Attachment F: Transient Stability Analysis

# F-1 Contingency List and Fault Clearing Times

F-1-1: Category B Contingencies and Fault Clearing Times

| Continuous                                   |                    | Clearing Tin | ne (Cycles) |
|--|--------------------|--------------|-------------|
| Contingency                                  | Fault Location     | Near End     | Far End     |
|  | Red Deer 63S       | 5.5          | 5.5         |
| 900L (Benalto 17S to Red Deer 63S)           | Benalto 17S        | 5.5          | 5.5         |
|  | Saunders Lake 289S | 5            | 6           |
| 910L (Saunders Lake 289S to Wolf Creek 288S) | Wolf Creek 288S    | 5            | 6           |
|  | Nevis 766S         | 5.5          | 5.5         |
| 912L (Nevis 766S to Red Deer 63S)            | Red Deer 63S       | 5.5          | 5.5         |
|  | Bigstone 86S       | 5.5          | 5.5         |
| 914L1 (Bigstone 86S to Gaetz 87S)            | Gaetz 87S          | 5.5          | 5.5         |
|  | Gaetz 87S          | 5.5          | 5.5         |
| 914L2 (Red Deer 63S to Gaetz 87S)            | Red Deer 63        | 5.5          | 5.5         |
|  | Tinchebray 972S    | 5            | 6           |
| 9L16 (Tinchebray 972S to Cordel 755S)        | Cordel 755S        | 5            | 6           |
|  | Nevis 766S         | 5            | 6           |
| 9L20 (Nevis 766S to Cordel 755S)             | Cordell 755S       | 5            | 6           |
|  | Red Deer 63S       | 5.5          | 5.5         |
| 925L (Red Deer 63S to Janet 74S)             | Janet 74S          | 5.5          | 5.5         |
|  | Janet 74S          | 5.5          | 5.5         |
| 929L (Janet 74S to Hazelwood 287S)           | Hazelwood 287S     | 5.5          | 5.5         |
|  | Cassils 324S       | 5            | 6           |
| 935L (Cassils 324S to Milo 356S)             | Milo 356S          | 5            | 6           |
|  | Ware Junction 132S | 6.25         | 7.25        |
| 944L (Ware Junction 132S to Jenner 275S)     | Jenner 275S        | 6.25         | 7.25        |
|  | New Bridgen        | 5            | 6           |
| 9L46 (New Bridgen to Lanfine 959S)           | Lanfine 959S       | 5            | 6           |
|  | New Bridgen        | 5            | 6           |
| 9L51 (New Bridgen to Pemukan 932S)           | Pemukan 932S       | 5            | 6           |
|  | Tinchebray 972S    | 5            | 6           |
| 9L59 (Tinchebray 972S to Anderson 801S)      | Anderson 801S      | 5            | 6           |
|  | Jenner 275S        | 5            | 6           |
| 1002L (Jenner 275S to Dome Empress 163S)     | Dome Empress 163S  | 5            | 6           |
|  | Bowmanton 244S     | 5            | 6           |
| 1034L (Cassils 324S to Bowmanton 244S)       | Cassils 324S       | 5            | 6           |
|  | Tinchebray 972S    | 5            | 6           |
| CETO1 (Tinchebray 972S to Gaetz 87S)         | Gaetz 87S          | 5            | 6           |
|  | Tinchebray 972S    | 5            | 6           |
| CETO2 (Tinchebray 972S to Gaetz 87S)         | Gaetz 87S          | 5            | 6           |

| Continuous  | Fault Location | Clearing Time (Cycles) |         |
|-------------|----------------|------------------------|---------|
| Contingency | Fault Location | Near End               | Far End |
| EATL        | Newell 2075S   | 5                      | 5       |
| WATL        | Crossings 511S | 5                      | 5       |

### F-1-2 : Select Category C5 Contingencies and Fault Clearing Times

| C5 Contingency   | Fault Location     | Clearing Time (Cycles) |          |
|--|--------------------|------------------------|----------|
| Co Contingency Fault Location  |                    | Far End                | Near End |
| 923L (Milo to Newell) and<br>935L (Cassils 324S to Milo 356S) *                                | Milo 356S          | 5                      | 6        |
| 925L (Red Deer 63S to Janet 74S) and<br>929L (Janet 74S to Hazelwood 287S)                     | Janet 74S          | 5.5                    | 6.5      |
| 910L (Saunders Lake 289S to Wolf Creek 288S) and 914L (Saunders Lake 289S to Bigstone 86S)     | Saunders Lake 289S | 5.5                    | 6.5      |
| 933L (Anderson 801S to Ware Junction 132S) and 934L (Anderson 801S to Ware Junction 132S)      | Anderson 801S      | 5                      | 6        |
| 924L (Langdon 102S to Milo 356S) and 927L (Langdon 102S to Milo 356S)                          | Milo 356S          | 5                      | 6        |
| 931L (West Brooks 28S to Ware Junction 132S) and 1075L (West Brooks 28S to Ware Junction 132S) | West Brooks 28S    | 6.25                   | 7.25     |
| CETO 1 (Gaetz 87S to Tinchebray 972S) and CETO 2 (Gaetz 87S to Tinchebray 972S)                | Gaetz 87S          | 5                      | 6        |

