

Business Process

BP_SO 8.6 Generator Outturn Availability

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1 ASSUMPTIONS

Assumptions made during the design of this process include:

- This is an all-island business process, meaning the same process will be used across both jurisdictions on the island, Ireland and Northern Ireland. It can be conducted by the relevant team in either Dublin or Belfast; and
- All required systems, including MMS and EDIL are in place. They offer all required functionalities to support business needs.

2 PROCESS REFERENCES

2.1 RELATED RULES REFERENCES

The following table provides references to the documents that govern the design of this business process.

| Document Title | Relevant Section | Description |
|-------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SONI Grid Code | Scheduling and Dispatch Code No. 1 & 2 (SDC1 & SDC2) | The SONI Grid Code sets out the principles governing SONI's relationship with users and technical standards to be complied with by SONI and users. The Code specifies procedures for planning, connecting to and operating the transmission system during both normal and exceptional circumstances. |
| EirGrid Grid Code | Scheduling and Dispatch Code No. 1 & 2 (SDC1 & SDC2) | The EirGrid Grid Code sets out the principles governing EirGrid's relationship with users and technical standards to be complied with by EirGrid's and users. The Code specifies procedures for planning, connecting to and operating the transmission system during both normal and exceptional circumstances. |
| SEM-15-065 | System Operation in the I-SEM | Sets out high level guidance related to the scheduling and dispatch process. |
| SEM-15-071 | Process for the Calculation of Outturn Availability, 29 September 2015. | The SEM-15-071 decision paper applies to both transmission and distribution connected Centrally Dispatched Generating Units and Controllable Wind Farm Power Stations which are disconnected as a direct result of a transmission outage scheduled by the TSO |

2.2 RELATED DOCUMENTS

The following table provides a list of documents that are related to this business process.

| Document Title | Relationship | Description |
|---------------------------------------|--------------|----------------------------------------------------------------------------------------------|
| Balancing Market Principles Statement | Information | A Guide to Scheduling and Dispatch under the Revised Single Electricity Market Arrangements. |

3 PROCESS CONTEXT

3.1 BUSINESS MODEL RELATIONSHIP

The 'Generator Outturn Availability' process sits within the 'Operational Planning' process group within the Systems Operator processes. The Operational Planning processes cover the ongoing planning and management of transmission and generator outages, and ensuring that this information is correctly recorded.

3.2 BACKGROUND AND SCOPE

Background

The Single Electricity Market Committee (SEMC) decision SEM-15-071 "Process for the Calculation of Outturn Availability" was published on 29 September 2015. The SEM-15-071 decision paper applies to both transmission and distribution connected Centrally Dispatched Generating Units and Controllable Wind Farm Power Stations which are disconnected as a direct result of a transmission outage scheduled by the TSO. Outages on the distribution system are not related to the decision paper.

The decision states that Generators/Wind/Solar Farms will not be outturn available for associated capital works or for (up to) five days maintenance per year, and otherwise will be outturn available during transmission outages. For the purposes of tracking the five days are 'designated days' for maintenance, and are communicated to the generators in advance of the outage.

The EirGrid Grid Code definition for Outturn Availability is as follows:

- **Outturn Availability:** The set of Availability data for a Generator Unit or Demand Side Unit as declared by the relevant Generator Unit or Demand Side Unit and submitted by the TSO to SEM after the end of the Trading Day.

The SONI Grid Code definition for Outturn Availability is as follows:

- **Outturn Availability:** The set of Availability data for the relevant CDGU, Controllable WFPS, Aggregated Generating Unit, Pumped Storage Plant or Demand Side Unit as declared pursuant to SDC1.4 and submitted by the TSO to SEM after the end of the Trading Day.

Scope

The scope of this process is to ensure that outages and outturn availability are properly recorded in Real Time and then checked by System Support (Data Feeds) before data is submitted to I-SEM. It is the responsibility of Near Time to track the maintenance for each generator over the course of the year, and inform Real Time and System Support (Data Feeds) of the outturn availability status of each relevant Generator throughout each outage. It is the responsibility of Real Time and System Support (Data Feeds) to ensure this information is recorded correctly in real time during the outage and updated correctly after the outage.

