

Comment Form for Draft 3 of the Frequency Response SAR

Please use this form to submit comments on the third draft of the Frequency Response SAR. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line. If you have questions please contact Maureen Long at maureen.long@nerc.net or by telephone at 813-468-5998.

Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
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<input checked="" type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

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Group Comments (Complete this page if comments are from a group.)

Group Name: Bonneville Power Administration
Lead Contact: **Bart McManus**
Contact Organization: **Bonneville Power Administration**
Contact Segment: **1**
Contact Telephone: **360-418-2309**
Contact E-mail: **bamcmanus@bpa.gov**

Additional Member Name	Additional Member Organization	Region*	Segment*
James Murphy	Bonneville Power Administration	WECC	1
John Anasis	Bonneville Power Administration	WECC	1
Brenda Anderson	Bonneville Power Administration	WECC	6

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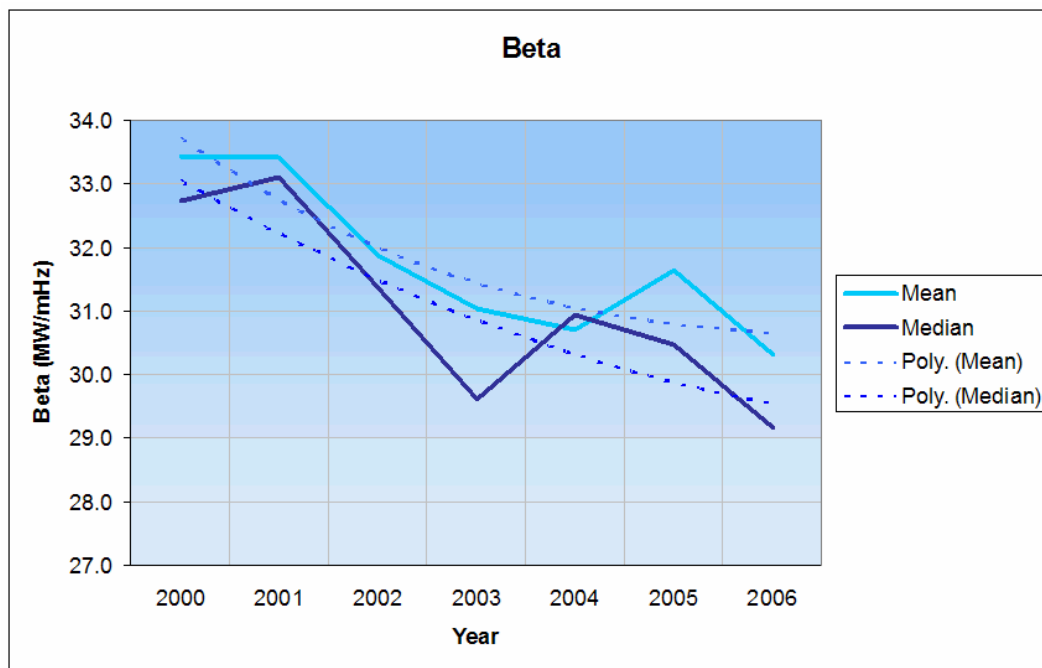
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*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

The original SAR on Frequency Response was submitted in large part due to a study that showed a 10+% decline in Eastern Interconnection Frequency Response over a 5-year period, when response should be increasing over time as the Interconnection grows. Other Interconnections were observing similar declines. The drafting team posted a white paper along with the SAR to outline the need for a standard.

The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

Comment Form for Draft 3 of the Frequency Response SAR

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: With the caveat that more data may be collected if the need arises (out to 10 or 15 minutes)

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: BPA does not believe a field trial is needed for this standard. The standard should be written and implemented with the levels of noncompliance structured around data submittal.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: BPA agrees with the necessity of a frequency response standard. BPA highly encourages that this effort be implemented as soon as possible.

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Group Comments (Complete this page if comments are from a group.)

Group Name: PJM
Lead Contact: Albert DiCaprio
Contact Organization: PJM
Contact Segment: 2
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Contact E-mail: dicapram@pjm.com

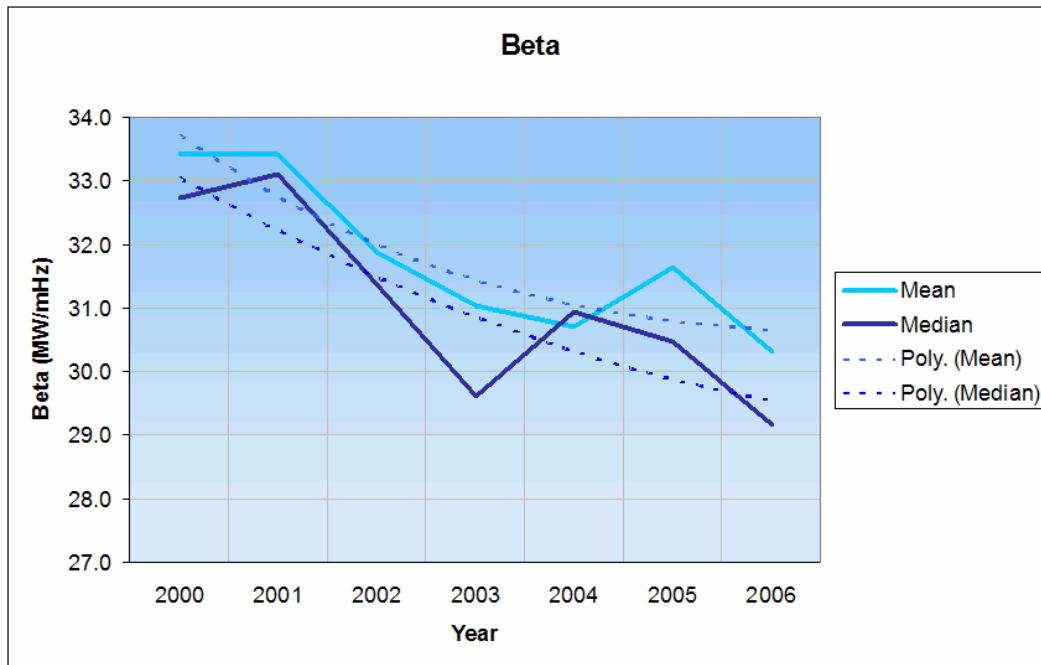
Additional Member Name	Additional Member Organization	Region*	Segment*
Tom Bowe	PJM	RFC	2
Alicia Daughtery	PJM	RFC	2
Joseph Willson	PJM	RFC	2

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Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

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1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: The primary objective of this SAR is to collect data; to analyze the data; and only then to recommend a performance value. The SAR DT insists that collecting data is a Technical Standard. The RSDP states:

"Technical standards...will contain Measures (not measuring - AMD) of physical parameters..." At this point this SAR proposal does not contain such a measure, it does not even assert that the measure is really needed (hence the need to analyze the data).

Page 19 (of 43) of the RSPM states "The drafting team may recommend the scope of the standard be reduced to allow the effort to move forward, while still remaining within the scope of the SAR. Reducing the scope of the SAR is acceptable if the drafting team finds, for instance, THAT ADDITIONAL TECHNICAL RESEARCH IS NEEDED PRIOR TO DEVELOPING (emphasis added) a portion of the standard or issues need to be resolved before consensus can be achieved on a portion of the standard. "The highlighted section applies directly to the scope of this SAR. The SAR Team recognizes work is needed. There is no question about that. The Team should do that work BEFORE proposing a mandatory standard.

PJM supports the concept of doing such a study, and would encourage NERC to assign a group to do such a study, but PJM does not agree that collecting data rises to the level of a valid NERC reliability standard.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: The proposal as written appears to be headed towards mandating a given unit response. As such there would be an obligation on the Generator Operator - there does not seem to be any requirements that would apply to the Generator Owner - unless of course the requestor includes a requirement to install a governor (this has, to date, be an implied obligation just as having a turbine has been an implied obligation). If the requestor does intend to assert an obligation on the Generator Owner to install a governor then the question arises should that be a standard or should that be a part of the Certification of a GO?

It is not clear what the LSE requirements are in this proposal.

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3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: As noted above PJM does not consider collecting data in order to decide what a requirement should be as grounds for a standard. Thus the sampling period which is outside of a NERC standard, can be defined in whatever way the group doing the sampling desires.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: There are field trials for standards (which this question is directed) and there are field trials for good ideas. This proposed SAR would seem to fall into the second category; and while posting events is interesting, it does not rate being a NERC standard. Collecting and posting data can be effected without a standard.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: PJM would also note that the proposal references two distinct parameters - the Natural response of a BA; and the natural response of a unit. It is not clear how the requestor intends to link the two parameters. The sum of the units' natural responses will not equal the natural response of the BA. Does the requestor intend to link the two, or to keep them separate? As written it appears that the requestor intends for the BA to be held responsible for an annual measured value. The SAR DT does not recognize that during different times there are different number of units operating and available to respond. The SAR DT makes no mention of whether or not a BA(?) would have to shed load to maintain such frequency response (for those periods when all units are at full load). The SAR DT makes no mention of distance from an event. An event in NE will effect more response in NE than in Florida - how will that be addressed? PJM would ask for clarification on what the requestor would intend to mandate.

FERC has recognized the need to include suppliers that use load control - how does this SAR intend to address such 'natural response suppliers'?

As written this proposal becomes an ambiguous standard as it obligates a BA to get data from a generator (as opposed to directly obligating generators to supply the data to the analysis team - this is important from the perspective of who would be non-compliant if the data were not supplied - the BA or the GO?).

PJM would suggest that NERC create a Frequency Project, budget the project through its members rather than create a standard and risk imposing non-compliance penalties for what potentially could be a non-issue. Deal with this for what it is - a research activity.

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Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name: Southwest Power Pool Operating Reliability Working Group
Lead Contact: Wayne Galli
Contact Organization: Southwest Power Pool
Contact Segment: RTO
Contact Telephone: 501-614-3344
Contact E-mail: wgalli@spp.org

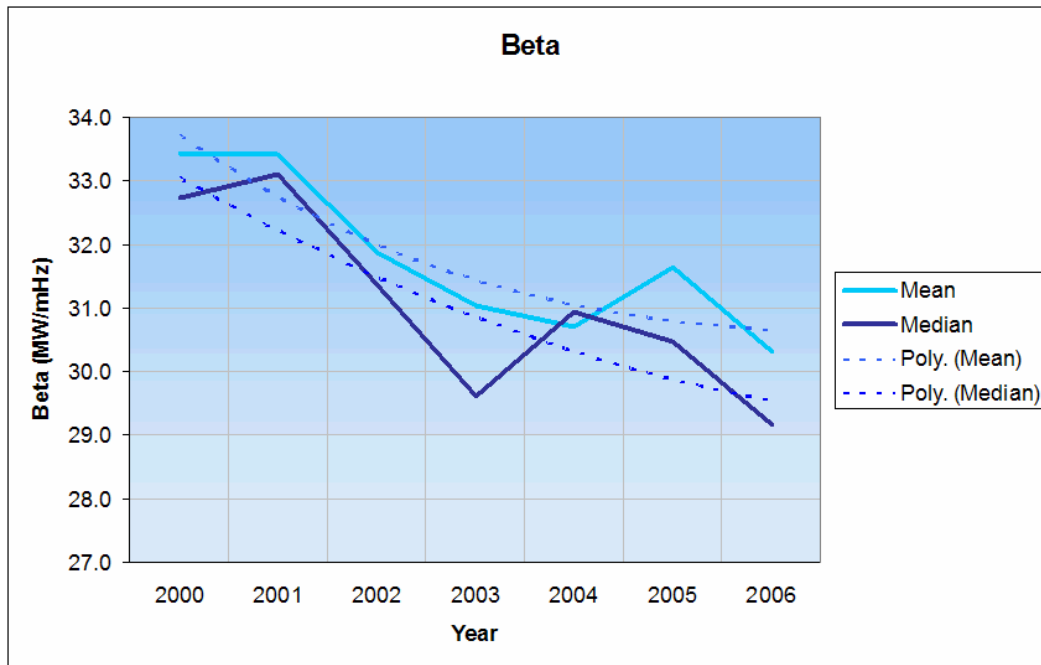
Additional Member Name	Additional Member Organization	Region*	Segment*
Pete Kuebeck	Oklahoma Gas and Electric	SPP	1
Jim Useldinger	Kansas City Power and Light	SPP	1
Bill Grant	Southwestern Public Service	SPP	1
Jason Atwood	Kelson Energy	SPP	4
Steve Massey	Westar Energy	SPP	5
Mike Crouch	Western Farmers Electric Coop	SPP	1
Dan Boezio	American Electric Power	SPP	1
Wayne Galli	Southwest Power Pool	SPP	10

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: Do not agree with the notion in point 5 regarding the need for a Target Frequency Response for each interconnection at this time. It is beyond the scope of this technical SAR to propose anything other than collection of data to support the study.

