Constraints Forecast Studies for ECP 2.5

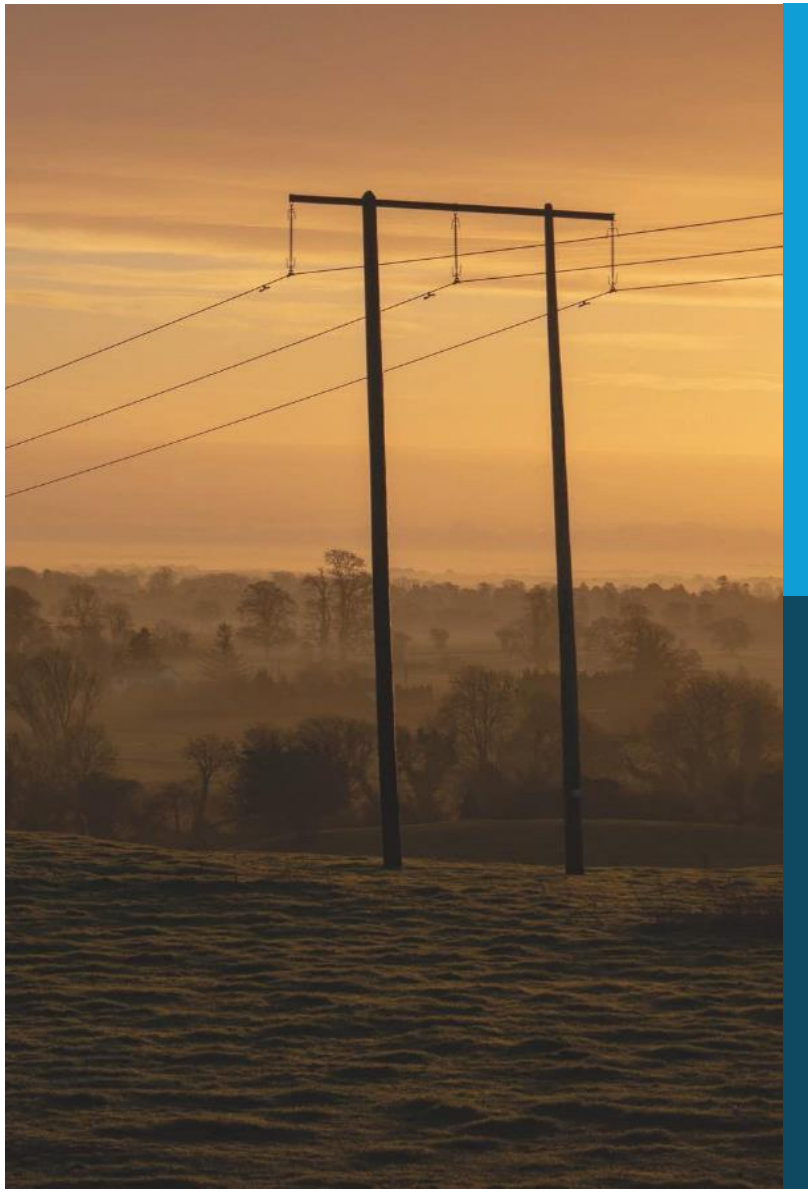
Summary of Initial Draft Results

23/01/2026

EirGrid

Agenda

- Welcome and Updates
- Key Messages
- Background
- Assumptions
- Draft Results
- Sensitivities
- Actual vs ECP Forecast
- Area level results



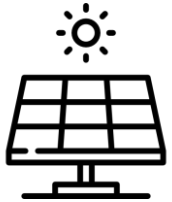
Document updates

- Plain English Document
- Methodology Statement
- Assumptions Document
- Ireland System Summary
- Key Summaries of Area Reports
- Results in Excel Format

Key Messages

- Largest portfolio to date and largest increase from previous ECP

- New interconnector modelling which more accurately captures aligned weather patterns and market dynamics with interconnected regions



- Dispatch down higher than previous ECP constraint forecast studies driven primarily by surplus

22% 

- Sensitivities show the benefit of additional storage capacity and interconnection

What is Dispatch Down

Total Dispatch Down: Sum of Surplus, Curtailment & Constraint

Type of Dispatch Down	Definition
Surplus	Dispatch down applied for energy balancing when generation exceeds demand + interconnector flows.
Curtailment	Dispatch Down applied to ensure operational limits are met.
Constraint	Dispatch Down applied to manage network constraints.