4 PROCESS OBJECTIVE

The objective of this Business Process is to meet the following obligations under the EirGrid and SONI Grid Codes, namely:

- SDC1 Scheduling and Dispatch Code No.1
- SDC2 Scheduling and Dispatch Code No.2

5 ROLES AND RESPONSIBILITIES

5.1.1 NEAR TIME

The following table provides a summary of the obligations of the Near Time team relating to the Outturn Availability process:

| Team Name | Responsibility in relation to process | Timeline Associated |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Near Time | <ul style="list-style-type: none"> Track the maintenance for each generator over the course of the year, and inform Real Time/System Support (Data Feeds) of outturn availability status of each disconnected Generator throughout each transmission outage. | As required |

5.1.2 SYSTEM SUPPORT

The following table provides a summary of the obligations of the System Support team relating to the Outturn Availability process:

| Team Name | Responsibility in relation to process | Timeline Associated |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| System Support (Data Feeds) | <ul style="list-style-type: none"> Monitor Outturn Availability Information provided by Near Time; and Ensure outages are recorded correctly and instructions sent to the market to ensure availability and dispatch instructions reflect the Outturn Availability status. | As required |

5.1.3 REAL TIME

The following table provides a summary of the obligations of the Real Time team relating to the Outturn Availability process:

| Team Name | Responsibility in relation to process | Timeline Associated |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Real Time | <ul style="list-style-type: none"> Monitor Outturn Availability Information provided by Near Time; and Ensure outages are recorded correctly in real time in the Electronic Dispatch Instruction Logger (EDIL) and the Energy Management System (EMS). | As required |

5.1.4 GENERATOR

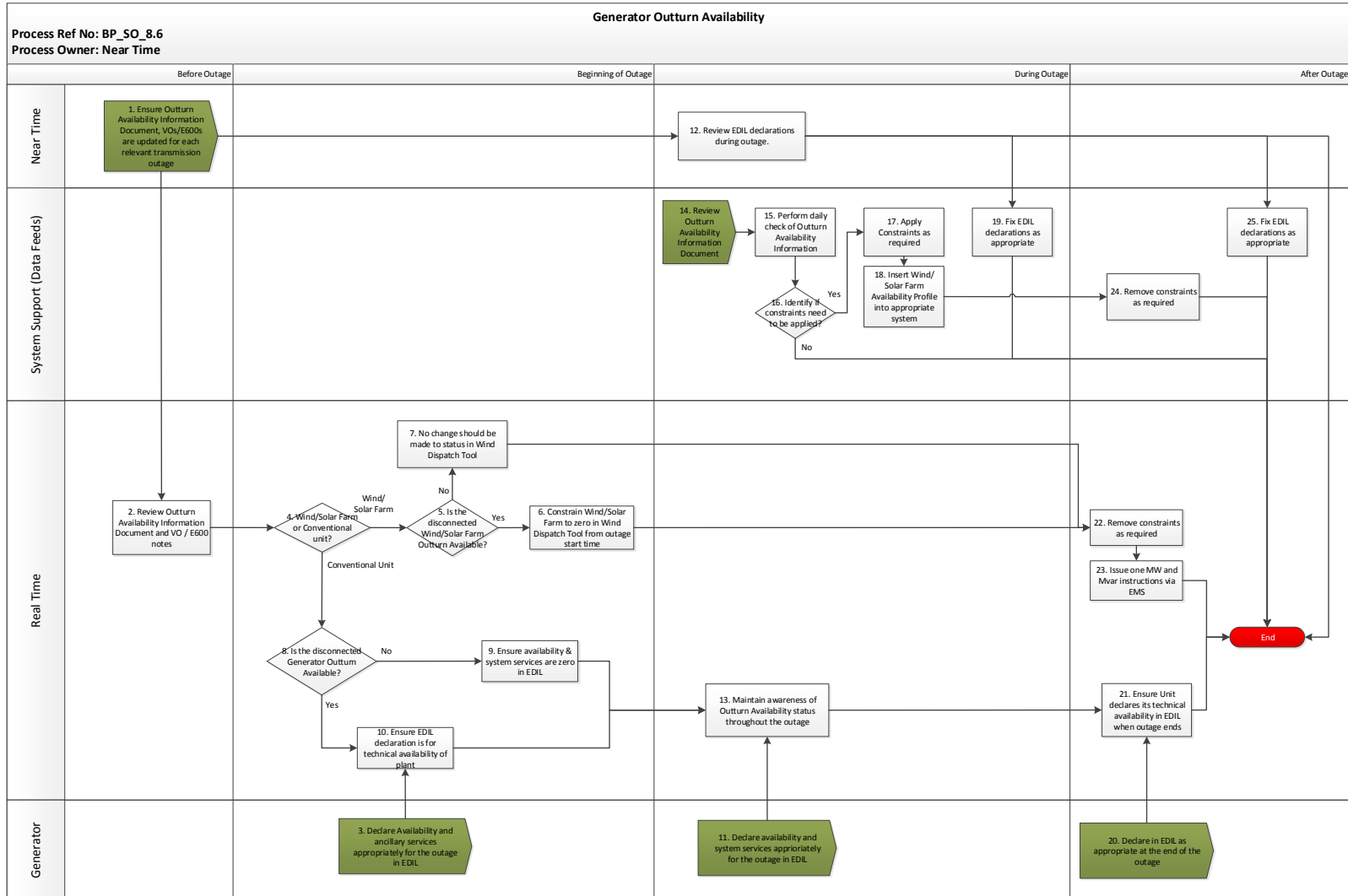
The following table provides a summary of the obligations of the Generator relating to the Outturn Availability process:

