. The SDT will continue to consider this issue as it refines its proposal. |
| Nucor Corporation |  | While we fully agree with the concept of a minimum value for BATL, it is not obvious to us that L10 is the “correct” minimum value. Our understanding is that this minimum value will be re-evaluated as the field trial progresses and as additional, technically-based methodologies are developed. |
| **Response:** The SDT appreciates your support that it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. The SDT agrees that L10 may not provide the appropriate range for ACE. The SDT will monitor and be informed by the field trial.  |
| American Electric Power (AEP) | No | If you are not going to limit the ACE inside the L sub 10 what effect does this have?  |
| **Response:** The concept of using an ACE Transmission Limit would be in conjunction with the implementation of the BAAL being developed by the SDT which would replace the current CPS2. The SDT believes it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. Allowing some range of values near zero ACE provides necessary operational flexibility for each Balancing Authority. However, such a range of values, when it prevents a more restrictive ACE limit associated with Transmission from being enforced, allows a Balancing Authority to contribute more flow on a congested flowgate (path) than would be allowed without such a range of values. The SDT will continue to consider this issue as it refines its proposal. |
| Consultant | No | 1. In my understanding this question confuses “minimum ACE” with “value a BATL should not become smaller than” by switching between these terms while proposing setting minimum BATL equal to L10.
2. This question is about “minimum BATL”, not “minimum ACE” which is covered as “threshold” ACE equal to 0.5% metering error in the preceding question 1. “Minimum BATL” should indeed be the same as “minimum ACE”, namely the “minimum ACE” set as “threshold” ACE equal to 0.5% metering error in question 1. A “minimum BATL” set equal to any larger value, such as L10, is dysfunctional and unfair. A fixed minimum BATL equal to L10 guarantees that any BA currently in compliance with CPS2 will not exceed the BATL, making the BATL not more onerous to the BA than CPS2 is. But this is a “one-sided pass” in favor of the BA and against the Interconnection and is therefore not justified technically or equitably. The BATL binds/constrains only when there is congestion. Therefore, when there is no congestion the BATL is already less onerous on both the BA and the Interconnection than is CPS2 which applies regardless of whether or not there is congestion. Whenever there is congestion however, a “minimum BATL” that is set outside “minimum ACE” provides an additional benefit to the BA, but at the expense of the Interconnection which is prevented from relieving congestion down to the minimum ACE. Basically the BA is afforded thereby the unfair and unreliable “added benefit”/”bonus”/”protection”/”guarantee” of never having to change current operating practice of compliance to CPS2 in order to comply with BATLs. The BA is thereby offered all the added convenience of BATL (when there’s no congestion) and none of the added inconvenience (whenever there is congestion)-all “one way”, all benefit and no cost! Accordingly, setting “minimum BATL” equal to L10 instead of equal to “minimum ACE” is an unnecessary “political bargaining” concession aimed at buying extra support for BATLs from a BA at the expense of the Interconnection and is, therefore, not technically justified, especially because it harms Interconnection reliability in the form of congestion management. In direct answer to the question, therefore, the “technically based method for eliminating” L10 is to (a) properly/clearly use terminology by identifying “minimum BATL” as identical to the “minimum ACE” 0.5% technically-justified metering error threshold set in question 1, while (b) recognizing that no technical justification has been given for setting “minimum ACE” equal to L10 , only a political justification as “a bound comparable to present requirements” in the wording of this very question. “Comparable” for what purpose? For the operating convenience of maintaining existing practice, not for technically improved reliability, in effect a bound no worse than what we currently have but certainly not better when the time comes to use it! That is politics, not technical excellence. L10 is also technically irrelevant: it (a) is irrelevant to congestion management, and (b) is a frequency-based limit applied to a ten-minute average of control error in furtherance of a very incomplete, commercially useful but reliability irrelevant technique of economically-efficient control on the sole basis of saving wear-&-tear by ignoring one-minute-average deviations and responding only to ten-minute-average deviations. In the wake of the BP disaster, NERC would do well to dispense with the last vestige of that narrow-band concept in setting reliability standards.
 |
| **Response:** 1) The SDT agrees that our explanation of the proposal did not convey concepts clearly and subsequent documentation will take this comment into consideration. 2) The SDT agrees that establishing a range of values around zero ACE, when it prevents a more restrictive ACE limit associated with Transmission from being enforced, allows a Balancing Authority to contribute more flow on a congested flowgate (path) than would be allowed without such a range of values. However, the SDT believes it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. The SDT believes such a range of ACE values is necessary for reliability reasons, and disagrees that it is offered as a “political bargaining concession.”The SDT agrees that since this proposal only enforces an ACE-based Transmission limit during times of Transmission congestion, it appears to be less onerous to Balancing Authorities than the present CPS2 (L10) limit. However, a comparison is difficult to assess with certainty since CPS2 compliance allows a Balancing Authority to exceed L10 for slightly less than 10% of the 10-minute periods during a month. The SDT agrees that L10 may not provide the appropriate range for ACE.. The SDT will continue to consider this issue as it refines its proposal. |
| Northeast Power Coordinating Council | No | See comments to Question 5. |
| E.ON U.S. | No | See response to Question 5. |
| **Response:** Please refer to response to comments in Question 5. |
| Manitoba Hydro | No | This should be tested and monitored with field trials to ensure that a BA, having significant impact on a flow gate (i.e. a high ADF), has a small enough BATL to address the impacted flow-gate and achieve the desired congestion relief. An ACE limit of L10 may not be restrictive enough to achieve the desired loading relief on a flowgate path.  |
| **Response:** The SDT agrees that any proposed range of values around zero ACE should be tested and monitored with field trials. The SDT believes it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. The SDT agrees L10 may not provide the appropriate range for ACE and any range of ACE must balance Balancing Authority reliability issues with Transmission reliability issues. The SDT will monitor and be informed by the field trial.  |
| Arizona Public Service Company | Yes |  |
| Bonneville Power Administration | Yes |  |
| California ISO | Yes |  |
| East Kentucky Power Cooperative | Yes |  |
| FirstEnergy | Yes |  |
| We Energies | Yes |  |
| **Response:** The SDT appreciates your support of this threshold. |
| Midwest ISO Standards Collaborators | Yes | We agree with the concept that there should be a minimum bound established for each BA that recognizes general operation of a Balancing Authority. This seems like a reasonable starting point that should be evaluated further; however, with anticipation that the frequency bias may eventually be allowed to be changed to better reflect actual response, we do not believe the team should be linking its proposal to a calculation based upon the bias, as the resulting value may be unreasonably restrictive for large Balancing Authorities given the non-linear results of the CPS2 calculation..  |
| **Response:** The SDT appreciates your agreement that it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. The SDT appreciates your support of this threshold as a starting point. The SDT agrees further evaluation is necessary and agrees L10 may not provide the appropriate range for ACE. The SDT will continue to consider this issue as it refines its proposal. |
| Duke Energy | Yes | We would note that the proposal is not technically-based however we agree with the concept that there should be a minimum bound established for each BA that recognizes general operation of a Balancing Authority. Though we cannot say that L10 is the proper methodology, we do recognize that MW bounds consistent with the current CPS2 L10 limits in place would be consistent with what has been accepted in historically but not under such a restrictive measure of ensuring that the bound is not exceeded for more than 15 consecutive clock-minutes. With speculation that the frequency bias may eventually be allowed to be changed to better reflect actual response, we do not believe the team should be linking its proposal to a calculation based upon the bias, which already may be unreasonably restrictive for large Balancing Authorities given the non-linear results of the CPS2 calculation.  |
| **Response:** The SDT appreciates your agreement that it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns, much like a boat requires some range of movement when secured to to a stationary object to avoid being sunk by wave action. The SDT appreciates your support of this threshold as a starting point. The SDT agrees further evaluation is necessary and agrees L10 may not provide the appropriate range for ACE. The SDT will consider whether to change the proposed time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft.  |

1. **Do you agree with allowing a BA to exceed a BATL for 15 consecutive minutes? If not, please propose a technically-based time limit for BATLs.**

**Summary Consideration:**

Of those commenters that disagree with the limit, some support shorter and some support longer times. Nearly all comments, however, mention or imply that the proposed time limit lacks technical justification. The SDT will continue to develop consensus on Tv based on future comments from industry similar to the consensus gained on other timing thresholds. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft.