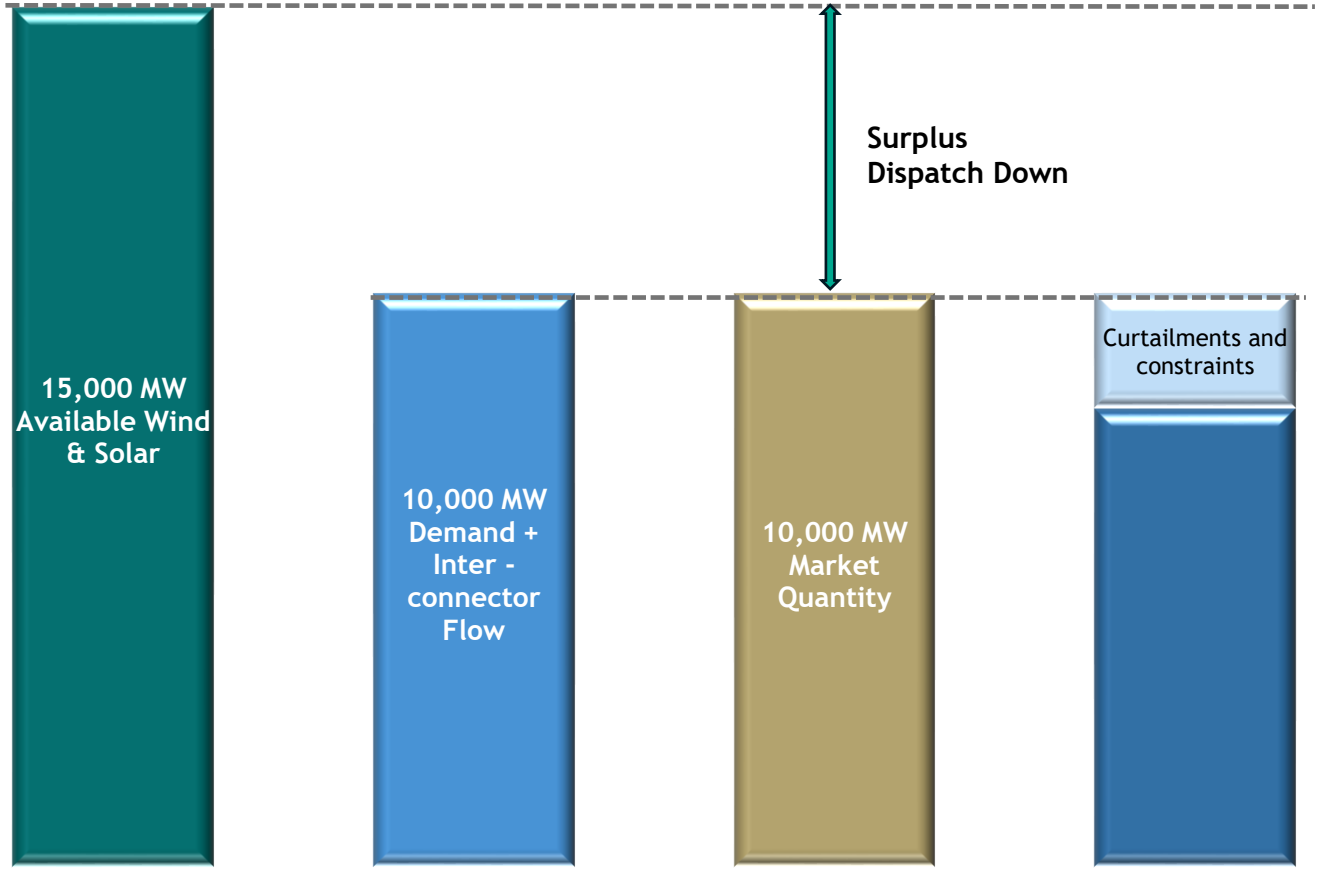