| Team Name | Responsibility in relation to process | Timeline Associated |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Generator | <ul style="list-style-type: none"> Declare availability as required under Grid Code to reflect the Outturn Availability status. Declare system services as required under Grid Code. | At the start of the outage, during the outage as appropriate and at the end of the outage. |

6 PROCESS DESCRIPTION

6.1 LEVEL 3 PROCESS

6.1.1 PROCESS MAP



6.1.2 PROCESS STEPS

| # | Step | Step Description | Responsible Role | Outputs | Indicative Timing/ Frequency | System |
|----------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|---------------------------------|---------------------------------------------------------------|
| Before outage | | | | | | |
| 1 | Ensure Outturn Availability Information Document, VOs/E600s are updated for each relevant transmission outage | Ensure Outturn Availability Information is updated for each relevant transmission outage. It is the responsibility of Near Time to track the maintenance for each generator over the course of the year, and inform Real Time/System Support (Data Feeds) of the outturn availability status of each relevant Generator throughout each transmission outage. | Near Time | N/A | As required | Outturn Availability Information Document/Outage System/E600s |
| 2 | Review Outturn Availability Information Document and VO/E600 notes | Real Time reviews the Outturn Availability Information on an ongoing basis to identify the Outturn Availability Status of each disconnected Generator/Wind/Solar Farm during each transmission outage. The VOs and E600s will contain guidance notes on Outturn Availability, but Control Centres should maintain awareness by checking Outturn Availability Information Document. | Real Time | N/A | As required | Outturn Availability Information Document |
| Beginning of outage | | | | | | |
| 3 | Declare availability and system services appropriately for the outage in EDIL | The Generator shall declare in EDIL as appropriate for the outage: If the Generator is Outturn Available, ensure EDIL availability declaration is for technical availability of plant and system services declarations are zero. | Generator | EDIL updated | At the start of the outage | EDIL |


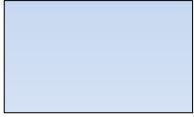
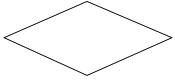




| # | Step | Step Description | Responsible Role | Outputs | Indicative Timing/ Frequency | System |
|---|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|---------------------------------|--------------------|
| | | If <u>not</u> Outturn Available, the Generator shall declare availability and system services to zero in EDIL. | | | | |
| 4 | Wind/Solar Farm or Conventional Generator? | The Real Time User shall initially identify if the relevant transmission outage disconnects a Wind/Solar Farm or Conventional Generator? If the transmission outage disconnects a Wind/Solar Farm, go to step 5. If the transmission outage disconnects a conventional Generator, go to step 8. | Real Time | N/A | As required | N/A |
| 5 | Is the disconnected Wind/Solar Farm Outturn Available? | As per Outturn Availability Information Document, if the Wind/Solar Farm is Outturn Available from the start of the outage, go to step 6. If the Wind/Solar Farm is <u>not</u> Outturn Available (i.e. the Wind/Solar Farm's own outage or a designated day) go to step 7. | Real Time | N/A | As required | N/A |
| 6 | Constrain Wind/Solar Farm to zero in Wind Dispatch Tool from outage start time | If Wind/Solar Farm is Outturn Available, the Wind/Solar Farm should be constrained to zero in the Wind Dispatch Tool at the start of the outage. | Real Time | WDT updated | As required | Wind Dispatch Tool |
| 7 | No change should be made to status in Wind Dispatch Tool | If the Wind/Solar Farm is not Outturn Available no change should be made to its status in the Wind Dispatch Tool. | Real Time | N/A | As required | N/A |
| 8 | Is the disconnected Generator Outturn Available? | As per Outturn Availability Information Document, if the Generator is <u>not</u> Outturn Available (i.e. the Generator's own outage or a designated day), go to step 9. | Real Time | N/A | As required | N/A |

