Business Process

BP_SO_3.4 Dispatch Wind Units via EMS

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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;
- The following business processes addresses all requirements, including roles, tools, and activities that will enable the TSO to achieve scheduling objectives; and
- All required systems, including MMS, EMS 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	SDC1 Scheduling and Dispatch Code No. 1 & 2	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	SDC1 Scheduling and Dispatch Code No. 1 & 2	The EirGrid Grid Code is the technical document which establishes the rules governing the operation, maintenance and development of the transmission system and sets out the procedures for governing the actions of all transmission system users. The document ensures that all users are treated in a transparent and equitable manner.
Principles of Dispatch and the Design of the Market Schedule in the Trading and Settlement Code SEM-11-062	4.4 Priority Dispatch	SEMC decisions on the adherence to an 'absolute' interpretation of priority dispatch and the position of wind in the hierarchy of dispatch.
I-SEM Energy Trading Arrangements Detailed Design SEM-15-065	2. System Operation in the I-SEM	Sets out high level guidance related to the scheduling and dispatch process

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 which includes descriptions of LTS, RTC and RTD.

EirGrid Policy for Implementing SEM-11-062	Policy	This operation policy document provides an explanation as to how the TSOs give effect to the SEM-11-062 decision in scheduling and dispatching generation on the island.

3 PROCESS CONTEXT

3.1 BUSINESS MODEL RELATIONSHIP

The 'Dispatch Priority Wind Units' process sits within the 'Dispatch' process group within the Systems Operator processes. Dispatch is the process of issuing instructions to units to adjust their MW production or consumption. In general this happens after gate closure. Given the final PNs and the actual status of units, the dispatch process modifies the output of units in accordance with inc/dec offers to ensure system balance while meeting all the security constraints and maximising the output from priority units.

The scheduling processes which look at the positioning of available resources to enable the system to be securely dispatched are a key input into this process. The Perform Long Term and Short Term Scheduling processes will generate indicative schedules which will then be refined in the dispatch process.

3.2 BACKGROUND AND SCOPE

Background

The I-SEM design provides for mandatory participation of market participants in the TSOs' scheduling and dispatch process which spans the intraday and balancing market timeframes. The SEM Committee Energy Trading Arrangements decision paper (SEM-15-065) contains a number of guiding principles related to this scheduling and dispatch process:

- Insofar as it is possible, the *ex-ante* markets should be left to resolve the energy supply/demand balance.
- The TSOs should not take any action prior to [*Balancing Market*] gate closure unless it is for reasons of system security e.g. reserves, for priority dispatch or for other statutory requirements.
- Costs for constraint [non-energy] actions are economically incurred.
- Minimise the cost of balancing the system given the PNs at [*Balancing Market*] gate closure.

In addition there are a number of related requirements in both the I-SEM High Level Design (SEM-14-085a) and ETA decision papers that impact on the scheduling & dispatch process:

- Participation in the *ex-ante* markets is not mandatory,
- Only dispatchable generation and dispatchable demand is required to submit PNs (i.e. wind and non dispatchable demand will not be required to submit PNs)
- PNs will be partially delinked. This means that PNs only have to be linked to *ex ante* trades at gate closure (i.e. FPN should reflect traded volumes). Prior to gate closure, a participant's PN submission should be its best estimate of its FPN (i.e. should reflect their expected final *ex ante* trades).
- In addition to reflecting the expected or actual ex ante traded volumes, PNs should at all times represent the participant's best estimate of its intended level of generation and/or consumption.

Whilst the I-SEM design represents many new requirements it also maintains some existing ones - it does not change obligations on the TSOs with respect to system security, the treatment of priority dispatch or other statutory requirements arising from the Network Codes. Thus the scheduling and dispatch process must balance all of these objectives. Specifically the scheduling element must be continuous to incorporate the changing market information into the dispatch process.