Do not agree with point 6 of the description. In order to get a handle on what is really going on, all Balancing Authorities should be required to produce data valid to the study. Also the language in point 6 is poorly worded compared to the right wording in 6a and 6b. 6a and 6b should be included in the SAR and 6 should be removed.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: A standard can not be imposed on the response of load to frequency. Load Serving Entities can only provide data.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: The 5 minute time is adequate, but it lacks substance. Small changes in load and generation due to frequency response are very difficult to separate from normal load changes and AGC action on generation units (as was pointed out). It is important to include in the description of data collection that the 5 minutes should include 1 minute of data prior to a study event and 4 minutes after a study event. It is also important to include a sample rate, such as 4 seconds (obviously, faster samples are better, but may not be practical).

The SAR, as written, lacks specifics on what data is required to perform a valid study. Some examples of necessary data may include, but are not limited to, AGC pulses, special protection systems, generator MW, tie line MW, frequency, etc.

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4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: The reasoning for this technical standard is based on the perception that the frequency response of the electrical system is declining and a concern that the interconnect's ability to arrest significant system disturbances is slowly being compromised. Although it is not disagreeable that a study be conducted to determine if an actual decline in frequency response is occurring and then to determine cause, it is disagreeable to propose a potential remedy for a problem that may not exist or, dependent on the findings, an inappropriate remedy.

Types of generating units online (e.g., wind generation, combined cycle, etc) and their subsequent loading will have an influence on the frequency response of the system. As long as Balancing Authorities are maintaining their reserve obligations, even large contingencies should be manageable. However, over the years because of the trend to get more out of invested generation resources, it would give the appearance of a decline in frequency response since most frequency degradations are a result of losses of generation and a resultant decline in system frequency and those are what is studied and scrutinized. The August 14, 2003 disturbance was an opportunity to study the frequency response of all on-line generating units due to the frequency event resulting in a high frequency. High frequency is the only event where all on-line generating units will respond.

Proposing the establishment of a Target Frequency Response for the interconnect before concluding if an actual decline in frequency response is occurring and the cause(s) for the decline is finding a solution before defining the problem. Any standards involving frequency response need to also consider the role system reserves play in the interconnect as well as the frequency response of generators and system load to frequency. As long as generating reserve obligations are being met in accordance with current Reliability Standards and Regional Operating Criteria there may not be a need to go further dependent on the outcome of the study proposed by this SAR.

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Organization:	American Transmission Co.	
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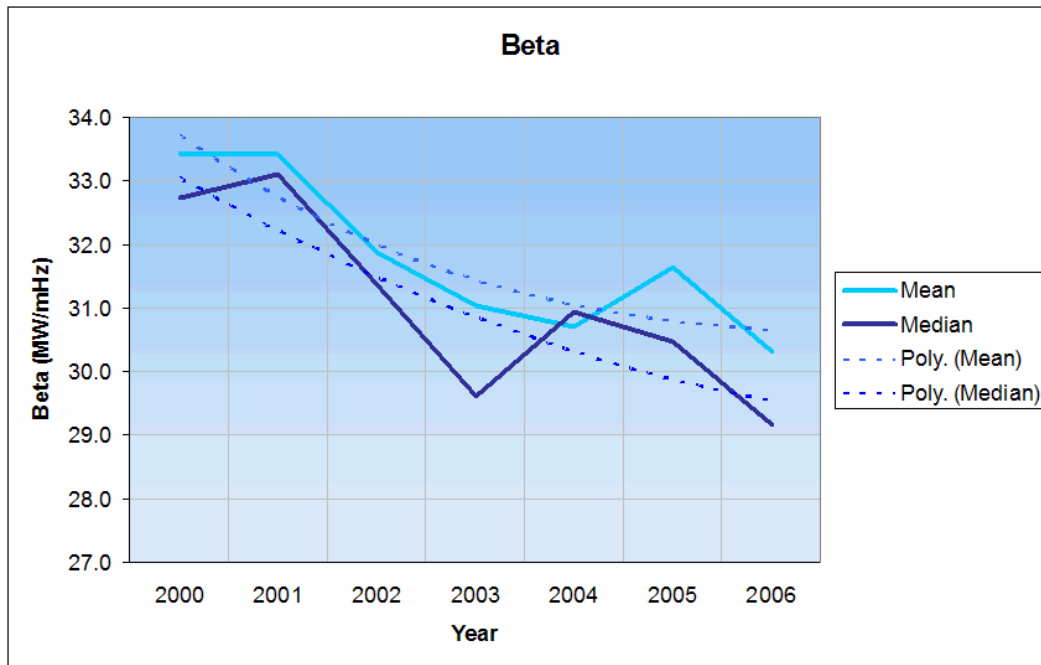
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The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: ATC does not see the need to identify the Load Serving Entity in the Applicability section. The SDT should provide an explanation as to the reasoning behind the selection of Load Serving Entities.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments:

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Brent Kingsford	
Organization:	CAISO	
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E-mail:	bkingsford@caiso.com	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input checked="" type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input checked="" type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

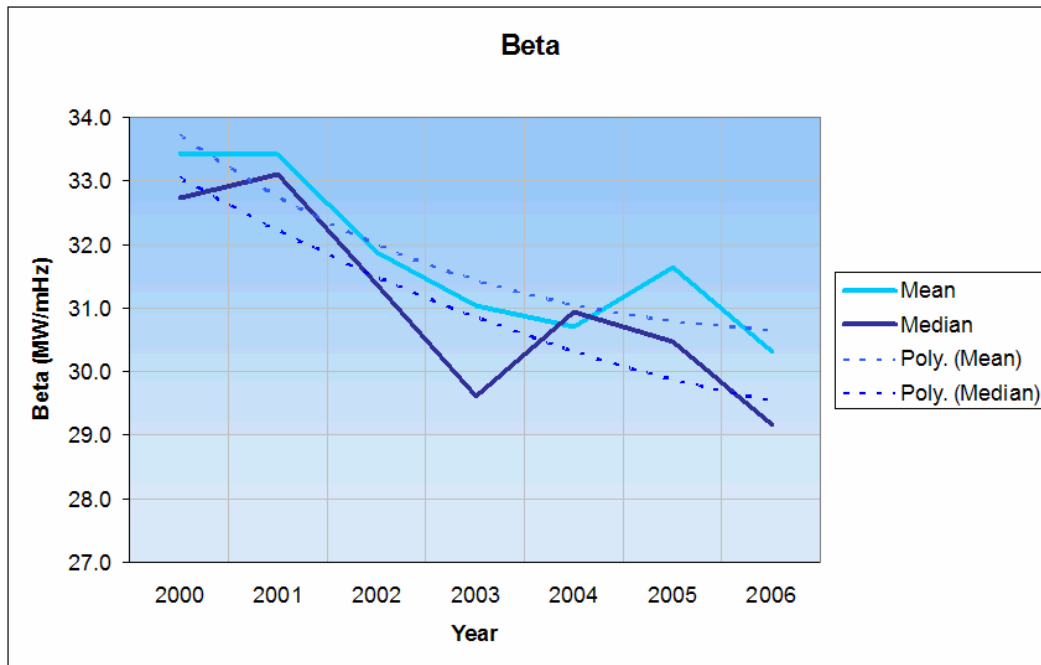
Additional Member Name	Additional Member Organization	Region*	Segment*

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The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



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Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

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Comments:

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Michael Gildea	
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NERC Region	<input type="checkbox"/>	Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
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Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

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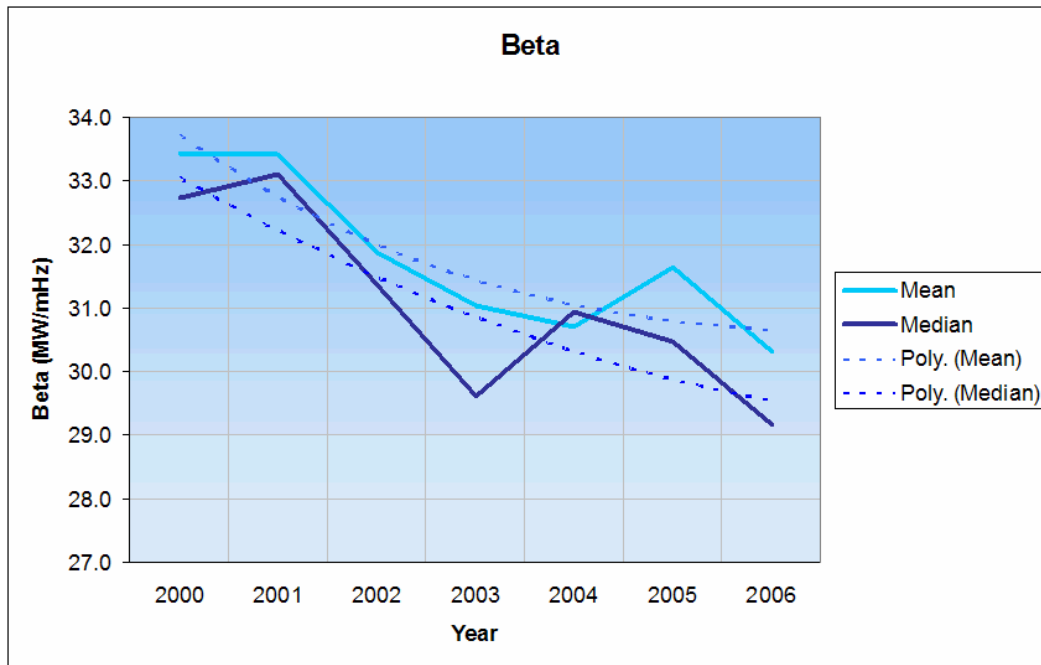
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1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

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Yes

No

Comments:

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Yes

No

Comments:

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Yes

No

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Comments:

Specific to the Requirement 6 a which states:

Each Generator Operator that operates a generator larger than [10 MW]*, shall provide data to its Balancing Authority, as required in item 6, to support this standard and for use in developing models of Frequency Response in the associated Interconnection.

Comment Form for Draft 3 of the Frequency Response SAR

Balancing Authorities may seek Speed Droop characteristics for our generators. Speed Droop is a design characteristic of the steam turbine (or the prime mover's governor response in the case of a combustion turbine or diesel) .