| **Organization** | **Yes or No** | **Question 3 Comment** |
| --- | --- | --- |
| Nucor Corporation |  | We see no reason that the time limit cannot run in parallel with the IROL 30 minute requirements. It appears that there is sufficient synergy between the IRO and BAL standards that the required actions of the RC and BA would work in a synergistic manner to limit actual flows caused by nonzero ACE that aggravate congestion on a flowgate. Please note further comments below. |
| **Response:**. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft. The SDT appreciates your support that the proposal will work in a synergistic manner between Balancing Authorities and other Functional Model entities to limit actual flows caused by non-zero ACE that aggravate congestion on a flowgate (path). |
| WECC RC | No | A TOP that is responsible for a SOL limit violation is responsible to take actions without intentional delay to resolve the SOL. We suggest making the BATL time limit the same limit as the Frequency Trigger Limit 10 minutes, if violating the limit is causing undue burden on the interconnection it should be resolved immediately. A TOP can’t wait to take actions for a SOL violation while a BA waits 15 minutes to get below a BATL.  |
| Western Electricity Coordinating Council | No |
| **Response:** The SDT agrees that Transmission Operators must initiate actions without intentional time delay to resolve IROL and SOL concerns. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft. The SDT intends for Balancing Authorities to initiate timely actions to mitigate exceeding either Balancing Authority Area Control Error Limit(BAAL) and/or BATLs, but the SDT recognizes that mitigating actions cannot be made effective immediately, just as IROL and SOL provide for a Transmission Operator to exceed those limits for a time (Tv) before incurring a violation to allow time to effectuate mitigating actions.  |
| East Kentucky Power Cooperative | No | Allowing 5 minutes for the System Operator to recognize that there is a persistent problem that requires action is sufficient. However, some actions the SO could take would require longer than 10 minutes to effectuate. For example, if additional generation from an off-line combustion turbine is needed to reduce the ACE to within the BATL, it may take more than 10 minutes to bring on and get loaded. |
| **Response:** The SDT appreciates your support of the concept of providing entities time to recognize persistent problems. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft. The SDT intends for Balancing Authorities to initiate timely actions to mitigate exceeding either BAAL and/or BATLs, but the SDT recognizes that actions cannot be made effective immediately. The SDT will continue to consider this issue as it refines its proposal.  |
| Duke Energy | No | Our answer is actually "yes and no". We would note that the proposal is not technically-based, and our answer is dependent upon whether the limits developed properly consider the operating range needed of the balancing authority to manage all changes within its system that should be considered in the planning and operation of the system. |
| Midwest ISO Standards Collaborators | No | We would note that the proposal is not technically-based, and our answer is dependent upon whether the limits developed properly consider the operating range needed of the balancing authority to manage all changes within its system that should be considered in the planning and operation of the system.  |
| **Response:** The SDT recognizes that a Tv for this limit is not yet technically justified. The SDT will continue to develop consensus on Tv based on future comments from industry similar to the consensus gained on other timing thresholds. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft. The SDT intends for Balancing Authorities to initiate timely actions to mitigate exceeding either BAAL and/or BATLs, but the SDT recognizes that actions cannot be made effective immediately. The SDT suggests monitoring operation during field trials to gather additional information regarding this Tv. |
| Northeast Power Coordinating Council | No | See comments to Question 5. |
| E.ON U.S. | No | See response to Question 5 |
| American Electric Power (AEP) | No | See the comments under number 5 |
| **Response:** Please refer to response to comments in Question 5. |
| Bonneville Power Administration | No | The answer would be yes if the associated implementation of BATL were at 90% or below. TOPs are responsible for keeping the IROL/SOL for going over the limit, not just mitigating once it goes over the limit. |
| **Response:** The SDT agrees Transmission Operators must initiate actions to stay within and to mitigate exceeding IROLs and SOLs. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft. The SDT intends for Balancing Authorities to initiate timely actions to mitigate exceeding either BAAL and/or BATLs, but the SDT recognizes that actions cannot be made effective immediately, just as IROL and SOL provide for a Transmission Operator to exceed those limits for a time (Tv) before incurring a violation.  |
| Arizona Public Service Company | Yes |  |
| California ISO | Yes |  |
| Consultant | Yes |  |
| FirstEnergy | Yes |  |
| Manitoba Hydro | Yes |  |
| MRO's NERC Standards Review Subcommittee | Yes |  |
| We Energies | Yes |  |
| **Response:** The SDT appreciates your support of the proposed Tv. |

1. **Do you agree with the proposed update rates, considering that BATLs will be imposed only during times of flowgate (path) congestion risk? {Every hour and every time a path limit changes (tied to the update cycle of IDC and WebSAS)} If not, please propose a technically-based update cycle for BATLs.**

**Summary Consideration:**

Most industry commenters suggest broad agreement with making this proposal compatible with existing tools. The SDT will provide additional information to explain future proposals and use these comments to inform future proposals.

| **Organization** | **Yes or No** | **Question 4 Comment** |
| --- | --- | --- |
| Nucor Corporation |  | We believe that coordinating the updates of the BATL with the IDC and WebSAS is good use of existing tools and aids in keeping the RCs and BAs in the same information loop with technically parallel information used for congestion relief from other causes. This should aid in implementation and also provide a broader picture from which to base decisions. |
| **Response:** The SDT appreciates your support of this concept. |
| California ISO | No | I proposed to make BATL sensitive Path dynamic limit (COI for example), derate and outage. |
| **Response:** The SDT intends for BATLs to be dynamic as you state, although the SDT realizes our explanation of the proposal did not convey concepts clearly. The SDT proposes to update ACE Distribution Factors (ADFs) whenever Transmission Distribution Factors (TDFs) and zonal values of Frequency Bias Settings are changed and/or updated. The SDT proposes to use updated flowgate (path) ratings whenever these ratings are updated for Interchange Distribution Calculator (IDC) and other operational uses. The SDT intends for these updates to capture dynamic, derated, and/or outage flowgate (path) limit changes. The SDT believes BATLs should be updated whenever any of the following are implemented by entities registered for applicable Functional Model functions: i) zonal bias changes, ii) TDF change, iii) flowgate (path) ratings change, and/or iv) a flowgate (path) either becomes congested or is no longer congested. The SDT believes this update cycle coordinates with TLR processes and works in a synergistic manner between Balancing Authorities and other Functional Model entities to limit actual flows caused by non-zero ACE that aggravate congestion on a flowgate (path). |
| Northeast Power Coordinating Council | No | See comments to Question 5. |
| E.ON U.S. | No | See response to Question 5. |
| American Electric Power (AEP) | No | See the comments under number 5 |
| **Response:** Please refer to response to comments in Question 5. |
| Arizona Public Service Company | No | The BATLs are effectively dynamic limits. Their update interval should be commensurate with the time limit allowed for exceeding the limit, 15 min. This will allow the actions of other BAs also affected by congestion on the same path, as well as actions already taken by the BA, to be reflected in the limit in a more timely fashion. APS recommends the update interval be 15 min.  |
| **Response:** The SDT agrees that BATLs are effectively dynamic limits. The SDT proposes to update ACE Distribution Factors (ADFs) whenever Transmission Distribution Factors (TDFs) and zonal values of Frequency Bias Settings are changed and/or updated. The SDT proposes to use updated flowgate (path) ratings whenever these ratings are updated for IDC and other operational uses. The SDT believes Balancing Authority ACE Transmission Limits (BATLs) should be updated whenever any of the following are implemented by entities registered for applicable Functional Model functions: i) zonal bias changes, ii) TDF change, iii) flowgate (path) ratings change, and/or iv) a flowgate (path) either becomes congested or is no longer congested. This update cycle may occur more or less often than 15 minutes, but the SDT believes it will accomplish your stated goals of allowing “the actions of other Balancing Authorities also affected by congestion on the same path, as well as actions already taken by the Balancing Authority, to be reflected in the limit in a more timely fashion.” The SDT believes this update cycle coordinates with TLR processes and works in a synergistic manner between Balancing Authorities and other Functional Model entities to limit actual flows caused by non-zero ACE that aggravate congestion on a flowgate (path). The SDT will consider if and/or how to refine the update cycle, and will consider your suggestion of 15 minutes, as it develops the next draft. |
| FirstEnergy | Yes |  |
| Manitoba Hydro | Yes |  |
| MRO's NERC Standards Review Subcommittee | Yes |  |
| We Energies | Yes |  |
| **Response:** The SDT appreciates your support of the proposed update cycle.  |
| Consultant | Yes | Concept correction: there is no such thing as "congestion risk" as expressed in this question and in the documentation accompanying this request for comments. There is "congestion". "Risk" is a technical term with precise mathematical definition and informal use of the term should be avoided especially as it can hamper proper deployment of appropriate mathematical methods. |
| **Response:** The SDT considered the term “risk” to mean “exposure to the chance of injury or loss; a hazard or dangerous chance” as it is commonly defined in various dictionaries including “Webster’s New Universal Unabridged Dictionary.” While the SDT used the term “congestion risk” (a chance of congestion) to suggest that an ACE limit may be implemented before flows on a flowgate (path) reach 100% of its rating (i.e., the flowgate or path becomes congested), the SDT agrees that the explanation of the proposal did not convey concepts clearly.  |
| Bonneville Power Administration | Yes | In WECC we have path limits that continually change based on system conditions, are you proposing WEBSAS would be continually updating during a flowgate congestion risk? |
| **Response:** The SDT believes a final proposal, if accepted by the industry, could be implemented either with or without changes to WebSAS. The SDT has not proposed a specific implementation alternative or tool at this time, but rather proposes to use IDC and WebSAS information as it exists for required calculations. The SDT recognizes that any proposal must be feasible, and that specific implementation details must be addressed as a proposal is finalized. However, within this broad feasibility view, the SDT has prioritized development of a process to address Purpose Statement B and D issues as a first step, recognizing implementation details must be addressed as a proposal moves closer to acceptance. |
| Duke Energy | Yes | We agree with a methodology that is consistent with the timing used by other processes providing congestion relief. While we believe the whitepaper contemplates the RC having some role in the determination, on a constraint by constraint basis, of these BA bounds, we need more detail on how this is proposed to work, especially the communication of the changing limits to the BA. It appears that this will have to be an automated process initiated by a system and communicated to the BAs. As there may be some cases where balancing is being performed by a market entity, this information will have to be communicated without revealing non-public transmission data. |
| Midwest ISO Standards Collaborators | Yes | We agree with a methodology that is consistent with the timing used by other processes providing congestion relief. |
| **Response**: The SDT appreciates your agreement with the proposed methodology. The SDT has not proposed a specific implementation alternative or tool at this time, but recognizes that any proposal must be feasible, and that specific implementation details must be addressed as a proposal is finalized. The SDT, within this broad feasibility view, proposes that an automated process and/or tool would determine ACE Transmission limits applicable for each Balancing Authority based on one or more congested flowgates. This process and/or tool would distribute the applicable, i.e., most restrictive, ACE limit(s) to the Balancing Authority. Since the Balancing Authority’s ACE limit is determined on contribution to congested flowgates (paths), at most the Balancing Authority would receive one positive and one negative ACE value and possibly only one value. Therefore, the Balancing Authority would not receive any Transmission information, only the applicable limit(s).  |