One final point to note is the reference to dispatchable and non dispatchable generation above. In I-SEM, wind units will be able to request that they are categorised as either 'dispatchable' or 'non-dispatchable'

within the Market (this will be part of the registration process going forward). This requirement is primarily driven by the need to allow wind units become 'price makers' rather than 'price takers'. By registering as 'dispatchable', the TSO will be able issue MW set-point instructions to that unit via EDIL, thus these wind units that nominate to be dispatchable by the TSO will lose their Priority Dispatch status in the market and effectively be non-priority dispatchable wind.

Scope

The 'Dispatch Priority Wind Units' process covers the activities required to instruct or dispatch Priority Dispatch wind units via the TSOs Wind Dispatch Tool (WDT) as per the advisory instructions issued via the Real Time Dispatch (RTD run from the Security Constrained Unit Commitment/ Security Constrained Economic Dispatch (SCUC/ SCED) functionality in the Market Management System (MMS). This process does not cover the activities required to issue dispatch instructions to Generator Units and non-priority 'dispatchable' wind, this is covered in the 'Issue Dispatch Instructions' process. The dispatching of Wind Units will remain largely unchanged in SEM following integration with Europe. It will continue to be performed by the Wind Dispatch Tool (WDT) in the TSOs Energy Management System (EMS), with users required to enter the instructions in the WDT as per the RTD run from SCUC/ SCED.

The key input and trigger for this process is the RTD which the SCUC/ SCED system will generate. The 'Perform Long Term and Short Term Scheduling' process document provides further detail on how the scheduling runs operate and feed into this process. The 3 scheduling runs, Long Term Scheduling, Real Time Commitment and Real Time Dispatch, will feed the dispatch process on an almost continuous basis in SEM:

1. Every 4 hours the LTS run will update the Long Term Current Operating Plan (COP) and send recommended sync or desync instructions for units with long notification times
2. Every 15 minutes the RTC run will update the Near Term Current Operating Plan (COP) and send recommended sync or desync instructions for units with short notification times
3. Every 5 minutes the RTD run will update the Real Time Current Operating Plan (COP) and send advisory dispatch instructions

For non-dispatchable wind units the Operator will be able to review the dispatch instructions for these units from the COP which will show aggregate non-dispatchable wind generation per each priority dispatch category information per each jurisdiction. The Operator uses the information from the COP to input into the Wind Dispatch Tool (WDT) in EMS to dispatch the non-dispatchable wind units.

4 PROCESS OBJECTIVE

There are multiple documents setting out rules and obligations relating to the scheduling and dispatch process covering system security, priority dispatch, economic objectives and other statutory requirements. Some of these documents are list below however a more comprehensive list can be found in the Balancing Market Principles Statement published by the TSOs:

- European Network Codes
- EirGrid and SONI Transmission Licence
- EirGrid and SONI Grid Code SDC1 Scheduling and Dispatch Code No.1
- EirGrid and SONI Grid Code SDC2 Scheduling and Dispatch Code No.2
- SEMC decision on the "Principles of Dispatch and the Design of the Market Schedule in the Trading and Settlement Code" (SEM-11-062) which aims to maximising renewable generation, outlining that the TSO should continue to "adhere to an absolute interpretation of priority dispatch whereby economic factors are only taken account of in exceptional situations"
- Various other SEMC decisions