Our concern is the only data we may be able to provide would be turbine manufacturer design data. For our older units where turbine control systems have been retrofitted and upgraded with more modern controls, we may not really know the speed droop characteristic of the unit. Collecting performance data to demonstrate the speed droop is extremely difficult if not impossible on a large unit. (Requires the grid connection frequency be allowed to "droop" as the generator is loaded). Hence, as now written, Constellation Generation is not clear how we could comply.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Howard F. Illian	
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E-mail:	howard.illian@energymark.org	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
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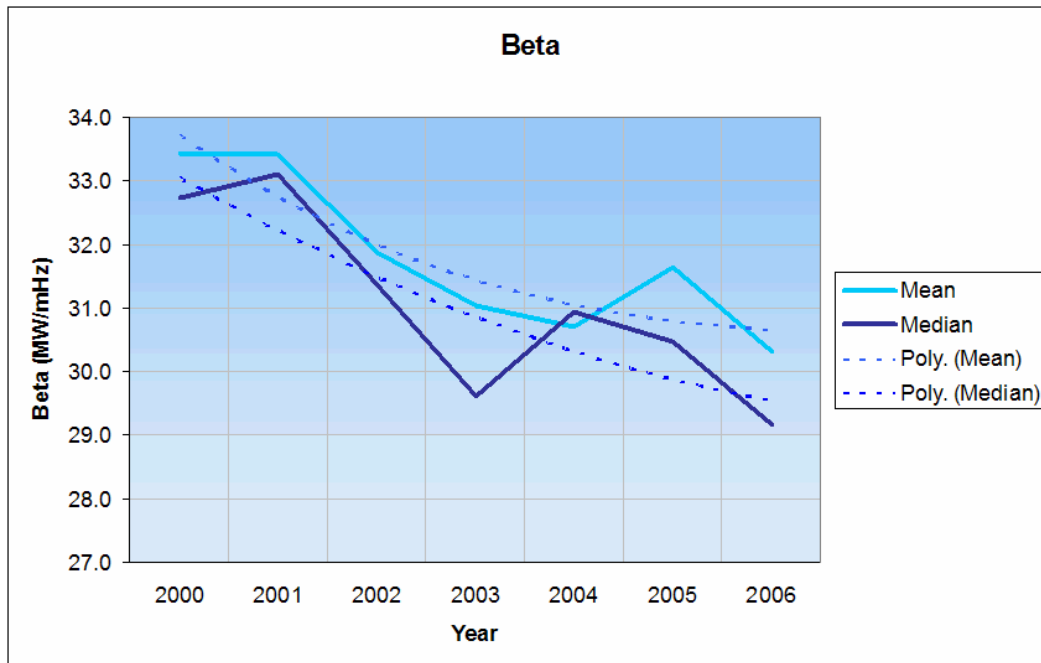
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1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: At this time information is not available that would provide a sound technical basis for the development of a performance standard. However, with the recent increased interest in Frequency Response, new data and analysis could become available at any time that would change the focus from a technical standard to a performance standard. If new information and analysis becomes available during the development of the technical standard, consideration should be given to how the development of the technical standard could delay the development and implementation of a performance standard. Must the technical standard be completed and approved before work can start on a performance standard?

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: I agree that the proposed list includes those entities that would be affected by a technical standard. However, there are many questions that must be resolved before any standard that affects the Generation Owner, Generation Operator or Load-serving Entity can be implemented. These questions relate to how a performance standard can or should be implemented. If there is no reasonable expectation that they would be included in a future performance standard, it would be unreasonable to implement a technical standard that requires these three functional entities to provide data. In a fair market that allows voluntary participation by Generation Owners, Generation Operators and Load-serving Entities, the direct application of a Frequency Response Performance Standard to these entities is not currently possible without creating unreasonable inequities in the market. Any standard applied directly to one generator but not another will create unreasonable inequities in a market. Since each generation technology has different Frequency Response capabilities, only a solution that provides Frequency Response through a market based mechanism can be fairly implemented in a market. Under these conditions, the measurement methods and data collection for a technical standard should only be applied to those entities that would have responsibilities under a performance standard. The correct alternative for collecting data from these entities is to collect it indirectly through the Balancing Authority or Reliability Coordinator that would be directly affected by a performance standard. The inclusion of Generation Owner, Generation Operator, and Load-serving Entity directly in the data collection will lead to the development of data collection systems that will need to be replaced, if and when, a performance standard is developed. This is an inefficient way to develop the technology for a new standard.

Comment Form for Draft 3 of the Frequency Response SAR

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: I agree with the concept of measuring Frequency Response for an extended period after a disturbance, but I do not agree that the reason is related to masking by AGC action. If the Frequency Bias for a Balancing Authority is set to a value that approximates the actual Frequency Response, the AGC action will always provide the correct response for reliable interconnection performance. The Frequency Response should be measured for an extended period after a disturbance to identify entities that are prematurely withdrawing their expected frequency response support from the interconnection. This has been demonstrated for entities that have outer loop control that only includes scheduled deliveries without adjustment for frequency response.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: This would be a good way to insure that every entity select a similar set of events for calculation of their Frequency Response, but it will not insure conformity of the results. The difficulty with any method for selecting a common set of events is that each of those events is caused by a disturbance within one or more of the Balancing Authorities on the interconnection. Those entities that cause the disturbance will experience a different frequency response than those entities that are responding. The net effect is that the sum of the responses for all of the entities on the interconnection must sum to zero. This means that each entity must eliminate those disturbances for which they are the cause, from the set of disturbances they use to estimate their response. The real advantage is an entity cannot influence the results of the measurement through selection of the events they choose to include in the calculation.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: One of my concerns is a majority of entities in NERC must agree that there is a need for a standard before the standard process moves forward. This could have undesirable long-term results with respect to the quality of the standards that are developed. This standard provides a good example of this problem. From what I have observed, both the Texas and Western Interconnections have concluded that there is a reliability need for a Frequency Response Standard on their interconnections. Unfortunately, reasonable opposition from the Eastern Interconnection will prevent the development of a common standard for those two interconnections. The only alternative will be for the Texas and Western Interconnections to each develop their own standards for Frequency Response without considering ways of making those two standards similar to each other. If the Eastern Interconnection, after a few years, finds that it needs a Frequency Response Standard, it will then become necessary for a new

Comment Form for Draft 3 of the Frequency Response SAR

standard to be developed that applies to all three interconnections. If each interconnection has a different Frequency Response Standard, it means there is no standard at all, but three different rules for NERC. The next logical step is to develop a common standard for all three interconnections requiring the first two standards developed by the Texas and Western Interconnections separately be modified to conform to a North American Standard on Frequency Response. Combining these three separate needs into a single standard will result in a natural opposition to change by those interconnections that have already implemented an interconnection standard that meets their individual needs. This will make it very difficult to gain the support necessary to enact a common standard for NERC. This multi-step development can only be avoided by having all three interconnections participate and contribute to standards identified and developed by individual interconnections. I believe that NERC needs to find a way to address this problem. If they do not, the standard development and approval process will lead to fractured standards and an unacceptable fractured standard process for NERC. One alternative might be to find a way for all interconnections to participate in the solution of individual interconnection problems as part of the standard development process.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Steve Myers	
Organization:	ERCOT	
Telephone:	512-248-3077	
E-mail:	smyers@ercot.com	
NERC Region		Registered Ballot Body Segment
<input checked="" type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input checked="" type="checkbox"/>	2 — RTOs, ISOs
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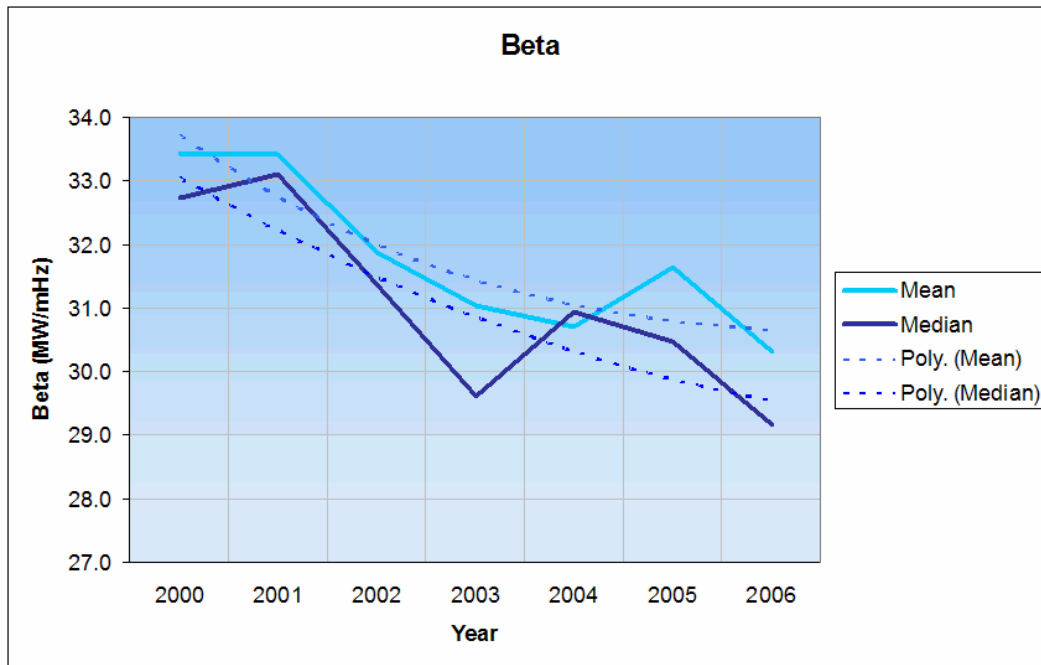
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The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: This time frame should be sufficient for determination of frequency response. If it is intended that this data should also be useful for evaluating generating unit governor functioning, a longer time may be appropriate.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: A field trial would be beneficial to ensure that no gaps in the need for data exist. This could relate to whether other data is needed or whether data for a longer time is needed.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments:

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Roger Champagne	
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Telephone:	514 289-2211, X2766	
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NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input checked="" type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

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Group Comments (Complete this page if comments are from a group.)
Group Name:
Lead Contact:
Contact Organization:
Contact Segment:
Contact Telephone:
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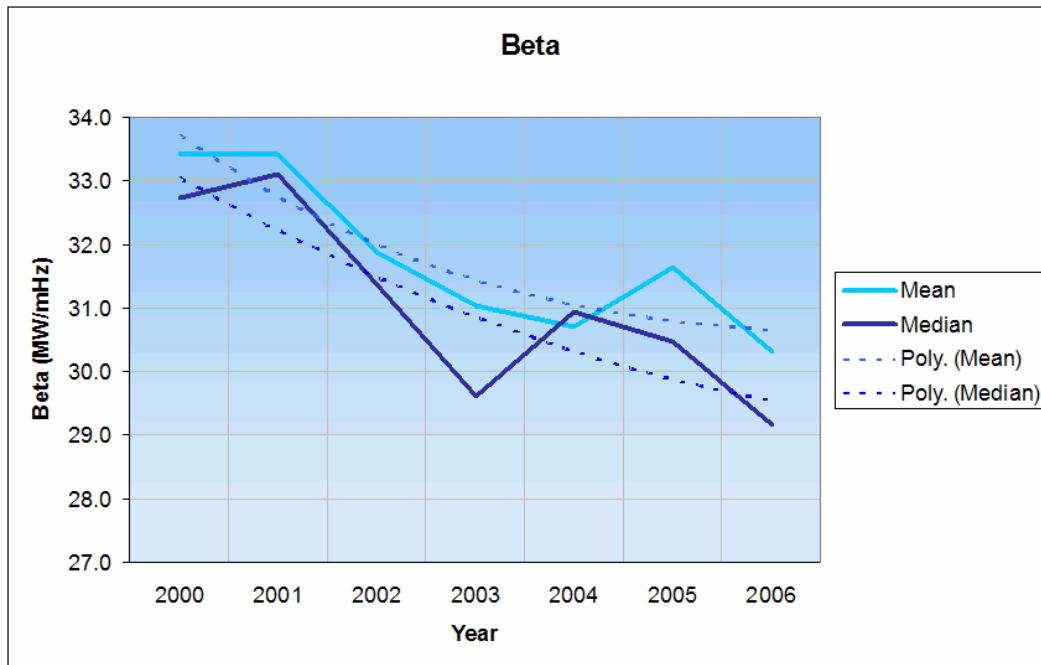
Additional Member Name	Additional Member Organization	Region*	Segment*

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1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: HQT believe there might be other means than Reliability Standards to accomplish this data collection.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: We question the need to include the applicability to the LSEs in this SAR and requests the drafting team to explain the purpose.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: We requests clarification as to what data and at what periodicity will be collected from the identified entities.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: Being a single Balancing Authority Interconnection, there might be a need for a «regional» difference for the Québec Interconnection when specific value will be established. Same as ERCOT, frequency response will be based on the change in generation (or load) rather than Tie-Line deviation.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Ron Falsetti	
Organization:	IESO	
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NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input checked="" type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
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Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

