

Please call 1-866-410-8397 to participate in the teleconference portion of today's meeting

Participant Code: 1819551557

Thank you!

Kara

**WORKSHOP 3 – TELECONFERENCE – May 1, 2008 9:00 – 12:00**

| <b><u>OTHERS</u></b> | <b><u>SUGGESTION OR DISCUSSION</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Generators over 10mW | <p>Staff suggestion – upper level of Tier 4 modified to 10mW OR don't have an upper level on Tier 4 and use IEEE 1547 to specify that it shall be used for the 10 MW and under and that a modified version for those that are 10 and above??(other tiers modified accordingly – discussion below)</p> <p>Account for the “over 10 MW projects” through the use of Xcel's suggestion:</p> <ul style="list-style-type: none"><li>- those facilities rated over 10mW start with the tier 4 process and Technical standards and modify as needed by mutual agreement</li><li>- provide “complaint process”...but don't dictate project evaluation or application process beyond the starting point</li></ul> <p>Jason - Interstate renewable C – IEEE can offer guidance for 10 MW and over. 10</p> |

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|                                               | <p>MW can be state jurisdictional. Cases where FERC declined jurisdiction. Structure is necessary. Not aware of difference when you go from 10 mW to 20MW – system protection.</p> <p>Brad K – support above. Concern in other states. Larger generator need dispute resolution process. Modified tier 4 still provides for such.</p> <p>Don - MDU – max capacity is less than upper rating. Concern with respect to misleading customers to think they can connect large generators when not enough circuit capacity. Large generator have to connect to transmission system. Don’t want to mislead to think it can be done easily.</p> <p>Brad K – once rules in place how communicate and make transparent. Clarify customer expectations.</p> <p>Jason – IREC – 2 mw solar = 16 million...this is not a standard customer. Will spend time to talk with developer. Usually certified engineers....</p> <p>Mid A – Jeff – to include everything creates complication.</p> <p>Brad – clear catch all. Developer wants more structure.</p> <p>Xcel – tom – cap formal process at 10 mW...flexibility above that</p> |
| <p>Tier definitions – level of generation</p> | <p>Current Straw man =</p> <ul style="list-style-type: none"> <li>• Tier 1 = 25 kW or less</li> <li>• Tier 2 = 2 MW or less</li> <li>• Tier 3 = 10 MW or less</li> <li>• Tier 4 = 20 MW or less</li> </ul> <p>Company suggestions:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

- Tier 1 = 25kW, 10 kW (BHP and Mid A) or less – *discussion from BHP and Mid A*
- Tier 2 = 2 MW or less
- Tier 3 = 10 MW, 2 MW (Xcel) or less – *discussion from Xcel*
- Tier 4 = 20 MW, 10 MW (Xcel) or less

TIER 1 discussion – Basis is Ill...10 kW and below. FERC fast track = 10 kW and below.

Xcel – support 10 kW...over 10 and the tier 2 process is not a problem.

Mike – IREC – IEEE standard min level for single p is 30 kW. Lower end. To be consistent with the upper 1547 limit be consistent with the lower end.

Brad – 10 kW limit is used in other states that went with FERC structure. Technical requirements for larger systems don't have practical affect. Technical reasons?

Start to see some different affects when higher kW level. Around 25 are the screens the same? or are there reasons for difference.

Xcel – Tom – most distribution are residential 10 kW is a no brainer. Above that and extra effort necessary.

Don – MDU – Agree with Tom(Xcel) 10 kW good for upper limit on Tier 1

Mike – IREC – 1547 - page 8 and 9 30 kW..typical application for a home is 30 kW...

Tier 1 other screens on secondary lines already upper limit of 20.

Black Hills – customer stand point - those in SD will be 10 kw and below. Look for FERC – they established a fast track process, all inclusive process – everything provided for the customer. Majority of applications we see will be SMALL.

