This template has been prepared by AEMO’s Victorian Connections team. It provides guidance to Applicants on the minimum Customer performance standards information required as part of a customer connection application. Please complete the following tables and submit this document as part of your connection application.

## **CONNECTION INFORMATION**

|  |  |
| --- | --- |
| Site name |  |
| Name of intending or currently registered financially responsible market participant (FRMP)  Full name e.g. The First Energy Company Pty Ltd (trading as Energy First) |  |
| Network service provider |  |
| Proposed transmission network *connection point* |  |
| Connection point voltage | Choose an item. |
| Customer load consumption | MW/MVA |
| Applicable NER Version |  |
| Date of finalisation  Date of agreed Performance Standards |  |

## **PERFORMANCE STANDARDS**

The table below outlines the information that AEMO’s Victorian Connections team requires to assess compliance with the technical requirements set out in Chapter 5 of the National Electricity Rules (NER). Please complete the blanks in the table to describe how the facility complies with the Performance Standards set out in the NER.

###### Please note:

* Shaded areas do not require completion.
* For each item in the third column, provide a detailed description of the facility’s compliance with the requirement in the fourth column, again including values where applicable.
* Indicate in the fifth column whether the facility meets automatic, negotiated or minimum Performance Standards by inserting the letter A, N or M respectively.
* Use the sixth column to provide a detailed description of the agreed access standard, including values where applicable.
* Terms written in *italics* are defined in Chapter 10 of the NER.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **NER REFERENCE** | **DESCRIPTION** | **GENERAL** | **DETAILED DESCRIPTION OF COMPLIANCE WITH GENERAL REQUIREMENT INCLUDING VALUES** | **AGREED PERFORMANCE IS AUTOMATIC, NEGOTIATED OR MINIMUM STANDARD (A / N / M)** | **DETAILED DESCRIPTION OF PROPOSED STANDARD INCLUDING VALUES** |
| **S5.3.3** | Protection systems and settings |  |  |  | *Protection system* and settings requirements are specified in Appendix 1. |
| **S5.3.5** | Power factor requirements |  |  |  | The *power factor* at the *connection point* must remain between [PF] [lagging/leading] and unity. |
| **S5.3.6** | Balancing of load currents |  |  |  | The *Network User* must ensure that the current in any phase is not greater than XXX% or less than YY% of the average of the currents in the three phases. |
| **S5.3.7** | Voltage fluctuations |  |  |  | *Voltage* fluctuation requirements are specified in Appendix 2. |
| **S5.3.8** | Harmonics and voltage notching |  |  |  | *Harmonics* and *voltage* notching requirements are specified in Appendix 3. |
| **S5.3.10** | Load shedding facilities | *Network Users* who are *Market Customers* and who have expected peak demands of more than 10MW must provide automatic interruptible load in accordance with clause 4.3.5 of the Rules. | 100% load shedding for automatic under frequency and manual load shedding and possible future under voltage load shedding as per S5.1.10. |  |  |
| **S5.3.11** | Short circuit ratio (customers)  [Only applicable to *inverter based loads*] |  |  |  | The *Network User* must have plant capability sufficient to operate stably and remain *connected* at a *short circuit ratio* of X.X, assessed in accordance with the methodology prescribed in the sy*stem strength impact assessment guidelines*. |

**Appendix 1: S5.3.3 Protection Systems and Settings**

The [*automatic/negotiated*] *access standard* is:

1. Primary *protection systems* must be provided to *disconnect* any faulted element from the *power system* within the applicable *fault clearance time* specified in Table 1.1.
2. Each primary *protection system* must have sufficient redundancy to ensure that a faulted element within its protection zone is *disconnected* from the *power system* within the applicable *fault clearance time* with any single protection element (including any communications facility upon which that *protection system* depends) out of service.
3. *Breaker fail protection systems* must be provided to clear faults that are not cleared by the circuit breakers controlled by the primary *protection system*, within the applicable *fault clearance time* specified in Table 1.1.

Table 1.1: Protection and Breaker Fail System Fault Clearance Times

|  |  |  |
| --- | --- | --- |
|  | **[Connection Voltage] kV** | **[Other Voltages] kV** |
| Primary *protection systems* | [TBC] ms | [TBC] ms |
| *Breaker fail protection systems* | [TBC] ms | [TBC] ms |

**Appendix 2: S5.3.7 Voltage Fluctuations**

The *plant* must not produce at the *connection point*:

1. Low Frequency *Voltage* Fluctuations greater than the limits specified in Table 2.1;

Table 2.1: [*Automatic/Negotiated] Access Standard* Low Frequency Voltage Fluctuation Limits (system normal)

|  |  |
| --- | --- |
| **Voltage Changes Per Hour** | **Magnitude (%) of actual kV** |
| ≤1 | ≤[LIMIT] |
| >1 or ≤10 | ≤[LIMIT] |
| >10 or ≤100 | ≤[LIMIT] |
| >100 or ≤1000 | ≤[LIMIT] |

1. *Voltage* Fluctuations greater than the limits specified in Table 2.2 where flicker will be measured in accordance with AS/NZS 61000.3.7:2001.

Table 2.2: [*Automatic/Negotiated] Access Standard* Flicker *Voltage* Fluctuation Limits (system normal)

|  |  |
| --- | --- |
| **Pst** | [LIMIT] |
| **Plt** | [LIMIT] |

**Appendix 3: S5.3.8 Harmonics and Voltage Notching**

The harmonic *voltage* distortion caused by the *plant* at the *connection point* must not exceed the [*automatic*/*negotiated*] *access standard* limits in Table 3.1.

Table 3.1: [*Automatic/Negotiated] Access Standard* Harmonic *Voltage* Distortion Limits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Odd Harmonic (Non-multiple of 3) | | Odd Harmonic (Multiple of 3) | | Even Harmonic | |
| Harmonic | Emission Limit | Harmonic | Emission Limit | Harmonic | Emission Limit |
| 5 |  | 3 |  | 2 |  |
| 7 |  | 9 |  | 4 |  |
| 11 |  | 15 |  | 6 |  |
| 13 |  | 21 |  | 8 |  |
| 17 |  | 27 |  | 10 |  |
| 19 |  | 33 |  | 12 |  |
| 23 |  | 39 |  | 14 |  |
| 25 |  | 45 |  | 16 |  |
| 29 |  |  |  | 18 |  |
| 31 |  |  |  | 20 |  |
| 35 |  |  |  | 22 |  |
| 37 |  |  |  | 24 |  |
| 41 |  |  |  | 26 |  |
| 43 |  |  |  | 28 |  |
| 47 |  |  |  | 30 |  |
| 49 |  |  |  | 32 |  |
| THD |  |  |  | 34 |  |
| Non-integral |  |  |  | 36 |  |
|  |  |  |  | 38 |  |
|  |  |  |  | 40 |  |
|  |  |  |  | 42 |  |
|  |  |  |  | 44 |  |
|  |  |  |  | 46 |  |
|  |  |  |  | 48 |  |
|  |  |  |  | 50 |  |