1. **Do you have any other comment, not expressed in questions above, for the RBC SDT?**

**Summary Consideration:**

Industry comments suggest that:

* The SDT did not provide information adequate to fully explain this proposal.
* The SDT should clarify language in its explanations.
* Entities within the Eastern Interconnection question the need for additional requirements related to Purpose Statements B and D.
* Placing an additional burden on Reliability Coordinators to determine when to implement ACE Transmission Limits is unnecessary and undesirable.
* This proposal is too complex and difficult to implement.

The SDT has attempted to respond to all comments and will provide additional information to explain these proposals in the future, while using these comments to inform future proposals.

| **Organization** | **Question 5 Comment** |
| --- | --- |
| ISO-NE | To ask about how much or how little the margins should be (i.e. Q1-Q4) assumes the proposal has been vetted and approved.ISO-NE has two concerns with the fundamental concept as proposed in this posting:1. ACE is the net balance of a BA’s gen/load/interchange and is not directly linked to the flow direction on the ties. The flow on the ties due to ACE correction depends to a good extent on the point of generation pick-up/reduction, and on the interconnected network impedance. Its correction is therefore directionally specific and which makes it unable to be linked to the distribution factors and the flows on ties or any identified flowgates. On the other hand, transmission congestion is direction-specific. Forcing a relationship between ACE/its correction AND distribution factor on specific transmission facilities is a technically flawed concept. ACE and frequency response are not necessarily always in the same direction (pair). Some of the equations in the paper simply assume that they are always the same, and that is not grounded.
2. The proposal is so complex that it is bordering on unintelligible. We would strongly encourage a more simplistic approach that an operator and others in the industry can easily understand and support. We also believe proposing to use the IDC as an input to a real-time tool is a laden with potential problems; we are not aware of the ownership of this tool, the availability provisions required by the tool, the explicit requirements to post all necessary data, backup provisions, etc.

