25/09/2026

Constraints Forecast Studies for ECP-GSS-2

Proposed Assumptions



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Agenda

- Improvements to date
- Proposed Improvements
- ECP Background
- Study Scenarios
- Assumptions
  - General modelling assumptions
  - Network
  - Operational constraints
- Timeline and Engagement Plan

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Improvements in ECP-GSS-1

- New reporting methodology
- Input to surveys & mock report use
- Increased communications via email address
- Target query response time during query window of less than 1 week
- Landing page improvements

Proposed Improvements

Industry Reps

- Volunteers for a commitment for a year's cycle of engagement.
- Monthly meetings with ECP Constraint Forecasting Team.
- Gather proposed feedback from industry and prioritise changes.
- Representatives from all technologies wanted.
- Send expressions of interest to ecp_constraintsanalysis@Eirgrid.com by 02/10/2026.

Landing Page Improvements

- Making the landing page easier to navigate.
- Improvements to webinar awareness and ease of registration.

Results Dashboard

- Process improvement plan called for a dashboard for results.
- Project kick off has started.
- Target to deliver dashboard results by ECP-GSS-3.
- Regular industry engagement is required.

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Proposed Modelling Improvements

Constraint Allocation

- Updates to how constraint dispatch down is allocated to constraint groups. Moving to an hourly dispatch down allocation to better capture the interaction between wind and solar dispatch down.

Renewable profiles

- Moving to 12 solar area profiles to match wind profiles.
- Review of solar capacity factors / over install assumptions.
- Aligning historical year RES profiles with demand profiles.

Generation Portfolios

- We are including an additional portfolio where we select projects based on expected energisation dates.
- We are changing our remaining portfolios to be more aligned with AIRAA forecasts.

Synchronous Condensers

- Methodology on synchronous condensers modelling under investigation.

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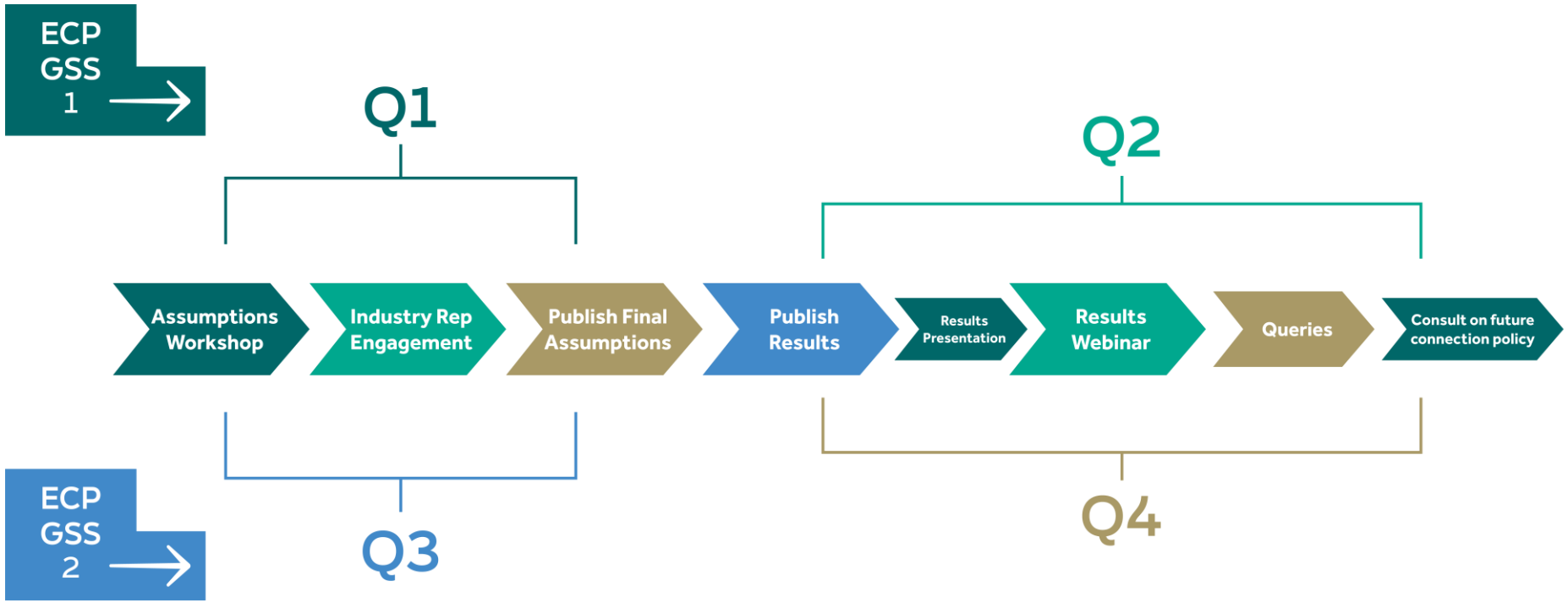
Background



(MW)	GSS-1	GSS-2
battery	2,051	167
solar	3,681	470
wind	1,190	729
Batch Total	**6,922**	**1,366**
IE Capacity Considered	**28.8 GW**	**28.6 GW**

