

# Unapproved Minutes from Webex Session on January 4, 2002

**To:** Working Group on System Design  
**CC:** Dan Ward, Dan Sabin  
**From:** Cheri Warren  
**Date:** 1/4/2002  
**Re:** Minutes from the Working Group on System Design meeting held via Webex on 1/4/02

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The meeting was "held" from 1:00 p.m. to 3:00 p.m. EST on January 4, 2002. There were roughly 30 "participants" (several "participants" had multiple parties on their end).

## Agenda:

Opening Comments by Cheri Warren  
Review of the Bootstrap Method by Rich Christie  
Analysis of some results by Charlie Williams  
Comparison of the Methods by Rich Christie  
Round Table discussion by all.

Copies of the PowerPoint presentations have already been sent out to the Working Group members.

In the opening comments, two (2) points were made:

Can the NESC be used to define a Major Event?

Need to make the definition so that Executives & Commissions can understand it!

The group generally felt that NESC was too vague to use as a basis for this definition. One comment was made that NESC does not apply to trees. It is also very difficult to obtain wind data across the distribution system.

Rich Christie started out his presentation by re-capping his presentation from the 10/26/01 Webex meeting. He stated that he had presented two (2) methods: Distribution Fitting Method (which used several equations) and the Bootstrap Method. Rich pointed out that all of the comments about his method being too complicated and having too many equations pertained to the Fitting Method. He in fact is in favor of the Boot Strap Method.

Bootstrap Method: Select the number of Major Event Days (MED) per year (N). Select the number of years to be included in the analysis (f) (number of years anywhere from 3 to 10). Sort the SAIDI per Day in descending order, using the all of days in the f years being used. The MED's are the N\*f worst (highest) SAIDI in the list. Rich originally proposed that one f

and one N be chosen for the whole nation. This is not appropriate due to all the differences we know and love.

Jim Bouford asked if this was a f year rolling average and would the MED's change from year to year. For example: Using 1998 – 2000 data there were 5 MED's in 2000. Then using 1999 –2001 data, there were 4 MED's in 2000. Would you then go back and change 2000's adjusted indices? Rich stated that you would not as you would only adjust (normalize?) the current years indices using this method.

It was pointed out that the threshold would change from year to year. Jim Bouford asked why not just set the threshold for the next "X" number of years. It was also pointed out, the longer the time frame for the analysis (the larger the value for f) the less probability there is for changes in the MED threshold.

Charlie Williams asked would the number of MED per year be qualitatively selected or arbitrarily set. It was stated that the number of MED's (N) would have to be agreed upon. N could either be set by the group, or it may have to be agreed upon between the utility and their Commission.

Dave Schepers pointed out that you could not come up with the adjusted indices until the end of the year. He asked how would MED's be identified mid-year (for year-to-date indices). Larry Conrad came up with SMET & SMED for ways of handling this problem.

**SMET – System Major Event Threshold** – A reportable index calculated at the end of each year to be applied for the following year. This value can be trended like others.

**SMED – System Major Events Days** – The actual number of days segmented as a result of the threshold.

It was pointed out that the lower the value for f (the fewer years included) that saturation would incur. That is one really bad year could have all of the MED's and the next f-1 years would not have any. Mike Sheehan stated that with a longer time frame (10 years) would give a better feel for the data. The only down side to using a longer time frame (higher value for f) is that it will take longer to see changes in reliability (the adjusted or normalized indices).

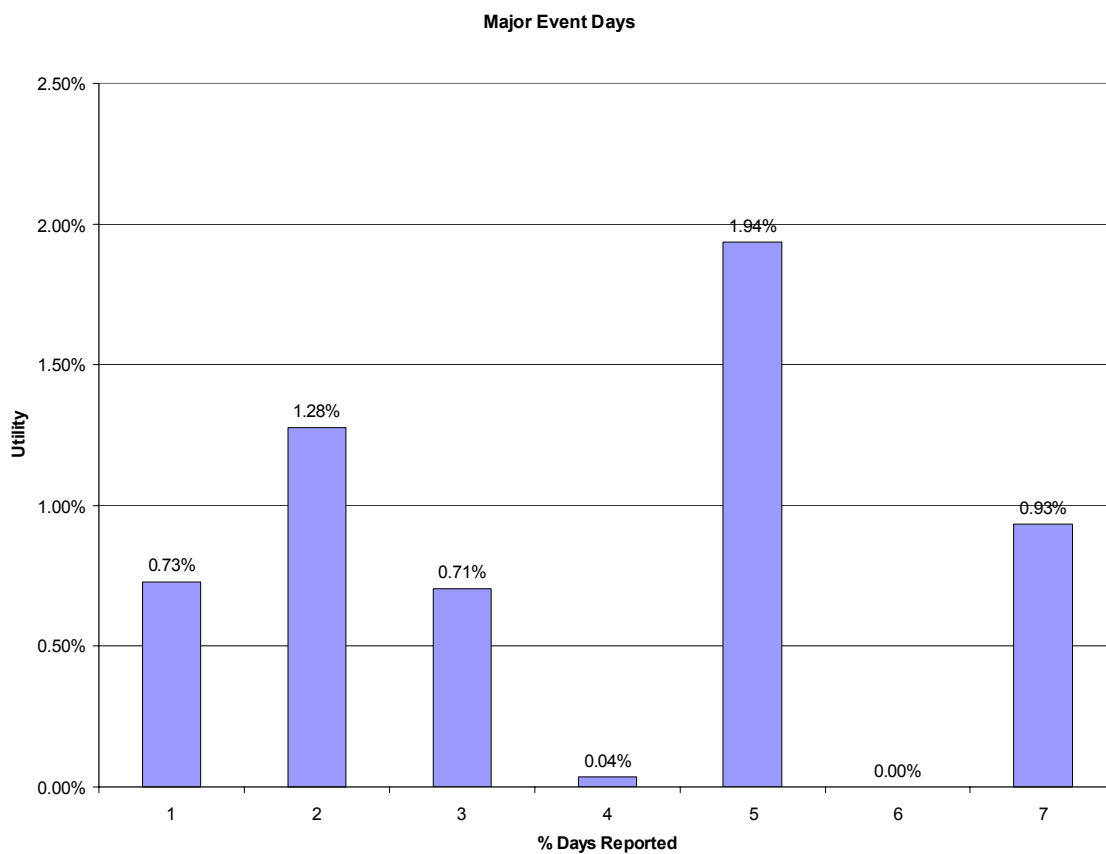
Other general comments about the Bootstrap method:

Use SAID/Day

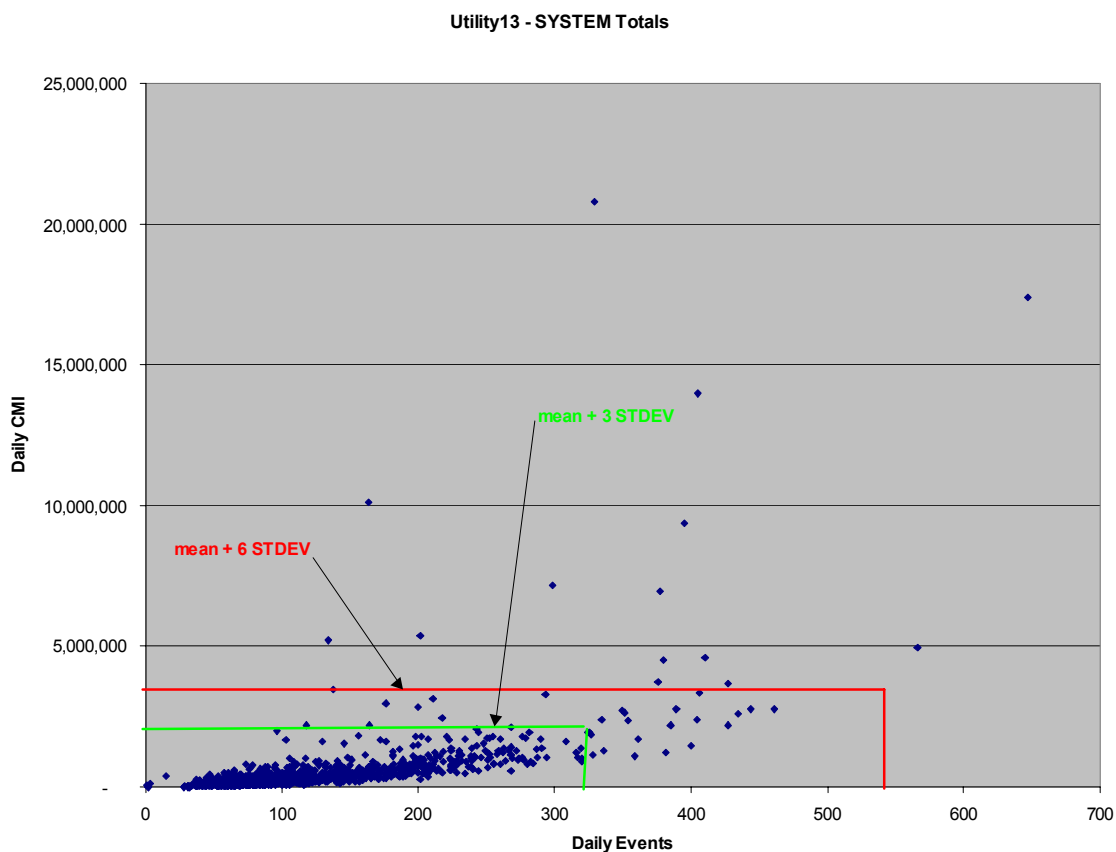
# days needs to be determined (chosen) – can be chosen using  $3\sigma$ .  
the simplicity is good.

### **Analysis Results:**

**Charlie Williams** then presented some analysis that he has done with data sent to him (via Cheri) for analysis. Using the  $6\sigma / 3\sigma$  approach, he found that there was anywhere from 0.5% to ~2.0% of the days would be classified as "Major Events", from the data. The variation is due to the variation in the individual utilities daily SAIDI.



Charlie also reviewed some data by  $3\sigma$  and  $6\sigma$ .  $3\sigma$  seems more realistic than  $6\sigma$ . See the plot below:



The question came up, is the MED defined by SAIDI or by the number of interruptions. Either could be used for the 6 Sigma approach, but by using SAIDI, a much better picture of an utilities operating conditions can be seen (or determined). Jim Bouford pointed out that the CMI (customer minutes interrupted) or SAIDI is overloaded in major events (usually) not the number of events (or interruptions). Or, a utility take s longer to restore customers in "Major Events" due to the man-power resources. The number of interruptions is the effect in overloading the resources.

Mike Sheehan pointed out that in Washington they have a Service Quality Index. This includes payments for missed service calls. These payments are waived for storm days. For his utility (Puget Sound Energy) a storm is declared when the number of interruptions reaches 150 to 175.

There was then a brief discussion on the effects of what happens when utilities let their maintenance and tree trimming go by the wayside. It was pointed out that both the mean and standard deviation would both increase. But, the number of "Major Events" would still probably stay the same, but have a much higher SAIDI/day. Charlie suggested that the Commissions would probably want to regulate the mean, which would mean that a utility would not want to let their maintenance go.

Rich then made a short presentation comparing the Bootstrap Method, the 6 Sigma Method and the current 1366 10% definition. Refer to presentation slides for the matrix. Rich did point out that the 6 Sigma and Bootstrap methods may be somewhat similar.

Cheri then brought up what work still needs to be done. The Work To Be Done is:

Which approach to use (6/3 sigma, MED (Bootstrap) or 10%)  
Use SAIDI, CMI or CI – group decided SAIDI per Day.

The Round Table Discussion focused on which method each individual preferred. The opinion on which method was preferred was split, with maybe a slight majority favoring the Bootstrap method. Dave Schepers pointed out (and few others agreed) that the only problem with the Bootstrap method was determining the number of MED's (N).

#### **Comments from the Participants:**

Joe Viglietta (PECO) – Exelon just built their business plan around the 10% definition. They are not anxious to change unless it's warranted. He will run their numbers. He also mentioned that he's concerned that segmenting 2 to 3 days won't remove enough variation to make the normalization meaningful.

Mike Tautphaeus (IP) Thinks we should go with the simplest method – boot strap.

Pete (ConEd) – Would like the group to consider working in the number of events per day because they can get overloaded with work during storm days.

Gene Lindholm (CILCO) – Likes the bootstrap.

Tom Kulas (XcelEnergy) – Xcel has been using number of events per day for years and he says it works very well. Makes the point that we should be doing this to exclude the right things.

Marek Wacllawiak (UI) – New comer, but likes the boot strap. Likes Larry Conrad's additions.

Dave Schepers (Ameren) – Acting as EEI liaison with the WG. Noted that he is not sure the boot strap method is equitable because you need to let the data tell you what the right levels are.

Jim Bouford (National Grid)– Let the data tell the story. Pick a method – they are all reasonable!

Mike Sheehan (PSE) – Washington State has been using 5% of customers out of service for years. He plans to put together a few slides for the WPM to compare  $6\sigma$  with 5%. He also mentioned that SAIFI and SAIDI are excluded when major events occur. If 25% of customers are out of service then they can use capital dollars to restore.

Rodney Robinson (Western Resources) – Thinks the bootstrap is arbitrary. Prefers the  $6/3\sigma$ . Thinks 10% is a problem with no basis. 5% might work. PUC wants to use the IEEE standard. He wishes events were the basis of the boot strap.

John McDaniel (DTE) - favors  $6/3\sigma$ .

John Spare (KEMA) – Likes the boot strap due to the simplicity, but is concerned about choosing the number of days ahead of time.

Greg Ardrey (Alliant) – PSC searched for the best. They report by feeder on everything. Accepted  $6\sigma$  for this year, but likes to bootstrap with  $f=3$ .

Charlie Williams (FPC) – We want to capture significant happenings beyond normal. Boot strap method shows simplicity. Set threshold levels and move forward. Look at the daily SAIFI & SAIDI numbers and then move forward. Wants to take a look at events.

**Participants:**

Cheri Warren  
John McDaniel  
Rich Christie  
Joe Viglietta  
Larry Conrad  
Mike Sheehan  
Jim Bouford  
Hector Valtierra  
Greg Ardrey  
Tom Short  
Greg Olson  
Neil Weisenfeld  
John Spare  
Charlie Williams  
Anil Pahwa  
Rod Gardner  
Don Lamontagne  
Rodney-Gary-Victor  
Charles Perry  
Clay Doyle  
Mike Tautphaeus  
Gene Shlatz  
Rich D'Aquanni  
Russ Ehrlich  
Tom Kulas  
Gene Lindholm  
Marek Wacllawiak  
Dave Schepers  
Jim Laurich