Executive Director and Secretary
Washington Utilities & Transportation Commission
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15 JAN 2012

Re: Docket UE-112133 Comments

Please excuse this handwritten submittal but I am temporarily without computer access.

I have 50 years experience in the industry including operation + maintenance responsibility for 3 grid tied small generating plants as follows:

1) 28 MW (4 units) Hydro-connected to BPA at Port Angeles at 69KV.
2) 10 MW (1 Unit) Steam Turbine - connected to Tanesco at Mgololo, Tanzania at 13.8KV
3) 10 MW (1 Unit) Steam Turbine - connected to Consumers Power @ Parchment Michigan at 11.5KV

I urge you not to get sucked into unsafe procedures due to commercial pressures.

Suggested Rules:

1. Only induction generators should be exempt from using a disconnect switch. However, if no disconnect is used, People working on the system (grid, distribution, transmission) must be able to stop the induction generator. Once stopped, it cannot be restarted if the system remains denergized.

All forms of electronic power conversion equipment (inverters) are subject to false starting.

From both a safety and economic standpoint Induction Generation should be encouraged in lieu of synchronous generation. Obviously solar (photovoltaic) is an exception, as is variable speed wind generation, both of which require inverters. Inverters are not safe, when grid connected, without a safety disconnect.

2. Distributed Generation that is manned with an operator or under supervisory control of an operator on a 24/7 basis should be exempt. Some maintenance crews do not trust operators and may still demand a positive lockout device. In most cases portable grounds are an acceptable substitute if installed by the maintenance person/crew.

3. All other distributed generation needs an accessable, lockable disconnect that must be registered with the utility company

4. Lockout rules should not be changed. Lockout is the responsibility of the person working on the equipment where energization is a possibility

5. Grounding of the deenergized system is not a responsibility of the independent generator though it is a good practice to have the disconnect ground the generator side of the disconnect switch unless it is necessary to keep the independent on a dummy load to prevent damage such as a) steam turbine cool down gradient, or small wind turbine or hydro to prevent overspeed.

Safety associated with distributed generation is best kept seperated from issues related to protective relaying caused by distributed generation though both are inter related.

1. Relaying and fuse protection are the responsibility of the utility co.

The future of efficient and affordable electric supply lies in distributed generation. Utilities are going to have to deal with these issues. There is a cost associated with this. Rate payers will have to pay this cost and WCOTC must support these increases.

It is a fact that radial distribution systems are not compatible with distributed generation but D.G. can be accomodated. So far there appears to be a lack of will to do so or to support the associated costs.

2. Suggested Methods:

ⓐ Ignor small independent generators as relates to fault current contribution and protection schemes. The definition of small depends on the capacity of the utility grid at the point of the D.G. connection and the size of the D.G. unit. If the instantaneous fault energy capability of the independent is 10 KVA and the grid is 1000 KVA then ignor the D.G. unit in calculating relay and fuse settings.

3. It makes sense to transfer trip the D.G. unit, along with the breaker serving the radial feeder, when the fault energy from the D.G. unit is significant. This means that energy from both the grid source and D.G. source must be added together vectorially to initiate a feeder breaker trip along with a trip of the D.G. breaker (or other shutdown scheme) on the D.G. equipment.

This means more shunt trips, more breakers, fewer fuses and a computer and data highway to send out trip signal and feed energy data to the computer.

This all sound daunting but with modern technology it is doable + not too expensive.

The alternative is replacing radial distribution with network or loop distribution which will be very expensive, mainly from the huge increase in fault current that comes from double feeding.

The transfer tripping of the D.G. unit applies to protective relay, phase loss, UV + OV, etc, that would trip the feeder breaker.

It is important that very small D.G. units be tightly protected with O.C, UV-OV, phase loss, phase sequence UF-OF relaying. It is this relaying that will get the D.G. unit off the line after the utility feeder has tripped out. and there are no provisions for transfer trip.

It is a safe assumption that when the D.G. unit tries to pick up the load after the feeder breaker trips ~~out~~ it will trip out. The bigger the D.G. unit the less likely this is to happen.

About Insurance - - - -

This does not make sense. It appears to be a delaying/blocking tactic on the part of the utilities and business development tactic on part of the insurance industry.

Insurance is needed when there is hard to control risk. The risk associated with ~~property~~ properly executed D.G. is extremely low.

Money needs to be spent on disconnect switches, and transfer trip equipment, data highway expense etc. That will make D.G. compatible with radial utility distribution, not on insurance premiums.

SINCERELY

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