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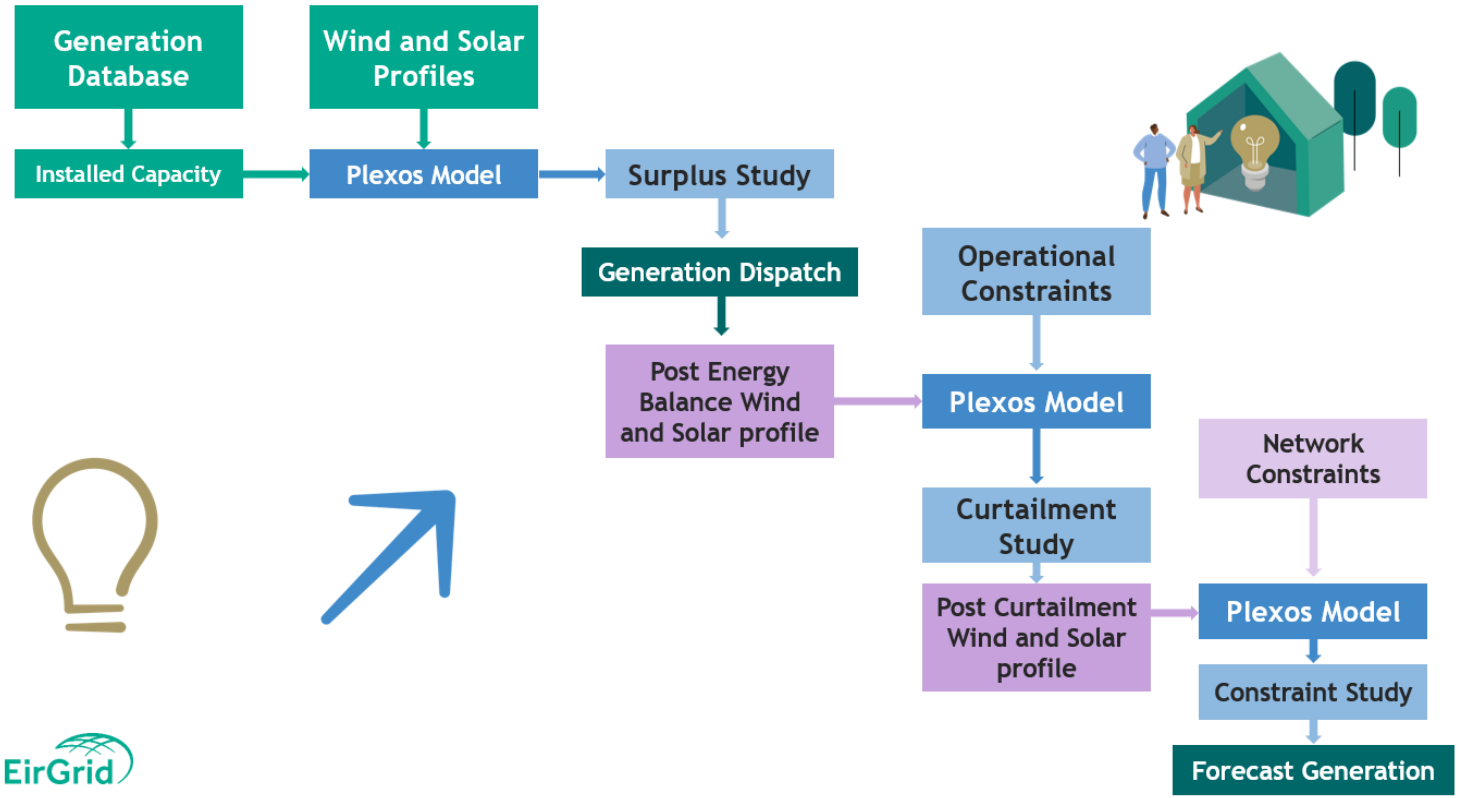
Modelling Process

1. Plexos based model
2. Each scenario has 3 runs – surplus, curtail and constraint
3. Models are run sequentially to calculate surplus, curtailment and constraints
4. The output from the Surplus Study feeds into the Curtailment Study which feeds into the Constraint Study
5. Operational limits and network constraints are added in to successive models
6. Except interconnectors, all capacity can redispatch between runs



Our Portfolios

ECP-GSS-2 breakdown of IE & NI generation capacity (MW)

Type	2029 Initial 1 Study	2031 Initial 2 Study	2031 10% ECP Study	2035 20% ECP Study	100% ECP Study
IE Battery	1,486	2,137	2,525	2,913	6,017
IE Solar	3,361	4,798	5,583	6,368	12,647
IE Wind	5,571	6,056	6,440	6,823	9,889
IE Wind Offshore	0	0	0	0	0
IE Total	**10,418**	**12,992**	**14,548**	**16,104**	**28,553**
NI Total	**2,535**	**2,535**	**2,631**	**2,726**	**3,491**
Total	**12,953**	**15,527**	**17,179**	**18,831**	**32,044**

Scenario build-up: total capacity

2029 Initial 1

13.0 GW

Connected + expected renewables by end-2028.

2031 Initial 2

15.5 GW

Connected + expected renewables by end-2030

2031 10% ECP

17.1 GW

Scale all capacity included in the 100% ECP portfolio but not in initial portfolio by 10% and add it to the 2031 initial 2.

2035 20% ECP

18.8 GW

Scale all capacity included in the 100% ECP portfolio but not in initial portfolio by 20% and add it to the 2031 initial 2.

2035 100% ECP

32.0 GW

All ECP pipeline RES & batteries (some of whom may not have received offers but are still considered within these studies).