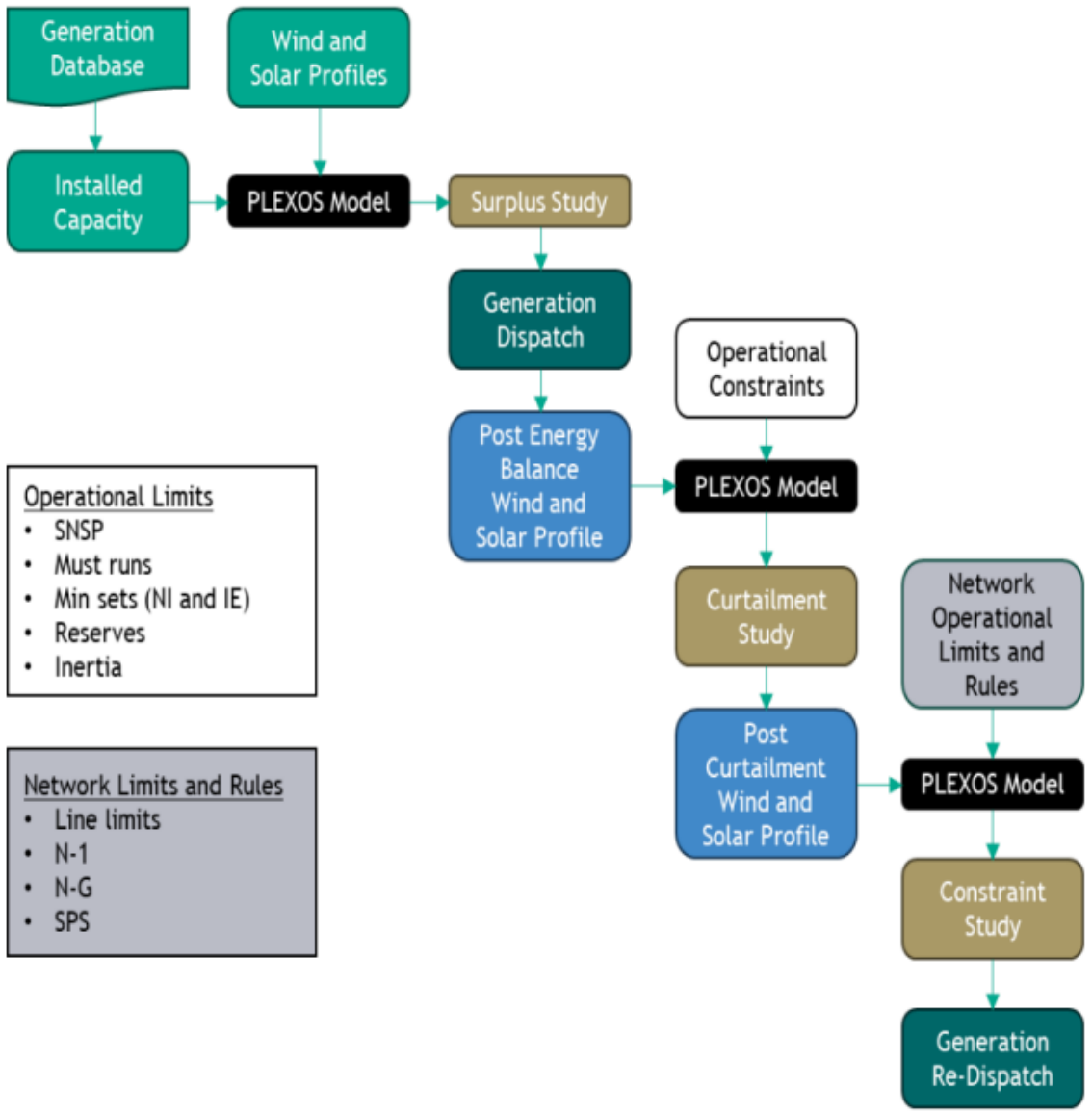