<sup>\*</sup>Contingency triggers EATL curtailment RAS

## F-2 Transient Stability Analysis Results Summary

### F-2-1 2023 Pre-Development Transmission System

Table F-2-1: Transient Stability Results under Category B Contingencies—Pre-Development in 2023

| Contingency                              | Fault Location        | Fault Type                           | Transient<br>Stability |
|--|-----------------------|--------------------------------------|------------------------|
| 910L (Saunders Lake 289S to Wolf Creek   | Saunders Lake<br>289S | Three Phase to Ground                | Stable                 |
| 288S)                                    | Wolf Creek 288S       | Three Phase to Ground                | Stable                 |
| 912L (Nevis 766S to Red Deer 63S)        | Nevis 766S            | Three Phase to<br>Ground             | Stable                 |
| (1010 1000 10 100 200 10 100 200 1000)   | Red Deer 63S          | Three Phase to<br>Ground             | Stable                 |
| 914L1 (Bigstone 86S to Gaetz 87S)        | Bigstone 86S          | Three Phase to Ground                | Stable                 |
|  | Gaetz 87S             | Three Phase to<br>Ground             | Stable                 |
| 914L2 (Red Deer 63S to Gaetz 87S)        | Gaetz 87S             | Three Phase to<br>Ground             | Stable                 |
|  | Red Deer 63S          | Three Phase to<br>Ground             | Stable                 |
| 9L16 (Tinchebray 972S to Cordel 755S)    | Tinchebray 972S       | Three Phase to<br>Ground             | Stable                 |
|  | Cordel 755S           | Three Phase to Ground                | Stable                 |
| 9L20 (Nevis 766S to Cordel 755S)         | Nevis 766S            | Three Phase to Ground                | Stable                 |
| ,  | Cordell 755S          | Three Phase to Ground                | Stable                 |
| 925L (Red Deer 63S to Janet 74S)         | Red Deer 63S          | Three Phase to Ground                | Stable                 |
| ,  | Janet 74S             | Three Phase to Ground                | Stable                 |
| 929L (Janet 74S to Hazelwood 287S)       | Janet 74S             | Three Phase to<br>Ground             | Stable                 |
| ,  | Hazelwood 287S        | Three Phase to<br>Ground             | Stable                 |
| 935L (Cassils 324S to Milo 356S)         | Cassils 324S          | Three Phase to Ground Three Phase to | Stable                 |
|  | Milo 356S             | Ground                               | Stable                 |
| 944L (Ware Junction 132S to Jenner 275S) | Ware Junction 132S    | Three Phase to Ground                | Stable                 |
| ,  | Jenner 275S           | Three Phase to Ground                | Stable                 |
| 9L46 (New Bridgen to Lanfine 959S)       | New Bridgen           | Three Phase to Ground                | Stable                 |
| ,  | Lanfine 959S          | Three Phase to<br>Ground             | Stable                 |
| 9L51 (New Bridgen to Pemukan 932S)       | New Bridgen           | Three Phase to Ground                | Stable                 |

| Contingency                              | Fault Location       | Fault Type            | Transient<br>Stability |
|--|----------------------|-----------------------|------------------------|
|  | Pemukan 932S         | Three Phase to Ground | Stable                 |
| OL 50 /Tinchohray 072S to Andorson 901S) | Tinchebray 972S      | Three Phase to Ground | Stable                 |
| 9L59 (Tinchebray 972S to Anderson 801S)  | Anderson 801S        | Three Phase to Ground | Stable                 |
| 1002L (Jenner 275S to Dome Empress 163S) | Jenner 275S          | Three Phase to Ground | Stable                 |
|  | Dome Empress<br>163S | Three Phase to Ground | Stable                 |
| 1034L (Cassils 324S to Bowmanton 244S)   | Bowmanton 244S       | Three Phase to Ground | Stable                 |
| 1034E (Gassiis 3243 to Bowillanton 2443) | Cassils 324S         | Three Phase to Ground | Stable                 |
| EATL                                     | Newell 2075S         | Three Phase to Ground | Stable                 |
| WATL                                     | Crossings 511S       | Three Phase to Ground | Stable                 |

Table F-2-2 Transient Stability Results under Category C5 Contingencies -Pre Development in 2023

| Contingency   | Fault Location        | Fault Type            | Transient<br>Stability |
|---|-----------------------|-----------------------|------------------------|
| 923L (Milo to Newell) and<br>935L (Cassils 324S to Milo 356S)   | Milo 356S             | Three Phase to Ground | Stable                 |
| 925L (Red Deer 63S to Janet 74S) and 929L (Janet 74S to Hazelwood 287S)                                 | Janet 74S             | Three Phase to Ground | Stable                 |
| 910L (Saunders Lake 289S to Wolf Creek 288S)<br>and<br>914L (Saunders Lake 289S to Bigstone 86S)        | Saunders Lake<br>289S | Three Phase to Ground | Stable                 |
| 933L (Anderson 801S to Ware Junction 132S)<br>and<br>934L (Anderson 801S to Ware Junction 132S)         | Anderson 801S         | Three Phase to Ground | Stable                 |
| 924L (Langdon 102S to Milo 356S) and 927L (Langdon 102S to Milo 356S)                                   | Milo 356S             | Three Phase to Ground | Stable                 |
| 931L (West Brooks 28S to Ware Junction 132S)<br>and<br>1075L (West Brooks 28S to Ware Junction<br>132S) | West Brooks 28S       | Three Phase to Ground | Stable                 |