| # | Step | Step Description | Responsible Role | Outputs | Indicative Timing/ Frequency | System |
|----------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|---------------------------------|-------------------------------------------------|
| | | If the Generator is Outturn Available, go to steps 10 and 11. | | | | |
| 9 | Ensure availability & system services are zero in EDIL | If the Generator is not Outturn Available, ensure availability & system services are declared to zero in EDIL. | Real Time | EDIL updated | As required | EDIL |
| 10 | Ensure EDIL declaration is for technical availability of plant | If the Generator is Outturn Available, ensure EDIL declaration is for technical availability of plant and system services are declared to zero in EDIL. | Real Time | EDIL updated | As required | EDIL |
| During Outage | | | | | | |
| 11 | Declare availability and system services appropriately for the outage in EDIL | The Generator shall update declarations in EDIL as appropriate for the outage: If the Generator is Outturn Available, ensure EDIL declaration is for technical availability of plant. If <u>not</u> Outturn Available, the Generator shall declare availability to zero in EDIL. | Generator | EDIL updated | As required | EDIL |
| 12 | Review EDIL declarations during outages | Check to ensure Outturn Availability Information Document is kept up to date. Review EDIL declarations during outages to ensure they align and raise discrepancy with Generator and System Support (Data Feeds). | Near Time | N/A | As required | Outturn Availability Information Document, EDIL |
| 13 | Maintain awareness of Outturn Availability status throughout the outage | During each relevant transmission outage, maintain awareness of status of works / availability /designated days via Outturn Availability Information Document. | Real Time | N/A | As required | Outturn Availability Information Document |
| 14 | Review Outturn Availability | System Support reviews the Outturn Availability | System Support | N/A | As required | Outturn |

| # | Step | Step Description | Responsible Role | Outputs | Indicative Timing/ Frequency | System |
|---------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------|---------------------------------|-------------------------------------------|
| | Information Document | Information on an ongoing basis to identify the Outturn Availability Status of each disconnected Generator/Wind/Solar Farm during each transmission outage. | (Data Feeds) | | | Availability Information Document |
| 15 | Perform Daily check of Outturn Availability Information | Perform Daily check of Outturn Availability Information. | System Support (Data Feeds) | N/A | As required | Outturn Availability Information Document |
| 16 | Identify if constraints need to be applied? | Review the status of each relevant Wind/Solar Farm and determine whether a constraint needs to be applied for the outage to allow the wind/solar farm to be Outturn Available? If yes go to step 18. If no go to step 19. | System Support (Data Feeds) | N/A | As required | N/A |
| 17 | Apply constraints as required | Check that constraints have been applied, if not, apply constraints as required. | System Support (Data Feeds) | N/A | As required | NESS/EDIL |
| 18 | Insert Wind/Solar Farm Availability profile into appropriate systems | Obtain the MW availability profile for the trading day(s) where a Controllable Wind/Solar Farm was outturn available. To ensure the correct ACTAs are submitted to the SEM according to data submission timelines, for Ireland units, upload this profile to NESS and for Northern Ireland units upload this profile using VPT Availability. | System Support (Data Feeds) | NESS correction | As required | NESS/VPT Availability |
| 19 | Fix EDIL declarations as appropriate | Fix EDIL declarations as appropriate. | System Support (Data Feeds) | | As required | EDIL |
| After Outage | | | | | | |

| # | Step | Step Description | Responsible Role | Outputs | Indicative Timing/ Frequency | System |
|----|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|---------------------------------|-----------|
| 20 | Declare in EDIL as appropriate at the end of the outage. | The Generator shall ensure EDIL declaration is for technical availability of plant following the end of the outage. | Generator | EDIL updated | As required | EDIL |
| 21 | Ensure Unit declares its technical availability in EDIL when outage ends. | Ensure Unit declares its technical availability in EDIL when outage ends. | Real Time | N/A | As required | EDIL |
| 22 | Remove constraints as required | Check that any constraints have been removed. If not, remove constraints as required. | Real Time | EDIL/EMS updated | As required | EDIL/EMS |
| 23 | Issue one MW and Mvar instructions via EMS | Issue one MW and one Mvar instruction to ALL Wind farms that have been disconnected to ensure their controls are unaffected by the outage. | Real Time | EMS updated | As required | EMS |
| 24 | Remove constraints as required | Check that constraints have been removed. If not, remove constraints as required. | System Support (Data Feeds) | N/A | As required | NESS/EDIL |
| 25 | Fix EDIL declarations as appropriate | Fix EDIL declarations as appropriate. | System Support (Data Feeds) | | As required | EDIL |

7.1 PROCESS FLOWCHART KEY

| FLOWCHART KEY | |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|  Trigger | Trigger |
|  | Process step |
|  | Process decision / question |
|  | Reference to another process |
|  | Another business process to be implemented following current step (current step is a trigger for another process) |
|  End | Process end |
|  | System (automatic step) |