

**FROM:****Filed: March 17, 2008****EB-2007-0050****Exhibit C****Tab 4****Schedule 12****Page 4 of 5****COMMENT:**

The following is a chart derived from HONI Interrogatory Response to Pappas - C-4 - 012. This lists the Conductor Type and Temperature Rating of the 10 existing 230 kV circuits from the Bruce GS, the 4 existing 500 kV circuits and the 2 proposed 500 kV circuits. Please note that the Technical Conference Transcript records that some of these circuits are at their thermal limit. Accordingly, the claim was made that this would limit the use of capacitor enhancements of these circuits. Yet, as the chart shows, HONI has not even considered using superior conductors on the new circuits, let alone considering reconductoring the challenged circuits. As there are conductors, now in use, that have temperature ratings as high as 200 to 250 °C, it is clear that even the choice of conductors for the new circuits is inappropriate. Newer technology has allowed for lighter conductors with greater transmission capacity, 2 to 3 X greater. This means that reconductoring will not necessitate the need for new towers, nor a change in distance between the 2 circuits on existing towers.

**CHART FROM HONI [INTERROGATORY REPLY] CHART.**

|                                                               | Conductor Type, Stranding,<br>Conductors per bundle | Temperature Rating<br>°C |
|---------------------------------------------------------------|-----------------------------------------------------|--------------------------|
| <b>230 KV TRANSMISSION LINE BRUCE TO HANOVER/ORANGEVILLE:</b> |                                                     |                          |
| Bruce x Hanover - B4V & B5V                                   | ACSR, 42/7, 1                                       | 127                      |
| Hanover x Orangeville - B4V & B5V                             | ACSR, 54/19, 1                                      | 104                      |
| <b>230 KV TRANSMISSION LINE BRUCE TO OWEN SOUND:</b>          |                                                     |                          |
| Bruce x Owen Sound - B27S & B28S                              | ACSR, 26/7, 1                                       | 140                      |
| <b>230 KV TRANSMISSION LINE BRUCE TO DETWEILER:</b>           |                                                     |                          |
| Bruce x Seaforth - B22D & B23D                                | ACSR, 54/19, 1                                      | 150                      |
| Seaforth x Detweiler - B22D & B23D                            | ACSR, 26/7, 1                                       | 120                      |
| <b>500 KV TRANSMISSION LINE BRUCE TO MILTON***:</b>           |                                                     |                          |
| Bruce x Milton - B561M                                        |                                                     |                          |
| Section 1                                                     | ACSR, 26/7, 4                                       | 127                      |
| Section 2                                                     | ACSR, 26/7, 4                                       | 127                      |
| Bruce x Milton/Claireville - B560V                            |                                                     |                          |
| Section 1                                                     | ACSR, 26/7, 4                                       | 127                      |
| Section 2                                                     | ACSR, 26/7, 4                                       | 127                      |

| Conductor Type, Stranding,<br>Conductors per bundle | Temperature Rating<br>°C |
|-----------------------------------------------------|--------------------------|
|-----------------------------------------------------|--------------------------|

**500 KV TRANSMISSION LINE BRUCE TO  
LONGWOOD:**

|                          |               |     |
|--------------------------|---------------|-----|
| Bruce x Longwood - B562L |               |     |
| Section 1                | ACSR, 26/7, 4 | 127 |
| Section 2                | ACSR, 26/7, 4 | 104 |
| Section 3                | ACSR, 26/7, 4 | 127 |
| Bruce x Longwood - B563L |               |     |
| Section 1                | ACSR, 26/7, 4 | 127 |
| Section 2                | ACSR, 26/7, 4 | 127 |

**New 500 KV TRANSMISSION LINE Bruce  
TO MILTON:**

|                                |               |     |
|--------------------------------|---------------|-----|
| Bruce x Milton - B566M & B567M | ACSR, 26/7, 4 | 127 |
|--------------------------------|---------------|-----|