### F-2-2 2031 Pre-Development Transmission System

Table F-2-3: Transient Stability Results under Category B Contingencies—Pre- Development System in 2031

| Contingency  | Fault Location        | Fault Type               | Transient<br>Stability |
|--|-----------------------|--------------------------|------------------------|
| 910L (Saunders Lake 289S to Wolf Creek   | Saunders Lake<br>289S | Three Phase to Ground    | Stable                 |
| 288S)  | Wolf Creek 288S       | Three Phase to Ground    | Stable                 |
| 912L (Nevis 766S to Red Deer 63S)  | Nevis 766S            | Three Phase to Ground    | Stable                 |
| TABLE (NEVIS 7000 to New Deer 000)   | Red Deer 63S          | Three Phase to<br>Ground | Stable                 |
| 914L1 (Bigstone 86S to Gaetz 87S)  | Bigstone 86S          | Three Phase to Ground    | Stable                 |
|  | Gaetz 87S             | Three Phase to Ground    | Stable                 |
| 914L2 (Red Deer 63S to Gaetz 87S)  | Gaetz 87S             | Three Phase to Ground    | Stable                 |
|  | Red Deer 63S          | Three Phase to Ground    | Stable                 |
| 9L16 (Tinchebray 972S to Cordel 755S)  | Tinchebray 972S       | Three Phase to<br>Ground | Stable                 |
|  | Cordel 755S           | Three Phase to Ground    | Stable                 |
| 9L20 (Nevis 766S to Cordel 755S)   | Nevis 766S            | Three Phase to Ground    | Stable                 |
| ,  | Cordell 755S          | Three Phase to Ground    | Stable                 |
| 925L (Red Deer 63S to Janet 74S)   | Red Deer 63S          | Three Phase to Ground    | Stable                 |
| ,  | Janet 74S             | Three Phase to Ground    | Stable                 |
| 929L (Janet 74S to Hazelwood 287S)   | Janet 74S             | Three Phase to Ground    | Stable                 |
| ,  | Hazelwood 287S        | Three Phase to Ground    | Stable                 |
| 935L (Cassils 324S to Milo 356S)   | Cassils 324S          | Three Phase to Ground    | Stable                 |
| (  | Milo 356S             | Three Phase to Ground    | Stable                 |
| 944L (Ware Junction 132S to Jenner 275S)   | Ware Junction 132S    | Three Phase to Ground    | Stable                 |
| The control of the co | Jenner 275S           | Three Phase to Ground    | Stable                 |
| 9L46 (New Bridgen to Lanfine 959S)   | New Bridgen           | Three Phase to Ground    | Stable                 |
| SETO (New Emager) to Earline 3555)   | Lanfine 959S          | Three Phase to Ground    | Stable                 |
|  | New Bridgen           | Three Phase to Ground    | Stable                 |
| 9L51 (New Bridgen to Pemukan 932S)   | Pemukan 932S          | Three Phase to Ground    | Stable                 |
|  | Tinchebray 972S       | Three Phase to Ground    | Stable                 |

| Contingency                               | Fault Location       | Fault Type            | Transient<br>Stability |
|---|----------------------|-----------------------|------------------------|
| 9L59 (Tinchebray 972S to Anderson 801S)   | Anderson 801S        | Three Phase to Ground | Stable                 |
| 1002L ( Jappar 275S to Domo Emproce 162S) | Jenner 275S          | Three Phase to Ground | Stable                 |
| 1002L (Jenner 275S to Dome Empress 163S)  | Dome Empress<br>163S | Three Phase to Ground | Stable                 |
| 1034L (Cassils 324S to Bowmanton 244S)    | Bowmanton 244S       | Three Phase to Ground | Stable                 |
| 1034L (Cassiis 3243 to Bowillanton 2443)  | Cassils 324S         | Three Phase to Ground | Stable                 |
| EATL                                      | Newell 2075S         | Three Phase to Ground | Stable                 |
| WATL                                      | Crossings 511S       | Three Phase to Ground | Stable                 |

Table F-2-4: Transient Stability Results under Category C5 Contingencies – Pre-Development System in 2031

| Contingency   | Fault Location        | Fault Type               | Transient<br>Stability |
|---|-----------------------|--------------------------|------------------------|
| 923L (Milo to Newell) and<br>935L (Cassils 324S to Milo 356S)   | Milo 356S             | Three Phase to Ground    | Stable                 |
| 925L (Red Deer 63S to Janet 74S) and 929L (Janet 74S to Hazelwood 287S)                                 | Janet 74S             | Three Phase to Ground    | Stable                 |
| 910L (Saunders Lake 289S to Wolf Creek 288S)<br>and<br>914L (Saunders Lake 289S to Bigstone 86S)        | Saunders Lake<br>289S | Three Phase to Ground    | Stable                 |
| 933L (Anderson 801S to Ware Junction 132S)<br>and<br>934L (Anderson 801S to Ware Junction 132S)         | Anderson 801S         | Three Phase to Ground    | Stable                 |
| 924L (Langdon 102S to Milo 356S) and 927L (Langdon 102S to Milo 356S)                                   | Milo 356S             | Three Phase to Ground    | Stable                 |
| 931L (West Brooks 28S to Ware Junction 132S)<br>and<br>1075L (West Brooks 28S to Ware Junction<br>132S) | West Brooks 28S       | Three Phase to<br>Ground | Stable                 |