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|                              | <p>Staff Suggestions:</p> <ul style="list-style-type: none"> <li>• Tier 1 = 25 kW</li> <li>• Tier 2 = 2 MW or less</li> <li>• Tier 3 = 10 MW or less</li> <li>• Tier 4 = 10 MW or less <i>or anything that is not 1, 2, 3. and include language to allow additional standards when over 10mw</i></li> </ul> <p>TIER 1 –<br/>OTHER – BHP – 10.3.3 – if the proposed facility is to be interconnected on a single-phase secondary service line the generating capacity on the secondary...must not exceed the service transformer nameplate rating or the conductor rating.</p> <p>Xcel - ...must not exceed the lesser of 20 kW or the service transformer nameplate rating.</p> <p>Xcel – important in rural and older stuff – have older transformers.<br/>Tom Basso – 10.3.5 – proposed interconnection must use existing facilities. Is this redundant? Already covered.<br/>BHP – want to be more explicit to info for customers.</p> <p>TIER 2 –<br/>OTHER – BHP – 11.3.7 (6).2 – If the small generator facility is 3-phase or single-phase and is to be connected to a 3-phase or 4-wire primary line, it must be connected line to neutral and effectively grounded. The single phase small generation facility does not increase the primary line phase current imbalance by more than 20%</p> <p>Xcel – submitted something similar.</p> <p>Xcel and BHP – also discuss 11.3.8 changes.</p> |
| Shift to elevated tier level | Is a new/separate application necessary in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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|                                                         | <p>the case of non-approval?<br/>Staff proposes – NO.</p> <p>Xcel suggestion: By mutual agreement, the review process can move directly to the next tier without filing a separate formal application.</p> <p>Brad – utility and customer interests are aligned.<br/>Mid A – ok with it if language to allow utility to request more info.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>Clarifying and solidifying “Technical Standards”</p> | <p>Does explicit inclusion of a “Technical Standards” definition (to be IEEE 1547) in the rule eliminate concern regarding uncertainty?</p> <p>NOTE - (1547 and 1547.1 – test procedure requirements) other 1547 standards are guides, backgrounds, and alternative approaches.</p> <p>Tom - Xcel – technical standard refers to the “standard series”.</p> <p>Tom B – with 1547 and 1547.1 – those are the Standards...Thou Shall...the others are guides and recommended practices. Good info put not appropriate for rules.<br/>Good for guidance – but requiring their use is overkill.<br/>Xcel – standard portion included – encourage use of guidelines.</p> <p>Jason – IREC – page 2 of 1547 references several other standards incorporated by reference – don’t need to add more other than 1547.</p> <p>Jason – Otter tail – UL 1741 references 1547 and 1547.1 – the 1547.1 test procedures are the test procedures used in UL1741 –<br/>1741 gets into more safety aspects and labeling – beyond interconnection.<br/>Don’t want 1741 to be lost in the mix.</p> |

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|                                   | <p>Tom Xcel – agree</p> <p>Brad K – where would 1747 be mentioned?<br/>In the lab tested section?</p> <p>Jason – include it (1747) in the lab tested definition somewhere. (Xcel – agree, BHP, MDU)<br/>Xcel – like the 1741 reference because specified safety reference that not in 1547.</p> <p>OTHER - Ottetail – modified the rules to allow a Public Utility to utilize a different standard in addition to IEEE 1547 without Commission approval.</p> <p>If 1547 is common requirement for all projects – should be the standard.</p>                                                                                                                                                                                                                             |
| <p>Jurisdiction clarification</p> | <p>Xcel – Scope and applicability clarification<br/>Clarify that the rules are to apply directly to 10 MW or less “Small Generator” systems and serve only as the basis of those larger than 10MW<br/>Also define transmission line – those required by FERC to be listed as transmission in Form 1 filing.</p> <p>BHP – also used FERC Form 1 filing as a definition</p> <p>Ottetail – defined by using guidelines established by FERC and or the state Commission which are not part of the Public Utilities Distribution System or any Generation System.</p> <p>Staff Suggestion –</p> <p>IEEE for 10 MW and less only<br/>IEEE as “guide” for 10 MW and above<br/>If FERC jurisdictional NOT PUC<br/>Jurisdictional</p> <p>Brad – FERC inconsistent. FERC treat</p> |