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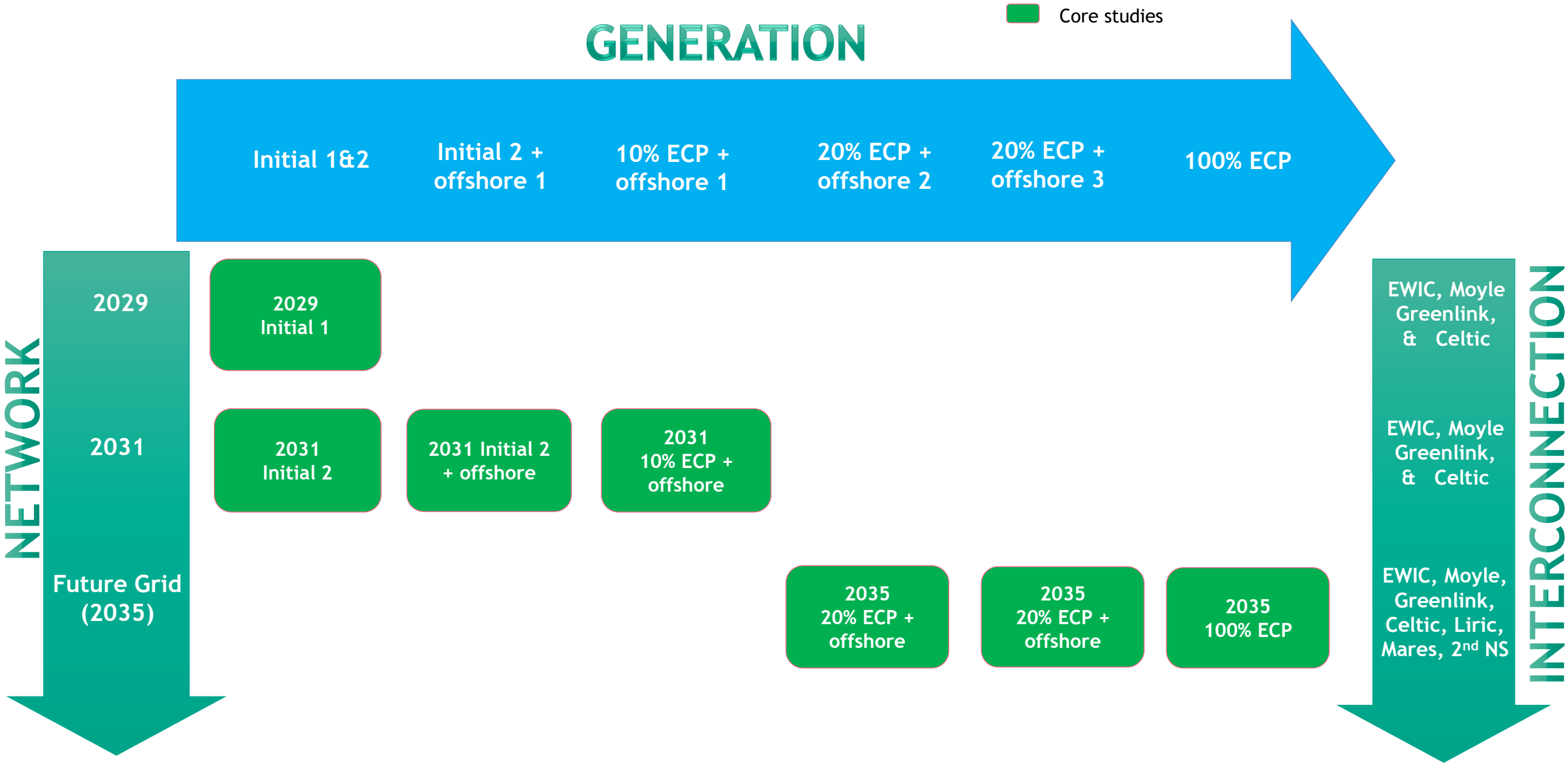
Core studies
GENERATION
Initial 1&2
Initial 2 + offshore 1
10% ECP + offshore 1
20% ECP + offshore 2
20% ECP + offshore 3
100% ECP
NETWORK
2029
2031
Future Grid (2035)
2029 Initial 1
2031 Initial 2
2031 Initial 2 + offshore
2031 10% ECP + offshore
2035 20% ECP + offshore
2035 20% ECP + offshore
2035 100% ECP
INTERCONNECTION
EWIC, Moyle Greenlink, & Celtic
EWIC, Moyle Greenlink, & Celtic
EWIC, Moyle, Greenlink, Celtic, Liric, Mares, 2nd NS

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Constraint Allocation

ECP-GSS-1

- Constraint dispatch down is applied on an annual basis not hourly.
- Wind and solar dispatch down are analysed separately.
- The total annual wind constraint dispatch down in a constraint subgroup is applied to each wind unit according to their annual available energy. The same applies to solar.

ECP-GSS-2

- Every hour analysed individually.
- The total constraint dispatch down is split among all units in the subgroup according to their hourly availability.

Impact

- Total dispatch down will not be impacted.
- Surplus and curtailment dispatch down will not be impacted.
- Constraint dispatch down allocation will change.

Illustration Purposes Only
In a single hour in a constraint group with four units:

	Available Energy (MW)	Model Output Constraint Dispatch Down (MW)	Current Approach DD (MW)	Future Approach DD (MW)
Wind Farm A	50	10	5	7.5
Wind Farm B	50	0	5	7.5
Solar Farm A	50	20	10	7.5
Solar Farm B	50	0	10	7.5

Wind DD = 10% (10MW of 100MW Available

Solar DD = 20% (20MW of 100MW available)

Total DD = 15% (30MW of 200MW available)