#### F-2-3 2023 Post CETO First Circuit and CRPC

Table F-2-5: Transient Stability Results under Category B Contingencies - CETO First Circuit and CRPC in 2023

| Contingency                            | Fault Location        | Fault Type            | Transient<br>Stability |
|--|-----------------------|-----------------------|------------------------|
| 910L (Saunders Lake 289S to Wolf Creek | Saunders Lake<br>289S | Three Phase to Ground | Stable                 |
| 288S)                                  | Wolf Creek 288S       | Three Phase to Ground | Stable                 |
| 912L (Nevis 766S to Red Deer 63S)      | Nevis 766S            | Three Phase to Ground | Stable                 |
|  | Red Deer 63S          | Three Phase to Ground | Stable                 |
| 914L1 (Bigstone 86S to Gaetz 87S)      | Bigstone 86S          | Three Phase to Ground | Stable                 |

| Contingency                              | Fault Location            | Fault Type                           | Transient<br>Stability |
|--|---------------------------|--------------------------------------|------------------------|
|  | Gaetz 87S                 | Three Phase to Ground                | Stable                 |
|  | Gaetz 87S                 | Three Phase to Ground                | Stable                 |
| 914L2 (Red Deer 63S to Gaetz 87S)        | Red Deer 63S              | Three Phase to Ground                | Stable                 |
| 0140 (T; 1 1 0700 t 0 117550)            | Tinchebray 972S           | Three Phase to Ground                | Stable                 |
| 9L16 (Tinchebray 972S to Cordel 755S)    | Cordel 755S               | Three Phase to Ground                | Stable                 |
| 01.20 (Novic 7669 to Cordol 7559)        | Nevis 766S                | Three Phase to Ground                | Stable                 |
| 9L20 (Nevis 766S to Cordel 755S)         | Cordell 755S              | Three Phase to Ground                | Stable                 |
| 925L (Red Deer 63S to Janet 74S)         | Red Deer 63S              | Three Phase to Ground Three Phase to | Stable                 |
| Total Door Goo to Garlot (140)           | Janet 74S                 | Ground Three Phase to                | Stable                 |
| 929L (Janet 74S to Hazelwood 287S)       | Janet 74S                 | Ground Three Phase to                | Stable                 |
| 0202 (Gallot 7 10 to Flazolwood 2010)    | Hazelwood 287S            | Ground Three Phase to                | Stable                 |
| 935L (Cassils 324S to Milo 356S)         | Cassils 324S              | Ground Three Phase to                | Stable                 |
| (000010 02 10 to 11110 0000)             | Milo 356S                 | Ground Three Phase to                | Stable                 |
| 944L (Ware Junction 132S to Jenner 275S) | Ware Junction 132S        | Ground Three Phase to                | Stable                 |
|  | Jenner 275S               | Ground Three Phase to                | Stable                 |
| 9L46 (New Bridgen to Lanfine 959S)       | New Bridgen               | Ground Three Phase to                | Stable                 |
| (  | Lanfine 959S              | Ground Three Phase to                | Stable                 |
| 9L51 (New Bridgen to Pemukan 932S)       | New Bridgen               | Ground Three Phase to                | Stable                 |
|  | Pemukan 932S              | Ground Three Phase to                | Stable                 |
| 9L59 (Tinchebray 972S to Anderson 801S)  | Tinchebray 972S           | Ground Three Phase to                | Stable                 |
|  | Anderson 801S             | Ground Three Phase to                | Stable                 |
| 1002L (Jenner 275S to Dome Empress 163S) | Jenner 275S  Dome Empress | Ground Three Phase to                | Stable                 |
| ,  | 163S                      | Ground Three Phase to                | Stable                 |
|  | Bowmanton 244S            | Ground Three Phase to                | Stable                 |
| 1034L (Cassils 324S to Bowmanton 244S)   | Cassils 324S              | Ground Three Phase to                | Stable                 |
| CETO1 (Tinchebray 972S to Gaetz 87S)     | Tinchebray 972S           | Ground Three Phase to                | Stable                 |
|  | Gaetz 87S                 | Ground Three Phase to                | Stable                 |
| EATL                                     | Newell 2075S              | Ground Three Phase to                | Stable                 |
| WATL                                     | Crossings 511S            | Ground                               | Stable                 |

Table F-2-6 Transient Stability Results under Category C5 Contingencies - CETO First Circuit and CRPC in 2023

| Contingency                                   | Fault Location  | Fault Type     | Transient<br>Stability |
|---|-----------------|----------------|------------------------|
| 923L (Milo to Newell) and                     |                 | Three Phase to |                        |
| 935L (Cassils 324S to Milo 356S)              | Milo 356S       | Ground         | Stable                 |
| 925L (Red Deer 63S to Janet 74S) and          |                 | Three Phase to |                        |
| 929L (Janet 74S to Hazelwood 287S)            | Janet 74S       | Ground         | Stable                 |
| 910L (Saunders Lake 289S to Wolf Creek 288S)  |                 | Three Phase to |                        |
| and   | Saunders Lake   | Ground         | Stable                 |
| 914L (Saunders Lake 289S to Bigstone 86S)     | 289S            |                |                        |
| 933L (Anderson 801S to Ware Junction 132S)    |                 | Three Phase to |                        |
| and   |                 | Ground         | Stable                 |
| 934L (Anderson 801S to Ware Junction 132S)    | Anderson 801S   |                |                        |
| 924L (Langdon 102S to Milo 356S) and          |                 | Three Phase to |                        |
| 927L (Langdon 102S to Milo 356S)              | Milo 356S       | Ground         | Stable                 |
| 931L (West Brooks 28S to Ware Junction 132S)  |                 | Three Phase to |                        |
| and   | West Brooks 28S | Ground         | Stable                 |
| 1075L (West Brooks 28S to Ware Junction 132S) |                 |                |                        |