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|                       | <p>first interconnection on a line differently than subsequent interconnections. Rather than a number pin it to FERC's test. If FERC...not state. Careful about putting a number in here.</p> <p>Jason - otter tail –<br/>Transmission line definition –<br/>Remove reference to specific voltage level.<br/>MDU – agree with suggestion and wording. Xcel – ok with it.<br/>Brad – no problem with language. BHP – ok with it. NW – ok for now....checking.<br/>E-mail to PAM from NW.....</p> |
| OTHER                 | <p>BHP – Site Control (5.6). documentation provided with the application regardless of whether a customer of the Public Utility or not. Please explain.</p> <p>Have documentation regardless – no particular situation...</p>                                                                                                                                                                                                                                                                   |
| <b><u>COMPANY</u></b> | <p><b><u>Tier 2 15% issue</u></b><br/><b><u>a) is the 15% an adequate measure for aggregated generation screening</u></b></p>                                                                                                                                                                                                                                                                                                                                                                   |
| OtterTail             | <p>Suggested increasing it to 25%</p> <p>OTHER TIER 2 SUGGESTION – short circuit interrupting capability (page 17 – 11.3.4)<br/>Removed 11.3.6 – please explain.</p> <p>Other Tier 2 screen issues –<br/>11.3.4 – FERC can't interrupt 85% - looking at MN....<br/>SGIP – was a compromise.<br/>IREC – 90% has not created any problems.</p>                                                                                                                                                    |

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|     | <p>Brad – 90% in strawman as what was agreed in Oregon. Included in more recent state rules...there was discussion in other workshops.</p> <p>Tom B – rule of thumb...85 – 90% ...no hard fast number.</p> <p>Tom – Xcel – want some margin here...various system modifications over time. Exact is a mater of comfort zone.</p> <p>IREC – inexact science. Within tolerance of calculation...</p> <p>Tom Xcel – prefer 85%...can accept 90%</p> <p>11.3.4 – suggest striking and 11.3.6. if willing to make financial commitment to make system upgrades, what to limit interconnection?</p> <p>Tom Xcel – limit is to prevent automatic approval without further study. Failing screens kick out of this tier and into a higher level where full study.</p> <p>Jason – IREC 11.3.6 – don’t know when in excess of 10 Mw on distribution side of transformer. This is cumulative...and if you are the one that pushed it over the edge – that is where the screen fails.</p> <p>IREC 90%</p> |
| MDU | <p>Don – general 15% ok...may be few locations where 15% number is too high. In those cases have to limit it some how – in general OK.</p> <p>BRAD K question – when 15% too high would other screens catch it.</p> <p>Don...does not think so. If these are limited strictly to inverter type</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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|                          | <p>installations. Don't think 15% a problem anywhere. Problem is it is some other type. If long distribution circuit. Not happen often...but occasionally a farm line. If a rancher want wind generator that may not be inverter type – may not be a problem. BUT...tier 1 and 2 are limited to inverter type installations.</p>                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Black Hills Power</p> | <p>Tier 2 evaluation and screening criteria:</p> <p>Aggregated generation must not exceed the lesser of:</p> <ul style="list-style-type: none"> <li>- 15% of the line section annual peak load as most recently measured at the substation or calculated for the line section</li> <li>- 200% of the line section annual minimum load as most recently measured at the sub-station or calculated for the line section</li> </ul> <p>BHP 200% an attempt to provide language...</p>                                                                                                                                                                                                                     |
| <p>Xcel Energy</p>       | <p>15% criteria is not adequate for feeders with exceptionally large seasonal loading variations such is common with irrigation feeders in a sparse rural area</p> <p>How approve by other means? Rule does not allow....</p> <p>Don – but rule requires inverter type. Those others may get pushed to tier 3 or 4.</p> <p>Brad – tier 2 requires lab tested or field....not specifically require inverter type. (11.1.3)</p> <p>Don – then there could be a problem in some cases – when not inverter based.</p> <p>Tom basso– what is tech. problem – Don - ground fault detection.</p> <p>Tom Bass - ?</p> <p>Don – overhead distribution heavily treed. Even in best situation have difficulty</p> |