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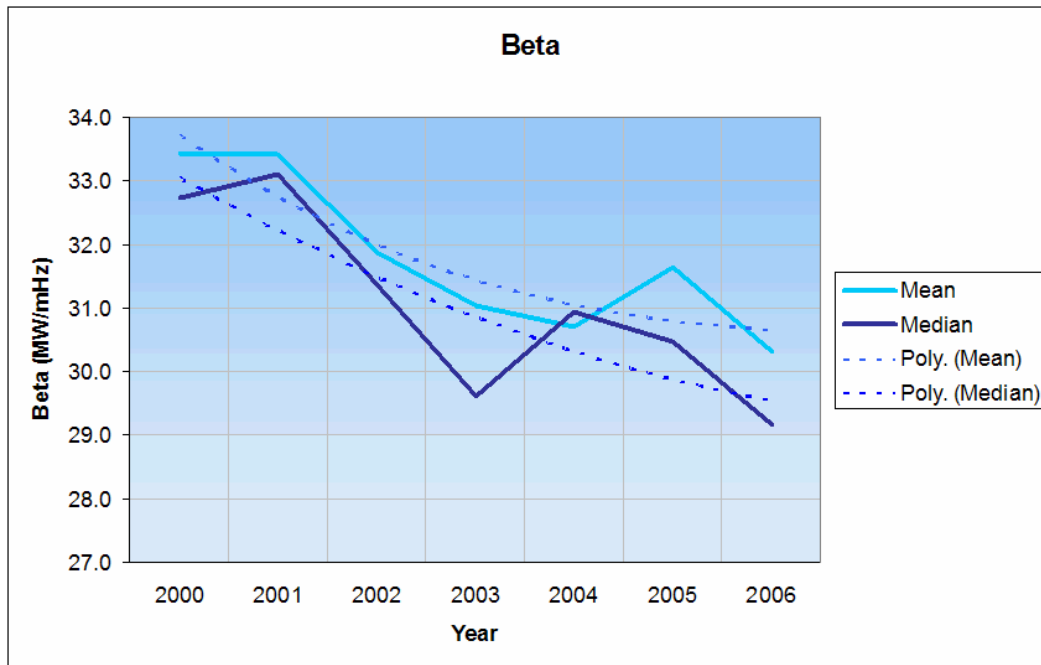
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1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

We do not agree with the reduced scope of this SAR. It does not require a standard to enable a data collection task(s). Data collection procedures and processes, charged by a standing committee, e.g. the OC, or respective working groups, would be more than sufficient.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

For the purpose of data collection, assigning responsibility to the Balancing Authority, Generator Operator and Load-serving Entity would suffice.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: A field test is a must and would definitely provide useful information on the types of event that would necessitate such data collection (The threshold needs to be clarified though - e.g. should it be >10MW loss of generator or some other threshold?), and any specific areas that need to be worked on in order to ensure that all relevant and required data is collected.

Comment Form for Draft 3 of the Frequency Response SAR

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Comments:

While we felt that the previous SAR was unclear on the intent, this SAR has such a reduced scope that the intended task does not require a reliability standard to achieve . A task team charged by a standing committee (the OC), would suffice. The requirements proposed in the SAR can be set as conditions for completing the data collection effort by the task team.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Kathleen Goodman	
Organization:	ISO New England	
Telephone:	(413) 535-4111	
E-mail:	kgoodman@iso-ne.com	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input checked="" type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input checked="" type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
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Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

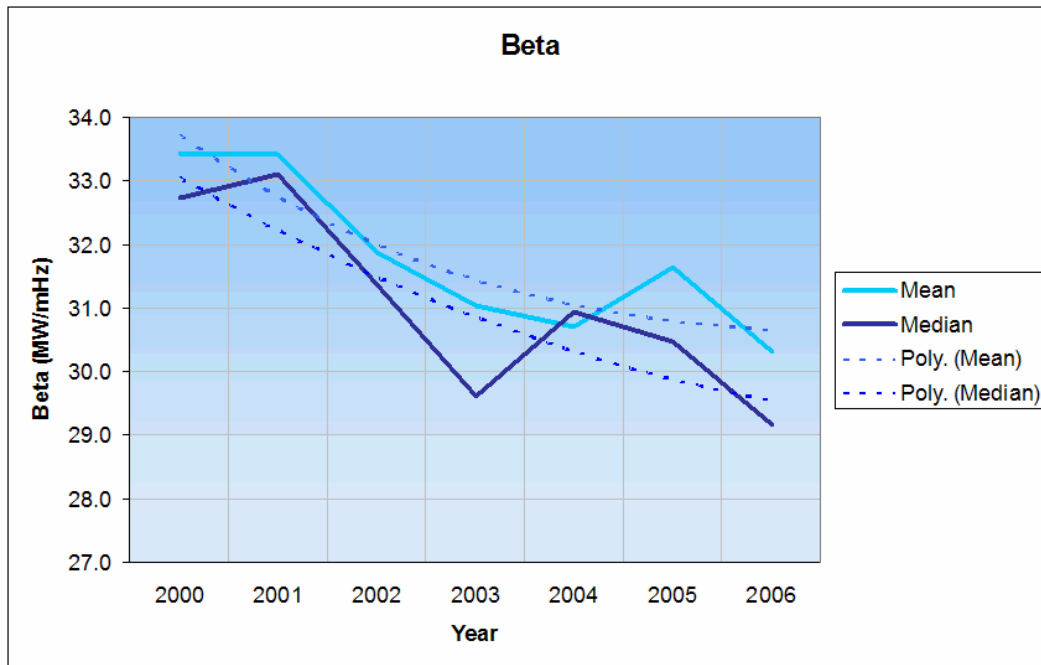
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Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: ISO New England does not see a need to include the applicability to the LSEs in this SAR and requests the drafting team to explain this.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: ISO New England requests clarification as to what data and at what periodicity will be collected.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

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Comments:

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Michael Gammon	
Organization:	Kansas City Power & Light	
Telephone:	816-654-1242	
E-mail:	mike.gammon@kcpl.com	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
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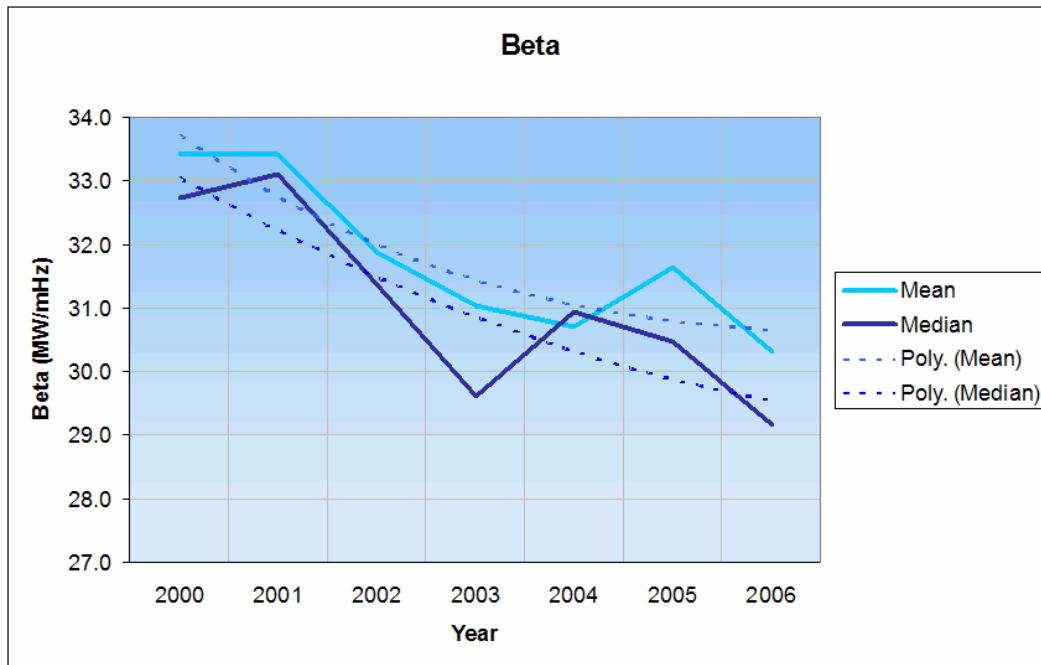
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Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: Do not agree with the notion in point 5 regarding the need for a Target Frequency Response for each interconnection at this time. It is presumptuous to advance a remedy prior to determining cause of the perceived decline in frequency response. Allow the technical SAR to perform its function to determine cause. Any appropriate remedy in operating standards should become apparent.

Do not agree with point 6 of the description. In order to get a handle on what is really going on, all Balancing Authorities should be required to produce data valid to the study. Also the language in point 6 is poorly worded compared to the right wording in 6a and 6b. 6a and 6b should be included in the SAR and 6 should be removed.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: The 5 minute time is adequate, but it lacks substance. Small changes in load and generation due to frequency response are very difficult to separate from normal load changes and AGC action on generation units (as was pointed out). It is important to include in the description of data collection that the 5 minutes should include 1 minute of data prior to a study event and 4 minutes after a study event. It is also important to include a sample rate, such as 4 seconds (obviously, faster samples are better, but may not be practical).

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Comment Form for Draft 3 of the Frequency Response SAR

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.
Comments: The reasoning for this technical standard is based on the perception that the frequency response of the electrical system is declining and a concern that the interconnect's ability to arrest significant system disturbances is slowly being compromised. Although it is not disagreeable that a study be conducted to determine if an actual decline in frequency response is occurring and then to determine cause, it is disagreeable to propose a potential remedy for a problem that may not exist or, dependent on the findings, in inappropriate remedy.

One reason a decline in frequency response may be perceived occurring is a result of more on-line generating units being fully loaded. That means when a frequency decline occurs there are less units able to respond because they are already loaded. That does not mean the interconnection is at risk. As long as Balancing Authorities are maintaining their reserve obligations, even large contingencies should be manageable. However, over the years because of the trend to get more out of invested generation resources, it would give the appearance of a decline in frequency response since most frequency degradations are a result of losses of generation and a resultant decline in system frequency and those are what is studied and scrutinized. The August 14, 2003 disturbance was an opportunity to study the frequency response of all on-line generating units due to the frequency event resulting in a high frequency. High frequency is the only event where all on-line generating units will respond.

Proposing the establishment of a Target Frequency Response for the interconnect before concluding if an actual decline in frequency response is occurring and the subsequent cause(s) for the decline is finding a solution before defining the problem. Any standards involving frequency response needs to also consider the role system reserves play in the interconnect as well as the frequency response of generators and system load to frequency. As long as generating reserve obligations are being met to meet current Reliability Standards and Regional Operating Criteria there may not be a need to go further dependent on the outcome of the study proposed by this SAR.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Robert Coish	
Organization:	Manitoba Hydro	
Telephone:	204-487-5479	
E-mail:	rgcoish@hydro.mb.ca	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input checked="" type="checkbox"/> MRO	<input checked="" type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input checked="" type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input checked="" type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

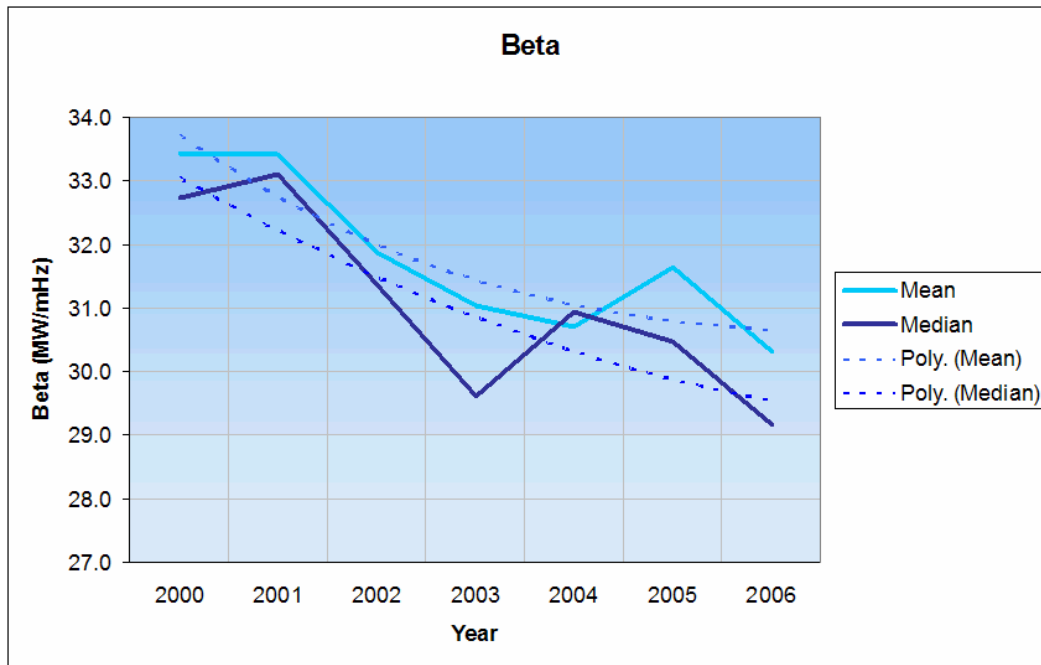
Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