#### F-2-4 2031 Post CETO First Circuit and CRPC

Table F-2-7: Transient Stability Results under Category B Contingencies - CETO First Circuit and CRPC 2031

| Contingency                            | Fault Location  | Fault Type            | Transient<br>Stability |
|--|-----------------|-----------------------|------------------------|
| 0401 (Soundary Lake 2005 to Welf Creek | Saunders Lake   | Three Phase to        | Stable                 |
| 910L (Saunders Lake 289S to Wolf Creek | 289S            | Ground                | Stable                 |
| 288S)                                  | Wolf Creek 288S | Three Phase to Ground | Stable                 |
|  |                 | Three Phase to        |                        |
|  | Nevis 766S      | Ground                | Stable                 |
| 912L (Nevis 766S to Red Deer 63S)      |                 | Three Phase to        |                        |
|  | Red Deer 63S    | Ground                | Stable                 |
|  |                 | Three Phase to        |                        |
|  | Bigstone 86S    | Ground                | Stable                 |
| 914L1 (Bigstone 86S to Gaetz 87S)      |                 | Three Phase to        |                        |
|  | Gaetz 87S       | Ground                | Stable                 |
|  |                 | Three Phase to        |                        |
|  | Gaetz 87S       | Ground                | Stable                 |
|  |                 | Three Phase to        |                        |
| 914L2 (Red Deer 63S to Gaetz 87S)      | Red Deer 63S    | Ground                | Stable                 |
|  |                 | Three Phase to        |                        |
|  | Tinchebray 972S | Ground                | Stable                 |
| 9L16 (Tinchebray 972S to Cordel 755S)  |                 | Three Phase to        |                        |
|  | Cordel 755S     | Ground                | Stable                 |
|  |                 | Three Phase to        |                        |
| 01.00 (1) . 7000 ( 0 1.17550)          | Nevis 766S      | Ground                | Stable                 |
| 9L20 (Nevis 766S to Cordel 755S)       |                 | Three Phase to        |                        |
|  | Cordell 755S    | Ground                | Stable                 |
| 0051 (B. LB. 0004   4.740)             | D 1D 000        | Three Phase to        | 0.11                   |
| 925L (Red Deer 63S to Janet 74S)       | Red Deer 63S    | Ground                | Stable                 |

| Contingency                              | Fault Location              | Fault Type                           | Transient<br>Stability |
|--|-----------------------------|--------------------------------------|------------------------|
|  | Janet 74S                   | Three Phase to<br>Ground             | Stable                 |
|  | Janet 74S                   | Three Phase to Ground                | Stable                 |
| 929L (Janet 74S to Hazelwood 287S)       | Hazelwood 287S              | Three Phase to Ground                | Stable                 |
| 935L (Cassils 324S to Milo 356S)         | Cassils 324S                | Three Phase to Ground                | Stable                 |
| 930L (Cassiis 3243 to Willo 3303)        | Milo 356S                   | Three Phase to Ground                | Stable                 |
| 944L (Ware Junction 132S to Jenner 275S) | Ware Junction 132S          | Three Phase to Ground Three Phase to | Stable                 |
| THE (Wate building 1020 to beinie 2700)  | Jenner 275S                 | Ground Three Phase to                | Stable                 |
| 9L46 (New Bridgen to Lanfine 959S)       | New Bridgen                 | Ground Three Phase to                | Stable                 |
| at to (Non Bridger to Earling coop)      | Lanfine 959S                | Ground Three Phase to                | Stable                 |
| 9L51 (New Bridgen to Pemukan 932S)       | New Bridgen                 | Ground Three Phase to                | Stable                 |
| · · · · · · · · · · · · · · · · ·        | Pemukan 932S                | Ground Three Phase to                | Stable                 |
| 9L59 (Tinchebray 972S to Anderson 801S)  | Tinchebray 972S             | Ground Three Phase to                | Stable                 |
|  | Anderson 801S               | Ground Three Phase to                | Stable                 |
| 1002L (Jenner 275S to Dome Empress 163S) | Jenner 275S<br>Dome Empress | Ground Three Phase to                | Stable                 |
|  | 163S                        | Ground Three Phase to                | Stable                 |
| 1034L (Cassils 324S to Bowmanton 244S)   | Bowmanton 244S              | Ground Three Phase to                | Stable                 |
|  | Cassils 324S                | Ground Three Phase to                | Stable                 |
| CETO1 (Tinchebray 972S to Gaetz 87S)     | Tinchebray 972S             | Ground Three Phase to                | Stable                 |
| EATL                                     | Gaetz 87S<br>Newell 2075S   | Ground Three Phase to                | Stable<br>Stable       |
| WATL                                     | Crossings 511S              | Ground Three Phase to                | Stable                 |
|  |                             | Ground                               | Otable                 |