Illustration purposes only

Constraints Forecast Modelling Process

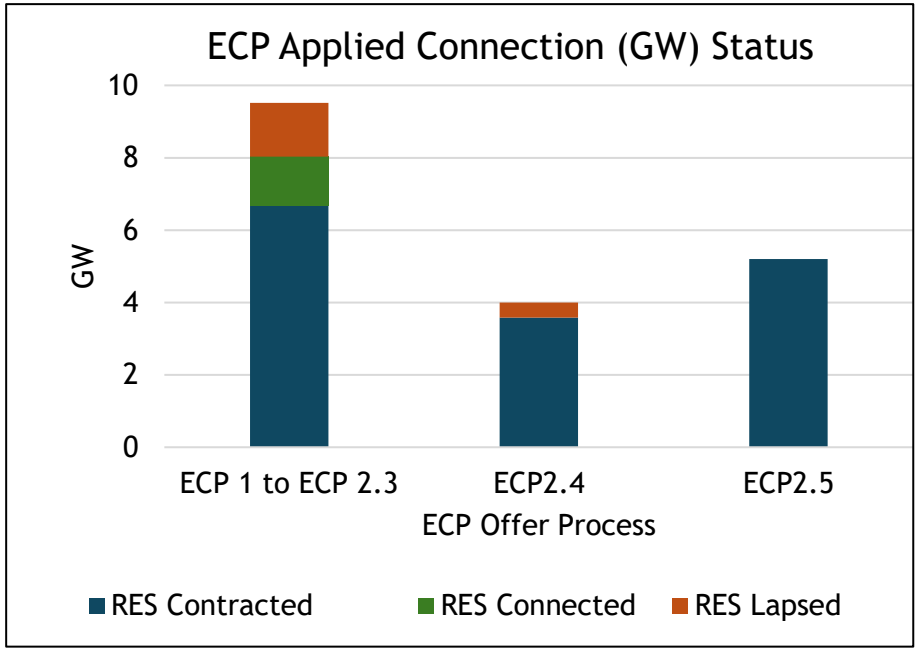
1. Plexos based model
2. Each scenario has 3 runs – surplus, curtail and constraint
3. Models are run sequentially to calculate surplus, curtailment and constraints
4. The output from the Surplus Study feeds into the Curtailment Study which feeds into the Constraint Study
5. Operational limits and network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

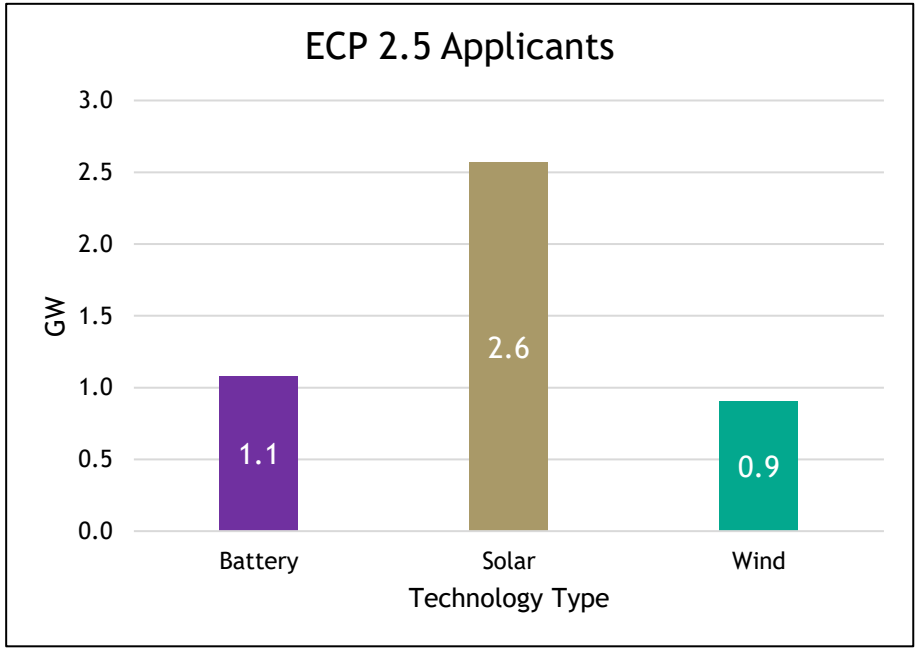


ECP - 2.5 Overview

- Introduction
  - The ECP 2-5 Constraints Analysis is carried out by EirGrid (as mandated by CRU/20/060) to forecast dispatch down levels for wind and solar projects.
  - The future study years are: 2028,2030 & 2035, layering in increase in installed generation capacity, higher demand and updated operational policy, along with grid reinforcements, will determine the Total Dispatch Down.
  - 6 Core studies and 8 sensitivities modelled.

- Overview
  - Report used by industry
  - Beneficial when reviewing:
    - locational signal for future RES, LDES and other generation applications.
    - Impacts of reinforcements and operational developments to RES projects.
    - Review of RES auction prices.
    - Comparison with other internal reports.