Unit DD = 0.15*Available Energy

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Solar Profile Overview

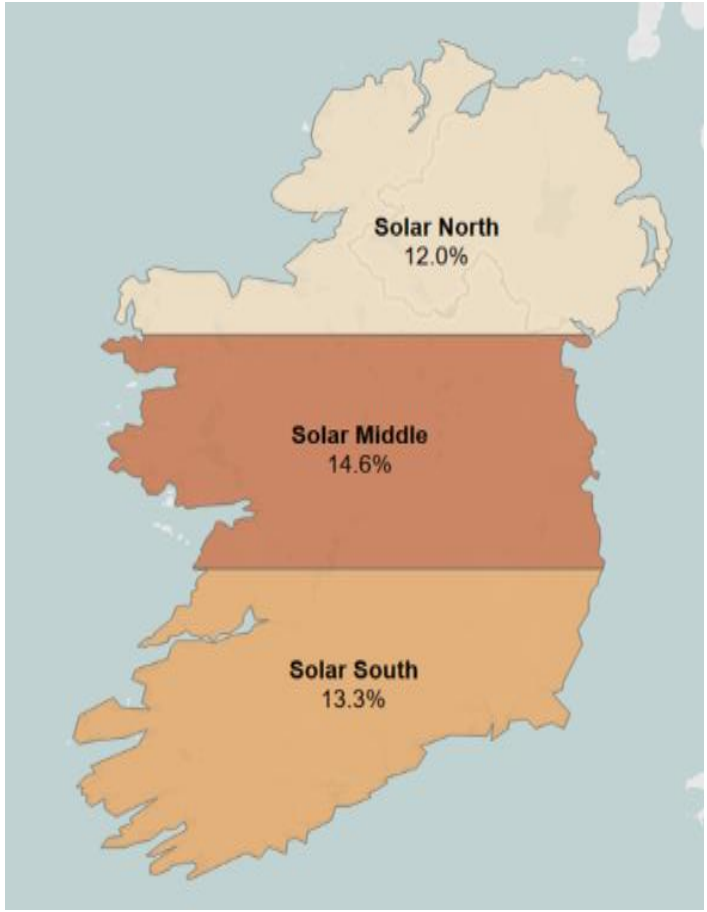
ECP GSS1 Profiles

- Three hourly availability profiles applied
- 2020 satellite data
- Over-install assumption of 13%

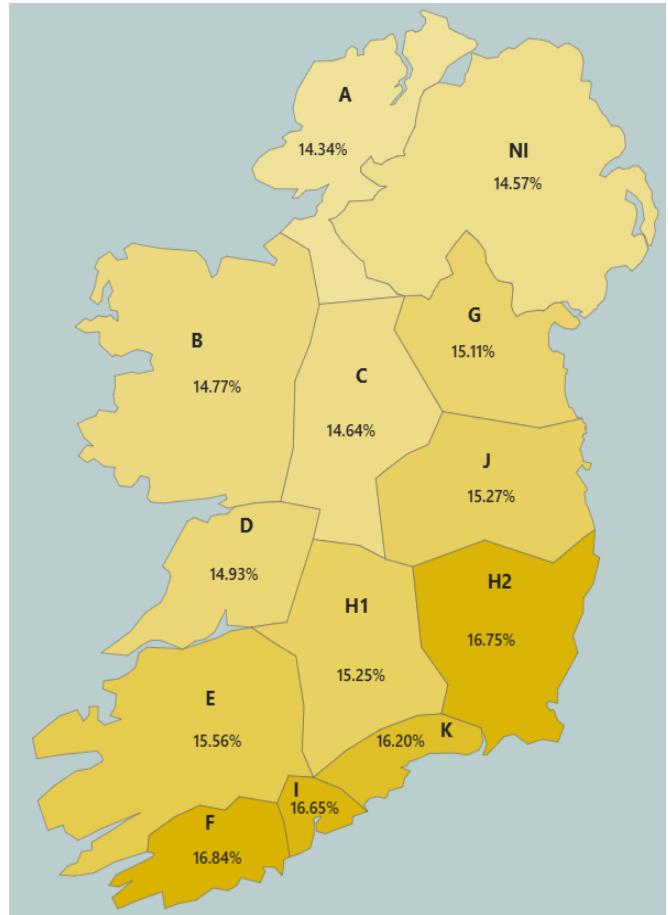
ECP GSS2 Profiles

- 12 Area profiles + NI
- 2022 satellite data
- Over-install assumption of 30%

ECP-GSS-1 Solar Areas



ECP-GSS-2 Solar Areas



Preliminary annual average capacity factors
Final capacity factors may vary slightly

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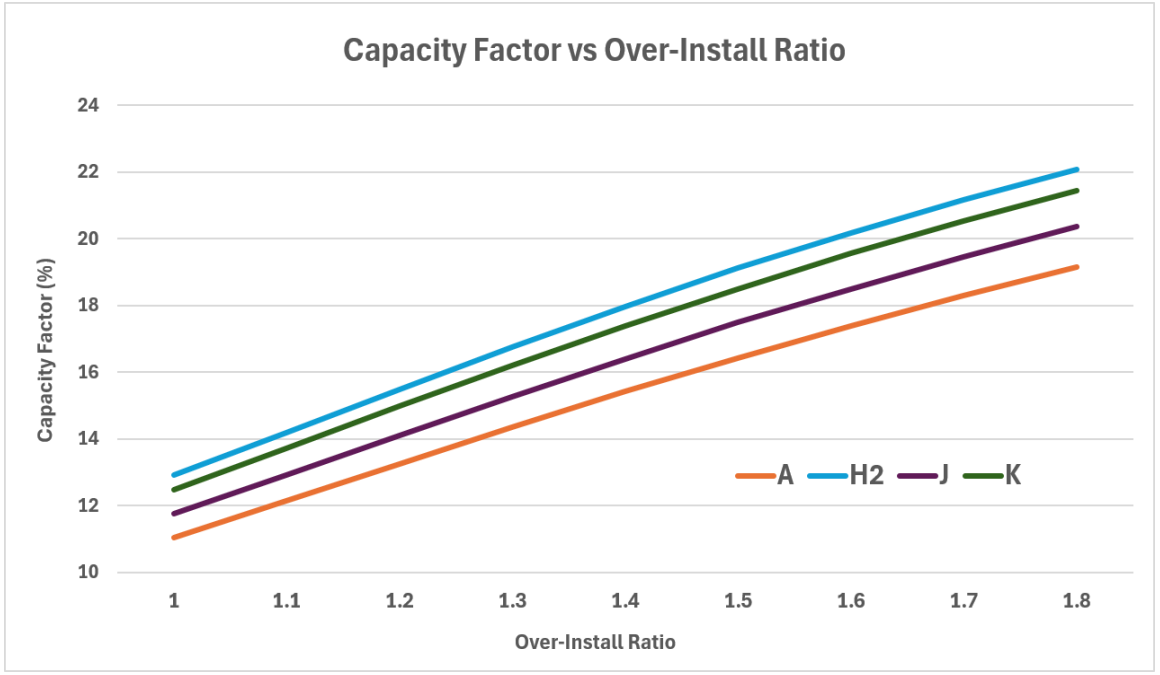
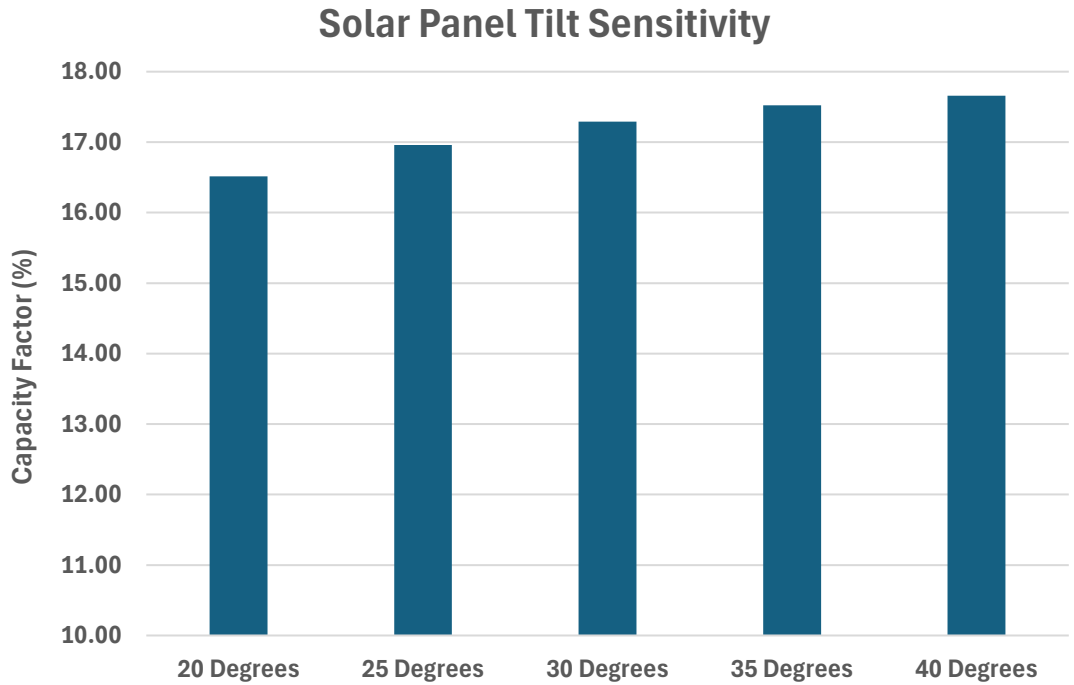
Over-Installing and Capacity Factor