Table F-2-8: Transient Stability Results under Category C5 Contingencies - CETO First Circuit and CRPC in 2031

| Contingency  | Fault Location        | Fault Type            | Transient<br>Stability |
|--|-----------------------|-----------------------|------------------------|
| 923L (Milo to Newell) and<br>935L (Cassils 324S to Milo 356S)                                    | Milo 356S             | Three Phase to Ground | Stable                 |
| 925L (Red Deer 63S to Janet 74S) and<br>929L (Janet 74S to Hazelwood 287S)                       | Janet 74S             | Three Phase to Ground | Stable                 |
| 910L (Saunders Lake 289S to Wolf Creek 288S)<br>and<br>914L (Saunders Lake 289S to Bigstone 86S) | Saunders Lake<br>289S | Three Phase to Ground | Stable                 |

| Contingency   | Fault Location  | Fault Type               | Transient<br>Stability |
|---|-----------------|--------------------------|------------------------|
| 933L (Anderson 801S to Ware Junction 132S)<br>and<br>934L (Anderson 801S to Ware Junction 132S)         | Anderson 801S   | Three Phase to<br>Ground | Stable                 |
| 924L (Langdon 102S to Milo 356S) and 927L (Langdon 102S to Milo 356S)                                   | Milo 356S       | Three Phase to Ground    | Stable                 |
| 931L (West Brooks 28S to Ware Junction 132S)<br>and<br>1075L (West Brooks 28S to Ware Junction<br>132S) | West Brooks 28S | Three Phase to<br>Ground | Stable                 |

#### F-2-5 2023 Post CETO Both Circuits and CRPC

Table F-2-9: Transient Stability Results under Category B Contingencies - CETO Both Circuits and CRPC in 2023

| Contingency   | Fault Location        | Fault Type               | Transient<br>Stability |
|---|-----------------------|--------------------------|------------------------|
| 910L (Saunders Lake 289S to Wolf Creek                | Saunders Lake<br>289S | Three Phase to Ground    | Stable                 |
| 288S)   | Wolf Creek 288S       | Three Phase to Ground    | Stable                 |
| 0.401 (14. 1. 7000 ( . 7. 1. 1. 000)                  | Nevis 766S            | Three Phase to Ground    | Stable                 |
| 912L (Nevis 766S to Red Deer 63S)                     | Red Deer 63S          | Three Phase to Ground    | Stable                 |
| 04414 (P: + 000+ 0 + 070)                             | Bigstone 86S          | Three Phase to Ground    | Stable                 |
| 914L1 (Bigstone 86S to Gaetz 87S)                     | Gaetz 87S             | Three Phase to Ground    | Stable                 |
| 0.4.4.0.4.0.4.0.4.0.4.0.4.0.7.0.4.0.7.0.4.0.7.0.4.0.4 | Gaetz 87S             | Three Phase to Ground    | Stable                 |
| 914L2 (Red Deer 63S to Gaetz 87S)                     | Red Deer 63S          | Three Phase to Ground    | Stable                 |
| 0140 (T: 1 1 0700 + 0 117550)                         | Tinchebray 972S       | Three Phase to Ground    | Stable                 |
| 9L16 (Tinchebray 972S to Cordel 755S)                 | Cordel 755S           | Three Phase to Ground    | Stable                 |
| 01 00 (Navia 7000 ta Oandal 7550)                     | Nevis 766S            | Three Phase to<br>Ground | Stable                 |
| 9L20 (Nevis 766S to Cordel 755S)                      | Cordell 755S          | Three Phase to Ground    | Stable                 |
| 0051 (Dad Daar 000 to Janet 740)                      | Red Deer 63S          | Three Phase to Ground    | Stable                 |
| 925L (Red Deer 63S to Janet 74S)                      | Janet 74S             | Three Phase to Ground    | Stable                 |
| 0001 (1-2-1,740 to 11-2-1,0070)                       | Janet 74S             | Three Phase to<br>Ground | Stable                 |
| 929L (Janet 74S to Hazelwood 287S)                    | Hazelwood 287S        | Three Phase to Ground    | Stable                 |
| 935L (Cassils 324S to Milo 356S)                      | Cassils 324S          | Three Phase to Ground    | Stable                 |
|   | Milo 356S             | Three Phase to Ground    | Stable                 |

| Contingency                              | Fault Location       | Fault Type               | Transient<br>Stability |
|--|----------------------|--------------------------|------------------------|
|  | Ware Junction 132S   | Three Phase to Ground    | Stable                 |
| 944L (Ware Junction 132S to Jenner 275S) | Jenner 275S          | Three Phase to Ground    | Stable                 |
| 01.40 (N D : 1                           | New Bridgen          | Three Phase to Ground    | Stable                 |
| 9L46 (New Bridgen to Lanfine 959S)       | Lanfine 959S         | Three Phase to Ground    | Stable                 |
|  | New Bridgen          | Three Phase to Ground    | Stable                 |
| 9L51 (New Bridgen to Pemukan 932S)       | Pemukan 932S         | Three Phase to Ground    | Stable                 |
| 01 50 /T; 1 1 0700 / A 1 0040)           | Tinchebray 972S      | Three Phase to Ground    | Stable                 |
| 9L59 (Tinchebray 972S to Anderson 801S)  | Anderson 801S        | Three Phase to Ground    | Stable                 |
|  | Jenner 275S          | Three Phase to Ground    | Stable                 |
| 1002L (Jenner 275S to Dome Empress 163S) | Dome Empress<br>163S | Three Phase to Ground    | Stable                 |
|  | Bowmanton 244S       | Three Phase to Ground    | Stable                 |
| 1034L (Cassils 324S to Bowmanton 244S)   | Cassils 324S         | Three Phase to Ground    | Stable                 |
|  | Tinchebray 972S      | Three Phase to Ground    | Stable                 |
| CETO1 (Tinchebray 972S to Gaetz 87S)     | Gaetz 87S            | Three Phase to Ground    | Stable                 |
|  | Tinchebray 972S      | Three Phase to Ground    | Stable                 |
| CETO2 (Tinchebray 972S to Gaetz 87S)     | Gaetz 87S            | Three Phase to Ground    | Stable                 |
| EATL                                     | Newell 2075S         | Three Phase to Ground    | Stable                 |
| WATL                                     | Crossings 511S       | Three Phase to<br>Ground | Stable                 |