**Following, from HONI:**

**Table of Transmission Line Data for Pappas IR #12**

**From EB-2007-0050 Exhibit C Tab 4 Schedule 12 pg 4/5**

**Please click on view > rotate > clockwise and then zoom to 125 % for  
easier viewing of the following page.**

Table of Transmission Line Data for  
Pappas IR #12

| Line                                                          | In Service Date | Firm Capacity<br>+<br>Amperes | Capacity<br>(MW) ** | Avg<br>Loading<br>(2007)<br>**** | Max Loading (2007) ***** | Length<br>km            | Conductor Type,<br>Stranding,<br>Conductors per<br>bundle | Conductor<br>Size<br>(diameter)<br>m | Conductor Cross<br>Section Area<br>cmil | Conductor Cross<br>Section Area<br>m <sup>2</sup> | Temperature<br>Rating<br>°C | Conductor<br>Resistance<br>Ω | Conductor<br>Resistance<br>(R/Length)<br>Ω/km | Conductor<br>Resistivity (ρ)<br>Ω-m |
|---------------------------------------------------------------|-----------------|-------------------------------|---------------------|----------------------------------|--------------------------|-------------------------|-----------------------------------------------------------|--------------------------------------|-----------------------------------------|---------------------------------------------------|-----------------------------|------------------------------|-----------------------------------------------|-------------------------------------|
| <b>230 KV TRANSMISSION LINE BRUCE TO HANOVER/ORANGEVILLE:</b> |                 |                               |                     | Total of both circuits           |                          |                         |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Bruce x Hanover - B4V & B5V                                   | 26-Nov-63       | 1019                          | 423                 | 284                              | 452                      | 46                      | ACSR, 42/7.1                                              | 0.02870854                           | 1277.5                                  | 0.0006473                                         | 127                         | 2.5975                       | 0.053873                                      | 3.487E-08                           |
| Hanover x Orangeville - B4V & B5V                             | 10-Dec-61       | 991                           | 412                 | 287                              | 378                      | 77                      | ACSR, 54/19, 1                                            | 0.02773703                           | 1192.5                                  | 0.0006042                                         | 104                         | 4.3488                       | 0.056296                                      | 3.402E-08                           |
| <b>OWEN SOUND:</b>                                            |                 |                               |                     |                                  |                          |                         |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Bruce x Owen Sound - B27S & B28S                              | 31-Oct-77       | 860                           | 357                 | 273                              | 175                      | 230 (B27S) & 180 (B28S) | ACSR, 26/7.1                                              | 0.02453023                           | 932.7                                   | 0.0004726                                         | 140                         | 4.7902                       | 0.069594                                      | 3.289E-08                           |
| <b>230 KV TRANSMISSION LINE BRUCE TO DETWEILER:</b>           |                 |                               |                     |                                  |                          |                         |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Bruce x Seaforth - B22D & B23D                                | 11-Oct-75       | 991                           | 412                 | 278                              | 374                      | 355 (B22D) & 355 (B23D) | ACSR, 54/19, 1                                            | 0.02773703                           | 1192.5                                  | 0.0006042                                         | 150                         | 6.2305                       | 0.056296                                      | 3.402E-08                           |
| Seaforth x Detweiler - B22D & B23D                            | 20-Nov-70       | 860                           | 357                 | 274                              | 135                      | 163 (B22D) & 156 (B23D) | ACSR, 26/7.1                                              | 0.02453023                           | 932.7                                   | 0.0004726                                         | 120                         | 5.6436                       | 0.069594                                      | 3.289E-08                           |
| <b>500 KV TRANSMISSION LINE BRUCE TO MILTON****:</b>          |                 |                               |                     |                                  |                          |                         |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Bruce x Milton - B561M                                        | 1-Apr-83        | 2636                          | 2442                | 2040                             | 2051                     | 1655 (B561M)            | -                                                         | -                                    | -                                       | -                                                 | -                           | -                            | -                                             | -                                   |
| Section 1                                                     |                 |                               |                     |                                  |                          | 176                     | ACSR, 26/7.4                                              | 0.02453023                           | 932.7                                   | 0.0004726                                         | 127                         | 1.2724                       | 0.069594                                      | 3.289E-08                           |
| Section 2                                                     |                 |                               |                     |                                  |                          | 158                     | ACSR, 26/7.4                                              | 0.01942713                           | 585                                     | 0.0002964                                         | 127                         | 17.3424                      | 0.110045                                      | 3.262E-08                           |
| Bruce x Milton/Claireville - B560V                            | 1-Oct-94        | 2636                          | 2442                |                                  |                          | 1525 (B560V)            |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Section 1                                                     |                 |                               |                     |                                  |                          | 209                     | ACSR, 26/7.4                                              | 0.02284719                           | 795                                     | 0.0004028                                         | 127                         | 0.2112                       | 0.080033                                      | 3.224E-08                           |
| Section 2                                                     |                 |                               |                     |                                  |                          | 206                     | ACSR, 26/7.4                                              | 0.01942713                           | 585                                     | 0.0002964                                         | 127                         | 22.7161                      | 0.110045                                      | 3.262E-08                           |
| <b>500 KV TRANSMISSION LINE BRUCE TO LONGWOOD:</b>            |                 |                               |                     |                                  |                          |                         |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Bruce x Longwood - B562L                                      | 26-Nov-90       | 2636                          | 2442                | 2038                             | 1103                     | 995 (B562L)             |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Section 1                                                     |                 |                               |                     |                                  |                          | 189                     | ACSR, 26/7.4                                              | 0.02284719                           | 795                                     | 0.0004028                                         | 127                         | 0.2241                       | 0.080033                                      | 3.224E-08                           |
| Section 2                                                     |                 |                               |                     |                                  |                          | 15                      | ACSR, 26/7.4                                              | 0.02453023                           | 932.7                                   | 0.0004726                                         | 104                         | 1.0775                       | 0.069594                                      | 3.289E-08                           |
| Section 3                                                     |                 |                               |                     |                                  |                          | 171                     | ACSR, 26/7.4                                              | 0.01942713                           | 585                                     | 0.0002964                                         | 127                         | 18.7673                      | 0.110045                                      | 3.262E-08                           |
| Bruce x Longwood - B563L                                      | 26-Nov-90       | 2636                          | 2442                |                                  |                          | 1020 (B563L)            |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Section 1                                                     |                 |                               |                     |                                  |                          | 189                     | ACSR, 26/7.4                                              | 0.02453023                           | 932.7                                   | 0.0004726                                         | 127                         | 0.1949                       | 0.069594                                      | 3.289E-08                           |
| Section 2                                                     |                 |                               |                     |                                  |                          | 186                     | ACSR, 26/7.4                                              | 0.01942713                           | 585                                     | 0.0002964                                         | 127                         | 20.4684                      | 0.110045                                      | 3.262E-08                           |
| <b>New 500 KV TRANSMISSION LINE BRUCE TO MILTON:</b>          |                 |                               |                     |                                  |                          |                         |                                                           |                                      |                                         |                                                   |                             |                              |                                               |                                     |
| Bruce x Milton - B566M & B567M                                |                 | 2636                          | 2443                | 2040                             | -                        | -                       | ACSR, 26/7.4                                              | 0.01942713                           | 585                                     | 0.0002964                                         | 127                         | 19.3544                      | 0.110045                                      | 3.262E-08                           |