5 ROLES AND RESPONSIBILITIES

5.1.1 REAL TIME

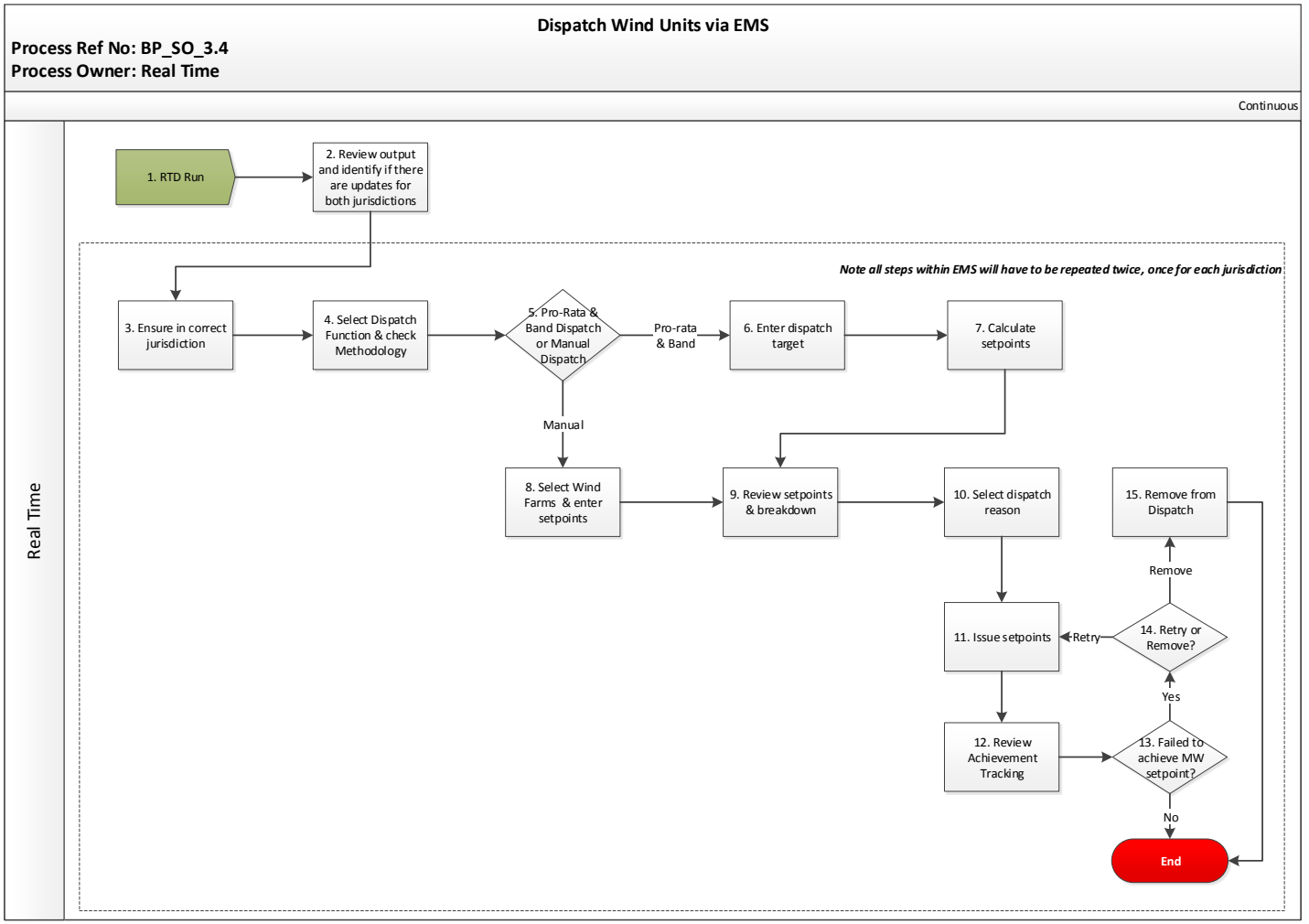
The following table provides a summary of the obligations of Real Time in relation to the 'Dispatch Priority Wind Units' process:

Team Name	Responsibility in relation to process	Timeline Associated
Real Time (Process Owner)	• Review output from scheduling run • Via EMS, enter the appropriate instructions to Wind Units as per the scheduling run	This will be a continuous process which will need to be managed 24 hours a day, 7 days a week, year round. The RTD run will be automatically scheduled to run every 5 minutes and it may generate instructions for wind.