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|  | <p>detecting ground faults. Consider dangerous and make attempt to detect. Guidelines in house with respect to certain levels of ground fault that should be able to detect. In past generator installations when impacted into that criteria that established then other things to try improve on that situation so that don't leave to continue to take a burn.</p> <p>Tom B – how make connection back to the DG – it is that location problem regardless of DG. How does DG exacerbate existing problem?</p> <p>Tom (Xcel – most are 4 wire system that require ground referencing..</p> <p>Don – location of generator in these locations becomes important – if it just happens that it is at end of dis circuit 0- not terrible. If installation is closer to substation – extremely large impact.</p> <p>IREC –in inverter based – contribution is minor. Synchronized that flows back into the system.</p> <p>Don – yes..problem if not limited to the inverter based.</p> <p>Tom B – not disrupt coordination of coordination.</p> <p>Tom B – if DG not disrupt existing coordination then ok.</p> <p>Don this is try but the only ones that don't have an impact are inverter based....</p> <p>Tom B – this is already in 1547 – coordination cannot be affected.</p> <p>Don – if add that language exactly – the only types allowed are inverter based. – not intent.</p> |
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Tom - Xcel – disrupt vs. impact. Are we talking the same terms?

Don – agrees that disrupt is proper term. Severity is the issue. When to the point of disruption have to do something more to provide protection is necessary.

Tom B. – we need to capture concerns. Don't want it buried somewhere...on other hand don't want to study systems unnecessarily.

Don – in reality Tier 1 is only one that MDU will install without any study. Have to keep track of how much generation connected to a particular circuit.

Tom - Xcel – if pass 15% and otherwise complies...MUST approve it.

Brad – witness test required – balance between what detail in rule and to what extent rely on what is already in 1547.

Tom Xcel – Xcel is ok with tier 2 so long as a few exceptions are allowed or recognized. MANDATORY approval is difficult to work with...that is the problem...

Jason – IREC – most applicants will have inverter based. Helpful to have special requirements for non-I based.

BHP – there is a specific individual that intends to install.

Jason - IREC –

BHP – Eric – no inverter based system that requested interconnection. Most of SD is going to be wind...not inverter based. Different climate of interconnection.

NW – support same comment. Interest here is small wind.

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|                      | <p>Tom Xcel - increasingly the small units are inverter based.</p> <p>Brad K – concerned about changing the screen structure that has become standard in many states. Can we do it by more specifically calling out 1547 standards? 1547 already requires grounding coordination...can't interconnect if disrupt grounding coordination...make specific if disrupt coordination...can't interconnect.</p> <p>Tom Xcel – agree with that approach...the way it is worded now must comply with 1547 before approval is not really clear. In addition to 15% etc...must also meet 1547.</p> <p>Brad K - 11.1.3 – to be eligible must use land tested and field tested. Cross reference to UL and IEEE...make more clear to say interconnection equipment proposed requires compliance with IEE and UL. Explicitly state it.</p> <p>Xcel – Supportive –</p> <p>Highly seasonal also addressed if explicit that 1547 must be met before interconnection.</p> <p>Don – 11.3.2 not want to see higher percentage than 15%.</p> <p><b>STAFF PROPOSE LANGUAGE -</b></p> |
| NorthWestern Energy  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MidAmerican          | Ok with the 15% requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| PUC STAFF SUGGESTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b><u>COMPANY</u></b> | <b><u>Tier 2 15% issue</u></b><br><b><u>b) highly seasonal circuit</u></b>                                                                                                                                                                                                                                                                         |
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| Otter Tail            |                                                                                                                                                                                                                                                                                                                                                    |
| MDU                   |                                                                                                                                                                                                                                                                                                                                                    |
| Black Hills Power     |                                                                                                                                                                                                                                                                                                                                                    |
| Xcel                  | Define Highly Seasonal Circuits – a circuit with a ration of annual peak load to off-season peak load greater than six (6)...then, for highly seasonal circuits only, the “aggregate Generation Facility capacity”, including the proposed Generation Facility , on the Line Section shall not exceed 15% of two times the Minimum Daytime Loading |
| Northwestern Energy   |                                                                                                                                                                                                                                                                                                                                                    |
| MidAmerican Energy    |                                                                                                                                                                                                                                                                                                                                                    |

Jason – IREC – minimum daytime loading. Lowest daily peak on the line section.

| <b><u>COMPANY</u></b> | <b><u>TEMPORATY</u></b><br><b><u>DISCONNECT – NOTICE</u></b>                                                                                                                                                                                                                                                                                                                                                           |
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| OtterTail             | <p>Notification challenges</p> <p>Completely deleted – in the case of forced outages – notification</p> <p>OTHER - if a small generator fails to remedy an adverse operating condition – the utility can temporarily disconnect immediately at its discretion.</p> <p>Sought input from field workers. First challenge is keeping track of the DG installation. People move, take it with or not...new owner, etc.</p> |

Notification for outages of maintenance  
how keep track of owner.