\* The MW are calculated from the Ampere capacity assuming the appropriate voltage of 120 kV, 240 kV or 535 kV at a power factor of 0.9.  
Firm Capacity means the capacity available on that line assuming that one of the two circuits is out of service.

\*\* Capacity means the power that can be transmitted along the line without requiring additional voltage support from other sources. This number is also known as the Surge Impedance Loading (SIL). The SIL can be increased by adding shunt or series compensation. A shunt capacitor bank is an example of shunt compensation. Although it is possible to reliability transmit power along the line in excess of the SIL, the voltage performance suffers. For a transmission path of about the length of the circuits in the Bruce area, exceeding SIL by more than 50% is not realistic unless a large amount of compensation is provided.

\*\*\* When this line was first placed into service in 1983, both circuits went to Milton SS and the two circuits were known as B560M and B561M.  
On October 1, 1994, the B560M circuit was reconfigured at Milton SS to bypass Milton SS and terminated instead at Claireville TS. It was renamed to B560V to reflect the change in termination. This change increased the length by 33 km. The capacity and capability of the line did not change as a result.

A portion of the Bruce x Milton line was initially placed into service in 1979 and operated at 230 kV in order to provide some additional transmission capacity before the construction of the line at the Milton end was completed. The portion that was so connected went from Bruce to Belwood Junction where it was connected to the 230 kV circuits D6V & D7V, Detweiler x Orangeville.

\*\*\*\* Power: Average Non-peak Transmitted MW is not readily available. Average 2007 loading is provided instead which encompasses on- and off-peak.

\*\*\*\*\* Power: MW During Provincial Demand of 29000 MW is not available.