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The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

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- Measuring generator response (those units on line).
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- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

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1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: Ten minutes might be more useful, especially in any areas where it appears to take a long time to settle down after a frequency deviation event. This could be left up to the discretion of operators and balancing authorities in any areas where slow or bumpy returns to normal frequency levels are experienced.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: Only if field trials are deemed to have very high probability of not causing significant difficulties on overly sensitive network area.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments:

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Alan R Oneal	
Organization:	MidAmerican Energy Company	
Telephone:	515-252-6449	
E-mail:	aroneal@midamerican.com	
NERC Region	<input type="checkbox"/>	Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input checked="" type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
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Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

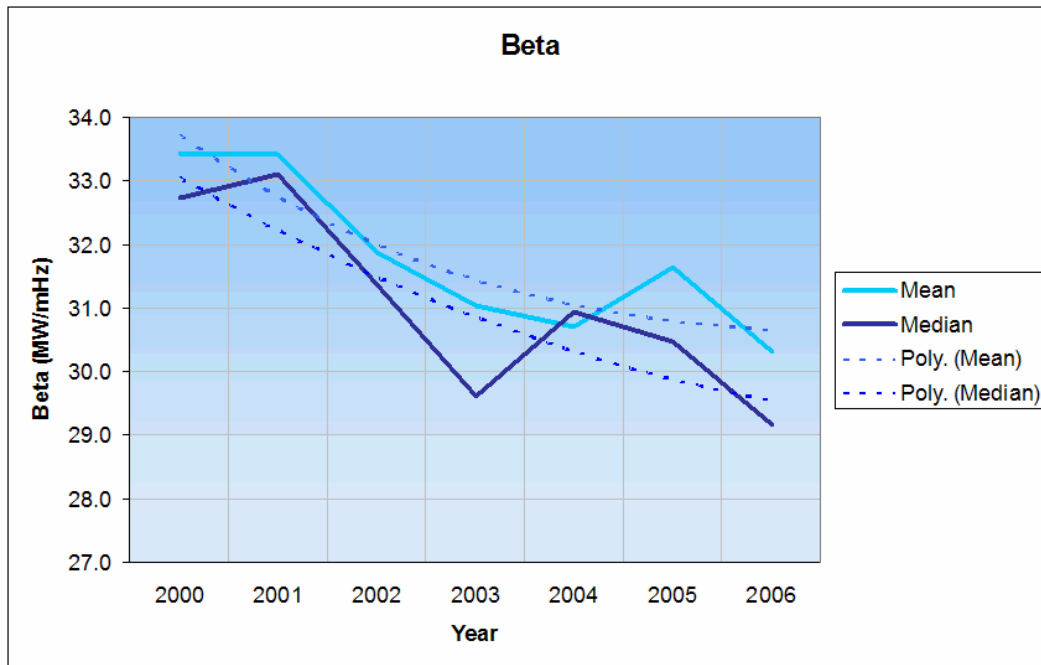
Additional Member Name	Additional Member Organization	Region*	Segment*

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Comment Form for Draft 3 of the Frequency Response SAR

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: This standard would be a start, at least, at bringing to light where and why response is being lost. It may well be that exposure and peer pressure, as well as the tiered reporting requirements, will keep plant and operations personnel abreast of their obligations for providing reserves of all types.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: This is not a new concept. I support institution of the standard as written so a start can be made to identify and, with luck, remediate the decline in frequency response.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: I have concern about the "shall"s in the standard, in that there is no apparent enforcement behind the requirements for data submittals. If I'm wrong in

Comment Form for Draft 3 of the Frequency Response SAR

this, then I would be comfortable with the effectiveness possible. If I'm right, what is to be done with an entity which finds it convenient not to report?

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region	<input type="checkbox"/>	Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
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	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name: Midwest ISO and individual stakeholders
Lead Contact: Jason Marshall
Contact Organization: Midwest ISO
Contact Segment: 2
Contact Telephone: (317) 249-5494
Contact E-mail: jmarshall@midwestiso.org

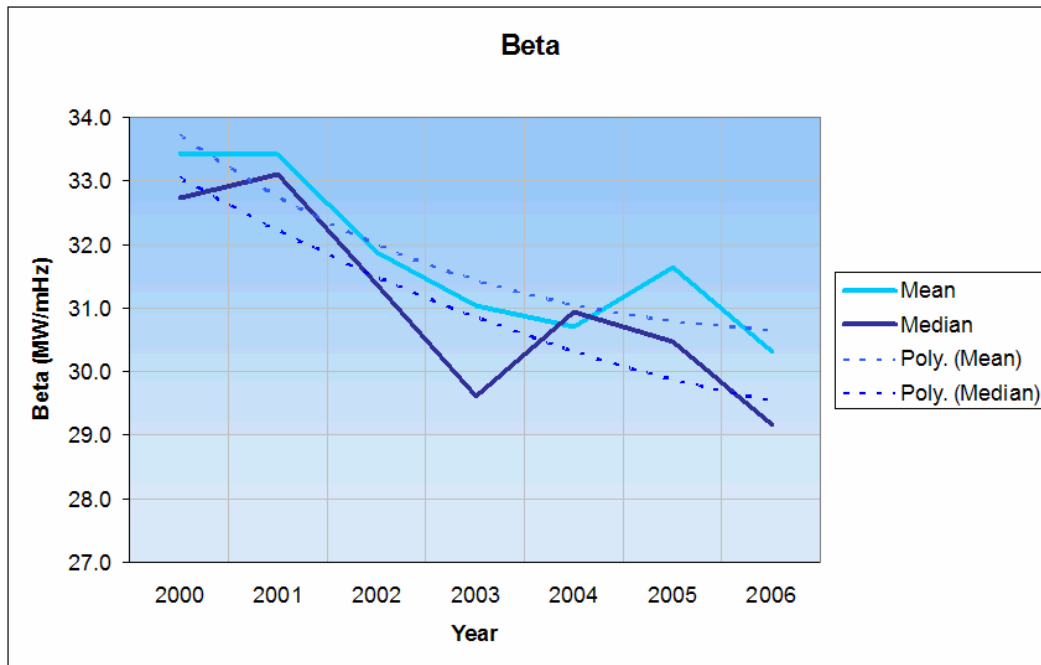
Additional Member Name	Additional Member Organization	Region*	Segment*
Doug Hils	Duke Energy	RFC	1
Brian F. Thumm	ITC	RFC	1
Jim Cyrulewski	JDRJC Associates	RFC	8

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

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The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



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Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

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Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: Five minutes is acceptable. There may be merit in collecting 15 minutes of data to cover the DCS window. The data should be readily available since the BAs are already examining this data to determine their compliance with the DCS standard. The final decision can be made during the standards drafting phase.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: This should not be a problem as BAs should already be performing this calculation in the annual determination of their frequency bias.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments:

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Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
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<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
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Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name: NPCC CP9, Reliability Standards Working Group

Lead Contact: Guy V. Zito

Contact Organization: Northeast Power Coordinating Council

Contact Segment: 10

Contact Telephone: 212-840-1070

Contact E-mail: gzito@npcc.org

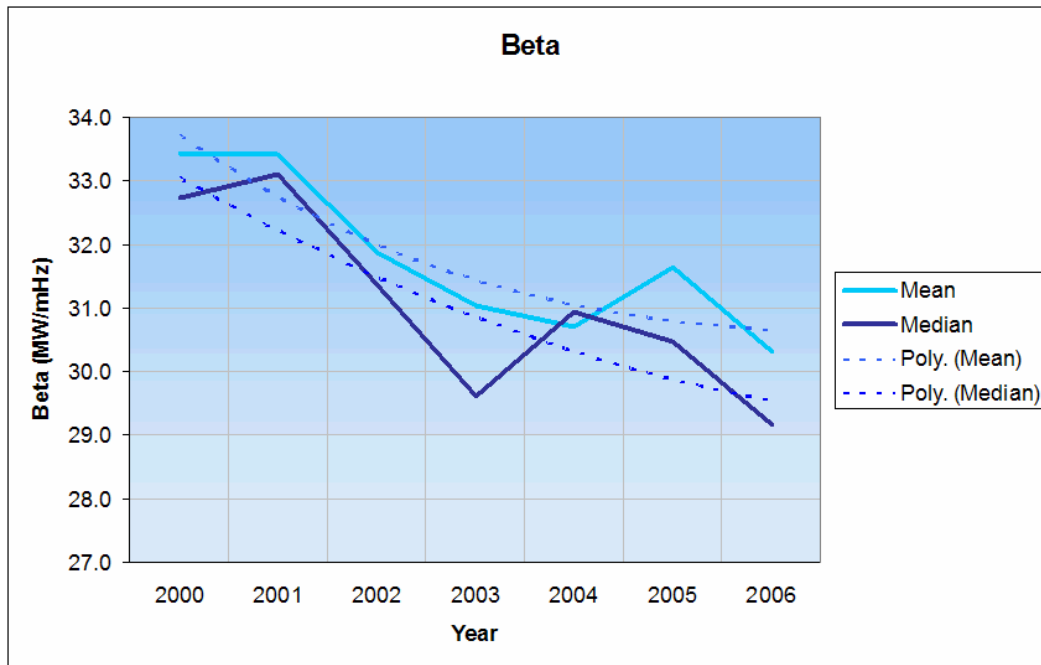
Additional Member Name	Additional Member Organization	Region*	Segment*
Ralph Rufrano	New York Power Authority	NPCC	1
Roger Champagne	TransEnergie HydroQuebec	NPCC	1
Ed Thompson	ConEd	NPCC	1
Al Adamson	New York St. Reliability Council	NPCC	10
Kathleen Goodman	ISO-New England	NPCC	2
Bill Shemley	ISO-New England	NPCC	2
Greg Campoli	New York ISO	NPCC	2
Don Nelson	MA Dept. of Tele. and Energy	NPCC	9
Ron Falsetti	The IESO, Ontario	NPCC	2
Bruno Jesus	Hydro One Networks	NPCC	1
Randy McDonald	New Brunswick Sys. Operator	NPCC	2
Guy V. Zito	Northeast Power Coord. Council	NPCC	10
Herb Schrayshuen	National Grid US	NPCC	1
Jerad Barnhart	NStar	NPCC	1

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- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
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- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: Many of NPCC's participating members believe there are other means to accomplish this phase of the initiative and that appropriate revisions to existing standard(s) may address the issue determined by the data analysis could be proposed.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: NPCC participating members question the need to include the applicability to the LSEs in this SAR and requests the drafting team to explain this.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: It is not clear what type of data is going to be collected from this requirement. AGC response is continuous. What is the justification for the specific "five minutes" referred to? Since AGC control is every 4 seconds, five minutes appears to be too long a period to collect this data. Imposing this requirement will require the installation of local data storage retention facilities & telemetering equipment that may not be necessary and NPCC participating members would like the drafting team to explain why 5 minutes is necessary.

Also, when requesting data from a generator what is expected scan-rate/exception reporting clarity of the data?

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

Comment Form for Draft 3 of the Frequency Response SAR

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.
Comments:

Comment Form for Draft 3 of the Frequency Response SAR

Please use this form to submit comments on the third draft of the Frequency Response SAR. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line. If you have questions please contact Maureen Long at maureen.long@nerc.net or by telephone at 813-468-5998.

Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Sydney L. Niemeyer	
Organization:	NRG Texas, Qualified Scheduling Entity (QSE)	
Telephone:	713-795-6108	
E-mail:	sydney.niemeyer@nrgenergy.com	
NERC Region		Registered Ballot Body Segment
<input checked="" type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input checked="" type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

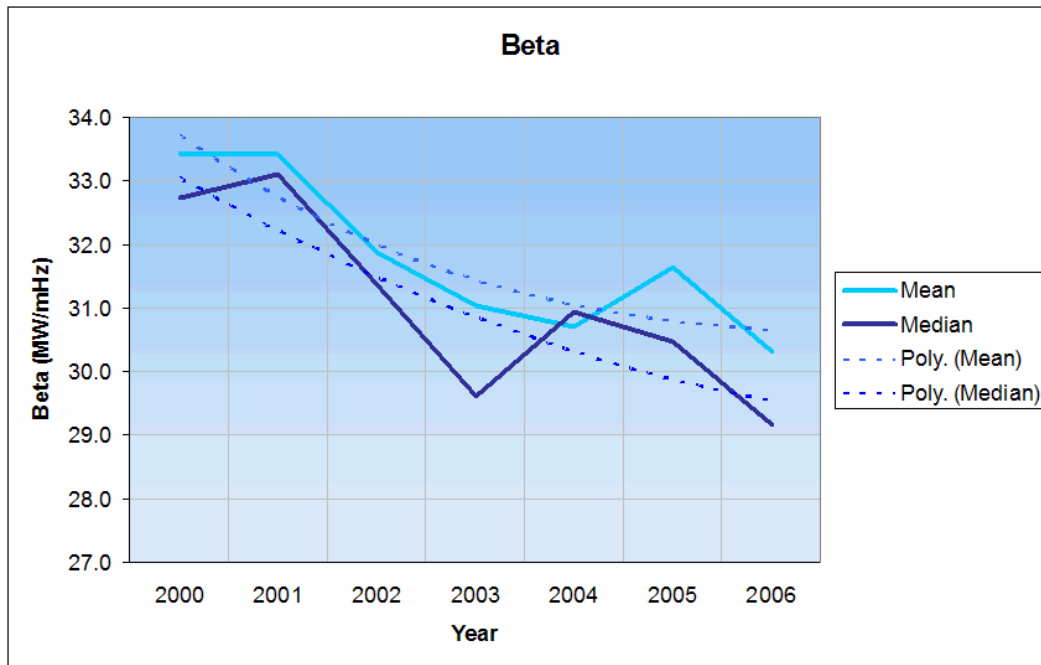
Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

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The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: A field trial may indicate the need for more or different data for the proper calculation of a BAs Frequency Response.

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.
Comments: Frequency Response of Resources is vital to the reliability of an interconnection. Large differences between the measured Frequency Response of a BA, its Bias setting and the models of Frequency Response may indicate a reliability risk. Updating the models with accurate Frequency Response data will improve the evaluation of this reliability risk. Please implement this process as soon as possible.

Comment Form for Draft 3 of the Frequency Response SAR

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Michael Calimano	
Organization:	New York Independent System Operator	
Telephone:	518-356-6129	
E-mail:	mcalimano@nyiso.com	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input checked="" type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input checked="" type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)
Group Name:
Lead Contact:
Contact Organization:
Contact Segment:
Contact Telephone:
Contact E-mail:

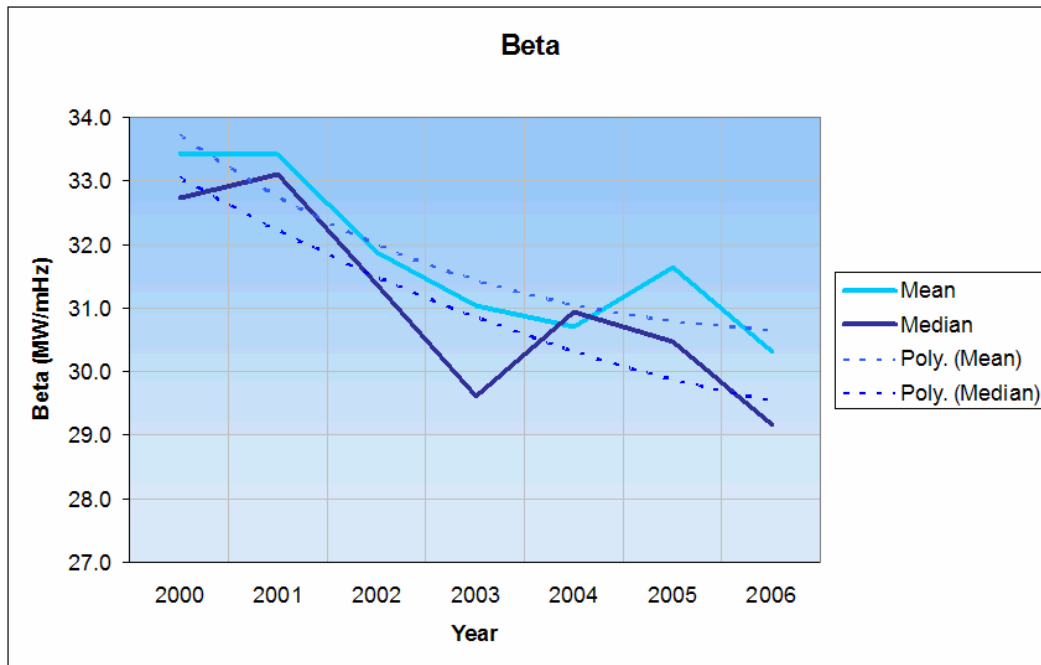
Additional Member Name	Additional Member Organization	Region*	Segment*

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Background Information:

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Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

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- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: The NYISO is uncertain if this is the appropriate means to require data collection for purposes of developing models. A review should be made to be certain that this proposed scope meets the criteria for a standard.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: It is not clear what type of data is going to be collected from this requirement. AGC response is continuous. What is the justification for the specific "five minutes" referred to? Since AGC control is every 4 seconds, five minutes appears to be too long a period to collect this data. Imposing this requirement will require the installation of local data storage retention facilities & telemetering equipment that may not be necessary and NPCC participating members would like the drafting team to explain why 5 minutes is necessary.

Also, when requesting data from a generator what is expected scan-rate/exception reporting clarity of the data?

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

Comment Form for Draft 3 of the Frequency Response SAR

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.
Comments:

Comment Form for Draft 3 of the Frequency Response SAR

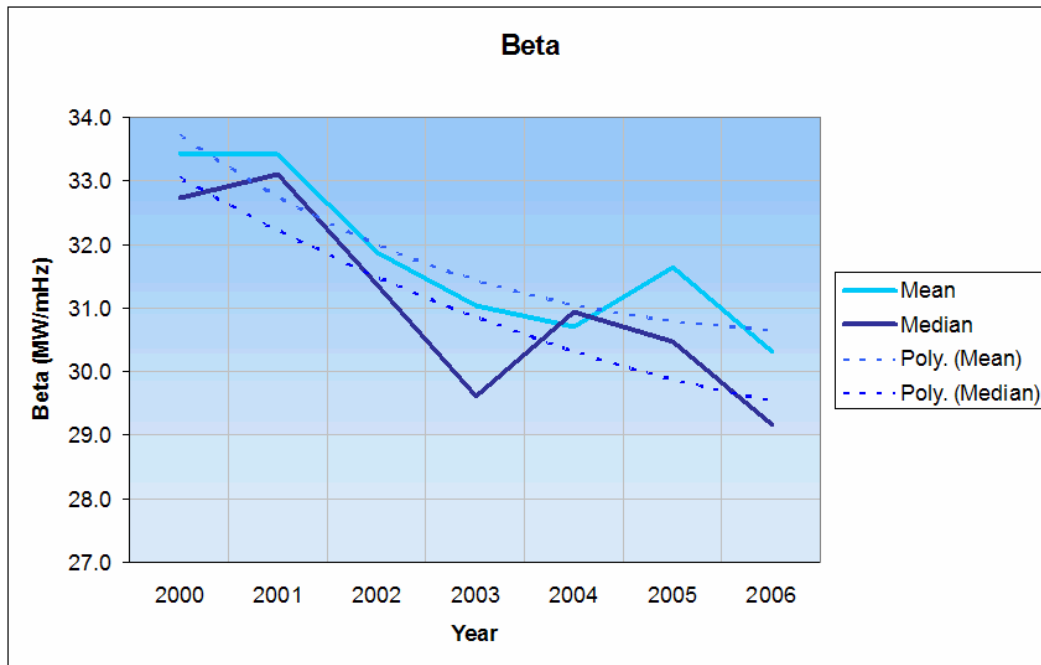
Please use this form to submit comments on the third draft of the Frequency Response SAR. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line. If you have questions please contact Maureen Long at maureen.long@nerc.net or by telephone at 813-468-5998.

Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Theodore Papaps	
Organization:	New York State Reliability Council	
Telephone:	516-545-4007	
E-mail:	tpappas@service.lipower.org	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input checked="" type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input checked="" type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

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The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

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- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
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- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
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Comment Form for Draft 3 of the Frequency Response SAR

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: Explain the applicability of the SAR to LSEs

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: It is not clear what type of data is going to be collected from this requirement. AGC response is continuous. What is the justification for the specific "five minutes" referred to? Since AGC control is every 4 seconds, five minutes appears to be too long a period to collect this data. Imposing this requirement will require the installation of local data storage retention facilities & telemetering equipment that may not be necessary.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: The results of the data collection efforts should be used to develop a standard governing frequency response.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input checked="" type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
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<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
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	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name: Southern Company Transmission
Lead Contact: Jim Busbin
Contact Organization: Southern Company Services, Inc.
Contact Segment: 1
Contact Telephone: 205-257-6357
Contact E-mail: jybusbin@southernco.com

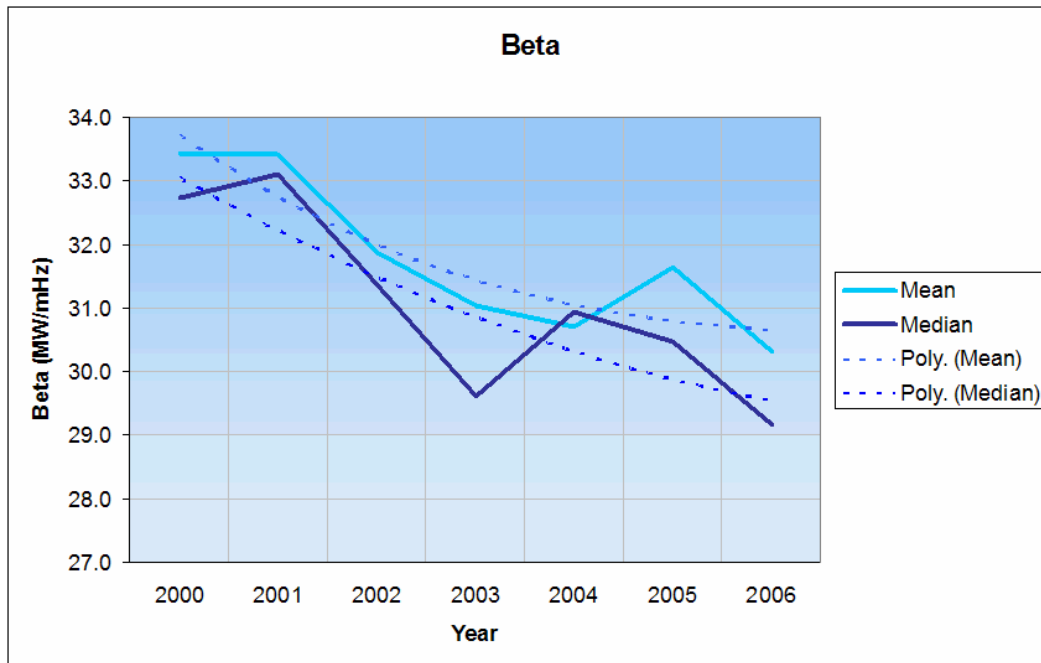
Additional Member Name	Additional Member Organization	Region*	Segment*
Marc Butts	Southern Company Services	SERC	1
J. T. Wood	Southern Company Services	SERC	1
Roman Carter	Southern Company Services	SERC	1
Raymond Vice	Southern Company Services	SERC	1
Jim Viikinsalo	Southern Company Services	SERC	1
Tom Higgins	Southern Company Services	SERC	5
Terry Crawley	Southern Company Services	SERC	5

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: Frequency response and its dynamic behavior is a complex issue that requires detailed analysis and study to understand. This in turn requires sufficient high quality data be obtained to support the development of models and concepts. The data could be collected voluntarily, but without the force of NERC standards behind it not many people are going to devote the resources required to collect the data. We strongly support this effort.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments: Currently BAs in the Eastern Interconnection have little, if any, way to actually calculate their frequency responses. As a result, most default to the one percent minimum. A good database of disturbance events will provide the information to calculate BA frequency response more accurately while at the same time allowing the NERC OC/RS to determine if the one percent minimum is appropriate in the EI today.