Put a lot of responsibility in field  
people...trust they will make the best  
decision. When asked why a particular  
person was disconnected...left to discretion  
and opinion of the worker...challenging to  
track down.

5 days too much to correct a problem –  
immediate disconnect necessary – safety.

Brad - distinction between emergency and  
other....

**What is an adverse operating affect**...does  
the utility have the ability to disconnect  
immediately.

Change language to make this clear??

Charles Brown – example?? How  
extreme??

Tom Xcel – flicker, cause annoyance.

Charles Brown – doubtful the Dg could  
get this done in 5 days...how  
disconnect...and how reconnect. What is  
the process?

Don – anytime there is a customer  
complaint. Ask the DG to stop generating  
to make fix...then test to determine  
whether fix is made. No necessity to  
reapply...

Charles Brown – if customer complaining  
– emergency then fall under different  
section

Xcel – not necessarily emergency.

16.1.1.1 – **“promptly”** language of concern.  
Potential conflicts between utility and  
customer.

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| MDU                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Black Hills Power   | <p>Removed the notification requirement for the public utility to notify the customer when it becomes aware of an emergency condition that may reasonably be expected to affect the Small Generator Facility Operation.</p> <p>Brad K – don’t just eliminate altogether. Change language to accommodate concerns. Keep some sort of reasonable notification. “to the extent information is know” “as long as reasonably necessary”</p> <p>Echo Ottetail – scope of this is emergency – when have emergency – top priority is to restore. No time to locate and identify customer. Treat the DG just like any other customer...don’t make calls to all customers when an emergency outage. 1) need to call at all hours 2) keeping up database.</p> <p>Keep requirement for customer – one person. Not burdensome for customer. Keep in mind top priority -</p> |
| Xcel                | <p>Sees some distinction between “small” and “large” interconnection. Small DG’s – not as necessary to notify as large.</p> <p>Same ....</p> <p>Required to treat all customers equally what, who...etc...whether consumer or the DG – to keep track of all small = burdensome.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| NorthWestern Energy | <p>Same.....</p> <p>Brad K – ELPC – be clear that it is customer’s responsibility to keep utility informed of moves, contact language, etc. Agree that as more DG - not just the utility responsibility...but also the consumer responsibility to keep utility updated. Suggest – “when practicable”....etc....</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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|             | Makes it clear that if possible, advise DG.                                                                                                                                                                                        |
| MidAmerican | Concern regarding uncontrollable events and notification<br><br>Invested in software, automatic calls, etc. hate to see another obligation that there be not one, but 2 calls...any other notice in SD rules should be sufficient. |

Dawn O – believes that the utility should notify when possible.... “when affect” the small generation facility already in the rule.  
Same treatment both ways.

IREC – 6.1.1 and 6.1.1.1 – structure...relationship to disconnect. If this covers disconnects---should certainly inform customer.

Charles Brown – makes sense that disconnect – should be notified and contact the consumer. If it is a general loss of power different situation. If a DG disconnect owe an explanation.

NW – now adding a new rule to the disconnect.

Xcel – medium to large – connected to feeder not just on consumer side.

Dawn – second data base and direct connect phone call. Not major difference in software.

Jason – IREC – most likely situation – grid down what to disconnect. Rule may not cover it.

Charles Brown – if disconnecting that source only should be able to notify the owner.

Ton Xcel – main concern with 16.1.1...anytime feeder trips it affects the operation and says must notify all.

Brad – agreement to tighten language.

Dawn O – how to get DG back on line. Same way as customer with adverse condition. At what point and time is it allowed for the customer to get back on line. Does the utility do tests....should the same rule apply to the DG as others.

Tom Xcel – will take the word of the consumer ...testing not a requirement. May need to be some on site verification.