We continue to support the concept of bounding ACE operation at the BA level, in conjunction with the BAAL limits. We suggest using static ACE bounded values as opposed to a dynamic model as proposed in the posting |
| **Response:** The SDT agrees that we sought specific industry comments to our proposal. By seeking specific comments, we did not intend to create the perception that this proposal had been fully vetted and approved. The SDT views this comment process as a key part of the vetting process. 1. The SDT agrees that Balancing Authority ACE contributions to flows on flowgates (paths) depend on network impedance and locations of resources and Loads. However, the derivation demonstrates how non-zero ACE contributes to flowgate (path) flows, allowing transformation of Transmission Distribution Factors (TDFs) into ACE Distribution Factors (ADFs). This derivation of ADFs provides the basis for this proposal, and allows for determination of both magnitude and direction of flow contributions on specific flowgates (paths) resulting from individual Balancing Authority non-zero ACE. The SDT encourages ISO-NE to provide specific information demonstrating technical flaws in the derivation of ADFs. The SDT agrees that in Interconnections with multiple Balancing Authorities, ACE and Frequency Response are not always in the same direction. This is possible due to the cumulative effect of multiple perturbations on the system occurring simultaneously. However, in order to identify and isolate only those effects that result from non-zero ACE, as is done in the document that derives ADFs, the system must otherwise be in balance. Therefore, non-zero ACE must always create a frequency response in a similar direction creating the “paired” response you mention, since the non-zero ACE is the perturbation of interest. If other perturbations were allowed, their effects would need to be removed in order to identify and quantify effects of non-zero ACE, resulting in the starting point used in the derivation document.
2. The SDT agrees that our explanation of the proposal did not convey concepts clearly. The SDT encourages submittal of feasible proposals for consideration. Any proposal incurs tradeoffs between various concerns. The SDT agrees that simplicity, ease of understanding, and industry support should be included in project objectives.The SDT disagrees with your concern with use of IDC information. At this conceptual stage, this proposal contemplates using TDFs from the IDC and “zones” that identify Point of Receipt and Point of Delivery for transactions. This linkage provides consistent use of TDFs and utilizes available information to minimize the need for new data and/or calculations. The SDT welcomes specific information regarding potential problems alluded to in your comments, how IDC ownership may be a concern, and how availability provisions of the IDC causes concern. The SDT has not proposed a specific implementation alternative or tool at this time, but recognizes that any proposal must be feasible, and that specific implementation details such as backup provisions must be addressed as a proposal is finalized. The SDT, within this broad feasibility view, proposes that an automated process and/or tool would determine ACE Transmission limits applicable for each Balancing Authority based on one or more congested flowgates. This process and/or tool would distribute the applicable, i.e,, most restrictive, ACE limit(s) to the Balancing Authority. Since the Balancing Authority’s ACE limit is determined on contribution to congested flowgates (paths), at most the Balancing Authority would receive one positive and one negative ACE value and possibly only one value. Therefore, the Balancing Authority would not receive any Transmission information, only the applicable limit(s).
3. The SDT appreciates your support of the concept of bounding ACE operation at the Balancing Authority level. The SDT will continue to consider both static and dynamic proposals to address issues in Purpose Statements B and D.
 |
| SRC | The SRC does not agree that it is appropriate to discuss the finer points of this proposal before the discussion of the proposal itself.The Background Section in the comment form makes reference to the SAR for Project 2007-18, and continues on to present the ACE Distribution Factor concept making specific references to BAAL and BATL, etc. These terms are not yet defined or approved by the industry. By presenting the ACE Distribution Factor concept in relation to BAAL and BATL creates the misconception that these terms and the associated criteria are taken for granted as approved or endorsed limits. We object to having this background material included in comment form for the concept paper, and object to posting the concept paper on the Project 2007-18 standard page which implies it will eventually be used as a reference for the BAL standards. The Background materials also imply acceptance of the BAAL and BATL limits and their definitions (since the Balancing Area ACE Limit, etc. are capitalized). The BA is responsible for controlling load, Generation and Confirmed Interchange within its BA Area, in accordance with the Functional Model, and there should not be any preconceived notion that a BA will have the necessary transmission information to assess transmission constraints. Further, it is not the BA’s role to address transmission issues. The TOP and IRO standards which assign the responsibility to the RC and TOP already provide the necessary requirements for addressing transmission issues and we should not add unnecessary and ineffective complexity.The SRC also has a concern with the fundamental concept of tying ACE to distribution factors on any interface or flowgate:1. ACE is the net balance of a BA’s gen/load/interchange and is not directly linked to the flow direction on the ties. The flow on the ties due to ACE correction depends to a good extent on the point of generation pick-up/reduction, and on the interconnected network impedance. Its correction is therefore directionally specific and which makes it unable to be linked to the distribution factors and the flows on ties or any identified flowgates. On the other hand, transmission congestion is direction-specific. Forcing a relationship between ACE/its correction AND distribution factor on specific transmission facilities is a technically flawed concept.
2. While some of the proposed theory may be demonstrated in a simple 2-BA with a single tie configuration, a 2-BA with multiple ties situation may begin to show that the expected flow on a specific tie changes in a reverse direction from the ACE correction owing to parallel flow and the specific location of the generation pick up. The situation is more uncertain when we look at a BA that is interconnected with multiple BAs and having multiple ties. A BA that is increasing generation to correct a negative ACE while one of its adjacent BAs who’s reducing generation to assist in the correction may result in an increased power flow from the assisting BA to the correcting BA on their ties (and on specific flowgates internal to either BA Area), i.e., in a reverse direction of what’s anticipated, due to generation pick up points and other BAs’ actions.
3. ACE and frequency response are not necessarily always in the same direction (pair). Some of the equations in the paper simply assume that they are always the same, and that is not grounded.
 |
| **Response:** The SDT sought specific industry comments to our proposal. The SDT views this comment process as a key part of the vetting process and included this question to provide opportunity to discuss any aspect of the proposal as you have done. The SDT agrees that terms such as BAAL, BATL, etc., have not been defined officially, nor has the industry approved them. They are part of the work of this SDT, and are being considered as definitions applicable to one or more proposed standards that are under development. Therefore, the SDT must propose and use these terms as it continues its work and as part of the vetting process associated with developing standards. Similarly, the concept paper may become background or reference material if proposed standards are approved by the industry and applicable regulatory agencies. The SDT disagrees that posting such material on a website clearly indicating that these are “standards under development” and posting them for industry comment as part of the approved standard development process creates a perception that the industry has approved and/or accepted any of this material. The SDT proposal does not presume that a Balancing Authority has any Transmission information. The SDT, within a broad feasibility view, proposes that an automated process and/or tool would determine ACE Transmission limits applicable for each Balancing Authority based on one or more congested flowgates. This process and/or tool would distribute the applicable, which is most restrictive, ACE limit(s) to the Balancing Authority. Since the Balancing Authority’s ACE limit is determined on contribution to congested flowgates (paths), at most the Balancing Authority would receive one positive and one negative ACE value and possibly only one value. Therefore, the Balancing Authority would not receive any Transmission information, only the applicable limit(s).The SDT must address issues within the scope of the Standards Authorization Request as approved by the Standards Committee. Purpose Statement B tasks the SDT with determining (a) requirement(s) “To support corrective action by the Balancing Authority when it’s excessive Area Control Error, as determined by this standard, may be contributing to or causing action to be taken to correct an SOL or IROL problem.” The SDT agrees that we do not want to add requirements that result in unnecessary and ineffective complexity as we address this purpose statement.1. The SDT agrees that Balancing Authority ACE contributions to flows on flowgates (paths) depend on network impedance and locations of resources and loads. However, the derivation demonstrates how non-zero ACE contributes to flowgate (path) flows, allowing transformation of Transmission Distribution Factors (TDFs) into ACE Distribution Factors (ADFs). This derivation of ADFs provides the basis for this proposal, and allows for determination of both magnitude and direction of flow contributions on specific flowgates (paths) resulting from individual Balancing Authority non-zero ACE. The SDT encourages SRC to provide specific information demonstrating technical flaws in the derivation of ADFs.
2. The SDT agrees that simplifications made to implement its proposal result in inaccuracies. However, the proposal does account for the situation you describe where flows on flowgates (paths) may increase and/or decrease due to multiple tie lines in parallel, alternative routes through multiple Balancing Authorities, etc. Further, the SDT asserts that the proposal accounts for situations where flows change on a flowgate (path) due to resource changes in multiple Balancing Authorities. The proposal allows a Balancing Authority to distribute or allocate its Frequency Bias Setting into multiple zones if it can determine a pseudo-ACE for each zone and provide rationale demonstrating the allocation more closely models its operation. Such efforts will model the effects you describe more accurately under the proposal.
3. The SDT agrees that in Interconnections with multiple Balancing Authorities, ACE and Frequency Response are not always in the same direction. This is possible due to the cumulative effect of multiple perturbations on the system occurring simultaneously. However, in order to identify and isolate only those effects that result from non-zero ACE, as is done in the document that derives ADFs, the system must otherwise be in balance. Therefore, non-zero ACE must always create a frequency response in a similar direction creating the “paired” response you mention, since the non-zero ACE is the perturbation of interest. If other perturbations were allowed, their effects would need to be removed in order to identify and quantify effects of non-zero ACE, resulting in the starting point used in the derivation document. Nothing in the proposal assumes individual Balancing Authority ACE and frequency is in the same direction as the proposal is intended to be implemented in multiple Balancing Authority Interconnections. Effects of multiple Balancing Authorities on specific flowgates (paths) are handled using superposition, i.e., individual effects are additive after considering both magnitude and direction.
 |
| Arizona Public Service Company | 1) APS expects that other measures to address path loading will be taken before the revised BATL’s will be received from the RC. For example, tags/schedules will likely be cut before the BATLs are updated and received. 2) The elimination of CPS2 and addition of this BATL (dynamic or static, regardless of its determination), will not prevent a BA from “leaning” on the interconnection. The only metric to discourage this in the proposed standard is CPS1. But the CPS1 performance metric is a 12-month measure and still allows a BA to spend a significant time benefitting from the interconnection. 3) In the process of determining the BATL, if there are no congested paths and effectively no BATL, rather than sending a zero to the BA an excessively large value (e.g. 999999) should be sent. The will allow the value received by the BA to always be used/implemented as a limit and will conform to the intent to make the minimum BATL = L10. |
| **Response:** 1. The SDT agrees that other measures may be initiated before, simultaneously, and/or after distributing BATLs to one or more Balancing Authority’s. Distribution of BATLs may also depend on specific situations. The SDT will consider whether to implement ACE limits differently as we refine the proposal in the next draft. Regardless, the SDT intends for ACE limits to work in harmony with other measures.
2. The SDT agrees that BATLs will not, and are not intended to, address a Balancing Authority “leaning” on the system. This issue is not specifically within the scope of this SDT. However, to the extent that non-zero ACE is causing action to be taken on a congested path, the BATL will apply and if non-zero ACE is causing frequency to deviate from 60 Hz, then BAAL will limit leaning to the extent that it is detrimental to System frequency. If leaning is a reliability issue beyond the impact to Interconnection frequency or Transmission congestion, the SDT encourages APS to submit a Standards Authorization Request to address the issue.
3. While sending a large value for a BATL is an implementation issue, the SDT agrees with the concept you suggest.
 |
| MRO's NERC Standards Review Subcommittee | A. Making adjustments to parameters “as more operating experience is achieved” would require a trial period. B. With respect to Reliability Coordinator involvement “minimizes market, code of conduct, computational accuracy, etc. issues”, in the case of non-MISO market members, it is difficult to discern if information/changes are initiated by the MISO Reliability Coordinator or by the MISO Market Operator. C. More clarity is needed on how “zones” are defined.D. The first four questions assume we agree with the need for the proposal in the first place. It is our understanding that the need for this proposal was the belief that under the RBC standard, a BA could somehow foresee future frequency and would choose to run continuously with a very large ACE counter to frequency and take no action. It is virtually impossible for a BA to have a large ACE and not impact frequency. It is generally irrational to operate counter to other Balancing Authorities (over generate during shortages or under generate during surpluses). I have heard of no cases of transmission issues due to the field trial. In addition, frequency control in the AGC window of time has improved in the past few years. The IROL standards provide transmission protection and we should not add unnecessary complexity. |
| **Response:** 1. The SDT agrees that “adjusting” parameters can be accomplished via a trial period, and supports adding a revised proposal to the field trial. However, parameters can also be adjusted as operating experience is gained while operating under a Standard.
2. The SDT believes issues of MISO Reliability Coordinator versus MISO Market Operator is beyond the scope of the SDT and suggests these issues be resolved with MISO and/or in other forums.
3. The SDT agrees that more clarity and information is needed related to “zones” and their use.
4. The SDT believes it is possible for individual Balancing Authority’s to affect flowgates (paths) adversely without significantly contributing to frequency excursions, although this may not be possible for very large Balancing Authorities. The SDT believes a proposal such as this can be made effective to address both Purpose Statements B (Transmission loading) and Purpose Statement D (TLR effectiveness) by limiting flow contributions on flowgates (paths) caused by non-zero ACE.The SDT agrees that to date no Transmission issues have been identified but the field trial is limited as to the number of Balancing Authorities involved in the trial.
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| American Electric Power (AEP) | 1. As AEP stated to draft 2 of the SAR, the industry already has sufficient Standards and Requirements that, if enforced correctly or applicability is expanded, would have the desired results. In order to help address balancing/regulation operational issues, there needs to be more focus on the reliability impacts from the lack of accountability by some of the GOPs. Today, all of the balancing responsibilities fall upon the BAs without providing clear obligations to the GOPs. AEP does not find the benefit that would be achieved, compared to the costs involved. Effort should be focused on continuing to develop and implement the BAAL approach that is currently under field trial rather than start-up another complex and difficult methodology to implement.
2. Furthermore, this approach is likely not to aid frequency response and there are concerns that it might be detrimental to frequency response. Trying to address congestion through the balancing function is a contradictory concept.
3. Also, this would drive away from the direction of RTO/ISO BA consolidation.
4. AEP would suggest that if the SDT is seriously considering this approach, NERC should host a webinar to walk through real scenarios and solicit input from operational staff.
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| **Response:** 1. The SDT believes this proposal works in conjunction with existing Transmission requirements and processes. Further, the SDT believes the BATLs address both Purpose Statements B and D. However, the SDT needs additional explanation regarding how Generator Operators relate to Purpose Statements A – D.
2. Though the SDT is not addressing issues related to Frequency Response with this proposal and BAAL, there is reason to expect BAAL and/or BATLs will work compatibly with Frequency Response and associated requirements.
3. The SDT needs additional explanation regarding how this proposal may deter Balancing Authority consolidation since it addresses reliability concerns and does not presume any business model for accomplishing the required performance.
4. The SDT agrees that more industry outreach is needed to explain future proposals and inform the industry.
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| E.ON U.S. | 1. Before addressing specific ADF/BATL parameters (as in questions 1 thru 4), the basic ADF/BATL concept needs broad acceptance. This posting is the first time ADF/BATL has been presented to the industry. It seems premature to be setting specific parameters until the industry is comfortable with the overall proposal.
2. It also seems that even if ADF/BATL is an appropriate technical solution, it raises issues related to its implementation within the functional model.
3. ADF is a proxy calculation which correlates a BA’s ACE to flows on specific transmission lines or flowgates. Since the ACE calculation is non-locational, will the correlation to specific flows be sufficiently accurate and provide consistent results? Can restricting a BA to the BATL be trusted to resolve flow problems in the most expeditious/efficient manner?
4. When flow problems arise, it may be more effective for a RC/TOP to work with (or direct) a BA on corrective actions than spend time and effort implementing a BATL response.
5. Unless excessive ACE (within BAAL constraints) frequently causes line/flowgate loading problems, the use of ADF/BATL may not be necessary. How broad is the scope of the perceived excess ACE/line loading problem?
6. The ADF/BATL proposal introduces several technical parameters that will need to be established, monitored and records retained. This will be an additional compliance burden on the RC, TOP and BA and compliance authorities.
7. Clarity is needed for the following issues:
	* There is discussion of limiting it to the range of +/- L10 but the white paper also mentions that “The absolute value of a BATL should never be less than 1 MW and BATLs should be rounded up (in an absolute sense) to the next whole MW.” E.ON U.S. believes that, these two concepts seem to conflict.
	* There is mention that if “A BA that allocates its Frequency Response into multiple zones must provide a “pseudo-ACE” for each zone it uses”, but what if the BA has Pseudo BA’s modeled in the IDC. Would this require separate ACE (or imbalance) limitations?
	* What would constitute violating this? If there is a 15 minute window and you are within the limit for one AGC cycle does the clock reset? Is it based on clock minute average? What is the “after the fact” measure of performance?
	* Since the indicator for this is a measure of transmission congestion (although not specifying which flow gate), would the indices be available for regulated generation to see as constraint on ACE as the current BAAL limitations are presented to them?
8. A 0.5% threshold is too low. For a 200 MW limit on a flowgate, a BA with an ACE outside of +/- L10 would be subjected to BATL if it is contributing 1 MW to the flowgate. However, if you are outside of +/- L10, the BA should be aiming to get back within its bounds regardless of this new BATL so a 1 MW contribution to that limit will not trigger a very different response from the BA.