Table F-2-10 Transient Stability Results under Category C5 Contingencies - CETO Both Circuits and CRPC in 2023

| Contingency                                    | Fault Location  | Fault Type     | Transient Stability |
|--|-----------------|----------------|---------------------|
| 923L (Milo to Newell) and                      |                 | Three Phase to |                     |
| 935L (Cassils 324S to Milo 356S)               | Milo 356S       | Ground         | Stable              |
| 925L (Red Deer 63S to Janet 74S) and           |                 | Three Phase to |                     |
| 929L (Janet 74S to Hazelwood 287S)             | Janet 74S       | Ground         | Stable              |
| 910L (Saunders Lake 289S to Wolf Creek 288S)   |                 | Three Phase to |                     |
| and  | Saunders Lake   | Ground         | Stable              |
| 914L (Saunders Lake 289S to Bigstone 86S)      | 289S            |                |                     |
| 933L (Anderson 801S to Ware Junction 132S) and |                 | Three Phase to |                     |
| 934L (Anderson 801S to Ware Junction 132S)     | Anderson 801S   | Ground         | Stable              |
| 924L (Langdon 102S to Milo 356S) and           |                 | Three Phase to |                     |
| 927L (Langdon 102S to Milo 356S)               | Milo 356S       | Ground         | Stable              |
| 931L (West Brooks 28S to Ware Junction 132S)   |                 | Three Phase to |                     |
| and  | West Brooks 28S | Ground         | Stable              |
| 1075L (West Brooks 28S to Ware Junction 132S)  |                 |                |                     |

| Contingency   | Fault Location | Fault Type            | Transient Stability |
|---|----------------|-----------------------|---------------------|
| CETO 1 (Gaetz 87S to Tinchebray 972S) and CETO 2 (Gaetz 87S to Tinchebray 972S) | Gaetz 87S      | Three Phase to Ground | Stable              |

#### F-2-6 2031 Post CETO Both Circuits and CRPC

Table F-2-11: Transient Stability Results under Category B Contingencies - CETO Both Circuits and CRPC in 2031

| Contingency  | Fault Location        | Fault Type                           | Transient<br>Stability |
|--|-----------------------|--------------------------------------|------------------------|
| 910L (Saunders Lake 289S to Wolf Creek   | Saunders Lake<br>289S | Three Phase to Ground                | Stable                 |
| 288S)  | Wolf Creek 288S       | Three Phase to<br>Ground             | Stable                 |
| 912L (Nevis 766S to Red Deer 63S)  | Nevis 766S            | Three Phase to Ground                | Stable                 |
| 912L (Nevis 7003 to Neu Deel 033)  | Red Deer 63S          | Three Phase to Ground                | Stable                 |
| 914L1 (Bigstone 86S to Gaetz 87S)  | Bigstone 86S          | Three Phase to Ground Three Phase to | Stable                 |
| The state of the same of the s | Gaetz 87S             | Ground Three Phase to                | Stable                 |
| 914L2 (Red Deer 63S to Gaetz 87S)  | Gaetz 87S             | Ground Three Phase to                | Stable                 |
| (1.04 500. 000 to oddie 070)   | Red Deer 63S          | Ground Three Phase to                | Stable                 |
| 9L16 (Tinchebray 972S to Cordel 755S)  | Tinchebray 972S       | Ground Three Phase to                | Stable                 |
| (  | Cordel 755S           | Ground Three Phase to                | Stable                 |
| 9L20 (Nevis 766S to Cordel 755S)   | Nevis 766S            | Ground Three Phase to                | Stable                 |
|  | Cordell 755S          | Ground Three Phase to                | Stable                 |
|  | Red Deer 63S          | Ground Three Phase to                | Stable                 |
| 925L (Red Deer 63S to Janet 74S)   | Janet 74S             | Ground Three Phase to                | Stable                 |
| 929L (Janet 74S to Hazelwood 287S)   | Janet 74S             | Ground Three Phase to                | Stable                 |
|  | Hazelwood 287S        | Ground Three Phase to                | Stable                 |
| 935L (Cassils 324S to Milo 356S)   | Cassils 324S          | Ground Three Phase to                | Stable                 |
| , (  | Milo 356S             | Ground Three Phase to                | Stable                 |
| 944L (Ware Junction 132S to Jenner 275S)   | Ware Junction 132S    | Ground Three Phase to                | Stable                 |
|  | Jenner 275S           | Ground                               | Stable                 |
| 9L46 (New Bridgen to Lanfine 959S)   | New Bridgen           | Three Phase to Ground                | Stable                 |