**STAFF PROPOSE LANGUAGE – Section 16**

- avoid duplication in the rules
- avoid burdensome request

- focus on when need to disconnect specific generator
- correct the 5 day correction issue...non-emergency setting. (adverse system affect)

Look at III

| <b><u>COMPANY</u></b> | <b><u>ISSOLATION DEVICE</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| Otter Tail            | <p>Deleted the applicant's option to provide access to an isolation device that is contained in a building or area that may be unoccupied and locked or not otherwise readily accessible to the Public utility</p> <p>ADDED – for small generator facilities – the meter base may serve as the required isolation device, if the meter base is not the Point of Interconnection</p> <p>Jason – 5.9.3.2 – DG – if not only person with access to lock box = dangerous condition. Gets back to adverse system condition. DG hires someone to work on it, company disconnects, and altering of facility by others</p> <p>Charles Brown – put two disconnect 1 at source and 1 at utility interface. Lockable is the key word. The party working on the facility lock....</p> <p>30 amps or less – using meter base as means of disconnect – not adequate. Need something in between.</p> |
| MDU                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Black Hills Power     | <p>Added tier 1 to the requirement:</p> <ul style="list-style-type: none"> <li>- when connecting to the secondary line, the isolation must be by means of a lockable isolation device whose status is</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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|      | <p>clearly indicated, located within 10' of the public utility owned meter service and is readily accessible by the public utility.</p> <p>Exception</p> <ul style="list-style-type: none"> <li>- max output of 2kW of less</li> <li>- connected to a secondary line</li> <li>- uses lab tested, inverter based interconnection equipment and</li> <li>- is interconnected the public utilities' EDS through a public utility owned metered service</li> </ul> <p>Deleted the draw out type circuit breaker as a consideration for an isolation device.</p> <p>Is it appropriate to be so prescriptive?<br/>Note: National Electric Code definition of "readily available"</p> <p>To help customer understand what is readily available. Don't want to search for the disconnect device is located. Some have smaller numbers....</p> |
| Xcel | <p>Added tier 1 to the requirement</p> <ul style="list-style-type: none"> <li>• tier 1 – the isolation must be by means of a lockable isolation device whose status is clearly indicted and is readily accessible by the utility.</li> <li>• An exception is allowed for a facility..... is connected to a secondary line of 240 V or less....self-contained meter. The meter base may serve as the required isolation device, provided it is readily accessible to the utility and its use does not interrupt service to the building load.</li> </ul> <p>All other interconnection isolation devices:</p> <ul style="list-style-type: none"> <li>• a draw-out type circuit breaker with the provision for padlocking at the draw-out position can be considered</li> </ul>                                                          |

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|              | <p>an isolation device for purposes of this requirement 24/7 access by the utility must be provided by either onsite personnel or device contained in a building or area unoccupied and located or otherwise not readily accessible.</p> <p>Utilities want lockable...<br/>Charles Brown – agree. already doing it.</p> <p>Ton Xcel – understanding is pull meter on generator not whole house meter.</p> <p>If not separate lockable – need some restrictions..high amp increase the threat of safety concerns.<br/>Meter would have to be self contained with 30 amp limit. Help address that it is modest service. Separate means other than killing the whole house or building.</p> <p><b>Discretion of utility--possible compromise</b></p> |
| NorthWestern |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Mid American | <p>Added Tier 1 to the requirements – current safety procedures require a utility accessible disconnect device for all generators.</p> <p>Removed exception: to allow for a small generation facility that has a maximum total output of 30 amperes or less, is connected to a secondary line utilizes lab tested, inverter based interconnection equipment and is interconnected to the T&amp;D system through a public utility – owned metered service. In this case, the meter base may serve as the required isolation device provided it is readily accessible to the public utility.</p>                                                                                                                                                    |
|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

IREC – less than 10 kw not need disconnect. Both largest in CA don't require disconnect to be installed. Have the largest #....report by NREL discussing

disconnect switch. Go through 5 steps – 5 failure modes before something happens...not possible for back feed. When system de-energized, inverter shuts off. The idea that it is needed for safety goes to safety. Argue against----not even used by the utility.

Charles brown. – most inverter based systems have a disconnect built into the inverter. Shut down when loss of grid power. As do his wind. In situations where what to work on turbine itself...want a lockable disconnect switch itself.