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| **Response:** 1. The SDT believed it was useful to provide examples of possible values, in addition to presenting a hypothetical concept. There was no intent to present the concept as unchangeable, but rather to gather specific comments from the industry regarding a specific rather than hypothetical proposal. The SDT included this question to receive comments on any aspect of the proposal.
2. The SDT needs more explanation regarding why this proposal might create additional issues for implementation within the Functional Model.
3. The document provides the technical basis to show that ACE Distribution Factors (ADFs) directly identify flowgate (path) flow contributions due to every Balancing Authority’s non-zero ACE. This proposal is not intended to resolve all congestion problems, but only limit flow contributions associated with non-zero ACE on congested flowgates (paths). Since there have not been requirements related to flows on flowgates (paths) caused by non-zero ACE and the effects have not been captured historically, it is difficult to determine whether any proposal could be the most expeditions and efficient way to manage these effects. The SDT believes this proposal, when finalized, can be an efficient and effective tool to manage excessive flows on congested flowgates (paths) contributed by non-zero ACE. The SDT intends to monitor the effectiveness of any proposal via the field trials and propose appropriate changes as necessary.
4. Nothing in this proposal limits Reliability Coordinator and/or Transmission Operator actions to mitigate and resolve their concerns.
5. The SDT agrees. However, since BAAL is unlimited in two quadrants of the ACE versus frequency diagram, the SDT believes this proposal will address Purpose Statement B and D issues. The SDT is not aware of a mechanism to quantify the amount of time that excessive non-zero ACE contributes to flow on congested flowgates (paths) without implementing such a requirement. However, the BAL-001 standard requires limiting ACE to average no more than L10 for 90% of the fixed 10-minute periods during a month. This CPS2 requirement limits all Balancing Authority’s approaching the 90% level while this proposal limits ACE only when ACE exceeds either BAAL or Balancing Authority ACE Transmission Limit (BATL).
6. The SDT is directed to establish necessary reliability requirements, and while we do not wish to create and/or change reporting requirements unduly, it may be necessary to change requirements to establish, maintain, and/or enhance reliability.
7. As discussed more fully in other responses:
* The SDT believes it is necessary to provide Balancing Authority’s with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns. However, the SDThas not determined a technically justified range of ACE values. The SDT will continue to consider if or how to provide such a range without conflicting with other aspects as it refines its proposal.
* Yes. The concept behind this proposal requires a Balancing Authority to allocate a portion of its Frequency Bias Setting and ACE into each zone that it intends to use. Depending on a Balancing Authority’s electrical proximity (network topology) to flowgates (paths) and its actions to control ACE, the SDT believes many Balancing Authorities will achieve both simplicity and acceptable results by placing their bias and ACE values in one zone. However, the proposal allows bias and ACE to be apportioned among multiple zones. Modeling of pseudo-Balancing Authorities in the IDC may facilitate allocation, but that has not yet been determined. Regardless, a pseudo-ACE must be provided for the pseudo-Balancing Authority. The SDT must consider how this apportionment can be guided to achieve benefits while minimizing gaming and other negative consequences.
* The SDT proposes to use 1-minute averages for values associated with this and BAAL. Therefore, assuming Tv of 15 minutes for BATLs, a Balancing Authority could have its 1-minute average ACE exceed its BATL for a maximum of 15 consecutive clock minutes before causing a violation on the 16th minute. This is similar to the 30-minute limit proposed for exceeding BAAL, as both use 1 clock-minute average. Similarly, Tv timers reset if clock-minute average ACE drops below the limit. The after-the-fact measure of performance is whether a limit is exceeded for more than Tv.
* The SDT requires additional explanation regarding application of BAAL and/or BATLs to generators in order to address your comment. It is unclear how a regulated generator receives an ACE signal associated with any requirement, including proposals for BAAL and BATLs. The SDT recognizes a Balancing Authority may direct generators to change output, either manually or automatically, pursuant to reliability, market, interconnection, tariff, etc., criteria in response to the Balancing Authority’s ACE. If the comment relates to whether a Balancing Authority will be informed of the specific flowgate (path) associated with a BATL it receives, the SDT will not require or prohibit such disclosure as it is not needed to implement this proposal and may create code of conduct concerns for some entities.For example, the SDT envisions this process and/or tool would distribute the applicable, which is most restrictive, ACE limit(s) to the Balancing Authority. Since the Balancing Authority’s ACE limit is determined on contribution to congested flowgates (paths), at most the Balancing Authority would receive one positive and one negative ACE value and possibly only one value. Therefore, the Balancing Authority would not receive any Transmission information, only the applicable limit(s).
1. The SDT will consider your comment regarding the 0.5% threshold as it refines its proposal. The SDT requires additional clarification to ensure we understand the nature of your concern. The SDT agrees that as proposed, a Balancing Authority whose ACE is contributing 1 MW of flow in the direction of congestion on a congested flowgate (path) as you describe would receive an ACE limit. Also, that ACE limit depends on the Balancing Authority’s ACE Distribution Factor for that flowgate (path) and may be modified by other factors. The SDT does not understand the statement that “…if you are outside of +/- L10, the Balancing Authority should be aiming to get back within its bounds regardless of this new BATL so a 1 MW contribution to that limit will not trigger a very different response from the Balancing Authority.” L10 was proposed to provide a Balancing Authority with necessary operating flexibility by providing a range of ACE values near zero (protected range) that would not be incurred upon by Transmission-related ACE limits in our proposal. However, unlike CPS2, this proposal was not intended to require or encourage Balancing Authorities to operate within such a protected range unless BAAL and/or BATL drove such operation.
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| California ISO | Develop compliance tool to identify offending BA who is not taking mitigation action in timely manner. |
| **Response:** The SDT will develop measurement and compliance aspects as part of developing (a) proposed standard(s). Development of compliance tools is beyond the scope of the SDT, however. |
| Consultant | I think this “ACE Distribution Factors” methodology of assigning BATLs is the best thing since sliced bread. However, there are a number of due-diligence issues as follows.1. The “recent experiment with existing TDFs” together with its “Experimental Results” should be reported in full detail. Merely mentioning the results is not transparent. 2. There are several mistakes in the “Calculating ACE Distribution Factors” supporting this comment form: 2.1 There is a contradiction in the indexing ofï€  Sigma in equations (11) and (24): when Y = 1, both Z = 1 and Z not= 1 and, when Y = N, both Z = N and Z not= N. So, Z = 1 and Z = N should be removed from the indexing of Sigma in equations (11) and (24).2.2 The equation for Beta-sub-X should be removed from the definitions for equation (11) because Beta-sub-X is not mentioned in equation (11).2.3 Equation (13) is either (a) missing the summation sign “SigmaSub(Znot=Y)”, or (b) mistakenly includes “BetaSubZ/BetaSubT” instead of “1 - (BetaSubY/BetaSubT)” . The equation should accordingly be FCsubXY = ACEsubY x (SigmaSub(Znot=Y))(BetaSubZ/BetaSubT) x DFsubXYZ , or FCsubXY = ACEsubY x (1 - (BetaSubY/BetaSubT)) x DFsubXYZ , but not FCsubXY = ACEsubY x (BetaSubZ/BetaSubT) x DFsubXYZ . Proof: just plug equation (11) into equation (12).2.4 I believe the following sentence written before equation (13) is wrong and should be deleted: “The sign must be changed because they represent the flow at the other BA.” Proof: the author correctly makes no such sign change in equation (13).2.5 The author neglected to correct a typo pointed out. The first line of section 3 should read “moves”, not “move”.2.6 The author neglects to acknowledge the undersigned for the insertion of equation (18) made crucial use of in Appendix 1 to derive equations (11) & (24).2.7 The third sentence prior to equation (23) mistakenly refers to “Equation (22)” instead of “Equation (23)”.2.8 I believe the following sentence written immediately before equation (23) is wrong and should be deleted: “It also indicates the direction of the flow and since the sign of the flow changes from the flow out of BA1 to the flow into the other BAs in question, the sign must be changed to be consistent with the sign of the ACE of BA1.” Proof: the author correctly makes no such sign change in equation (23).3. For the benefit of commenters, and with the indulgence of the drafting team, I offer my “proof-of-concept” rewrite of the “Calculating ACE Distribution Factors” paper, in precise operational mathematical detail including numerous new Appendices providing detailed computation examples requested by the original paper’s author Howard Illian and by The SDT that may have helped drive the drafting team’s “recent experiment” whose detailed account I am requesting in my comment #1 in this section. Download by pasting either of these urls in browser window: <http://www.blohm.cnc.net/ACEDistributionFactorsRevised.doc> [http://www.robertblohm.com/ACEDistributionFactorsRevised.doc](http://www.robertblohm.com/ACEDistributionFactorsRevised.doc%20) 4. NERC's IT department should investigate the feasibility of online comment formats that accommodate mathematical notation.5. The NERC IT department should remove a bug from the software used for these online comments. My true phone number is not 609 585 5451 as listed herein. My true number is 609 442 6343, or even 206 279 7713. Either of these numbers was rejected as not valid by NERC's online software. So I lied and entered my previous fixed-line phone number to get through that obstacle and proceed with these comments. |
| **Response:** The SDT appreciates your support of ACE Distribution Factors.1. Confidentiality issues preclude the disclosure of this information.