Comment Form for Draft 3 of the Frequency Response SAR

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.
Comments: This SAR starts the process toward understanding frequency behavior, particularly in the Eastern Interconnection. In our opinion this is a necessary first step in determining whether we need frequency response allocations or other measures to ensure the sustained frequency performance that is required for reliable operations.

Wherever possible, the scope and extent of data collection required for generators, their dynamic models including all associated control devices, and any other system data parameters covered under this SAR be limited such that it should not duplicate or exceed system modeling data requirements of any other NERC standard. One important system modeling parameter not emphasized in this SAR is the characteristic behavior of load at each substation (constant power, constant current, etc.), which would seem to have a significant effect on overall frequency response of the interconnected system. It is quite possible that advancements in consumer appliances and electronics, and their proliferation of use, have collectively changed the overall characteristics of system load to a composite state that is significantly different from modeling assumptions made within the previous few years.

Comment Form for Draft 3 of the Frequency Response SAR

Please use this form to submit comments on the third draft of the Frequency Response SAR. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line. If you have questions please contact Maureen Long at maureen.long@nerc.net or by telephone at 813-468-5998.

Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Mike Pfeister	
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NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input checked="" type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

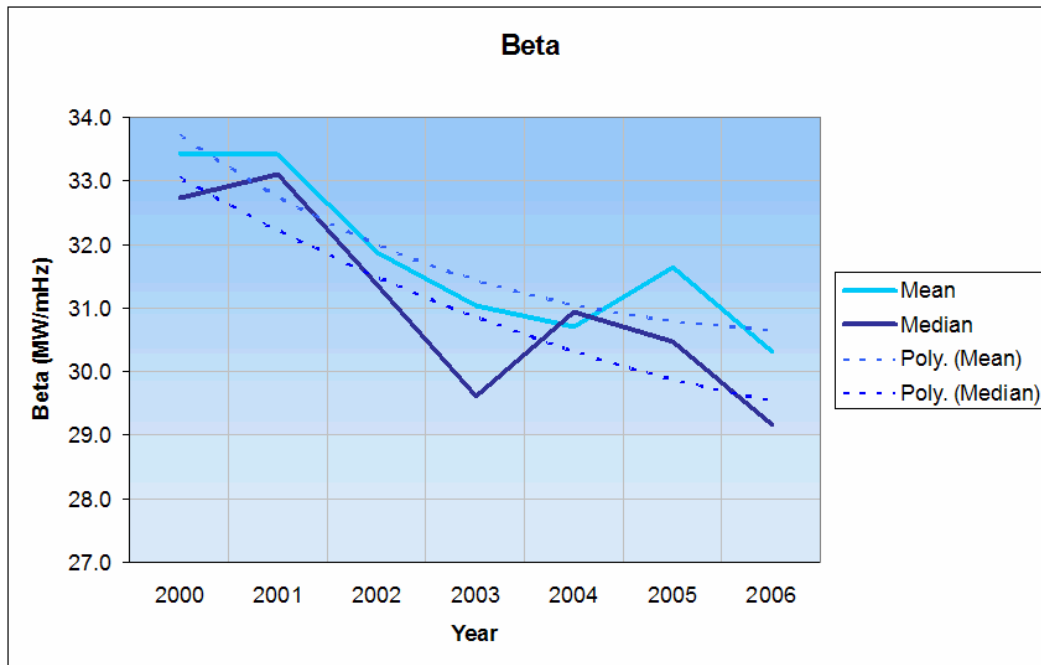
Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

The original SAR on Frequency Response was submitted in large part due to a study that showed a 10+% decline in Eastern Interconnection Frequency Response over a 5-year period, when response should be increasing over time as the Interconnection grows. Other Interconnections were observing similar declines. The drafting team posted a white paper along with the SAR to outline the need for a standard.

The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: Ultimately there may be some impact to the Planning Coordinator and/or Resource Planner if a frequency response requirement is specified. Could there be an extreme scenario where an entity would have to consider shedding load to meet some frequency reserve criteria?

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: The SAR includes some requirement language pertaining to generators greater than 10 MW. Old NERC Policy included language requiring frequency responsive governors "unless restricted by regulatory mandates". This makes sense for most nuclear facilities. Another type of restriction on governors involves small hydro units

Comment Form for Draft 3 of the Frequency Response SAR

that are dependent on water order. For this type of unit there truly is no governor response yet the unit capabilities may exceed 10 MWs. Please consider these types of exemptions as work progresses on this SAR and resulting standard.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Ron Beck	
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NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
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<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

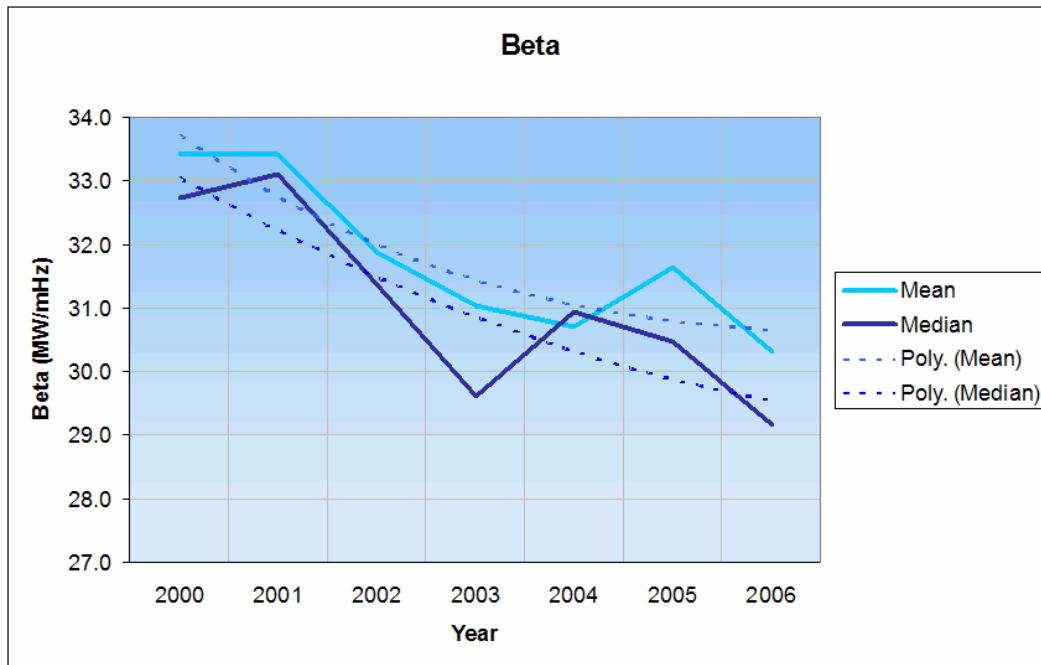
Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

The original SAR on Frequency Response was submitted in large part due to a study that showed a 10+% decline in Eastern Interconnection Frequency Response over a 5-year period, when response should be increasing over time as the Interconnection grows. Other Interconnections were observing similar declines. The drafting team posted a white paper along with the SAR to outline the need for a standard.

The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: The scope of this SAR is for data collection, and should not include establishing a Target Frequency Response as stated in Paragraph #5.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: Load serving entities should not be included due to the characteristics of load and frequency. Load Serving Entities should contribute data to determine FRC.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: Need more specific information regarding sample rates. The 5-minutes of frequency response should identify time periods prior to and after the event.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments: Data collection and FRC assessments should also take into account loss of load, not just loss of generation. If load is lost, causing a high frequency excursion, FRC should be observed on heavily loaded generators.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
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NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input checked="" type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
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<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

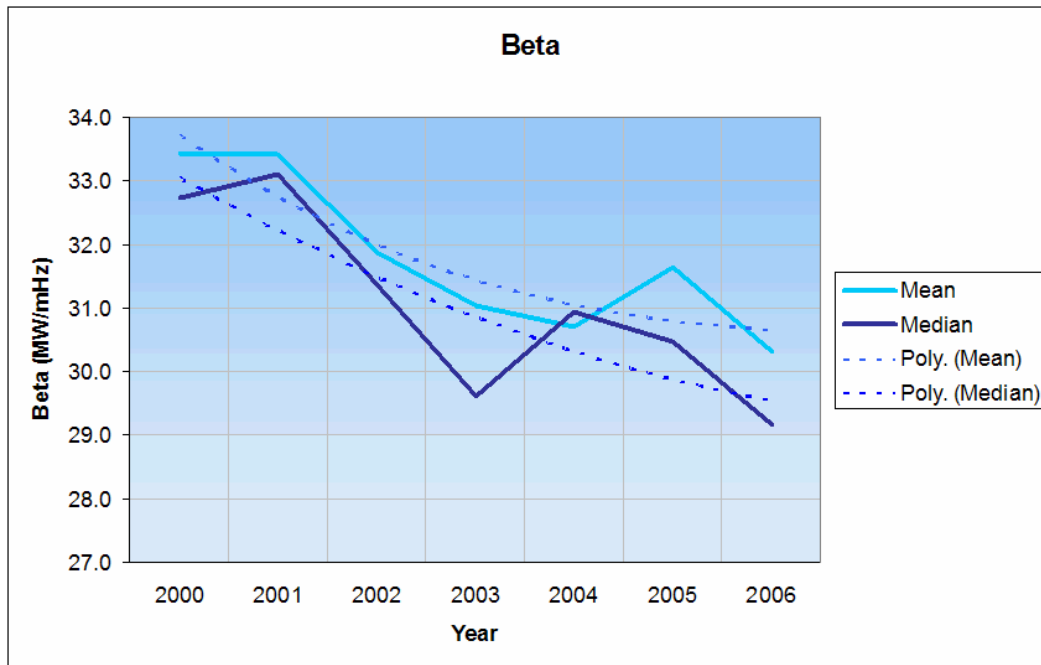
Additional Member Name	Additional Member Organization	Region*	Segment*
Greg Pieper	Xcel Energy	MRO	1
Michael Ibold	Xcel Energy	MRO	3
Steve Beuning	Xcel Energy	MRO	5

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

The original SAR on Frequency Response was submitted in large part due to a study that showed a 10+% decline in Eastern Interconnection Frequency Response over a 5-year period, when response should be increasing over time as the Interconnection grows. Other Interconnections were observing similar declines. The drafting team posted a white paper along with the SAR to outline the need for a standard.

The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

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Comment Form for Draft 3 of the Frequency Response SAR

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: We agree with the proposed scope except that items 5 and 6 do not deal specifically with data collection and therefore are beyond the scope of the SAR. We are concerned over establishing a Target Frequency Response. This is presumptuous in that it advances a proposed remedy before first meeting the intent of the SAR-determining the cause for the perceived decline in frequency response. We support Items 6a. and 6b. if referenced to item 4 as modified as follows: Modify 4 to require generator level reporting when the Frequency Response for a BA is less than [75]* percent of the Previous Years observed Frequency Response. Delete items 5 and 6.

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: To the extent information is needed from these entities, they are appropriate to list. It is possible that the LSE is not required.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: Further clarification is needed around the time period for which data will be collected. It important to note that description of the 5 minutes data collection period should include 1 minute before and 4 minutes after the event.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

Comment Form for Draft 3 of the Frequency Response SAR

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.
Comments: Establishing a Target Frequency Response is premature. It advances a proposed remedy in advance of first meeting the intent of the SAR-determining the cause for the perceived decline in frequency response. It is our view that the perceived decline of frequency response, if that turns out to be confirmed as a true decline, of itself does not necessarily indicate an significantly increased threat to reliability. As long as generating reserve obligations are being met to meet Reliability Standards and the real time regulating reserves are being carried, also to meet Standards, there may not be a need to go further depending on the outcome of the study proposed by the SAR.

