

Consideration of Comments

Project Name: 2010-07.1 Vegetation Management | FAC-003-4

Comment Period Start Date: 10/30/2015

Comment Period End Date: 12/16/2015

Associated Ballots: 2010-07.1 Vegetation Management FAC-003-4 IN 1 ST

There were 37 responses, including comments from approximately 123 different people from approximately 89 different companies representing 8 of the 10 Industry Segments as shown on the following pages.

All comments submitted can be reviewed in their original format on the project page.

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Director of Standards, [Howard Gugel](#) (via email) or at (404) 446-9693.

Questions

1. Do you agree with the FAC-003-4 table 2 MVCD values? If not, please provide your response below.
2. Do you agree with modifying the elevation levels in table 2 to go up to 15,000 feet and 4,267 meters? If not, please provide your response below.
3. If you have any other comments that you haven't already provided in response to the above questions, please provide them here.

The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

1. Do you agree with the FAC-003-4 table 2 MVCD values? If not, please provide your response below.

John Fontenot - Bryan Texas Utilities - 1 -

Selected Answer: Yes

William Hutchison - Southern Illinois Power Cooperative - 1 -

Selected Answer: Yes

John Falsey - Invenergy LLC - 5,6 - FRCC,MRO,WECC,TRE,NPCC,SERC,SPP,RFC

Selected Answer: Yes

Rob Robertson - SunEdison - 5 -

Selected Answer: Yes

Randall Hubbard - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - FRCC,WECC,TRE,SERC

Group Name: Southern Company

Group Member Name	Entity	Region	Segments
Robert Schaffeld	Southern Company Services, Inc..	SERC	1

John Ciza	Southern Company Generation and Energy Marketing	SERC	6
R. Scott Moore	Alabama Power Company	SERC	3
William Shultz	Southern Company Generation	SERC	5

Selected Answer: Yes

Richard Hoag - FirstEnergy - FirstEnergy Corporation - 1,3,4,5,6 - RFC

Group Name: FE RBB

Group Member Name	Entity	Region	Segments
William Smith	FirstenergyCorp	RFC	1
Cindy Stewart	FirstEnergy Corp.	RFC	3
Doug Hohlbaugh	Ohio Edison	RFC	4
Robert Loy	FirstEnergy Solutions	RFC	5
Richard Hoag	FirstenergyCorp	RFC	NA - Not Applicable
Ann Ivanc	FirstEnergy Solutions	FRCC	6

Selected Answer: Yes

Dan Bamber - Dan Bamber On Behalf of: David Downey, ATCO Electric, 1

Selected Answer: Yes

Herb Schrayshuen - Herb Schrayshuen - 2 -

Selected Answer: No

Answer Comment:

The tables are missing columns (or the headers are wrong) and have some number transpositions. In the english (ft) version of the table the range between 13000' and 14000' is missing. Additionally the rounding mathematics used to generate the tables may not be the most conservative. For clearances one should round up in all instances.

There is no issue with the underlying clearance numbers that resulted from the laboratory Testing. The issue is with the translation into the standard. It appears some more quality control and independent review should have been applied.

Response:

Thank you for your comments. The team has made adjustments to the proposed standard by 1) adding the 13000-14000 ft (and corresponding Metric column) to Table 2, 2) corrected transpositions in the headings in Table 2, and 3) has decided to remain with conventional rounding methodology after consideration. .

Thomas Foltz - AEP - 5 -

Selected Answer: No

Answer Comment:

While AEP does not object to the newly-proposed English values in Table 2, these values are not equivalent to the metric values provided in the same table. AEP requests that the drafting team review both the English and Metric values, and provide corrections as necessary.

Response:

Thank you for your comments. The team has reviewed the values and consulted with EPRI to ensure that the Metric and English values are coordinated.

Roger Dufresne - Hydro-Quebec Production - 5 -

Selected Answer: No

Answer Comment: See comments from TransEnergie.

Response: Thank you. Please refer to the TransEnergie section.

Randi Heise - Dominion - Dominion Resources, Inc. - 5 -

Group Name: Dominion - RCS

Group Member Name	Entity	Region	Segments
Larry Nash	Dominion Virginia Power	SERC	1
Louis Slade	Dominion Resources, Inc.	SERC	6
Connie Lowe	Dominion Resources, Inc.	RFC	3
Randi Heise	Dominion Resources, Inc,	NPCC	5

Selected Answer: Yes

Si Truc Phan - Hydro-Quebec TransEnergie - 1 - NPCC

Selected Answer: Yes

Emily Rousseau - MRO - 1,2,3,4,5,6 - MRO

Group Name: MRO-NERC Standards Review Forum (NSRF)

Group Member Name	Entity	Region	Segments
Joe Depoorter	Madison Gas & Electric	MRO	3,4,5,6
Chuck Lawrence	American Transmission Company	MRO	1
Chuck Wicklund	Otter Tail Power Company	MRO	1,3,5
Theresa Allard	Minnkota Power Cooperative, Inc	MRO	1,3,5,6
Dave Rudolph	Basin Electric Power Cooperative	MRO	1,3,5,6
Kayleigh Wilkerson	Lincoln Electric System	MRO	1,3,5,6
Jodi Jenson	Western Area Power Administration	MRO	1,6
Larry Heckert	Alliant Energy	MRO	4
Mahmood Safi	Omaha Public Utility District	MRO	1,3,5,6
Shannon Weaver	Midwest ISO Inc.	MRO	2
Mike Brytowski	Great River Energy	MRO	1,3,5,6
Brad Perrett	Minnesota Power	MRO	1,5
Scott Nickels	Rochester Public Utilities	MRO	4
Terry Harbour	MidAmerican Energy Company	MRO	1,3,5,6
Tom Breene	Wisconsin Public Service Corporation	MRO	3,4,5,6
Tony Eddleman	Nebraska Public Power District	MRO	1,3,5
Amy Casucelli	Xcel Energy	MRO	1,3,5,6

Selected Answer: Yes

Michelle Amaranos - APS - Arizona Public Service Co. - 1 -

Selected Answer: Yes

Jennifer Losacco - NextEra Energy - Florida Power and Light Co. - 1 - FRCC

Selected Answer: Yes

Laura Nelson - IDACORP - Idaho Power Company - 1 -

Selected Answer: Yes

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP

Selected Answer: Yes

Tammy Porter - Tammy Porter On Behalf of: Rod Kinard, Oncor Electric Delivery, 1

Selected Answer: Yes

John Fontenot - Bryan Texas Utilities - 1 -

Selected Answer: Yes

Steven Rueckert - Western Electricity Coordinating Council - 10 -

Selected Answer: No

Answer Comment: There are several typos in the table. In the "over 2133.6 m to 2438.4 m" column, the cell for 345 kV should be 1.5m, not .5m and the cell for 115 kV should be 0.7m, not .07m.

The added columns on the English table are missing the 13,000-14,000 ft range. The added columns on the Metric table stop at 14000 ft. The 14000-15000 ft column is not there. The two tables are inconsistent.

MVCD in the DC table did not change. Is this correct?

Response:

Thank you for comments. The team has corrected the typographical errors noted in your comments in the current proposed standard. The team has also added the 13000-14000 foot (and corresponding Metric) columns to Table 2. Finally, the values in the DC table did not change as they were not included in the scope of the project.

The additional comments regarding the requirements language in FAC-003 are beyond the scope of the project, but they will be retained for the next periodic review of the FAC-003 standard.

In regards to the values of 12000 feet and greater, the team consensus is that it is possible for facilities to be present at this altitude in North America. The team agrees that the under 500 foot column can be combined with the 500-1000 foot column, and has made the adjustment in the current draft of the standard. The team also agrees that a tenth of a meter level of detail in the meters column headings is not necessary and has adjusted the current draft of the standard.

The DC values in table 2 were out of the scope of the project.

The values in Table 2 have been calculated based on the Gallet equation. For additional information on the actual equation, please see the FAC-003-2 Technical Reference Document, Appendix 1, available at (<http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=12845997>).

The transient over-voltage values have been contained in FAC-003 as either an Attachment or Supplemental Material since FAC-003-2 and, to the best of our

knowledge are proper and correct. There may be some confusion in the wording presenting these values but it is clear that the Supplemental Materials is stating a TOV value of 1.4 is a realistic maximum for use in this standard for system voltages of 362 kV and above.

While some of your comments refer to areas outside the scope of the project, they will be retained for the next periodic review of the FAC-003 standard.

Andrew Puztai - American Transmission Company, LLC - 1 -

Selected Answer: Yes

Angela Gaines - Portland General Electric Co. - 1,3,5,6 - WECC

Selected Answer: No

Answer Comment: Please see WECC's position paper for details

Response: Please refer to the response to WECC's comments.

Steve Wenke - Avista - Avista Corporation - 5 -

Selected Answer: No

Answer Comment: The following is an excerpt from the WECC position paper:

In summary, the following changes should be made before approval:

- Correct the Functional Entity from “Planning Authority” to “Planning Coordinator”
- The added columns in Table 2 for vegetation management over 12,000ft are superfluous and not needed.
- Although not needed, the column for 14,000 to 15,000 is inadvertently skipped.
- Table 2 – (meters) contains typographical errors; A) for Over 2133.6 m, 345kV MVCD should be 1.5, not .5m; and B) for Over 2133.6 m, 115kV MVCD should be 0.7, not .07m,
- Although distances for AC lines are increased by 30% due to the study, there has been no increase in the distances for the DC lines, and no explanation is given. These distances should be considered for revision.
- For ease-of-use, the columns from “Over sea level up to 500 ft” and “Over 500 ft up to 1000 ft” should be combined to a single column “Over sea level up to 1000 ft”...only one cell will change by one tenth of a foot in only the 765kV voltage class.
- The elevation columns in the “meters” page of Table 2, are calculated to exactly match the elevations in feet, in the process the elevations given are un-workable. Elevations of 304.8m, 609.6m, 914.4m, etc. should be changed to 300m, 600m, 900 m. The MVCD’s (rounded to within one tenth of a foot) will not change.
- In Table 2 for Direct Current, the MVCD’s are calculated to within one hundredth of a foot – this is an un-workable level of precision.

Response:

Please refer to the response to WECC’s comments.

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RFC

Group Name: Duke Energy

Group Member Name	Entity	Region	Segments
Doug Hils	Duke Energy	RFC	1
Lee Schuster	Duke Energy	FRCC	3
Dale Goodwine	Duke Energy	SERC	5
Greg Cecil	Duke Energy	RFC	6

Selected Answer: Yes

Rachel Coyne - Texas Reliability Entity, Inc. - 10 -

Selected Answer: No

Answer Comment:

Texas RE noticed the following:

- There is not an “Over 13000 ft up to 14000 ft” column provided. Should there be?
- There is an incorrect value in the MVCD meters table in the last two columns. One column references “....up to 3962m” and the final column references “Over 3692 m....” so there appears to be transposed values
- On Table 2, there is no column for Over 13000 ft up to 14000 ft. The values in the “Over 14000 ft up to 15000 ft” within the Standard match the values of the “Over 13,000 ft up to 14,000 ft” values in the May 14, 2015 Industry Advisory. Is that correct? Based on the nature of the data (a general increase for most, if not all, 1000

ft elevation increase) it does not appear reasonable.

- It does not appear that there is consistency in the values. When you review the voltage levels increasing (e.g. 230 kV to 287 kV) it appears that the MVCD increase (e.g., at “sea level up to 500 ft” the MVCD increase from 4.0 ft to 5.2 ft). The increasing pattern appears to not be followed when it reaches the 345 kV level. The MVCD actually decreases when compared to a 287 kV level. Why does that occur? Was there a different parameter used in the derivation of Gallet’s equation for the 345 kV level? Ascertaining the correct value for the 345 kV level is highly critical for the ERCOT Interconnection (in both measurement type versions of the table.)
- Similar to the comment above, the MVCD for 345 kV lines from 2133.6m to 2438.4m is .5m, which is less than the MVCD of 1.5m and 1.6m for the altitudes immediately before and after in the table. This appears to be a typo and the MVCD for 345 kV lines 2133.6m to 2438.4m should be 1.5m.
- Table 2 for AC Voltages does not include lines at altitudes between 3352.8m and 3353m.
- There appears to be an inconsistency in the “meter” version of Table 2. The “older columns” have decimal point step increases (e.g. “Over 2133.6m up to 2438.4m”) that are carried over to the next columns as a starting point (e.g. “Over 2438.4m up to....”). The new columns do not utilize the same formatting.

Response:

Thank you for your comments. The team has reviewed and addressed the comments as follows:

- 1. The team has added the 13000-14000 foot (and corresponding Metric) columns to the current draft standard.**

2. The team has corrected the transposed figures in the current draft standard.
3. See response above regarding corrections made.
4. The change in transient overvoltage factors in the calculations are the driver in the decrease in MVCDs for voltages of 345 kV and above. Refer to p.31 in the supplemental materials for additional information.
5. This was a typographical error. The missing “1” has been added in the current draft of the standard.
6. See response 1 above.
7. The column headings in the Metric table have been rounded up to the nearest meter for consistency

Erika Doot - U.S. Bureau of Reclamation - 5 -

Selected Answer: Yes

Diana McMahon - Salt River Project - 1,3,5,6 - WECC

Selected Answer: No

Answer Comment:

SRP appreciates the opportunity to review and comment on the adjustments to the standard. We support the work of the drafting team, but request a review and revision of the tables to reflect issues identified in the WECC position paper including:

- The column for 14,000 to 15,000 is inadvertently skipped.
- Table 2 – (meters) contains typographical errors; A) for Over 2133.6 m, 345kV MVCD should be 1.5, not .5m; and B) for Over 2133.6 m, 115kV MVCD should be 0.7,

not .07m,

- Although distances for AC lines are increased by 30% due to the study, there has been no increase in the distances for the DC lines, and no explanation is given. These distances should be considered for revision.
- For ease-of-use, the columns from “Over sea level up to 500 ft” and “Over 500 ft up to 1000 ft” should be combined to a single column “Over sea level up to 1000 ft”...only one cell will change by one tenth of a foot in only the 765kV voltage class.
- The elevation columns in the “meters” page of Table 2, are calculated to exactly match the elevations in feet, in the process the elevations given are un-workable. Elevations of 304.8m, 609.6m, 914.4m, etc. should be changed to 300m, 600m, 900 m. The MVCD’s (rounded to within one tenth of a foot) will not change.
- In Table 2 for Direct Current, the MVCD’s are calculated to within one hundredth of a foot – this is an un-workable level of precision

Response:

Thank you for your comments. The team has addressed your comments as follows:

- 1. The missing column has been added in both the English and Metric sections of Table 2.**
- 2. The typographical errors have been corrected in the current draft of the standard.**
- 3. DC voltages are outside the scope of the project.**
- 4.**
- 5. After consideration, the team determined that it was preferable to retain both the 500 foot column and 1000 foot column. The team agrees and has rounded the meter values in the column headings to the nearest meter.**
- 6. DC voltages are outside the scope of the project.**

While some of your comments refer to areas outside the scope of the project, they will be retained for the next periodic review of the FAC-003 standard.

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC

Group Name: Seattle City Light Ballot Body

Group Member Name	Entity	Region	Segments
Pawel Krupa	Seattle City Light	WECC	1
Dana Wheelock	Seattle City Light	WECC	3
Hao Li	Seattle City Light	WECC	4
Bud (Charles) Freeman	Seattle City Light	WECC	6
Mike haynes	Seattle City Light	WECC	5
Michael Watkins	Seattle City Light	WECC	1,3,4
Faz Kasraie	Seattle City Light	WECC	5
John Clark	Seattle City Light	WECC	6

Selected Answer: No

Answer Comment: We support WECC Position paper, Dec 7, 2015: Table 2 – (meters) contains typographical errors; A) for Over 2133.6 m, 345kV MVCD should be 1.5, not .5m; and B) for Over 2133.6 m, 115kV MVCD should be 0.7, not .07m,

Response: Please refer to the response to WECC’s comments.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7 - NPCC

Group Name: RSC without Con Edison

Group Member Name	Entity	Region	Segments
Paul Malozewski	Hydro One.	NPCC	1
Guy Zito	Northeast Power Coordinating Council	NPCC	NA - Not Applicable
Brian Shanahan	National Grid	NPCC	1
Rob Vance	New Brunswick Power	NPCC	1
Robert J. Pellegrini	United Illuminating	NPCC	1
Sylvain Clermont	Hydro Quebec	NPCC	1
Edward Bedder	Orange and Rockland Utilities	NPCC	1
Mark J. Kenny	Eversource Energy	NPCC	1
Gregory A. Campoli	NY-ISO	NPCC	2
Si Truc Phan	Hydro Quebec	NPCC	2
Randy MacDonald	New Brunswick Power	NPCC	2
David Burke	Orange and Rockland Utilities	NPCC	3
Wayne Sipperly	New York Power Authority	NPCC	4
Connie Lowe	Dominion Resources Services	NPCC	4
David Ramkalawan	Ontario Power Generation	NPCC	4
Glen Smith	Entergy Services	NPCC	4
Brian O'Boyle	Con Edison	NPCC	5
Brian Robinson	Utility Services	NPCC	5
Bruce Metruck	New York Power Authority	NPCC	6
Alan Adamson	New York State Reliability Council	NPCC	7
Kathleen M. Goodman	ISO-New England	NPCC	2
Helen Lainis	Independent Electricity System Operator	NPCC	2
Michael Jones	National Grid	NPCC	3
Silvia Parada Mitchell	NextEra Energy	NPCC	4

Selected Answer: Yes

Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1

Selected Answer: Yes

Patricia Robertson - BC Hydro and Power Authority - 1 -

Group Name: BC Hydro

Group Member Name	Entity	Region	Segments
Patricia Robertson	BC Hydro and Power Authority	WECC	1
Venkataramakrishnan Vinnakota	BC Hydro and Power Authority	WECC	2
Pat G. Harrington	BC Hydro and Power Authority	WECC	3
Clement Ma	BC Hydro and Power Authority	WECC	5

Selected Answer: Yes

Answer Comment: BC Hydro agrees with the revised Table 2 MVCD values based on a Gallet equation gap factor of 1.0. However we would point out one typo on the metric distance table for 345 kV in the 2133.6-2438.4 m elevation column. The distance stated should be 1.5 m not 0.5 m as in the table and should be corrected.

Response: **Thank you for your comment. The typographical error has been corrected in the current draft of the standard.**

Peter Heidrich - Florida Reliability Coordinating Council - 10 -

Selected Answer: Yes

Daniel Mason - City and County of San Francisco - 5 -

Selected Answer: No

Answer Comment: Hetch Hetchy Water and Power believes the changes recommended in the attached WECC FAC-003-4 position paper should be considered prior to the approval of FAC-003-4.

Response: Please refer to the response to WECC's comments.

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP

Group Name: SPP Standards Review Group

Group Member Name	Entity	Region	Segments
Shannon Mickens	Southwest Power Pool Inc.	SPP	2
Jason Smith	Southwest Power Pool Inc	SPP	2
J. Scott Williams	City Utilities of Springfield	SPP	1,4
Jim Nail	City of Independence, Power & Light Department	SPP	3,5
John Falsey	Invenergy	NA - Not Applicable	NA - Not Applicable
John Allen	City Utilities of Springfield	SPP	1,4

Kevin Giles	Westar Energy Inc..	SPP	1,3,5,6
Louis Guidry	Cleco Corporation	SPP	1,3,5,6
Michelle Corley	Cleco Corporation	SPP	1,3,5,6
Mike Kidwell	Empire District Electric	SPP	1,3,5
Robert Hirschak	Cleco Corporation	SPP	1,3,5,6

Selected Answer: Yes

Answer Comment: Our group is in support of table 2 however, we have discovered that the values are not equivalent to the metric values provided in the same table. We would requests that the drafting team review both the English and Metric values, and provide corrections as necessary.

Response: **Thank you for your comments. The team has reviewed and appropriately revised the values in the English and Metric portions of Table 2.**

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable

Group Name: ACES Standards Collaborators

Group Member Name	Entity	Region	Segments
Bob Solomon	Hoosier Energy Rural Electric Cooperative, Inc.	RFC	1
Ginger Mercier	Prairie Power, Inc.	SERC	1,3
John Shaver	Arizona Electric Power Cooperative, Inc.	WECC	4,5
John Shaver	Southwest Transmission Cooperative, Inc.	WECC	1
Shari Heino	Brazos Electric Power Cooperative, Inc.	TRE	1,5
Ryan Strom	Buckeye Power, Inc.	RFC	4
Amber Skillern	East Kentucky Power Cooperative	SERC	1,3

Michael Brytowski	Great River Energy	MRO	1,3,5,6
Chip Koloini	Golden Spread Electric Cooperative, Inc.	SPP	5
Scott Brame	North Carolina Electric Membership Corporation	SERC	3,4,5
Mark Ringhausen	Old Dominion Electric Cooperative	RFC	3,4
Bill Hutchison	Southern Illinois Power Cooperative	SERC	1

Selected Answer: Yes

Answer Comment: We agree with the values listed in Table 2, as derived from EPRI’s empirical studies.

Response: Thank you for your comment.

Oshani Pathirane - Oshani Pathirane On Behalf of: Payam Farahbakhsh, Hydro One Networks, Inc., 1, 3

Selected Answer: Yes

2. Do you agree with modifying the elevation levels in table 2 to go up to 15,000 feet and 4,267 meters? If not, please provide your response below.

John Fontenot - Bryan Texas Utilities - 1 -

Selected Answer: Yes

William Hutchison - Southern Illinois Power Cooperative - 1 -

Selected Answer: Yes

John Falsey - Invenergy LLC - 5,6 - FRCC,MRO,WECC,TRE,NPCC,SERC,SPP,RFC

Selected Answer: Yes

Rob Robertson - SunEdison - 5 -

Selected Answer: Yes

Randall Hubbard - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - FRCC,WECC,TRE,SERC

Group Name: Southern Company

Group Member Name	Entity	Region	Segments
Robert Schaffeld	Southern Company Services, Inc..	SERC	1
John Ciza	Southern Company Generation and Energy Marketing	SERC	6
R. Scott Moore	Alabama Power Company	SERC	3
William Shultz	Southern Company Generation	SERC	5

Selected Answer: Yes

Richard Hoag - FirstEnergy - FirstEnergy Corporation - 1,3,4,5,6 - RFC

Group Name: FE RBB

Group Member Name	Entity	Region	Segments
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William Smith	FirstenergyCorp	RFC	1
Cindy Stewart	FirstEnergy Corp.	RFC	3
Doug Hohlbaugh	Ohio Edison	RFC	4
Robert Loy	FirstEnergy Solutions	RFC	5
Richard Hoag	FirstenergyCorp	RFC	NA - Not Applicable
Ann Ivanc	FirstEnergy Solutions	FRCC	6

Selected Answer: Yes

Dan Bamber - Dan Bamber On Behalf of: David Downey, ATCO Electric, 1

Selected Answer: Yes

Herb Schrayshuen - Herb Schrayshuen - 2 -

Selected Answer: Yes

Answer Comment: Yes, but the tree line in North America may not be that high.

Response:

Thomas Foltz - AEP - 5 -

Selected Answer: Yes

Roger Dufresne - Hydro-Quebec Production - 5 -

Answer Comment: See comments from TransEnergie

Response: Please see response to TransEnergie and NPCC comments.

Randi Heise - Dominion - Dominion Resources, Inc. - 5 -

Group Name: Dominion - RCS

Group Member Name	Entity	Region	Segments
Larry Nash	Dominion Virginia Power	SERC	1
Louis Slade	Dominion Resources, Inc.	SERC	6
Connie Lowe	Dominion Resources, Inc.	RFC	3
Randi Heise	Dominion Resources, Inc,	NPCC	5

Selected Answer: Yes

Answer Comment: Table 2 - Minimum Vegetation Clearance Distances (MVCD) For Alternating Current Voltage (feet) is missing the data column located between “Over 12,000 ft” and “Over 14,000 ft”. The column “Over 13, 000 ft” is not included in the table.

Response: Thank you for your comment. The columns have been appropriately adjusted and the missing column included in the current draft of the standard.

Si Truc Phan - Hydro-Quebec TransEnergie - 1 - NPCC

Selected Answer: No

Answer Comment: Hydro-Quebec TransEnergie support NPCC comments

Response: Please see response to NPCC comments.

Emily Rousseau - MRO - 1,2,3,4,5,6 - MRO

Group Name: MRO-NERC Standards Review Forum (NSRF)

Group Member Name	Entity	Region	Segments
Joe Depoorter	Madison Gas & Electric	MRO	3,4,5,6
Chuck Lawrence	American Transmission Company	MRO	1
Chuck Wicklund	Otter Tail Power Company	MRO	1,3,5
Theresa Allard	Minnkota Power Cooperative, Inc	MRO	1,3,5,6
Dave Rudolph	Basin Electric Power Cooperative	MRO	1,3,5,6
Kayleigh Wilkerson	Lincoln Electric System	MRO	1,3,5,6
Jodi Jenson	Western Area Power Administration	MRO	1,6
Larry Heckert	Alliant Energy	MRO	4
Mahmood Safi	Omaha Public Utility District	MRO	1,3,5,6
Shannon Weaver	Midwest ISO Inc.	MRO	2
Mike Brytowski	Great River Energy	MRO	1,3,5,6
Brad Perrett	Minnesota Power	MRO	1,5
Scott Nickels	Rochester Public Utilities	MRO	4
Terry Harbour	MidAmerican Energy Company	MRO	1,3,5,6
Tom Breene	Wisconsin Public Service Corporation	MRO	3,4,5,6
Tony Eddleman	Nebraska Public Power District	MRO	1,3,5
Amy Casucelli	Xcel Energy	MRO	1,3,5,6

Selected Answer: Yes

Michelle Amarantos - APS - Arizona Public Service Co. - 1 -

Selected Answer: Yes

Jennifer Losacco - NextEra Energy - Florida Power and Light Co. - 1 - FRCC

Selected Answer: Yes

Laura Nelson - IDACORP - Idaho Power Company - 1 -

Selected Answer: Yes

Answer Comment: Idaho Power's transmission system has no facilities at or near the stated elevation.

Response: Thank you for your comment.

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP

Selected Answer: Yes

Tammy Porter - Tammy Porter On Behalf of: Rod Kinard, Oncor Electric Delivery, 1

Selected Answer: Yes

John Fontenot - Bryan Texas Utilities - 1 -

Selected Answer: Yes

Steven Rueckert - Western Electricity Coordinating Council - 10 -

Selected Answer: No

Answer Comment: Do not understand the need to go this high. I believe it is well above the treeline/timberline. If there is no vegetation, there is no need to manage it.

4267 meters is only 14000 feet not 15000 feet.

However, as long as the tables are consistent, we don't have any problems if they go this high.

Response: Thank you for your comments. In regards to the values of greater than 12000 feet, the team consensus is that it is possible for facilities to be present at this altitude in North America.

Andrew Puztai - American Transmission Company, LLC - 1 -

Selected Answer: Yes

Angela Gaines - Portland General Electric Co. - 1,3,5,6 - WECC

Selected Answer: No

Answer Comment: Please see WECC's position paper for details

Response: Please see the response to WECC's comments above.

Steve Wenke - Avista - Avista Corporation - 5 -

Selected Answer: Yes

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RFC

Group Name: Duke Energy

Group Member Name	Entity	Region	Segments
Doug Hils	Duke Energy	RFC	1
Lee Schuster	Duke Energy	FRCC	3
Dale Goodwine	Duke Energy	SERC	5
Greg Cecil	Duke Energy	RFC	6

Selected Answer: Yes

Rachel Coyne - Texas Reliability Entity, Inc. - 10 -

Selected Answer: No

Answer Comment: Texas RE inquires: was there any consideration for establishing MVCDs for lines that are below sea level (e.g., New Orleans or Death Valley)?

Please see Texas RE's observations in #1.

Response:

Thank you for your comments. The team concluded that using the values from sea level to 1000 feet (or corresponding Metric values) is appropriate for any facilities that might exist below sea level.

Please see additional response to TRE's comments for your second comment.

Erika Doot - U.S. Bureau of Reclamation - 5 -

Selected Answer: Yes

Diana McMahon - Salt River Project - 1,3,5,6 - WECC

Selected Answer: Yes

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC

Group Name: Seattle City Light Ballot Body

Group Member Name	Entity	Region	Segments
Pawel Krupa	Seattle City Light	WECC	1
Dana Wheelock	Seattle City Light	WECC	3
Hao Li	Seattle City Light	WECC	4
Bud (Charles) Freeman	Seattle City Light	WECC	6

Mike haynes	Seattle City Light	WECC	5
Michael Watkins	Seattle City Light	WECC	1,3,4
Faz Kasraie	Seattle City Light	WECC	5
John Clark	Seattle City Light	WECC	6

Selected Answer: No

Answer Comment: We support WECC Position paper, Dec 7, 2015: Table 2 – (meters) contains typographical errors; A) for Over 2133.6 m, 345kV MVCD should be 1.5, not .5m; and B) for Over 2133.6 m, 115kV MVCD should be 0.7, not .07m,

Response: Thank you for your comment. Please see the response to WECC’s comments above.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7 - NPCC

Group Name: RSC without Con Edison

Group Member Name	Entity	Region	Segments
Paul Malozewski	Hydro One.	NPCC	1
Guy Zito	Northeast Power Coordinating Council	NPCC	NA - Not Applicable
Brian Shanahan	National Grid	NPCC	1
Rob Vance	New Brunswick Power	NPCC	1
Robert J. Pellegrini	United Illuminating	NPCC	1
Sylvain Clermont	Hydro Quebec	NPCC	1
Edward Bedder	Orange and Rockland Utilities	NPCC	1
Mark J. Kenny	Eversource Energy	NPCC	1

Gregory A. Campoli	NY-ISO	NPCC	2
Si Truc Phan	Hydro Quebec	NPCC	2
Randy MacDonald	New Brunswick Power	NPCC	2
David Burke	Orange and Rockland Utilities	NPCC	3
Wayne Sipperly	New York Power Authority	NPCC	4
Connie Lowe	Dominion Resources Services	NPCC	4
David Ramkalawan	Ontario Power Generation	NPCC	4
Glen Smith	Entergy Services	NPCC	4
Brian O'Boyle	Con Edison	NPCC	5
Brian Robinson	Utility Services	NPCC	5
Bruce Metruck	New York Power Authority	NPCC	6
Alan Adamson	New York State Reliability Council	NPCC	7
Kathleen M. Goodman	ISO-New England	NPCC	2
Helen Lainis	Independent Electricity System Operator	NPCC	2
Michael Jones	National Grid	NPCC	3
Silvia Parada Mitchell	NextEra Energy	NPCC	4

Selected Answer: No

Answer Comment: In table 2 Minimum Vegetation Clearance Distances (MVCD meters) the last two column headers are mislabeled. The last two columns should be “Over 3657m up to 3962m and Over 3962m up to 4267m” per the NERC report.

In Table 2 Minimum Vegetation Clearance Distances (MVCD feet), the last two column headers are mislabeled. In the NERC report the last column is labeled 13,000 ft up to 14,000 ft.

Response: Thank you for your comments. The team has adjusted the mislabeled column headings and added the appropriate missing values.

Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1

Selected Answer: Yes

Patricia Robertson - BC Hydro and Power Authority - 1 -

Group Name: BC Hydro

Group Member Name	Entity	Region	Segments
Patricia Robertson	BC Hydro and Power Authority	WECC	1
Venkataramakrishnan Vinnakota	BC Hydro and Power Authority	WECC	2
Pat G. Harrington	BC Hydro and Power Authority	WECC	3
Clement Ma	BC Hydro and Power Authority	WECC	5

Selected Answer: Yes

Peter Heidrich - Florida Reliability Coordinating Council - 10 -

Selected Answer: Yes

Answer Comment: However, the 'feet' and 'meter' versions of Table 2 for AC are either missing a column or the last column is mislabeled.

Response: Thank you for your comment. The team has corrected the inconsistency in the current draft of the standard.

Daniel Mason - City and County of San Francisco - 5 -

Selected Answer: No

Answer Comment: Hetch Hetchy Water and Power believes the changes recommended in the attached WECC FAC-003-4 position paper should be considered prior to the approval of FAC-003-4.

Response: Thank you for your comment. Please see response to WECC's comments above.

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP

Group Name: SPP Standards Review Group

Group Member Name	Entity	Region	Segments
Shannon Mickens	Southwest Power Pool Inc.	SPP	2
Jason Smith	Southwest Power Pool Inc	SPP	2
J. Scott Williams	City Utilities of Springfield	SPP	1,4
Jim Nail	City of Independence, Power & Light Department	SPP	3,5
John Falsey	Invenergy	NA - Not Applicable	NA - Not Applicable
John Allen	City Utilities of Springfield	SPP	1,4
Kevin Giles	Westar Energy Inc..	SPP	1,3,5,6
Louis Guidry	Cleco Corporation	SPP	1,3,5,6
Michelle Corley	Cleco Corporation	SPP	1,3,5,6
Mike Kidwell	Empire District Electric	SPP	1,3,5

Robert Hirchak	Cleco Corporation	SPP	1,3,5,6
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Selected Answer: Yes

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable

Group Name: ACES Standards Collaborators

Group Member Name	Entity	Region	Segments
Bob Solomon	Hoosier Energy Rural Electric Cooperative, Inc.	RFC	1
Ginger Mercier	Prairie Power, Inc.	SERC	1,3
John Shaver	Arizona Electric Power Cooperative, Inc.	WECC	4,5
John Shaver	Southwest Transmission Cooperative, Inc.	WECC	1
Shari Heino	Brazos Electric Power Cooperative, Inc.	TRE	1,5
Ryan Strom	Buckeye Power, Inc.	RFC	4
Amber Skillern	East Kentucky Power Cooperative	SERC	1,3
Michael Brytowski	Great River Energy	MRO	1,3,5,6
Chip Koloini	Golden Spread Electric Cooperative, Inc.	SPP	5
Scott Brame	North Carolina Electric Membership Corporation	SERC	3,4,5
Mark Ringhausen	Old Dominion Electric Cooperative	RFC	3,4
Bill Hutchison	Southern Illinois Power Cooperative	SERC	1

Selected Answer: No

Answer Comment: We recommend the SDT consider adding a graph, possibly on a logarithmic scale, to clearly list the values for each elevation. The revised table is congested with the additional information and should be modified for easier readability.

Response: Thank you for your comment. The team evaluated your request and determined that the current tabular format presents the information in an accurate manner.

Oshani Pathirane - Oshani Pathirane On Behalf of: Payam Farahbakhsh, Hydro One Networks, Inc., 1, 3

Selected Answer: No

Answer Comment: Hydro One Networks Inc. does not agree with the elevation levels specified in Table 2. There are also a few minor modifications that need correction in Table 2.

Response: Thank you for your response. The team decided to remain consistent with the elevation levels used in the prior versions of FAC-003.

The team has corrected the minor inconsistencies in the current draft of the standard.

3. If you have any other comments that you haven't already provided in response to the above questions, please provide them here.

John Fontenot - Bryan Texas Utilities - 1 -

Answer Comment: na

William Hutchison - Southern Illinois Power Cooperative - 1 -

Answer Comment: None

Maryclaire Yatsko - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 - FRCC

Answer Comment:

In the applicability section of FAC-003-4, the Standard applies in bullet 4.2.1 to “Each overhead transmission line operated at 200 kV or higher.” Please comment on whether FAC-003-4 applies to non-BES lines in addition to BES lines. For example, if a 230 kV line is excluded from the BES because it is a load serving only radial line, does FAC-003-4 apply to this line as it is a transmission line operated at over 200 kV?

Response:

Thank you for your comment. The SDT believes that Section 4.2.1 is not intended to encompass lines which, due to either (i) application of the BES Definition or (ii) due to an Approved Exception Request for an Exclusion Exception under Appendix 5C of the NERC Rules of Procedure, fall outside of the BES. Nonetheless, the SDT emphasizes that its opinion on this question is nonbinding and that this question is a compliance matter which may be addressed differently depending on facts and circumstances.

Herb Schrayshuen - Herb Schrayshuen - 2 -

Answer Comment:

It appears that the standard is moving back to the use of the term Planning Authority. NERC's practice in standards development has been moving toward the term Planning Coordinator as the common definition. This standard should use Planning Coordinator in a future revision before final industry approval.

4.2.2. Each overhead transmission line operated below 200kV identified as an element of an IROL under NERC Standard FAC-014 by the Planning Authority. <===== should be Planning Coordinator

Response:

Thank you for your response. The team agrees and has reverted to Planning Coordinator throughout the proposed draft standard.

Thomas Foltz - AEP - 5 -

Answer Comment: AEP agrees with the direction that the project team is taking, and supports their overall efforts. AEP’s negative vote is driven solely by the apparent lack of equivalency between the English and Metric values that have been proposed for Table 2, and we look forward to potential corrections in the subsequent version of the draft.

Response: Thank you for your comment. The team has revisited both the English and Metric values in Table 2 and revised the values, as appropriate, to ensure consistency.

Randi Heise - Dominion - Dominion Resources, Inc. - 5 -

Group Name: Dominion - RCS

Group Member Name	Entity	Region	Segments
Larry Nash	Dominion Virginia Power	SERC	1
Louis Slade	Dominion Resources, Inc.	SERC	6
Connie Lowe	Dominion Resources, Inc.	RFC	3
Randi Heise	Dominion Resources, Inc,	NPCC	5

Answer Comment: Dominion supports the additional comments of NPCC.

Response: Thank you for your comments. Please see the response to the NPCC comments.

Si Truc Phan - Hydro-Quebec TransEnergie - 1 - NPCC

Answer Comment: Hydro-Quebec TransEnergie support NPCC comments

Response:

Thank you for your comments. Please see the response to the NPCC comments.

Emily Rousseau - MRO - 1,2,3,4,5,6 - MRO

Group Name:

MRO-NERC Standards Review Forum (NSRF)

Group Member Name	Entity	Region	Segment s
Joe Depoorter	Madison Gas & Electric	MRO	3,4,5,6
Chuck Lawrence	American Transmission Company	MRO	1
Chuck Wicklund	Otter Tail Power Company	MRO	1,3,5
Theresa Allard	Minnkota Power Cooperative, Inc	MRO	1,3,5,6
Dave Rudolph	Basin Electric Power Cooperative	MRO	1,3,5,6
Kayleigh Wilkerson	Lincoln Electric System	MRO	1,3,5,6
Jodi Jenson	Western Area Power Administration	MRO	1,6
Larry Heckert	Alliant Energy	MRO	4
Mahmood Safi	Omaha Public Utility District	MRO	1,3,5,6
Shannon Weaver	Midwest ISO Inc.	MRO	2
Mike Brytowski	Great River Energy	MRO	1,3,5,6
Brad Perrett	Minnesota Power	MRO	1,5
Scott Nickels	Rochester Public Utilities	MRO	4
Terry Harbour	MidAmerican Energy Company	MRO	1,3,5,6
Tom Breene	Wisconsin Public Service Corporation	MRO	3,4,5,6
Tony Eddleman	Nebraska Public Power District	MRO	1,3,5
Amy Casucelli	Xcel Energy	MRO	1,3,5,6

Answer Comment:

The NSRF agrees with the associated changes.

Response: Thank you for your comment.

Michelle Amarantos - APS - Arizona Public Service Co. - 1 -

Selected Answer:

Answer Comment:

While the proposed FAC-003-4 provides additional clearance, APS believes that there are still gaps to address. The testing was done at the EPRI testing facility but not under all weather, topography, atmosphere conditions and variances in tree species. APS is concerned these clearance distances are still too restrictive to ensure reliability of the grid. To compound the issue, these clearances are real-time observations that don't take into account line loading (sag), temperature and time of day. APS would recommend an additional 10 feet of clearance to safeguard the reliability of the grid.

Response:

The EPRI testing resulted in a conservative determination of the MVCD by establishing a gap factor of 1.0. The team agrees that a vegetation management program should take into account all of the factors in your comments. As stated in Footnotes 17 and 20 to Table 2 of the proposed standard, "distances in this Table are the minimums required to prevent Flash-over; however prudent vegetation maintenance practices dictate that substantially greater distances will be achieved at time of vegetation maintenance."

Steven Rueckert - Western Electricity Coordinating Council - 10 -

Answer Comment:

Thank you for the opportunity to comment on the standard.

For appearance, all column widths on the tables should be the same. Values in some of the cells do not line up with the other values. This makes the table look sloppy.

I recognize that the ranges on the Metric table columns are exact translations of the 1000 foot ranges, but the numbers identifying the elevation for each column are not how entities that use the Metric System rather than the English System are going to think. No one is going to think in terms of 914.4 to 1219.2 meters. They are going to think in even numbered terms (900-1200 meters). Taking the direct translation rather than fixed, rounded terms is a slap in the face to those using the Metric System. That would be like labeling the English column 2952.7 - 3937.1 feet. The Metric column ranges should be even meters and the values in the cells adjusted accordingly.

R1 and R2 are identical in every way except the facilities that they refer to. Together they refer to all facilities. The VRFs and VSLs are also identical. I disagree with the need to separate them into two different requirements because the facilities in R1 are more significant. Compliance enforcement has the discretion to handle a violation differently if it is an element of an IROL or a Major WECC Path. The standard doesn't need two requirements for the same thing.

We have attached a redline version of FAC-003-4 that includes additional suggested changes and the reasons for the suggestions.

Response:

Thank you for your comments. The column widths have been adjusted for consistency. The Metric column headings have been rounded to the nearest meter. While Requirements R1 and R2 are outside the scope of the project, your comments will be retained for the next periodic review of the FAC-003 standard.

Andrew Pusztai - American Transmission Company, LLC - 1 -

Answer Comment:

ATC has identified the following recommended improvements for consideration by the SDT to the draft Standard .

- Regarding the Applicability of Facilities Section 4.2.2., American Transmission Company (ATC) recommends revising the language for clarity, to read: “Each overhead transmission line operated below 200 kV identified as an element of *a Planning Horizon IROL...*”
- Similarly, ATC recommends revising the language of R1 to read: “Each applicable Transmission Owner and applicable Generator Owner shall manage vegetation to prevent encroachments into the Minimum Vegetation Clearance Distance (MVCD) of its applicable line(s) which are either an element of *a Planning Horizon IROL,...*”
- ATC suggests updating the language of R2 to read: Each applicable Transmission Owner and applicable Generator Owner shall manage vegetation to prevent encroachments into the MVCD of its applicable line(s) which are not either an element of *a Planning Horizon IROL,...*”
- R5 contains a grammatical error and should state: “When *an* applicable...”
- ATC recommends making updates corresponding to those above to Categories 1A, 1B, 2A, 2B, 4A, and 4B identified on pgs. 13-14: “Category 1A — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, that are identified as an element of *a Planning Horizon IROL ...*,” “Category 1B — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, but are not identified as an element of *a Planning Horizon IROL...*,” “Category 2A — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines that are identified as an element of *a Planning Horizon IROL...*,” “Category 2B — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, but are not identified as an element of *a Planning Horizon IROL...*,” “Category 4A — Blowing together: Sustained Outages caused by vegetation and applicable lines that are identified as an element of *a Planning Horizon IROL...*,” and “Category 4B — Blowing together: Sustained Outages caused by vegetation and applicable lines, but are not identified as an element of *a*

Planning Horizon IROL...

- ATC recommends updating the proposed language in the Guidelines and Technical Basis section (pg. 24) to read: “The special case is needed because the Planning Authorities may designate lines below 200 kV to become elements of *a Planning Horizon IROL*...A line operating below 200kV designated as an element of *a Planning Horizon*...”

- The Project 2010-07.1 Adjusted MVCDs per EPRI Testing section (pg. 26) needs grammatical correction: “The advisory team *was comprised of* NERC staff, arborists, and industry members with wide-ranging expertise in transmission engineering, insulation coordination, and vegetation management...Based on these testing results conducted by EPRI, and consistent with the report filed in FERC Docket No. RM12-4-000, the gap factor used in the Gallet equation *required* adjustment from 1.3 to 1.0...”

- The Requirements R1 and R2 section (pg. 27) should be updated to read: “R1 is applicable to lines that are identified as an element of *a Planning Horizon IROL* or Major WECC Transfer Path. R2 is applicable to all other lines that are not elements of *Planning Horizon IROLs*,... The separation of applicability (between R1 and R2) recognizes that inadequate vegetation management for an applicable line that is an element of *a Planning Horizon IROL* or a Major WECC Transfer Path is a greater risk to the interconnected electric transmission system than applicable lines that are not elements of *Planning Horizon IROLs* or Major WECC Transfer Paths. Applicable lines that are not elements of *Planning Horizon IROLs* or Major WECC Transfer Paths do require effective vegetation management, but these lines are comparatively less operationally significant.”

Response:

Thank you for your comments. While your comments refer to areas outside the scope of the project, they will be retained for the next periodic review of the FAC-003 standard. The team has addressed the grammatical issues in the current draft of the standard.

Angela Gaines - Portland General Electric Co. - 1,3,5,6 - WECC

Answer Comment:

PGE is in agreement with WECC as outlined in their position paper and is casting a "No" vote for this standard. WECC's position paper is attached.

Response:

Thank you for your comment. Please see the response to WECC's comments.

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RFC

Group Name: Duke Energy

Group Member Name	Entity	Region	Segments
Doug Hils	Duke Energy	RFC	1
Lee Schuster	Duke Energy	FRCC	3
Dale Goodwine	Duke Energy	SERC	5
Greg Cecil	Duke Energy	RFC	6

Answer Comment:

Duke Energy would like to point out to the SDT, that there appears to be an omission on Table 2 of the MVCD range of "over 13,000ft up to 14,000ft". The columns currently lists ranges from 12,000ft to 13,000ft, and then moves to 14,000ft to 15,000ft skipping over the 13,000 to 14,000ft range. Duke Energy recommends adding an additional column to include the omitted MVCD range.

Duke Energy would also like to point out that there are some inconsistencies with the number of decimal places that are used in Table 2 of the currently enforceable FAC-003-3. In some instances one decimal place is used (ex. 8.2ft) and others where two decimal places are used (ex. 8.33ft). We recommend that a consistent approach be used going forward regarding the minimum MVCD levels, and that all values use the same number of decimal places in Table 2.

Response:

Thank you for your comments. The team has adjusted the appropriate values and added the 13000-14000 foot (and corresponding Metric) column to Table 2. The team has also reviewed and revised the English and Metric values for AC voltages in Table 2 as appropriate. The DC portion of Table 2 was not in the scope of the project.

While some of your comments are outside the scope of the project, they will be retained for the next periodic review.

Rachel Coyne - Texas Reliability Entity, Inc. - 10 -

Answer Comment:

Texas RE noticed in R1.1, the table is referenced as FAC-003-Table 2. In the VSLs, the table is referenced as FAC-003-4-Table 2. Texas RE recommends changing the requirement language to match the VSL language to eliminate confusion and clearly indicate the table for version 4 of the standard.

Texas RE noticed the VSL for R2 references FAC-003-4-Table 2 but the Requirement language itself does not. Texas RE recommends the requirement language reference Table 2 in order to be consistent with the VSL language. Should Requirement 2 language include the same phrase, “as shown in FAC-003-Table 2” with or without the “-4” reference, as Requirement 1?

Texas RE inquires: does the table in the supplemental material (titled “Comparison of spark-over.....”) need to be changed based on the EPRI review?

Texas RE recommends reviewing the footnotes for consistency. Footnotes 9, 10, and 11 reference Footnotes 4, 5, and 6, while Footnotes 17, 19, and 21 are identical but all include the full language of the footnote. Footnotes 18 and 20 are also identical, but footnote 20 includes the full language instead of “See footnote 18”.

For example, Texas RE noticed two footnotes with similar language. On Page 8 of the Standard there is a footnote, #4, that is then referenced on Page 9 by footnote #9: “This requirement does not apply to circumstances that are beyond the control of an applicable Transmission Owner or applicable Generator Owner subject to this reliability standard, including natural disasters such as earthquakes, fires, tornados, hurricanes, landslides, wind shear, fresh gale, major storms as defined either by the applicable Transmission Owner or applicable Generator Owner or an applicable regulatory body, ice storms, and floods; human or animal activity such as logging, animal severing tree, vehicle contact with tree, or installation, removal, or digging of vegetation. Nothing in this footnote should be construed to limit the Transmission Owner’s or applicable Generator Owner’s right to exercise its full legal rights on the ROW. “

On Page 11 in Footnote #15 there is a similar sentence to Footnote #4; “Circumstances that are beyond the control of an applicable Transmission Owner or applicable Generator Owner include but are not limited to natural disasters such as earthquakes, fires, tornados, hurricanes, landslides, ice storms, floods, or major storms as defined either by the TO or GO or an applicable regulatory body.”

Texas RE recommends the SDT be consistent with the language of the footnotes.

The Table 2 footnote “ + Table 2- Table of MVCD....” is incorrect as the May 14, 2015. NERC Advisory did not include the 14000 to 15000 ft column.

On the Direct Current portion of Table 2, Texas RE noticed there is not a reference regarding line operated at normal voltages “other than those listed” as well. Should there be? Also, why did the SDT not extend the Direct Current portion of the Table to 15000 ft?

Texas RE recommends changing the language of R1 and R2. The Requirements should

read: “to prevent encroachments of the types shown below into the MVCD of its applicable lines, operating within their Rating and all Rated Electrical Operating Conditions, which are.....” instead of “operating within its Rating and all Rated Electrical Operating Conditions of types shown below:” The current version reads as if the “types show below” is referencing Rated Electrical Operating Conditions.

Response:

Thank you for your comments. The scope of the project did not include the Requirements and associated VRF and VSL. The use of the term “spark-over” versus “flash-over” was determined to be outside of the scope of the project.

The team agrees that the footnote “+” to Table 2 should be clarified and has made appropriate changes in the current draft of the standard.

The DC values in Table 2 are outside of the scope of this project.

While some of your comments refer to areas outside the scope of the project, they will be retained for the next periodic review of the FAC-003 standard.

Erika Doot - U.S. Bureau of Reclamation - 5 -

Answer Comment:

The Bureau of Reclamation supports the drafting team’s proposed revisions to FAC-003-4.

Response:

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC

Group Name:

Seattle City Light Ballot Body

Group Member Name	Entity	Region	Segments
Pawel Krupa	Seattle City Light	WECC	1
Dana Wheelock	Seattle City Light	WECC	3
Hao Li	Seattle City Light	WECC	4
Bud (Charles) Freeman	Seattle City Light	WECC	6
Mike haynes	Seattle City Light	WECC	5
Michael Watkins	Seattle City Light	WECC	1,3,4
Faz Kasraie	Seattle City Light	WECC	5
John Clark	Seattle City Light	WECC	6

Answer Comment:

As mentioned above we are supporting the WECC Position Paper of Dec 7, 2015 as follows:

- Correct the Functional Entity from “Planning Authority” to “Planning Coordinator”
- Although distances for AC lines are increased by 30% due to the study, there has been no increase in the distances for the DC lines, and no explanation is given. These distances should be considered for revision.
- For ease-of-use, the columns from “Over sea level up to 500 ft” and “Over 500 ft up to 1000 ft” should be combined to a single column “Over sea level up to 1000 ft”...only one cell will change by one tenth of a foot in only the 765kV voltage class.
- The elevation columns in the “meters” page of Table 2, are calculated to exactly match the elevations in feet, in the process the elevations given are un-workable. Elevations of 304.8m, 609.6m, 914.4m, etc. should be changed to 300m, 600m, 900 m. The MVCD’s (rounded to within one tenth of a foot) will not change.

- In Table 2 for Direct Current, the MVCD's are calculated to within one hundredth of a foot – this is an un-workable level of precision.

Response: Thank you for your comments. Please refer to the response to WECC's comments.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7 - NPCC

Group Name: RSC without Con Edison

Group Member Name	Entity	Region	Segments
Paul Malozewski	Hydro One.	NPCC	1
Guy Zito	Northeast Power Coordinating Council	NPCC	NA - Not Applicable
Brian Shanahan	National Grid	NPCC	1
Rob Vance	New Brunswick Power	NPCC	1
Robert J. Pellegrini	United Illuminating	NPCC	1
Sylvain Clermont	Hydro Quebec	NPCC	1
Edward Bedder	Orange and Rockland Utilities	NPCC	1
Mark J. Kenny	Eversource Energy	NPCC	1
Gregory A. Campoli	NY-ISO	NPCC	2
Si Truc Phan	Hydro Quebec	NPCC	2
Randy MacDonald	New Brunswick Power	NPCC	2
David Burke	Orange and Rockland Utilities	NPCC	3

Wayne Sipperly	New York Power Authority	NPCC	4
Connie Lowe	Dominion Resources Services	NPCC	4
David Ramkalawan	Ontario Power Generation	NPCC	4
Glen Smith	Entergy Services	NPCC	4
Brian O'Boyle	Con Edison	NPCC	5
Brian Robinson	Utility Services	NPCC	5
Bruce Metruck	New York Power Authority	NPCC	6
Alan Adamson	New York State Reliability Council	NPCC	7
Kathleen M. Goodman	ISO-New England	NPCC	2
Helen Lainis	Independent Electricity System Operator	NPCC	2
Michael Jones	National Grid	NPCC	3
Silvia Parada Mitchell	NextEra Energy	NPCC	4

Answer Comment:

There are inconsistency with the use of terms “Planning Coordinator” and “Planning Authorities”.

NERC has been transitioning from the term planning authority to the term Planning Coordinator over the last several years.

But in this standard it has recently been change back to Planning Authority. We believe that this is the wrong designation.

Response:

Thank you for your comments. The team agrees that Planning Coordinator is the proper term and has reverted to this term throughout the proposed standard.

Patricia Robertson - BC Hydro and Power Authority - 1 -

Group Name: BC Hydro

Group Member Name	Entity	Region	Segments
Patricia Robertson	BC Hydro and Power Authority	WECC	1
Venkataramakrishnan Vinnakota	BC Hydro and Power Authority	WECC	2
Pat G. Harrington	BC Hydro and Power Authority	WECC	3
Clement Ma	BC Hydro and Power Authority	WECC	5

Answer Comment: BC Hydro recommends changing Planning Authority to Planning Coordinator to align with current terminology.

Response: Thank you for your comments. The team agrees that Planning Coordinator is the proper term and has reverted to this term throughout the proposed standard.

Peter Heidrich - Florida Reliability Coordinating Council - 10 -

Answer Comment: The SDT has established inconsistency with the use of the designations “Planning Coordinator” and “Planning Authority”. NERC has been transitioning from the term Planning Authority to the term Planning Coordinator, but in this standard revision the Planning Coordinator designation has been changed back to Planning Authority.

Response: Thank you for your comments. The team agrees that Planning Coordinator is the proper term and has reverted to this term throughout the proposed standard.

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP

Group Name: SPP Standards Review Group

Group Member Name	Entity	Region	Segments
Shannon Mickens	Southwest Power Pool Inc.	SPP	2
Jason Smith	Southwest Power Pool Inc	SPP	2
J. Scott Williams	City Utilities of Springfield	SPP	1,4
Jim Nail	City of Independence, Power & Light Department	SPP	3,5
John Falsey	Invenergy	NA - Not Applicable	NA - Not Applicable
John Allen	City Utilities of Springfield	SPP	1,4
Kevin Giles	Westar Energy Inc..	SPP	1,3,5,6
Louis Guidry	Cleco Corporation	SPP	1,3,5,6
Michelle Corley	Cleco Corporation	SPP	1,3,5,6
Mike Kidwell	Empire District Electric	SPP	1,3,5
Robert Hirschak	Cleco Corporation	SPP	1,3,5,6

Answer Comment:

Page 2 of the Standard....second line of the purpose definition. We would suggest to the drafting team to capitalize ‘vegetation’ since it is a defined term in the NERC Glossary of Terms.

Page 2 of the Standard....In section 4.1.1.1 of the Applicable Transmission Owner. We would suggest to the drafting team to not capitalize ‘Transmission Facilities’ since it is not a defined term in the NERC Glossary of Terms.

Page 2 of the Standard....In section 4.1.2 of the Applicable Generator Owner. We would suggest to the drafting team to not capitalize ‘Facilities’ since it is not a defined term in the NERC Glossary of Terms. However, the term ‘Facility’ is defined.

Page 2 of the Standard....In section 4.2.1, 4.2.2, 4.2.3, 4.2.4 of Facilities. We would suggest to the drafting team to capitalize ‘transmission line’ since it is a defined term in

the NERC Glossary of Terms.

Page 3 of the Standard....In section 4.3.1 of Generation Facilities (first line). We would suggest to the drafting team to capitalize 'transmission line' since it is a defined term in the NERC Glossary of Terms.

Page 3 of the Standard....last paragraph of the Background (first, second, and third line). We would suggest to the drafting team to capitalize 'reliability standard(s)' since it is a defined term in the NERC Glossary of Terms.

Page 4 of the Standard... bullets 2, 3, 5.). We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC Glossary of Terms. Also, we make the same suggestions in the last two paragraphs for the same term.

Page 4 of the Standard....last paragraph. We would suggest to the drafting team to capitalize 'transmission line' since it is a defined term in the NERC Glossary of Terms.

Page 5 of the Standard.....Requirement R1 (second line). We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC Glossary of Terms. Additionally, we suggest some alternative language for Requirement R1 to define or identify how these the elements of an IROL and elements of a Major WECC Transfer Path are determined. The suggested language as followed: "Each applicable Transmission Owner and applicable Generator Owner shall manage vegetation to prevent encroachments into the Minimum Vegetation Clearance Distance (MVCD) of its applicable line(s) which are either an element of an IROL, or an element of a Major WECC Transfer Path that are determined by a particular study; operating within their Rating and all Rated Electrical Operating Conditions of the types shown below".

Page 6 of the Standard....In sections 1.2, 1.3,1. 4 of Requirement R1. We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC

Glossary of Terms.

Page 6 of the Standard.....Measurement M1. We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC Glossary of Terms.

Page 6 of the Standard..... Requirement R2. We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC Glossary of Terms. Also, we make the same suggestions in sections 2.2, 2.3, 2.4 for the same term.

Page 7 of the Standard.....Measurement M2. We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC Glossary of Terms.

Page 7 of the Standard..... Requirement R3 (line 3). We would suggest to the drafting team to capitalize 'vegetation' since it is a defined term in the NERC Glossary of Terms.

Page 8 of the Standard..... Requirement R6 (line 2). We would suggest to the drafting team to capitalize 'transmission line' since it is a defined term in the NERC Glossary of Terms.

Page 8 of the Standard..... Measurement R6 (line 2). We would suggest to the drafting team to capitalize 'transmission line' since it is a defined term in the NERC Glossary of Terms.

Response:

Thank you for your comments. Your comments refer to areas outside the scope of the project, but will be retained for the next periodic review of the FAC-003 standard.

Colleen Campbell - ACES Power Marketing - 6 - NA - Not Applicable

Group Name: ACES Standards Collaborators

Group Member Name	Entity	Region	Segments
Bob Solomon	Hoosier Energy Rural Electric Cooperative, Inc.	RFC	1
Ginger Mercier	Prairie Power, Inc.	SERC	1,3
John Shaver	Arizona Electric Power Cooperative, Inc.	WECC	4,5
John Shaver	Southwest Transmission Cooperative, Inc.	WECC	1
Shari Heino	Brazos Electric Power Cooperative, Inc.	TRE	1,5
Ryan Strom	Buckeye Power, Inc.	RFC	4
Amber Skillern	East Kentucky Power Cooperative	SERC	1,3
Michael Brytowski	Great River Energy	MRO	1,3,5,6
Chip Koloini	Golden Spread Electric Cooperative, Inc.	SPP	5
Scott Brame	North Carolina Electric Membership Corporation	SERC	3,4,5
Mark Ringhausen	Old Dominion Electric Cooperative	RFC	3,4
Bill Hutchison	Southern Illinois Power Cooperative	SERC	1

Answer Comment:

(1) We question the modification from Planning Coordinator to Planning Authority. The NERC Glossary defines the PC, but not the PA. If the SDT is striving for consistency with FAC-014, we suggest developing a SAR to replace the outdated reference of the Planning Authority with the current Planning Coordinator term. It is surprising that the standards still have two terms for a single registered function. The Functional Model Working Group is conducting a review of the NERC Functional Model, and we suggest that the SDT discuss this change with them for guidance going forward.

(2) The timelines of the Implementation Plan are reasonable. However, we recommend copying the same language from the standard to the Implementation Plan for consistency.

(3) We also find Section C. Compliance, Section 1.2 Evidence Retention, second bullet, redundant, as “unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation” is already listed at the beginning of the section.

(4) We thank you for this opportunity to comment.

Response:

Thank you for your comments. The team agrees that Planning Coordinator is the proper term and has reverted to this term throughout the proposed standard.

The Implementation Plan is now a stand-alone document and not included in the proposed standard.

While some of your comments refer to areas outside the scope of the project, they will be retained for the next periodic review of the FAC-003 standard.

Oshani Pathirane - Oshani Pathirane On Behalf of: Payam Farahbakhsh, Hydro One Networks, Inc., 1, 3

Answer Comment:

While Hydro One Networks Inc. feels that the standard needs a few minor modifications and corrections, we generally support the intent of the standard. Hydro One Networks Inc. further supports the comments provided by the NPCC. Hydro One Networks Inc. agrees with the NPCC in that the “Planning Coordinator”, as opposed to the “Planning Authority”, should be an applicable functional entity for the standard.

Response:

Thank you for your comments. The team has reviewed the draft standard and addressed a number of minor corrections. The team agrees that Planning Coordinator is the proper term and has reverted to this term throughout the proposed standard.

End of Report