2.1 – The SDT will evaluate and correct any and all typos and notations in any future revision of the document. 2.2 – Beta sub x is not contained in the posted version of the paper. 2.3 – The SDT agrees that a summation sign is missing and this will be corrected in future revisions. 2.4 – The SDT agrees and this sentence will be deleted. 2.5 – The SDT agrees and the typo will be corrected. 2.6 – As this document has been created as a collaborative process within the SDT, future revisions will be published as an SDT document which makes this point moot. 2.7 – The SDT agrees and this will be corrected. 2.8 – The SDT will review this issue prior to any future postings. 1. The SDT will review the submittals and consider them in any future revisions.

Items 4. & 5: Complaints about software at NERC should be submitted directly to the NERC IT Department. The SDT has no control over NERC’s software. |
| We Energies | In today’s market environment, BA’s can encompass several member companies who contribute to an aggregate ACE. In such cases, would like to see those BAs utilize similar methodology for implementing flowgate relief among schedule parties. For example, compare actual flows to scheduled flows, and assign relief among parties on a pro-rata basis in accordance with deviation from actual.  |
| **Response:** The SDT created this proposal to address Purpose Statements B and D. Neither Purpose Statement B nor D allows the SDT to consider differences between actual and scheduled flow. This proposal addresses actual flows on a congested flowgate (path) caused by non-zero ACE. However, if the Balancing Authority determines that it cannot achieve reasonable results using only one zone, member companies within a Balancing Authority may provide a rational basis for assigning zones within a Balancing Authority, and for apportioning pseudo-bias and pseudo-ACE for those zones. This may not be the only basis for making such assignments, however.  |
| Nucor Corporation | Several times during the development of the Tv standard for BAAL it was stated that the 30 minute time limit for BAAL was chosen arbitrarily. In fact the concept that Tv would be set such that it would encompass 50% of the probability of the next generation contingency. However, this time period turned out “to be much greater than 30 minutes” and the “SDT chose 30 minutes to keep it the same as that used in the IROL standard in order to minimize the learning curve for operators as they implemented the BRD standards.” Again, while we agree that a time limit must be incorporated in the standard, we do not feel that there has been sufficient consideration for simply changing the ACE limit during periods of congestion, as opposed to introducing a new time limit that is based on an additional arbitrary value. There is sufficient harmony between the IRO and the proposed RBC standards that the 30 minute limit for the BAAL should apply to the BATL as well. In addition we are concerned that some confusion may be introduced by the timing of responses to congestion. Is it the SDTs intent that the BATL will prevent, or reduce, the likelihood of TLRs as Purpose Statement B appears to address? Or, is it the intent of the SDT that the BATL would be reactionary to a TLR event as set out in Purpose Statement D? To prevent potential conflicts it seems logical that the RC would want everything moving in the same direction at the same time (i.e., no delays in responsive actions). A 15 minute limit for BATL may unnecessarily induce a “wait and see” approach. We are very interested in the SDT reaction as well as the RC participating in the discussion. |
| **Response:** The SDT appreciates your agreement that a violation time limit must be included in the standard. The SDT will consider whether to change the proposed time as it develops its next draft.The SDT proposes that Balancing Authority ACE Transmission Limits (BATLs) will only be imposed when one or more flowgates (paths) are congested. If multiple flowgates (paths) are congested, the most restrictive BATL(s), for each Balancing Authority, will be imposed on a Balancing Authority. This contrasts to operation under BAL-001 that requires limiting ACE to average no more than L10 for 90% of the fixed 10-minute periods during a month, in effect limiting all Balancing Authorities’ ACE anytime their 90% limit is approached regardless of whether any flowgate (path) is congested and regardless of a Balancing Authority’s contribution to flows on a specific congested flowgate (path) due to its non-zero ACE. The SDT proposes to place a limit on a Balancing Authority’s contribution to flows on a congested flowgate (path). Depending on final implementation, this proposal may have an affect on TLRs, but that affect is not the primary intent. Rather it is a consequence of a “holistic” or cooperative approach that seeks to make requirements work together harmoniously rather than conflict. The SDT intends for this proposal to enhance TLR effectiveness as described in Purpose Statement D by recognizing affects of non-zero ACE that may result from TLR actions and untimely action by a Balancing Authority to correct its non-zero ACE. The SDT intends for Balancing Authorities to initiate timely actions to mitigate exceeding either BAAL and/or BATL, but the SDT recognizes that mitigating actions cannot be made effective immediately, just as IROL and SOL provide for a Tranmsission Operator to exceed those limits for a time (Tv) before incurring a violation to allow time to effectuate mitigating actions. The SDT is considering all comments regarding how to establish an appropriate Tv for BATLs. The SDT will consider whether to change the proposed violation time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft. |
| Midwest ISO Standards Collaborators | 1. The Relative Contribution of DF as Compared to ADF in section 2 of the whitepaper is technically flawed. It presumes that energy can be sourced without sinking somewhere. The paper also presumes that good estimates of actual system frequency response are static. They are not and change continuously. Further, they are typically only accurately known after an event happens.
2. There are several problems with the Appendix. First, the paper identifies T as a component of ACE. It appears that Î”T (schedules minus actual tie line flows) is not represented appropriately. T is used in place of Î”T and since Î”F is explicitly identified, we can only assume it was intended to represent one component of Î”T.
3. The development of equation 23 from equations 18-22 needs further explanation. The whitepaper suggests that equation 23 is derived from equation 22. It appears it is really derived from a combination of 6 and 18 through 22.
4. The whitepaper in the same paragraph states that equation 22 is the ADF for BA1 and normalizes ACE for BA1 to 1 MW. This needs further explanation. We think that the intent is to simply say that equation 22 was normalized but it is not clear.
5. Further, equation 23 is the first inclusion of DF. A few more intermediate equations would explain this concept better.
6. While we agree that this approach shows promise with this simple example of one BA having a non-zero ACE, we are concerned it could quickly break down with multiple BAs with non-zero ACE and encourage the drafting team to work through examples with multiple BAs with non-zero values of ACE.
7. The first four questions assume we agree with the need for the proposal in the first place. It is our understanding that the need for this proposal was the belief that under the RBC standard, a BA could somehow foresee future frequency and would choose to run continuously with a very large ACE counter to frequency and take no action. It is virtually impossible for a BA to have a large ACE and not impact frequency. It is generally irrational to operate counter to other Balancing Authorities (overgenerate during shortages or undergenerate during surpluses). We are aware of no cases of transmission issues due to the field trial. In addition, frequency control in the AGC window of time has improved in the past few years. The IROL standards provide transmission protection and we should not add unnecessary complexity.
8. Though operation under the Field Trial of the Balancing Authority ACE Limit (“BAAL”) has not demonstrated a reliability need for this proposed approach for a transmission-based ACE limit, we are supportive of imposing a limit at times when excessive ACE (as the industry will define) is causing or contributing to a transmission loading issue. The caveat to that statement is that methodology must allow for a practical and achievable operating range for the Balancing Authority.
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| **Response:** 1. The SDT disagrees that the whitepaper is technically flawed. The derivation of ACE Distribution Factors (ADFs) is based on the knowledge that net non-zero ACE within an Interconnection results in an energy imbalance that causes frequency to change to restore energy balance. Similarly, frequency response from all equipment within the Interconnection is designed, and will respond, to restore frequency to its scheduled value. These two fundamental facts establish where (over which flowgates or paths) the “single-sourced” energy will flow and allow ADFs to be determined. While issues of variability of Frequency Response and other measurement issues affect the proposal, these issues do not affect the derivation of ADFs. Whether Frequency Response changes, and whether it can be determined, do not affect the derivation since the derivation only depends on summing the individual parts to identify the composite.
2. The SDT understands that the paper needs to clarify that schedules are zero.
3. The SDT will provide a better explanation in any future release.
4. The SDT will provide a better explanation in any future release.
5. The SDT will provide a better explanation in any future release.
6. The SDT agrees that more industry outreach is needed to explain (a) proposal(s) and inform the industry. The SDT will consider providing examples to aid clarity. The SDT intends for any proposal to be feasible for multiple Balancing Authority Interconnections and will continue to keep this issue as a priority. This proposal does not penalize coincident behaviour by Balancing Authorities, which may be a concern.However, it does establish limits for all Balancing Authorities that create flows on a congested flowgate (path) and handles multiple Balancing Authorities with non-zero ACE without difficulty, based on initial test results.
7. The SDT believes this proposal responds to Purpose Statements B and D. The SDT believes it is possible for individual Balancing Authorities to affect flowgates (paths) adversely without significantly contributing to frequency excursions, although this may not be possible for very large Balancing Authorities. The SDT believes this proposal can be made effective to address both Purpose Statements B (Transmission loading) and Purpose Statement D (TLR effectiveness) by limiting flow contributions on flowgates (paths) caused by non-zero ACE. This proposal seeks to limit ACE when a Balancing Authority contributes to flows on a congested flowgate (path). If non-zero ACE does not contribute to flows on congested flowgates (paths) within an Interconnection, then there would be no limit applied to Balancing Authorities. Regarding the amount of time that a Balancing Authority could maintain non-zero ACE without this proposal, that is limited to 30 minutes of exceeding BAAL. The number of consecutive minutes that a Balancing Authority exceeds BAAL before attempting to move its ACE toward zero is a Balancing Authority decision and appears to depend on many factors including equipment, resource availability and response, risk aversion, etc. Anecdotal evidence from the field trials suggests at least one Balancing Authority has chosen to exceed BAAL for nearly the entire 30-minute period on several occasions before taking action – and without violating Tv. Similarly, the same factors and behaviours seem to apply to a Balancing Authority with non-zero ACE that is helping frequency, making it difficult to estimate how large and/or how long a Balancing Authority might be willing to allow its non-zero ACE to persist without attempting to move it toward zero. The SDT agrees that requirements and standards should avoid unnecessary complexity to the extent possible while addressing their reliability need.
8. The SDT is not aware of data correlating non-zero ACE to flowgate (path) congestion in general or under the field trial. Subjectively, entities have reported no identifiable Transmission issues within the Eastern Interconnection under the field trial. However, since a mechanism to correlate non-zero ACE contibution to flowgate (path) flows is not in use, it is difficult to assess whether these subjective measurements indicate no adverse Transmission effects from non-zero ACE or whether they simply indicate incremental effects are too small to identify when compared to historic performance. The SDT appreciates your support for imposing a limit at times when excessive ACE (as the industry will define) is causing or contributing to a Transmission loading issue. The SDT agrees it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns. However, the SDT has not determined a technically justified range of ACE values. The SDT will continue to consider if or how to provide such a range without conflicting with other aspects as it refines its proposal.
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| WECC RC | There are currently standards that support corrective actions by Balancing Authorities when its excessive ACE contributes to or causes action to be taken to correct a System Operating Limit problem. Duplication of standards creates confusion. When operating under CPS2 there was little involvement needed by the RC due to the BA’s monthly average created a score by which the BA could monitor its performance. Almost all of the BA’s in WECC are also registered as a TOP, as a TOP they are responsible for the TOP Standards listed and as a BA has the ability to take action. TOP-001-1 R1, R4, TOP-004-2 R1, R4, R6, TOP-008-1 R1, R2.RBC, as implemented in WECC has increased the workload for the WECC RC’s, there are 25 BAs participating in RBC and 1 RC. The eastern interconnection has 12 BA’s and 8 RC’s monitoring RBC  |
| Western Electricity Coordinating Council | There are currently standards that support corrective actions by Balancing Authorities when its excessive ACE contributes to or causes action to be taken to correct a System Operating Limit problem. Duplication of standards creates confusion. When operating under CPS2 there was little involvement needed by the RC due to the BA’s monthly average created a score by which the BA could monitor its performance. Almost all of the BA’s in WECC are also registered as a TOP, as a TOP they are responsible for the TOP Standards listed and as a BA has the ability to take action. TOP-001-1 R1, R4, TOP-004-2 R1, R4, R6, TOP-008-1 R1, R2.RBC, as implemented in WECC has increased the workload for the WECC RC’s, there are 25 BAs participating in RBC and 1 RC. The eastern interconnection has 12 BA’s and 8 RC’s monitoring RBC  |
| **Response:** The SDT agrees that requirements should not be duplicated. The SDT would appreciate specific information regarding standards that require corrective action by Balancing Authorities when their excessive ACE contributes to or causes action to be taken to correct a SOL and/or IROL that may duplicate this proposal. Other than EOP-002, Requirement R5, the SDT has not discussed whether this proposal should be applicable during Emergency conditions, i.e., where EOP standards apply, but welcomes information regarding duplication beyond EOP-002, Requirement R5. The SDT must address Purpose Statements B and D, and cannot depend on all Balancing Authorities being registered for other functions in the Functional Model.  |
| Northeast Power Coordinating Council | There are two concerns with the fundamental concept as proposed:1. ACE is the net balance of a BA’s generation/load/interchange, and is not directly linked to the flow direction on the ties. The flow on the ties due to ACE correction depends a great deal on the point of generation pick-up/reduction, and on the interconnected network impedance. Its correction is therefore directionally specific which makes it unable to be linked to the distribution factors and the flows on ties or any identified flowgates. On the other hand, transmission congestion is direction-specific. Forcing a relationship between ACE / its correction and distribution factor on specific transmission facilities is a technically flawed concept. ACE and frequency response are not necessarily always in the same direction (pair). Some of the equations in the paper incorrectly assume that they are always the same.2. The proposal is very complex. A simpler approach would allow operators and others in the industry to more easily understand and support. We also believe proposing to use the IDC as an input to a real-time tool has potential problems; ownership of this tool, the availability provisions required by the tool, the explicit requirements to post all necessary data, backup provisions, etc. We continue to support the concept of bounding ACE operation at the BA level, in conjunction with the BAAL limits. Suggest using static ACE bounded values as opposed to a dynamic model as proposed in the posting. |
| **Response:** 1. The SDT agrees that Balancing Authority ACE contributions to flows on flowgates (paths) depend on network impedance and locations of resources and Loads. However, the derivation demonstrates how non-zero ACE contributes to flowgate (path) flows, allowing transformation of Transmission Distribution Factors (TDFs) into ACE Distribution Factors (ADFs). This derivation of ADFs provides the basis for this proposal, and allows for determination of both magnitude and direction of flow contributions on specific flowgates (paths) resulting from individual Balancing Authority non-zero ACE. The SDT encourages Northeast Power Coordinating Council to provide specific information demonstrating technical flaws in the derivation of ADFs. The SDT agrees that in Interconnections with multiple Balancing Authorities, ACE and Frequency Response are not always in the same direction. This is possible due to the cumulative effect of multiple perturbations on the system occurring simultaneously. However, in order to identify and isolate only those effects that result from non-zero ACE, as is done in the document that derives ADFs, the system must otherwise be in balance. Therefore, non-zero ACE must always create a frequency response in a similar direction creating the “paired” response you mention, since the non-zero ACE is the perturbation of interest. If other perturbations were allowed, their effects would need to be removed in order to identify and quantify effects of non-zero ACE, resulting in the starting point used in the derivation document.
2. The SDT agrees that the proposal is complex and that our explanation of the proposal did not convey concepts clearly. The SDT encourages submittal of feasible proposals for our consideration. Any proposal incurs tradeoffs between various concerns, however. The SDT agrees that simplicity, ease of understanding, and industry support are worthy objectives.The SDT disagrees with your concern with use of IDC information. At this conceptual stage, this proposal contemplates using TDFs from the IDC and “zones” that identify Point of Receipt and Point of Delivery for transactions. This linkage provides consistent use of TDFs and utilizes available information to minimize the need for new data and/or calculations. The SDT welcomes specific information regarding potential problems alluded to in your comments, how IDC ownership may be a concern, and how availability provisions of the IDC causes concern. The SDT has not proposed a specific implementation alternative or tool at this time, but recognizes that any proposal must be feasible, and that specific implementation details such as backup provisions must be addressed as a proposal is finalized. The SDT, within this broad feasibility view, proposes that an automated process and/or tool would determine ACE Transmission limits applicable for each Balancing Authority based on one or more congested flowgates. This process and/or tool would distribute the applicable, which is most restrictive, ACE limit(s) to the Balancing Authority. Since the Balancing Authority’s ACE limit is determined on contribution to congested flowgates (paths), at most the Balancing Authority would receive one positive and one negative ACE value and possibly only one value. Therefore, the Balancing Authority would not receive any Transmission information, only the applicable limit(s).

The SDT appreciates your support of the concept of bounding ACE operation at the Balancing Authority level. The SDT will continue to consider both static and dynamic proposals to address issues in Purpose Statements B and D.  |
| Duke Energy | Though operation under the Field Trial of the Balancing Authority ACE Limit (“BAAL”) has not demonstrated a reliability need for this proposed approach for a transmission-based ACE limit, we are supportive of imposing a limit at times when excessive ACE (as the industry will define) is causing or contributing to a transmission loading issue. The caveat to that statement is that methodology must allow for a practical and achievable operating range for the Balancing Authority.  |
| **Response:** The SDT is not aware of data correlating non-zero ACE to flowgate (path) congestion in general or under the field trial. Subjectively, entities have reported no identifiable Transmission issues within the Eastern Interconnection under the field trial. However, since a mechanism to correlate non-zero ACE contribution to flowgate (path) flows is not in use, it is difficult to assess whether these subjective measurements indicate no adverse Transmission effects from non-zero ACE or whether they simply indicate incremental effects are too small to identify when compared to historic performance. The SDT appreciates your support for imposing a limit at times when excessive ACE (as the industry will define) is causing or contributing to a Transmission loading issue. The SDT agrees it is necessary to provide Balancing Authorities with a range of ACE values, positive and negative, to recognize that ACE must be allowed to fluctuate within some range of values regardless of other reliability concerns. However, the SDT has not determined a technically justified range of ACE values. The SDT will continue to consider if or how to provide such a range without conflicting with other aspects as it refines its proposal. |
| Bonneville Power Administration | 1. TOPs are responsible for keeping the IROL/SOL for going over the limit, not just mitigating once it goes over the limit. So, the implementation of BALT should be at 90% or less.
2. RBC shouldn’t cause any impact to TOPs. There should be no maximum contribution to congestion. If a BA’s impact is greater than .5%, then they should be assigned that contribution. Please explain reasoning behind .5% maximum threshold?
3. Please explain how you would calculate a BA DF. The only way BPA knows of creating DF is a Bus source to a Bus sink. This may have a large impact on the feasibility of this methodology and our ability to support it.
4. The statement on page 3, “, BALTS should be provided to BAs on a timing that coordinates with other transmission loading relief procedures presently used”. Our view is that this procedure should be imposed prior to other transmission loading relief procedures; RBC shouldn’t impact or interfere with the TOPs ability to manage their transmission levels below the limits.
5. This method seems overly complicated and the impact due to frequency response should be minimal. Do you have any studies to show the impact due to frequency response has a significant impact? BPA thinks that simply using DF as a measure of impact to a path would be a simpler and more manageable process.
6. The drafting team mentions using WEBSAS. Currently WEBSAS is used for a minor portion of the WECC paths and would need to expand significantly to be usable for this proposal.
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| **Response:** 1. The SDT will consider your recommendation to define “congestion” on a flowgate (path) when a flowgate (path) reaches 90% of its rating, along with all comments it receives, as it refines its proposal.
2. 0.5% of flowgate (path) rating is the practical accuracy of installed metering packages. Therefore, 0.5% of flowgate (path) rating constitutes the smallest measurable contribution of actual flowgate (path) flow. This value and direction of contributed flow, when translated through ACE Distribution Factors (ADFs), determines the value of each Balancing Authority’s ACE that would create the associated flow on the specific flowgate (path). The resulting value of ACE and its sign would constitute a limit to minimize measurable contribution to flowgate (path) actual flows contributing to congestion. Therefore,0.5% of flowgate (path) rating provides a basis for determining a conservative limit for non-zero ACE that is unique to each Balancing Authority (or portion of a Balancing Authority if the Balancing Authority is allocated into multiple zones) since ADFs are unique to each Balancing Authority and/or zone. Allowing Balancing Authority ACE to exceed this value will allow additional contribution to flowgate (path) flows, and hence, to flowgate (path) congestion. The SDT agrees that our explanation of the proposal did not convey concepts clearly. The SDT agrees that an ACE limit, however derived, would restrict flows that contribute to congestion caused be non-zero ACE until the flowgate (path) was no longer congested. However, if a Balancing Authority’s ACE is closer to zero than such a limit, the SDT proposes to ignore its contribution to flowgate (path) congestion.
3. The whitepaper describes the theory used to deternine ACE Distribution Factors (ADFs). Equation 23 and 24 in the whitepaper show how to calculate ADFs. Essentially, a Balancing Authority’s ADF for a specific flowgate is the sum of zonal bias to total bias time for the Transmission Distribution Factor (TDF) between the two Balancing Authorities. The SDT asserts the derivation of ADFs and the concepts in the proposal properly assign flow direction and contribution to congested flowgates (paths) from non-zero ACE to specific Balancing Authorities. These calculations have been demonstrated in an EXCEL spreadsheet using actual TDFs and BA Bias Settings from the Western Interconnection.
4. The SDT must consider all comments and the associated tradeoffs. The SDT will consider whether to change the proposed time, implement ACE limits differently in the process, and/or otherwise refine the proposal as it develops its next draft.
5. The SDT agrees that the proposal is complex and welcomes specific proposals and/or concepts that will be effective, efficient, and less complex. The SDT is not aware of data correlating non-zero ACE to flowgate (path) congestion in general or under the field trial. Subjectively, entities have resported no identifiable Transmission issues within the Eastern Interconnection under the field trial. However, since a mechanism to correlate non-zero ACE contibution to flowgate (path) flows is not in use, it is difficult to assess whether these subjective measurements indicate no adverse Transmission effects from non-zero ACE or whether they simply indicate incremental effects are too small to identify when compared to historic performance.The SDT requires further explanation regarding how “…DF as a measure of impact to a path would be a simpler and more manageable process.”
6. Since BATLs depend on ADFs, and hence on TDFs, the SDT proposes to use existing TDFs from IDC and WebSAS to minimize the need for new calculations. However, nothing precludes an Interconnection from identifying a different set of flowgates (paths) as long as it is willing to calculate and update TDFs and identify sufficient zones (POR/POD pairs associated with flowgates or paths) to account for all Balancing Authorities within one or more zones.
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1. The appeals process is in the Reliability Standards Development Procedures: http://www.nerc.com/standards/newstandardsprocess.html. [↑](#footnote-ref-1)