| Contingency                              | Fault Location       | Fault Type               | Transient<br>Stability |
|--|----------------------|--------------------------|------------------------|
|  | Lanfine 959S         | Three Phase to Ground    | Stable                 |
|  | New Bridgen          | Three Phase to Ground    | Stable                 |
| 9L51 (New Bridgen to Pemukan 932S)       | Pemukan 932S         | Three Phase to<br>Ground | Stable                 |
| 0.70 (7. 1.1. 0.700 ( 1.1. 0.10)         | Tinchebray 972S      | Three Phase to Ground    | Stable                 |
| 9L59 (Tinchebray 972S to Anderson 801S)  | Anderson 801S        | Three Phase to<br>Ground | Stable                 |
| 4000L (                                  | Jenner 275S          | Three Phase to Ground    | Stable                 |
| 1002L (Jenner 275S to Dome Empress 163S) | Dome Empress<br>163S | Three Phase to Ground    | Stable                 |
| 10011 (0 11 0010   5 11 0110)            | Bowmanton 244S       | Three Phase to<br>Ground | Stable                 |
| 1034L (Cassils 324S to Bowmanton 244S)   | Cassils 324S         | Three Phase to<br>Ground | Stable                 |
| 25704 (7: 1.1. 2500 t. 0.1. 250)         | Tinchebray 972S      | Three Phase to Ground    | Stable                 |
| CETO1 (Tinchebray 972S to Gaetz 87S)     | Gaetz 87S            | Three Phase to<br>Ground | Stable                 |
|  | Tinchebray 972S      | Three Phase to Ground    | Stable                 |
| CETO2 (Tinchebray 972S to Gaetz 87S)     | Gaetz 87S            | Three Phase to Ground    | Stable                 |
| EATL                                     | Newell 2075S         | Three Phase to Ground    | Stable                 |
| WATL                                     | Crossings 511S       | Three Phase to Ground    | Stable                 |

Table F-2-12: Transient Stability Results under Category C5 Contingencies - CETO Both Circuits and CRPC in 2031

| Contingency                                  | Fault Location  | Fault Type     | Transient<br>Stability |
|--|-----------------|----------------|------------------------|
| 923L (Milo to Newell) and                    |                 | Three Phase to | 0.11                   |
| 935L (Cassils 324S to Milo 356S)             | Milo 356S       | Ground         | Stable                 |
| 925L (Red Deer 63S to Janet 74S) and         |                 | Three Phase to |                        |
| 929L (Janet 74S to Hazelwood 287S)           | Janet 74S       | Ground         | Stable                 |
| 910L (Saunders Lake 289S to Wolf Creek 288S) |                 |                |                        |
| and  | Saunders Lake   | Three Phase to | Stable                 |
| 914L (Saunders Lake 289S to Bigstone 86S)    | 289S            | Ground         |                        |
| 933L (Anderson 801S to Ware Junction 132S)   |                 |                |                        |
| and  | Anderson 801S   | Three Phase to | Stable                 |
| 934L (Anderson 801S to Ware Junction 132S)   |                 | Ground         |                        |
| 924L (Langdon 102S to Milo 356S) and         |                 | Three Phase to |                        |
| 927L (Langdon 102S to Milo 356S)             | Milo 356S       | Ground         | Stable                 |
| 931L (West Brooks 28S to Ware Junction 132S) |                 |                |                        |
| and  |                 | Three Phase to |                        |
| 1075L (West Brooks 28S to Ware Junction      | West Brooks 28S | Ground         | Stable                 |
| 132S)  |                 |                |                        |
| CETO 1 (Gaetz 87S to Tinchebray 972S) and    |                 | Three Phase to |                        |
| CETO 2 (Gaetz 87S to Tinchebray 972S)        | Gaetz 87S       | Ground         | Stable                 |

# F-3 Transient Stability Analysis Plots Summary

| Section | Study Year | Scenario | Topology                 |        |                          |                         |        |
|---------|------------|----------|--------------------------|--------|--------------------------|-------------------------|--------|
| F-1     |            | 1        | Dro Dovolonment          | Part 1 |                          |                         |        |
| F-2     |            | ı        | Pre-Development          | Part 2 |                          |                         |        |
| F-3     |            | 2        | Pre-Development          |        |                          |                         |        |
| F-4     |            | 1        | 05704 : " 10000          | Part 1 |                          |                         |        |
| F-5     | 2023       | ı        | CETO 1 circuit and CRPC  | Part 2 |                          |                         |        |
| F-6     | 2023       | 2        | CETO 1 circuit and CRPC  | Part 1 |                          |                         |        |
| F-7     |            |          | CETO I CIICUIL AND CRPC  | Part 2 |                          |                         |        |
| F-8     |            | 4        | 4                        | 1      | CETO 2 circuits and CRPC | Part 1                  |        |
| F-9     |            | ı        | CETO 2 circuits and CRPC | Part 2 |                          |                         |        |
| F-10    |            | 2        | CETO 2 circuits and CRPC |        |                          |                         |        |
| F-11    |            | 1        | Pre-Development          |        |                          |                         |        |
| F-12    |            | 2        | Pre-Development          |        |                          |                         |        |
| F-13    |            | 4        | CETO 1 circuit and CRPC  | Part 1 |                          |                         |        |
| F-14    | 2031       | 1        | ı                        | !      | 1                        | CETO I CITCUIL AND CRPC | Part 2 |
| F-15    |            | 2        | CETO 1 circuit and CRPC  |        |                          |                         |        |
| F-16    |            | 1        | CETO 2 circuits and CRPC |        |                          |                         |        |
| F-17    |            | 2        | CETO 2 circuits and CRPC |        |                          |                         |        |