6 PROCESS DESCRIPTION

6.1 LEVEL 3 PROCESS

6.1.1 PROCESS MAP



6.1.2 PROCESS STEPS

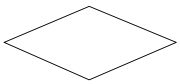
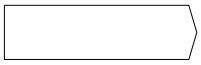
#	Step	Step Description	Responsible Role	Outputs	Indicative Timing/ Frequency	System
1	Trigger: RTD Run	The trigger for this process is the RTD (Real Time Dispatch) run, which will generate advisory schedules.	Real Time User	Advisory Dispatch Instructions	Continuous (24hr)	SCUC/SCED (MMS)
2	Review output and identify if there are updates for both jurisdictions	Review output and identify if there are updates for both jurisdictions. The RTD outputs will show: Note if there are updates for both Northern Ireland and Ireland the user will have to complete this process twice – for each jurisdiction.	Real Time User	N/A	Continuous/As required	SCUC/SCED (MMS)
Note the following steps will need to be performed twice, for each jurisdication, if there are update for Ireland and Northern Ireland from the RTD run						
3	Ensure in correct jurisdiction	Once logged into the Wind Dispatch Tool , the user should ensure they are in the right jurisdication before proceeding.	Real Time User	N/A	Continuous/As required	WDT (EMS)
4	Select Dispatch Function & check Methodology	The user must select the dispatch function: • Category 1 Wind Farm • Curtailment Apply • Curtailment Relax • Curtailment Removal • Constraint Apply • Constraint Relax • Constraint Removal Once function is selected check that the correct methodology has been selected. The	Real Time User	N/A	Continuous/As required	WDT (EMS)

#	Step	Step Description	Responsible Role	Outputs	Indicative Timing/ Frequency	System
		methodology will be either: • Band Order: setpoints calculated based on wind farm constraint groups; • Pro rata: setpoints calculated equally across all wind farms; • Manual: setpoints entered manually for each wind farm selected.				
5	Pro-Rata & Band Dispatch or Manual Dispatch	If it is pro-rata and band dispatch, go to step 6. If it is manual dispatch, go to step 8.	Real Time User	N/A	Continuous/As required	WDT (EMS)
6	Enter dispatch target	Enter the dispatch target, this is the MW target that the wind generation should meet following the instruction being issued.	Real Time User	N/A	Continuous/As required	WDT (EMS)
7	Calculate setpoints	Select 'Calculate setpoints' and the setpoints will be generated based on methodology.	Real Time User	N/A	Continuous/As required	WDT (EMS)
8	Select Wind Farms & enter setpoints	For manual dispatch, select the Wind Units that need to be dispatched and enter the setpoint they are to be dispatched at.	Real Time User	N/A	Continuous/As required	WDT (EMS)
9	Review setpoints & breakdown	Before proceeding ensure the correct information has been input (cross check with SCUC/SCED COP).	Real Time User	N/A	Continuous/As required	WDT (EMS)
10	Select dispatch reason	Confirm the correct dispatch reason with the Wind Dispatch Tool.	Real Time User	N/A	Continuous/As required	WDT (EMS)
11	Issue setpoints	Once the information has been entered in correctly and checked, the user can issue the setpoints.	Real Time User	Instructions issued	Continuous/As required	WDT (EMS)

#	Step	Step Description	Responsible Role	Outputs	Indicative Timing/ Frequency	System
12	Review Achievement Tracking	After the setpoints have been issued, the user can review progress in the 'Achievement Tracking' section, the user should wait for the 'Active list status' has changed from 'Processing', if a unit has failed to achieve, the user will be notified by red text on the display.	Real Time User	N/A	Continuous/As required	WDT (EMS)
13	Failed to achieve MW setpoint?	If the wind units have failed to achieve the MW setpoint the Real Time User has issued go to step 14. If the wind units have achieved the MW setpoints, then the dispatch instructions have been issued and followed successfully and no further action is required, the process ends.	Real Time User	N/A	Continuous/As required	WDT (EMS)
14	Retry or Remove?	If the wind units have failed to achieve the MW setpoint, the user must then decide whether to retry issuing the setpoints again or to remove the instruction completely. To retry issuing the instruction again, go to step 11. To remove the instruction completely, go to step 15.	Real Time User	N/A	Continuous/As required	WDT (EMS)
15	Remove from Dispatch	Remove the wind unit from dispatch and process ends.	Real Time User	N/A	Continuous/As required	WDT (EMS)

7 APPENDICES

7.1 PROCESS FLOWCHART KEY

FLOWCHART KEY	
	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)
	Process end
	System (automatic step)