- Increasing the solar farm over-install ratio assumption will increase solar farm availability (capacity factor).
- From our analysis solar panel tilt, technologies is not as impactful as considering over-install ratio.
- An over-install ratio assumption of 30% was selected. This will lead to an increase in solar unit's available energy in ECP-GSS-2.





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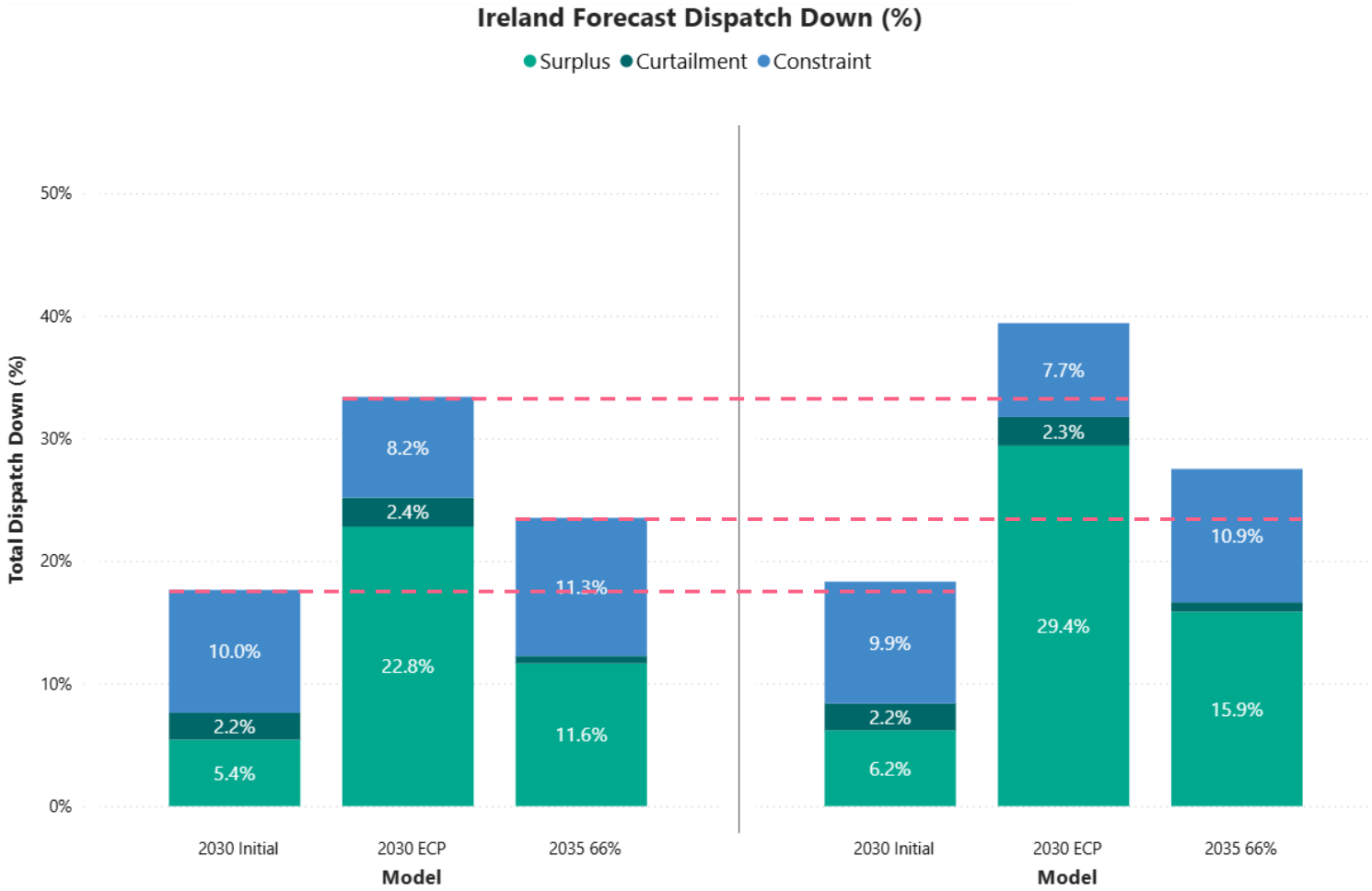
Impact Of New Solar Profiles

- Due to the higher level of available energy using the updated solar profiles, higher levels of dispatch down are forecast.
- Total renewable generation increases by 2-5% depending on the scenario.
- Total renewable dispatch down increases by 1-6% depending on the scenario.

Area	Capacity Factor (%)		
	DC/AC 1.13	DC/AC 1.3	DC/AC 1.5
A	12.47	14.34	16.42
B	12.85	14.77	16.91
C	12.73	14.64	16.77
D	12.95	14.93	17.1
E	13.53	15.56	17.81
F	14.65	16.84	19.19
G	13.14	15.11	17.3
H1	13.26	15.25	17.45
H2	14.57	16.75	19.11
I	14.48	16.65	18.99
J	13.27	15.27	17.48
K	14.09	16.2	18.5
Ireland	**13.50**	**15.53**	**17.75**

Preliminary annual average capacity factors
Final capacity factors may vary slightly

Wind and Solar Total Dispatch Down from ECP-GSS-1



Left: 2020 3 area solar profiles with 1.13 over-install ratio
Right: 2020 12 area solar profiles with 1.5 over-install ratio

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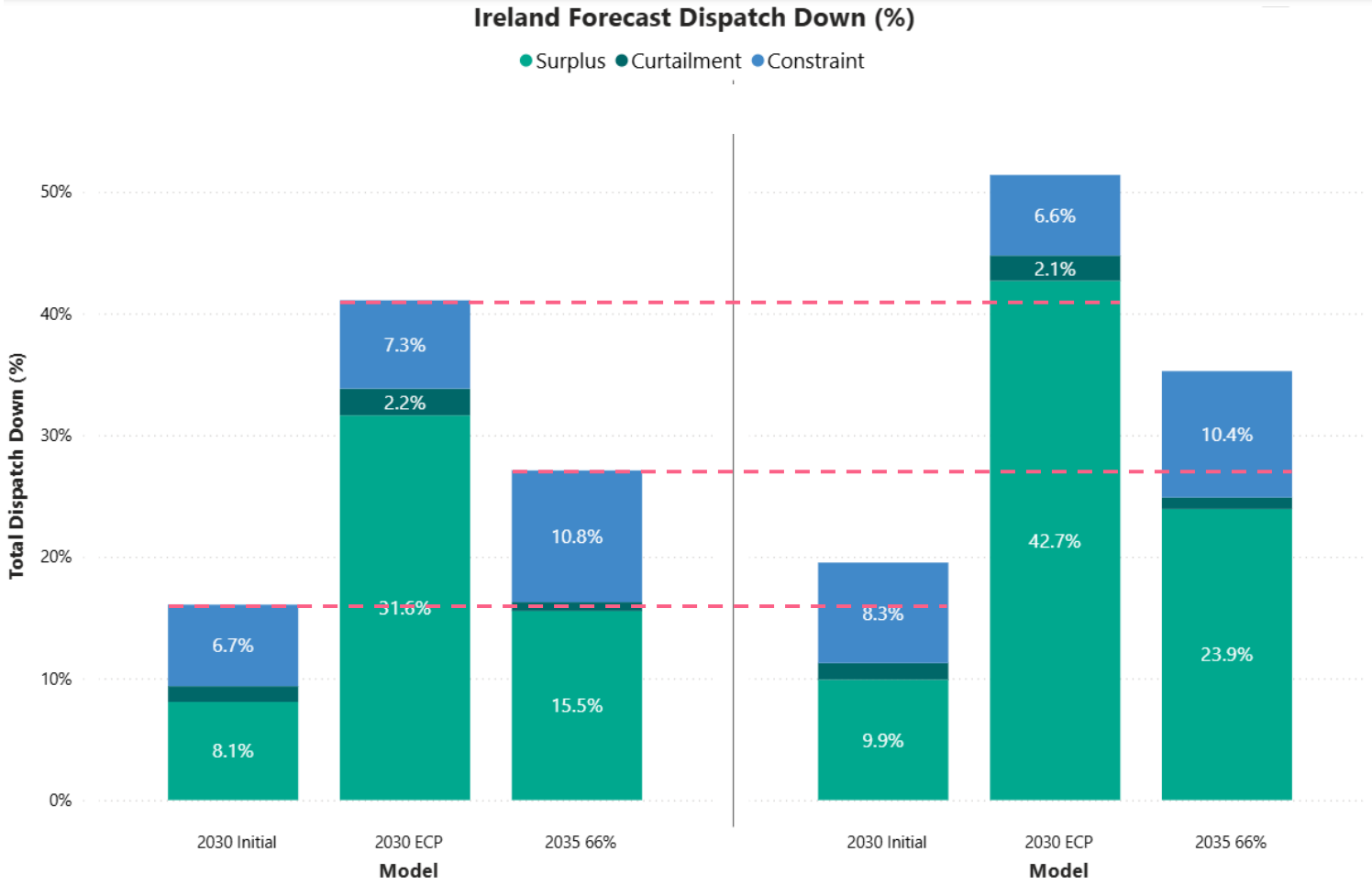
Solar Total Dispatch Down from ECP-GSS-1



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Right: 2020 12 area solar profiles with 1.5 over-install ratio

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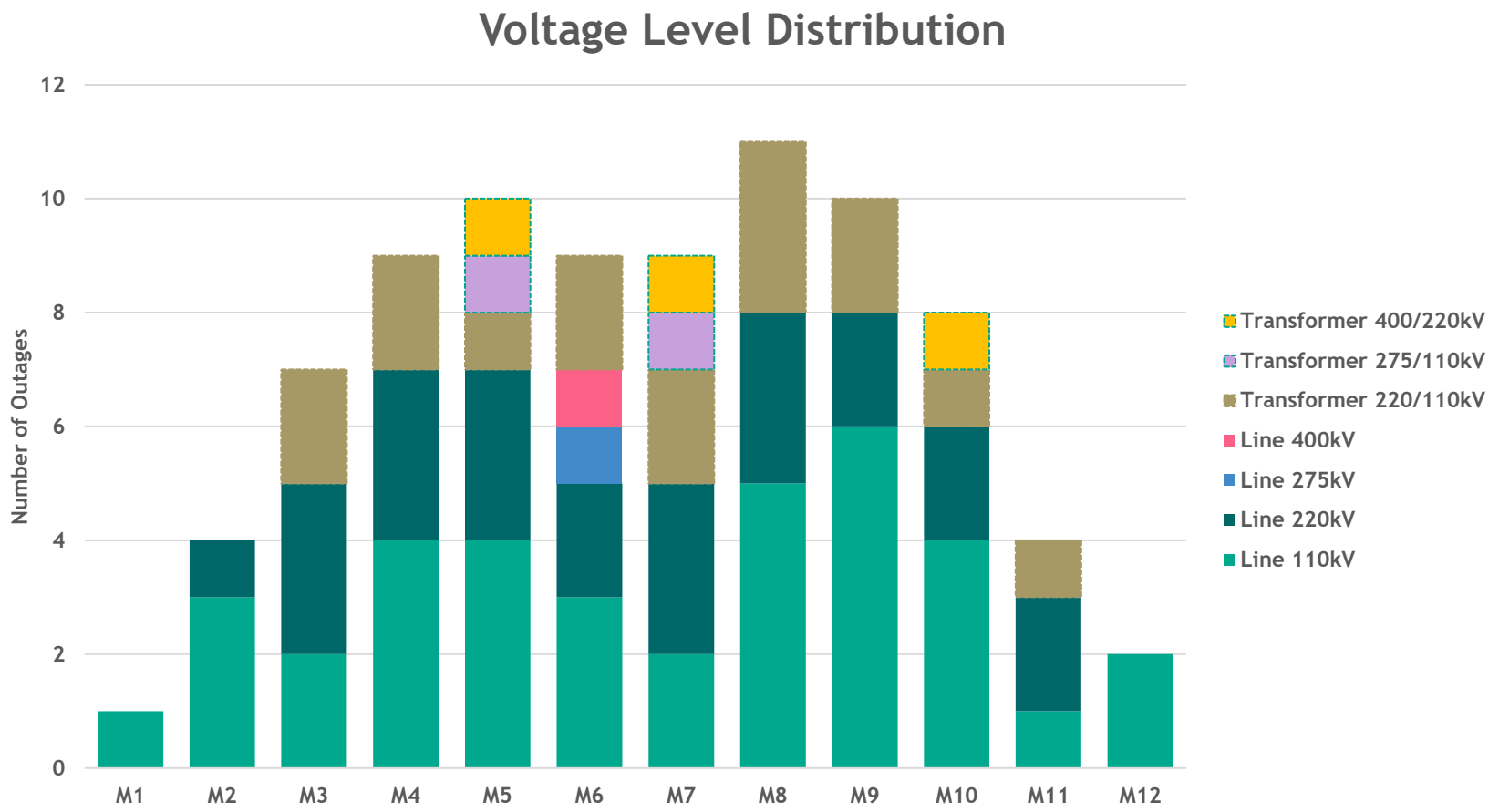
Model Inputs

	ECP-GSS-1	ECP-GSS-2	Comment
Demand (TER/Peak)	AIRAA 2026-2035 Median	AIRAA 2026-2035 Median	
Demand (profile)	AIRAA Forecast Weather Year	2022 Weather Year	
Wind Profiles	12 Areas, 2020 profile	12 Areas, 2022 profile	
Solar Profiles	3 Areas, 2020 profile	12 Areas, 2022 profile	Aligning with wind areas. CF update
Conventional Generation	AIRAA model	AIRAA model	
Interconnector Capacity	2030: EWIC, Celtic, Greenlink, Moyle 2035: EWIC, Celtic, Greenlink, Moyle, MARES, LIRIC	2029: EWIC, Celtic, Greenlink, Moyle 2031: EWIC, Celtic, Greenlink, North South*, Moyle 2035: EWIC, Celtic, Greenlink, Moyle, North South, Mares, LIRIC	
Interconnector Modelling	Dynamic model of GB & France	Dynamic model of GB & France	

Network Reinforcements and outages

	ECP-GSS-1	ECP-GSS-2	Comment
Network Reinforcements	Per 2026 Q1 TID	Per 2026 Q2 TID	
Network Outages	12 Month Representative Outage Plan	Updated 12 Month Representative Outage Plan	



Operational Constraints

	ECP-GSS-2		
Operational Constraints	**2029**	**2031**	**2035**
Inertia	23,000 MWs (17 GW LCIS Installed)	23,000 MWs (21 GW LCIS Installed)	23,000 MWs (25 GW LCIS Installed)
Minimum Sets (IE, NI)	IE-3, NI-1	IE-2, NI-1	IE-0, NI-0
Reserve (IE, NI)	POR /SOR/TOR I/TOR II - LSI Replacement reserve - LSI	POR /SOR/TOR I/TOR II - LSI Replacement reserve – LSI	POR /SOR/TOR I/TOR II - LSI Replacement reserve - LSI
Non-Synchronous Generation	-90%	-95%	-100%
Dublin Voltage Control Constraint (S_NBMIN_DubNB2) & (S_NBMIN_DubNB)	-When EWIC is available – 1,2 -When EWIC is on outage – 1,3 -[DB1, HNC, HN2] , [B1, HNC, HN2, PBA, PBB]	-When EWIC is available – 1,2 -When EWIC is on outage – 1,3 -[DB1, HNC, HN2] , [B1, HNC, HN2, PBA, PBB]	-When EWIC is available – 0,1 -When EWIC is on outage – 0,2 -[DB1, HNC, HN2] , [B1, HNC, HN2, PBA, PBB]

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Battery, LDES & Hybrid Units

	ECP-GSS-1	ECP-GSS-2	Comment
Installed Capacity	Based on ECP Pipeline	Based on ECP Pipeline	
MEC / MIC	MEC = MIC	MEC = MIC	
Attributes	2 cycles per day 81% RTE 5% min/max SOC	2 cycles per day 81% RTE 5% min/max SOC	
TUOS	No charge / minimum profit to dispatch	No charge / minimum profit to dispatch	
POR/SOR/TOR	Batteries <= 1hr duration are the only contributors	Batteries <= 1hr duration are the only contributors	These batteries are still allowed engage in energy arbitrage but reserve requirement will be held back.
Replacement Reserve	Batteries > 1hr duration can contribute as well as conventional units	Batteries > 1hr duration can contribute as well as conventional units	
Redispatch	Batteries redispatch between each run	Batteries redispatch between each run	
Hybrid Units	No sharing of MEC Power sharing not enabled but constraint dispatch may resemble power sharing	No sharing of MEC Power sharing not enabled but constraint dispatch may resemble power sharing	
LDES	No operational envelope	No operational envelope	Modelled as any other battery with longer duration

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Timeline



Engagement Plan

- Initial Engagement Webinar – 25.09.2026
- Data Freeze Date – 02.10.2026
- Assumptions and Scenario Matrix Finalised – 02.10.2026
- Draft Results Webinar – 15.12.2026
- Publication of Results – 15.12.2026
- Closing date to submit queries – 08.01.2027
- Closing date to respond to queries – 22.01.2027

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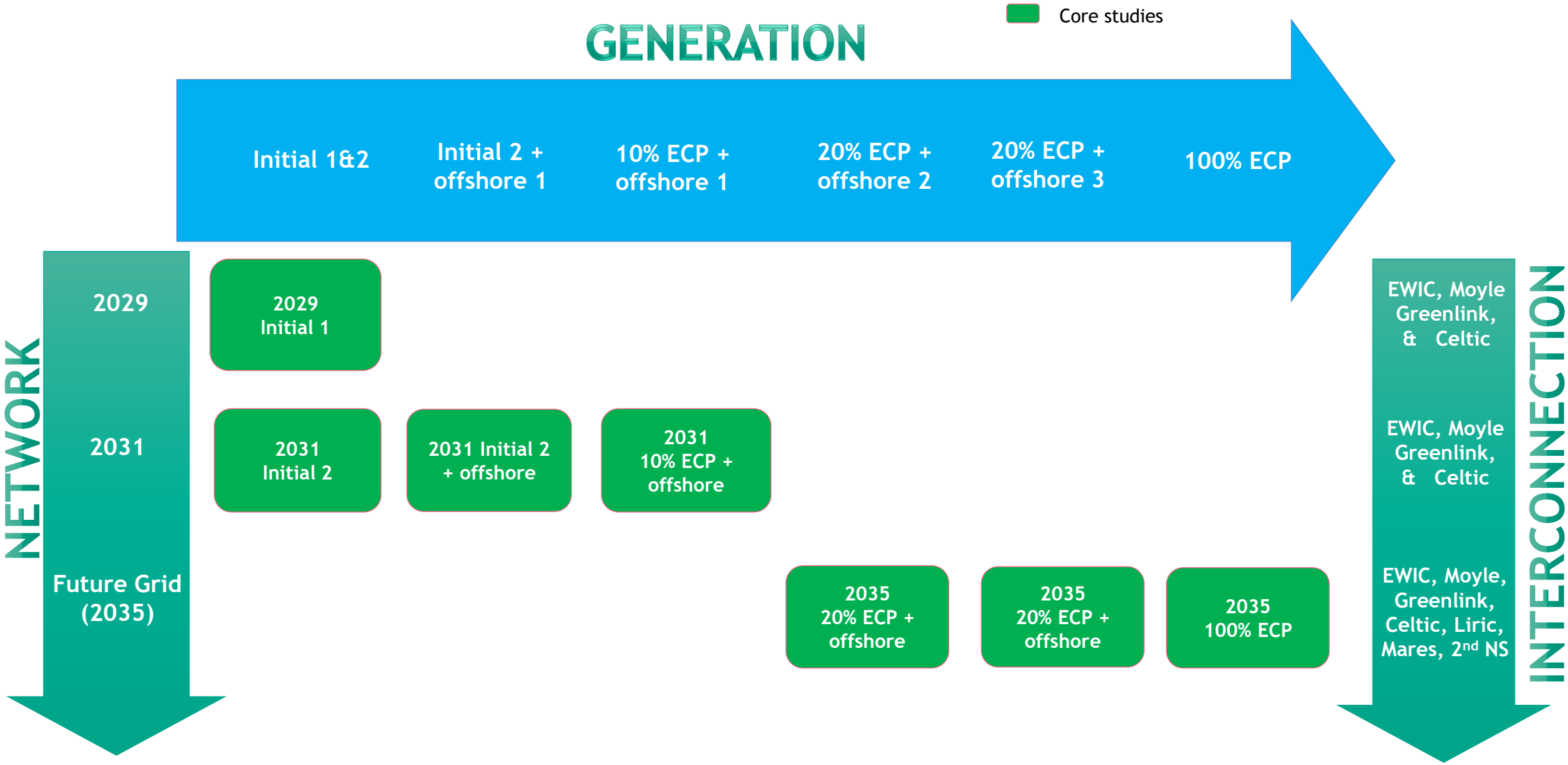
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Thank You
Questions?



Appendix