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Brian Thumm	
Organization:	ITC Holdings	
Telephone:	248-374-7846	
E-mail:	bthumm@itctransco.com	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
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Comment Form for Draft 3 of the Frequency Response SAR

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Contact Organization:

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Contact Telephone:

Contact E-mail:

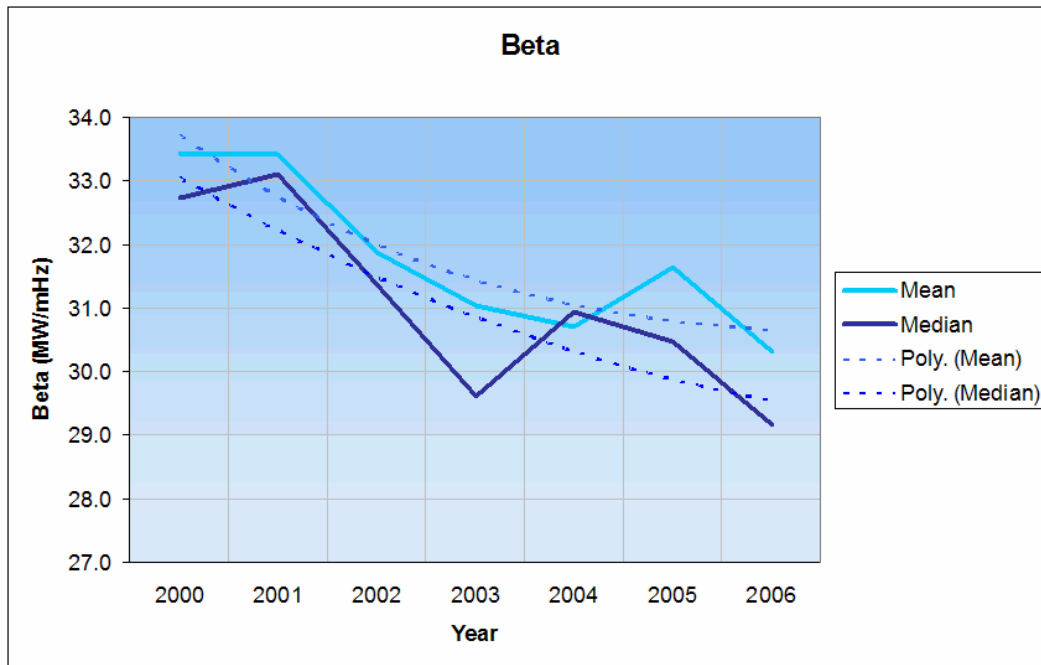
Additional Member Name	Additional Member Organization	Region*	Segment*

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments:

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments: Five minutes of data seems arbitrary. If the collection period were extended to 15 minutes, it would coincide with the Disturbance Control period.

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments:

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Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	James H. Sorrels, Jr.	
Organization:	American Electric Power	
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NERC Region		Registered Ballot Body Segment
<input checked="" type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
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<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input checked="" type="checkbox"/> RFC	<input checked="" type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input checked="" type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input checked="" type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 — Regional Reliability Organizations, Regional Entities

Comment Form for Draft 3 of the Frequency Response SAR

Group Comments (Complete this page if comments are from a group.)

Group Name:

Lead Contact:

Contact Organization:

Contact Segment:

Contact Telephone:

Contact E-mail:

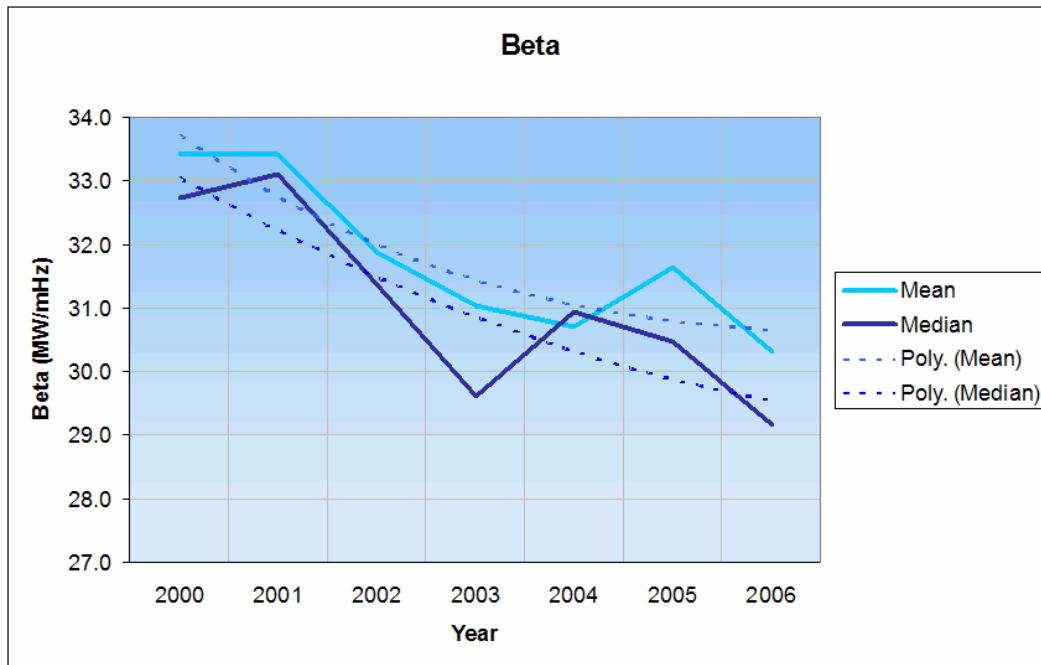
Additional Member Name	Additional Member Organization	Region*	Segment*

*If more than one Region or Segment applies, indicate the best fit for the purpose of these comments. Regional acronyms and segment numbers are shown on prior page.

Background Information:

The original SAR on Frequency Response was submitted in large part due to a study that showed a 10+% decline in Eastern Interconnection Frequency Response over a 5-year period, when response should be increasing over time as the Interconnection grows. Other Interconnections were observing similar declines. The drafting team posted a white paper along with the SAR to outline the need for a standard.

The NERC Resources Subcommittee recently updated their estimate of Eastern Interconnection Frequency Response and found it still trending downward. Response in 2006 was on the order of 2,800 MW/0.1Hz (compared to 3,750 MW/0.1Hz in 1994). Frequency Response for larger events (greater than 35 mHz) in 2006 may be as low as 2,600 MW/0.1Hz. Below is an independently calculated estimate of the trend in Eastern Interconnection Frequency Response provided by the New York ISO. Note: Response is stated in engineering terms (MW/mHz) as opposed to the traditional MW/01.Hz.



The proposed Frequency Response standard (FRS) is a technical standard. Technical standards are described in the [Reliability Standards Development Procedure](#). The FRS is not proposed to be a performance standard and does not propose a minimum Frequency Response, below which penalties are applied.

Industry commenters agreed there is a reliability need for the FRS. Comments varied on the technical details of the standard. Because of the divergent views on the details of the FRS SAR, the NERC Standards Committee (SC) directed the SAR drafting team to revise the SAR to focus only on the data collection needed to support the development of accurate models of Frequency Response in North America.

The SAR drafting team has tried to meet the Standards Committee's directive with this third version of the SAR.

Comment Form for Draft 3 of the Frequency Response SAR

The Version 3 of the Frequency Response SAR represents the changes requested by the NERC Standards Committee, while still meeting the June 2006 direction of the NERC Operating Committee. Specifically, the Operating Committee endorsed developing a Frequency Response standard that includes the following goals and objectives:

- Improving Interconnection Frequency Response event cataloging and benchmarking.
- Calculating balancing authority Frequency Response and requiring balancing authorities to analyze those cases where the response is significantly below the norm.
- Establishing time limits to complete the analyses.
- Tabulating non-responsive generators.
- Measuring generator response (those units on line).
- Including regional participation and review.

This revised SAR was reviewed and supported by the NERC Resources Subcommittee on December 4, 2006. The major changes between Draft 2 and Draft 3 include:

- Clarification on the role of the Load-serving Entity and Generator Operator.
- Inclusion of the applicability of Reliability Principles 3, 5, and 6.
- Reduced the scope to address only the collection of data needed to model Frequency Response in North America.
- Clarified that the data collected to model frequency response over a period of up to 5 minutes per event to help identify the window of time where frequency response appears to be masked by AGC action.

Note that because the changes to the SAR were quite significant, no redline showing the changes from Version 2 to Version 3 will be posted.

Please review the revised SAR and then answer the questions on the following page. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line.

Comment Form for Draft 3 of the Frequency Response SAR

You do not have to answer all questions. Enter All Comments in Simple Text Format.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments:

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: The role of the load serving entity in item 6b is unclear.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

4. Should a field trial be initiated, whereby a set of events for each Interconnection is posted throughout the year, to be used by BAs to calculate their 2007 Frequency Response?

Yes

No

Comments:

5. Please provide any other comments (that you have not already provided in response to the first three questions on this form) that you have on the revised SAR.

Comments:

Comment Form for Draft 3 of the Frequency Response SAR

Please use this form to submit comments on the third draft of the Frequency Response SAR. Comments must be submitted by **March 9, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with the words "FR SAR Draft 3" in the subject line. If you have questions please contact Maureen Long at maureen.long@nerc.net or by telephone at 813-468-5998.

Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:	Richard Kafka	
Organization:	Pepco Holdings, Inc.	
Telephone:	301-469-5274	
E-mail:	rjkafka@pepcoholdings.com	
NERC Region		Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input checked="" type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs, ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input checked="" type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
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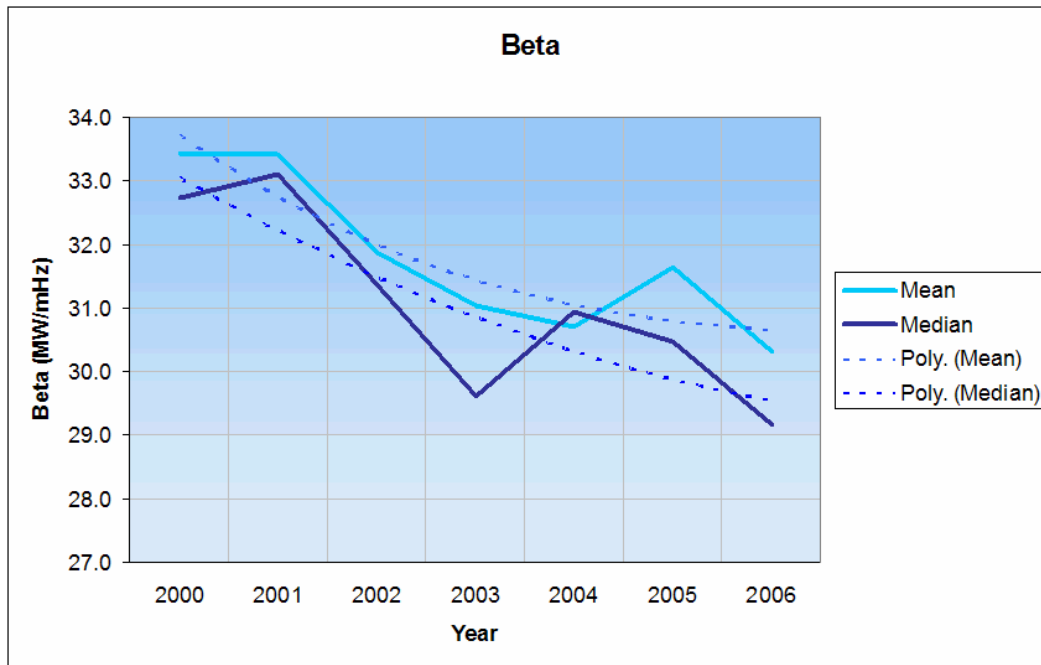
Additional Member Name	Additional Member Organization	Region*	Segment*

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Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. Do you agree with the reduced scope of this SAR — focusing only on the data collection needed to support the development of accurate models of Frequency Response in North America?

Yes

No

Comments: Data collection will provide the background for any new performance standard

2. The proposed standard would have requirements for the following functional entities: Reliability Coordinator, Balancing Authority, Generator Owner, Generator Operator, and Load-serving Entity. Do you agree that these are the right functional entities for the proposed standard?

Yes

No

Comments: In some cases, it is likely that the BA and GOP will have all the information required.

3. The SAR drafting team modified the SAR to clarify that data will be collected to model up to 5 minutes of frequency response. This should help identify the window of time where frequency response appears to be masked by AGC action. Do you agree with this clarification?

Yes

No

Comments:

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Yes

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Comments: