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DRAFT
IEEE PES Winter Technical Meeting 2008
San Antonio, Texas
Meeting Minutes

Working Group on Distribution Reliability – Part 1

Tuesday January 8th, 2008

10:00 to 4:00 pm

Chair - Cheri Warren (mailto: cwarren@ieee.org)

Vice Chair - John McDaniel (mailto: John.McDaniel@us.ngrid.com)

TF on Interruption Reporting Practices

Co Chair - Val Werner (<mailto:val.werner@we-energies.com>)

Co Chair - Rodney Robinson (<mailto:rodney.l.robinson@westarenergy.com>)

John McDaniel called the Working Group meeting on Reliability to order at 10:00 am.

Introductions – 36 attendees

Rodney Robinson handed out the draft minutes for the WG meeting at the summer power meeting in Tampa, Florida. The minutes will be discussed in the afternoon session.

Rodney Robinson opened the Task Force meeting and informed the TF that the PAR had been submitted and will be up for review and approval in the March NesCom meeting. At that time, the TF will have an official PAR number for the standard. Further, the latest versions of the Guide will then be entered into the IEEE Guide development format and process for better tracking.

Rodney and Val Werner brought out that the following key updates need to be done for the entire Guide and will be covered in later discussions:

- 1) The terminology will be checked to make sure the same terms and definitions are used throughout the Guide. The coding or wording in sections 2 and 3 will be revised to be consistent with the coding presented in Section 1.
- 2) The charts and graphs in section 3 will be changed comply with the Guide requirement document as set forth by the TF. The requirements document will specify that backgrounds of charts be white, labeling for clarification and a thorough descriptions of basis for the information provided, i.e. includes or does not include major events days, excludes planned outages, etc. The TF will begin putting together the Guide requirement document in subsequent meetings.
- 3) The TF members discussed the use of the term outage or interruption events to indicate the number of device events that caused customer interruptions, This issue

was also discussed in the Reliability WG meeting later in the afternoon and it was agreed that further discussion is needed to resolve this issue in the WG. Once the issue is resolved, the TF will make sure that the correct terminology for these events will be used throughout the document.

- 4) In general, the information and figures included in the Guide will not include major event days and when they do, it should be noted clearly.

The TF began reviewing, in detail, section 3 of the Guide with the following comments noted:

Figure 1 – Heide Caswell discussed this figure for the TF members. It was agreed that the X (Days in the Year in descending lognormal SAIDI order) and Y (Descending Days) indexes need to have labels and the x coordinates need to be defined or described.

Figure 2 – The titles ‘Low Mean results’ and ‘High Mean Results’ will be changed to ‘Utility A’ and ‘Utility B’ respectively.

Figure 3 –

- Need to add X (Circuits in descending order) and Y (Cumulative system SAIFI) axis titles
- It was suggested to add a tabular subset of the data points
- Possibly provide the graph with only the first one-third or half circuit information to break out the details of these circuits
- It was brought out that this type of graph and information begs the follow-up comparison of costs by circuit to fix problems and thus complete a costs optimization on where to spend available funds (this could be added in the text).

Figure 4 – After Heide discussed this figure, it was asked to add some text explaining the CPI index and how it is blended.

Figure 5 – Need to clean up labeling for the X and Y coordinates for both charts.

Section 3.2.2.2 – Charlie Williams discussed the fact that in his view ‘weather’ should not be considered a cause, but that the interruption events that have been coded as weather can be reviewed and a ‘probable cause’ can be determined using the approach shown on figures 8 thru 10 and tables 1 thru 4. Joe Viglietta indicated that they actually keep a separate ‘probably cause’ coding for interruption events.

After some discussion on this issue, Charlie was asked to change the figure headings to ‘wildlife’, provide more explanation of the process and change table and correct table 1 to cover 24 hours.

Figure 11 – In discussing this figure, it was brought out that this figure provides all customer interruptions displayed at the transformer station point. It was requested that the write up explain this and provide more information on the color coding by transformer station.

Section 3.2.3.1.2 – It was noted that this section is actually discussing the CELID customers, but the TF agreed to not bring in that index in this Guide.

Section 3.3.3.2.1 – This section will be deleted and any reference to DEMI.

Section 3.2.3.3 – Need to add a description of ‘line segments’ as it is used in this section and figure 14.

Figure 15 thru 18 – The ‘Responsible’ system breakdown should agree with those provided in section 1.4 and when further breakdown information is provided, test will be provided to state that the utility can gain further insight into the performance of the system by gathering more details or sub categories of the codes presented in section 1.

Section 3.2.4.4 – Delete this section because it is redundant to earlier discussions.

Figure 19 – It was suggested to provide the Y coordinate information in SAIFI rather than customer interruptions for more accurate comparison.

Section 3.3 – The TF discussed the various reliability improvement programs listed and the overall issue of circuit hardening. Keith Frost and John Spare agreed to work on this section.

Section 3.4.2 – This section is yet to be written by Val Werner and Rodney Robinson. Keith Frost agreed to assist in the development.

Section 3.5.1.2 and Figures 20 and 21 – Terry Nielsen agreed to provide a paper already written on dashboards.

Figure 23 – It was agreed that the two different chart groupings will be broken up and further explanation provided for the ‘Reliability Indices’ comparison graphs on the right.

The TF discussed the need to have another face-to-face meeting before the Summer Power Meeting to sit down and take the time to clean up the current draft. It was agreed that if possible, a time will be set up during the April T&D Expo in Chicago, IL for several of the TF members to have this meeting.

A TF web meeting will be set up in February to start revising the current draft and finalize the plans for the April TF working session time and date.

The TF meeting adjourned at noon.

Working Group on Distribution Reliability – Part 2

Tuesday January 8th, 2008
1:00 to 4:00 pm

Cheri Warren called this part of the WG meeting to order at 1:00 pm.

TF on Reliability Indices P1366

Introductions – 44 attendees were present

The WG reviewed the minutes from the WG meeting at the June 2007 General meeting in Tampa, Florida. Only one comment was submitted on page 8, the bottom action item should read “Lee Taylor agreed to consider heading up...”.

Motion by Mark Thatcher (1st) and Val Werner (2nd) to approve the minutes as noted was unanimously approved.

Catastrophic Event Days

Jim Bouford (jbouford@trcsolutions.com) discussed his “Review of 11 Utilities’ Data to Determine the Criteria for Identifying Catastrophic Days in Calculating T_{MED} within IEEE 1366-2003. Jim studied 11 utilities in his review.

- T_{MED} will change drastically from year-to-year as a result of catastrophic days, but not really change the number of MED’s even though the utility’s reliability is actually degrading.
- Based on his analysis thus far with utilities from 40,000 to 3.5 million customers, Jim is proposing that an ‘extreme event’ day threshold of 4.15β to identify those extreme event days.
- Removal of these days will not necessarily smooth out the reliability results from year to year.

Also since Rich Christie could not make the meeting, Jim Bouford discussed the results of Rich’s analysis. The key issue is how we propose identifying the outliers.

John Spare questioned the narrow 4.15β number for the selection and had concerns that using a sample base of only 12 utilities is way too small, even though they may be representative.

Action Item: John Spare agreed to look into this analysis further.

Hydro Quebec’s process - Chantal Bitten discussed the methodology they have followed since 2005 which is the IEEE 1366-2003 method, but they first set aside the catastrophic days then do the T_{MED} determination. They have used a 4.0β as the threshold T_{CED} for catastrophic events days.

From their analysis and experience since 2005, they have the following conclusions:

- Catastrophic Event Days (CED) spoils the daily SAIDI data set and thus has to be set aside before evaluating the TMED as in the IEEE 1366.
- A $5\beta T_{CED}$ is now considered more suitable than the $4\beta T_{CED}$ considering the acknowledgement of the CED, in addition, to the T_{MED} stability.
- A benchmarking on Distribution Mid Voltage data only would help take the right decisions for this specific network.

2-1/2 β Method with Outlier Removal (Utilize Box & Whisker Plots) – Heide Caswell and Ethan Matthes discussed that the Utah PUC has questioned keeping the unusually large events in the T_{MED} determination. The PUC requires PacifiCorp to remove the outliers as determined by the Box & Whiskers methodology before calculating the T_{MED} .

Heide noted that prolonged outages resulting from the most extreme weather events can:

- Significantly increase in T_{MED}
- Increase variance in the difference between T_{MED} in consecutive years and
- Increased TMED may improperly impact SAIDI and number of days segregated as MED’s.

Matthes discussed the Box & Whiskers approach. In the Box & Whiskers analysis, first rank the daily SAIDI’s from lowest to highest. Break the daily SAIDI values into quartiles and the outliers are

determined by those days with a daily SAIDI greater than the top of the third quartile plus three times the top of the first quartile level. It is anticipated that removing these outliers will smooth the annual T_{MED} thresholds.

This process has two objectives:

1. Effectively, dampen the impact of extremely improbable events (including extreme natural phenomena) on the resulting calculations for the TMED.
2. Decrease the variance of the difference between TMED in consecutive years.

Cheri Warren asked why not look at smoothing SAIDI and SAIFI, Heide and John Spare indicated that the long study of the weather show that weather variations should not be great. John stated that SAIDI varies greater than TMED and he thinks TMED should be more consistent.

In discussing the formula, John Spare stated that the 3 times the top of the first quartile is a personal selection by the PUC, it is subjective.

Heide and Matthes have developed a Minitab software package for the methodology and had a few disc to hand out.

Action Item: It was agreed that this Minitab will be made available on the password protected portion of the WG website.

Bob Manning offered to give the United Illuminated data set to be analyzed for a catastrophic event.

Cheri noted that the Utah PUC can be used as a reference if we decide that we will pursue the Box & Whiskers approach.

John Spare indicated that he is willing to work with the Catastrophic Event group for their analytical support.

Cheri reminded the attendees that it is still the plan to replace any CED's with the average SAIDI day results when days are re-categorized as a Catastrophic Event.

It was agreed that the Catastrophic Event group will continue their discussions with John Spare's participation and have their recommendations at the next meeting.

Heide Caswell discussed that the Weather Normalization group put together a guide to use conventional weather parameters, not SAIDI day statistics. Further it was noted that Detroit Edison did a study in past years showing that weather was only 3rd as the overall cause.

Action Item: It was agreed that the Catastrophic Event and Weather Normalization groups should have a web based meeting. Heide and Vince Forte will set up the meeting.

Benchmarking Results Update – Poorani Ramachandran (<mailto:Poorani.Ramachandran@ngrid.com>) Poorani presented the results of the 2006 reliability comparison with the comments received in June 2007 meeting incorporated.

For the 66 utilities that have consistent data from 2002 to 2006, the overall results indicated that the SAIDI since 2002 have increased 17% on average, the SAIFI has increased 6% and CAIDI has increased 10%.

Of these 66 companies, it was determined that 58 utilities have been using a connectivity model since 2004 for their outage management systems or trouble order systems.

Action Item: Bob Saint agreed to try to get more small utilities for the benchmarking effort for 2007.

Chantal Bitten questioned whether the utilities included customer interruptions due to problems on their transmission and distribution or just their distribution. About one-half of the attendees give all of the customer interruption information but they break out the transmission and distribution information separately. There was some confusion as to what is classified as transmission and distribution.

Action Item: Greg Obechain will provide the EEI definition for Transmission and Distribution. Bob Saint also agreed to provide the RUS definition for Power Supply and Distribution.

After discussing these results, the WG agreed that everyone wanted to continue with the IEEE benchmarking for 2007 results.

TF on Weather Normalization – Chair Tom Short – Update provided by Val Werner

Val Werner discussed the paper written by the group on wind correlations and normalization approaches based on weather statistics. The group anticipates finalizing the document for their Pittsburgh General Meeting

The group had not made a decision as to the direction from here, maybe to develop a guide. Also the group is considering a panel session at the Calgary 2009 General Meeting during the WG meeting.

TF on Duration Indices

Chair - Joe Viglietta (mailto: joseph.viglietta@exeloncorp.com)

The attendees discussed the need to consider adding some proposed duration indices in the next revision of 1366, maybe CELID.

Lee Taylor suggested that we measure the value of these new along with the old indices to see the benefits to the customers and the utilities. His company does not necessarily track the CAIDI for their own purposes.

Val Werner mentioned that his company uses CAIDI specifically looking at the trend over the previous three years.

At Alabama Power, the customer perception on how they performed verses the actual numbers. There is more concern by the number of interruption events than the duration. Their customers wanted the estimated restoration times provided when they call in.

Cheri Warren brought out that CEMI was added in the previous version of the Guide for states like Florida and Illinois. Further Cheri noted that the Guide is intending to have indices that will aid the utilities in the future which may be the intent with some of the duration indices.

Other topics:

Since we did not have time in this meeting for everyone to provide regulatory updates for their state(s), it was requested that everyone provide their comments for inclusion in the WG minutes.

The Reliability Work Group was adjourned by motion (1st Val Werner and 2nd Mark Thatcher)