IREC – disconnect operated and controlled by the utility. But to require the customer to have something the utility does not use is unnecessary.

Charles B. – a 10 kW system not need a separate lockable switch.

Larger..however...and support a disconnect switch available to the utility.

Jeff – Mid A – safety – currently in safety procedures – have to isolate all known sources of know on distribute system before taking a clearance.

Would isolate any generator on system. Map all generators small or large. Inverter based ul based....”as a company can’t take those out of our safety procedures”.....until then cannot agree to anything other than current safety practices.

IREC – OSHA requirements are much different than utility requirements. OSHA requirements are the rule....in reality don’t use switch. Liability is saying that it is used...but not in reality.

Mid A - According to operations they clear all generation sources.

There is a chance that these things could island...just by grounding a circuit does not mean it is safe – it is a hazard itself – no guarantee that always de-energize.

Brad – if inverter based systems shut down – are they considered a generation source. If shut down no fear of feeding the system. An additional layer of expense and created barrier.

IREC – OSHA requires a test. Also see NREL paper that identify 5 failure modes that have to take place before something back feeds...page 11. all systems in any state – has not happened. To make it a rule and not look at best practices across country would be a failure of the process.

Tom Xcel – with proper rotating equipment they can hold in....not likely but real. Eliminating of switch is a best practice?? And we are not agreeing??

Brad – emerging consensus of over all trend – when systems newer made sense to require a disconnect switch for everything. For small level one – equipment is redundant. Latest states have eliminated requirement for tier 1 inverter based.

BHP – Oregon require it except for 30 amp inversion

Charles Brown – what is the kind of economic impact?

Mike C. NREL – as low as \$150 - \$200...installation cost, however, can be much higher. 5 – 600 or possibly \$1,000. cost can be high. For an inexpensive photo can be significant part of system. Are required to have a disconnect...under currently rules. (NEC)

IREC - the switch we are talking about is separate from the NEC requirement and is for utility use.

Mike C NREL – when high penetration level---more and more difficult for lineman to lock and tag each system. If adopt a rule now that have to lock and tag each site...what happens in 5 year? More and more difficult for utility and greater outage times.

BHP – want to look at what is relevant in SD. Not many..and not much experience. Require them for safety issue – as more comfortable working with them – nothing to prevent a modification of the rule. Look at safety now and wait until comfortable with them...take safety first, and modify rule in the future, or allow utility discretion. Goes to emergency situation. Top priority to make safe. If not ability to do it...not wait to determine how to isolate.

Brad K – while may be some circumstances in SD where different – good here to look at over all experience in the country to see what experience is elsewhere. Set ground rules right now rather than change later. Use best practices in the rules now.

Pam – NW – injuries...safety is very important. Position – outside means to disconnect readily available to personnel  
SD not where Ca is....can review and modify rules as SD gets more comfortable.  
Safety first.

Brad K – looking at 10 kw and under – agreement that it is not a safety concern. Safety not taking a back seat to any other concern. – not just CA....other states are moving toward this as well.

IREC – FL NJ did away with these. Safety - generators, etc are the biggest emergency concern there is. To say it is a safety hazard and to say switch is more safe is a misnomer.

Mike C. – in NREL report does identify safety as the paramount concern of the utilities. How much is too much and are we talking redundancy? Several min means of disconnecting systems. The utility has opportunity to experience and witness the operation of the system to be assured the disconnect is operational . where higher number of systems – every day occurrence. Utility knows it works. Comfort with the devices

BHP – those charged with reliability and safety of workers...still say prefer to have disconnect switch to maintain safety. Don't want any burden on utility---but need safety.

IREC – F1 - if utilities really think requirement – the utility pay itself

BHP – cost causer issue. Not subsidize cost of special connections.

IREC – different for utility need – not customer.

BHP – to draw this out of context is not fair. What were other application fees, etc.?

NEXT MEETING – Interconnection 4

Forms Questions:

Agreement signed by both parties – is it covered by the Certificate of Completion?

Should the certificate of completion be imbedded in the Agreement itself 10.5.4 and .5.

5.9.3.1 – draw our circuit breaker – agreement.....delete.

MDU – Xcel – agree...