EB-2010-0131

IN THE MATTER OF the *Ontario Energy Board Act, 1998,* being Schedule B to the *Energy Competition Act, 1998* S.O. 1998, c. 15;

AND IN THE MATTER OF an Application by Horizon Utilities Corporation to the Ontario Energy Board for an Order or Orders approving or fixing just and reasonable rates and other service charges for the distribution of electricity as of January 1, 2011.

HORIZON UTILITIES CORPORATION

RESPONSE TO BOARD STAFF INTERROGATORY #37

DELIVERED JANUARY 28, 2011

PUBLIC UNREDACTED VERSION
PROVIDED PURSUANT TO THE
BOARD'S DECISION ON
CONFIDENTIALITY MAR. 30, 2011
- EB-2010-0131

PUBLIC UNREDACTED VERSION PROVIDED PURSUANT TO THE BOARD'S DECISION ON CONFIDENTIALITY MAR. 30, 2011 - EB-2010-0131

Taki, Hani

From: ryan.boudreau@HydroOne.com
Sent: June 14, 2010 9:05 AM
To: Taki, Hani
Cc: Michael.Yakimchuk@HydroOne.com
Subject: RE: Hydro One Transformer Station Generation Capacity

Hello Hani.

I can answer some of your questions:

1a. For the thermal limit, the main deciding factor is our decision on the maximum reverse flow we are willing to tolerate on the transformer. Minimum load and the predicted operating power factor of the resulting flow are also used to determine the final value.
1b. For the Short Circuit remaining capacity, it is strictly the Transmission System Code limits.

2. The reverse flow limit is based on many factors, some relating to voltage performance, some relating to tap changing equipment, some relating to common practices in other jurisdictions, and some relating to the power transformer configuration. Some studies were performed to evaluate the voltage regulation of the bus at some of our stations for contingency situations. It is a proxy for many different factors, some quantitative, some qualitative.

3. The 60% rule does not apply to all transformers because we have asked our transformer manufacturers to confirm the ability of transformers with dual secondary windings. Those manufacturers have confirmed that some transformers were not built to the same standard and are not able to tolerate the same magnitude of reverse flows.

4. Distribution Transformers: If you are referring to step down transformers such as 27.6kV - 8.32kV, we are applying the 60% rule. If you are referring to poletop transformers supplying a small number of customers, my understanding is that we are limiting the penetration to 20% of the rating of the transformer when that transformer serves more than one customer. I'm not sure what we do when the transformer serves a single customer.

I hope this answers your questions.

Regards,

Ryan Boudreau, P.Eng - Distribution Generation Connections
416-345-6424 - http://www.hydroone.com

From: Michael.Yakimchuk@HydroOne.com [mailto:Michael.Yakimchuk@HydroOne.com]
Sent: June 11, 2010 7:50 AM
To: Taki, Hani
Subject: Re: Hydro One Transformer Station Generation Capacity

Hani, sorry about the delay but I first read your email while on the train and knew it wasn't going to be a 5 minute answer. I realize I should have replied earlier.

Of course I remember meeting you. I do not have the answers to these questions yet but am researching for you and will have something soon.

Cheers,

Mike

PUBLIC UNREDACTED VERSION PROVIDED PURSUANT TO THE BOARD'S DECISION ON CONFIDENTIALITY MAR. 30, 2011 - EB-2010-0131

Taki, Hani

From: Taki, Hani
Sent: May 28, 2009 12:15 PM
To: 'ryan.boudreau@HydroOne.com'
Cc: rob.davidson@HydroOne.com
Subject: RE: DG Capacity Limits

Ryan,

Thanks for the explanation. Is this 60% for one transformer or for the whole station?

Yes, we're looking for additional information to help us come up with limits for our feeders. How did Hydro One come up with the 400 A limit on its distribution feeders? Is this just based on the conductor ampacity and the ability to transfer half of the load to other feeders?

Thanks.

Hani

From: ryan.boudreau@HydroOne.com [mailto:ryan.boudreau@HydroOne.com]
Sent: Thursday, May 28, 2009 8:35 AM
To: Taki, Hani
Cc: rob.davidson@HydroOne.com
Subject: RE: DG Capacity Limits

Hello Hani.

The 60% rule was established quite a while ago after some consultation with university researchers, internal stakeholders, etc etc. The best way I can describe it, is that many people put a lot of thought into it, and found it difficult to come up with a precise number. 60% was the best compromise and became the rule. No other rule in this business has been scrutinized as much as the 60% rule. Most recent conclusions are showing us that this rule can be both conservative AND aggressive. For some transformer types (dual winding secondary) the number may be much too aggressive. For others, it may provide us with a comfortable buffer. This is an ongoing topic for us, and there is not one single person who is an expert on it. What type of discussion are you looking for? Are you looking for additional information so you can come up with your own rules for your own system?

This rule would apply to HONI owned transformers regardless of who owns the feeders. We are not yet prepared to accept more than 60% reverse loading on a two winding transformers to ensure that we can still provide adequate voltage control and thermal rating. We recently learned something about flux in our Dual secondary winding transformers that may be even more restrictive.

Regards,

Ryan Boudreau
Generator Connections Department - Hydro One
416-345-6424

From: Taki, Hani [mailto:hani.taki@horizonutilities.com]
Sent: Wednesday, May 27, 2009 4:28 PM
To: BOUDREAU Ryan