Assumptions in ECP 2.5 compared to ECP 2.4

Assumption	ECP 2.4	ECP 2.5
Article 12 and 13	Interim implementation has been updated to pro-rata constraints on RES.	Grandfathering of Surplus and Constraints
Demand	AIRAA 2025-2034	AIRAA 2026-2035
Conventional Generation	AIRAA 2025-2034 and capacity auction	AIRAA 2026-2035
RES generation (Ireland)	Updated with ECP 2.4 list	Updated with ECP 2.5 list
Interconnector	2027 – EWIC, Greenlink, Moyle. 2029 – EWIC, Greenlink, Moyle, Celtic, North-South 2. Future Grid – EWIC, Greenlink, Moyle, LirIC, Celtic, North-South 2, 2nd France.	2028 – EWIC, Greenlink, Moyle, Celtic-Q2 2030 – EWIC, Greenlink, Moyle, Celtic Future Grid – EWIC, Greenlink, Moyle, LirIC, Celtic, 2nd France, **MaRES**, 2nd North South
Interconnector Modelling Methodology	Static price	**Dynamic price** ICs now reflect the regional price differentials and flows currently observed in the SEM, GB and France Markets.
Batteries	Based on current offers and applications. Short duration (<= 1hr) for maintaining reserve (POR, SOR, TOR1 & TOR2). Longer duration (>1 hr) for energy arbitrage and replacement reserve. 2 cycle per day limit.	Same as ECP 2.4
Operational Constraints	Operational roadmap policy	Operational roadmap policy Weekly operational constraints
Reinforcement Assumptions	Network Delivery Portfolio (NDP) and SOEF 1.1 Roadmap	NDP and SOEF Roadmap 1.1
Transmission outages	9-month representative transmission programme	12-month representative transmission programme

New interconnector modelling captures aligned weather patterns

ECP 2.4 – Static price

- A static price calibrated to historical flows
- SEM always import if SEM price is > 80 EUR/MWh
- SEM always export if SEM price is < 40 EUR/MWh

Drawbacks

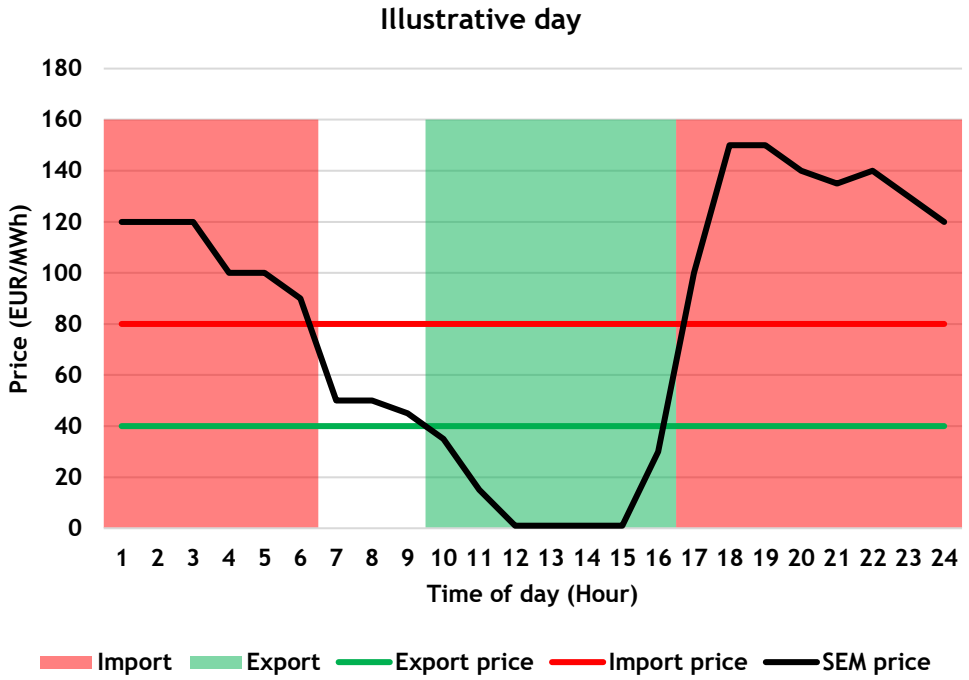
- Always assumes exporting during dispatch down
- Allows ICs to fully change dispatch based on operational and network constraints

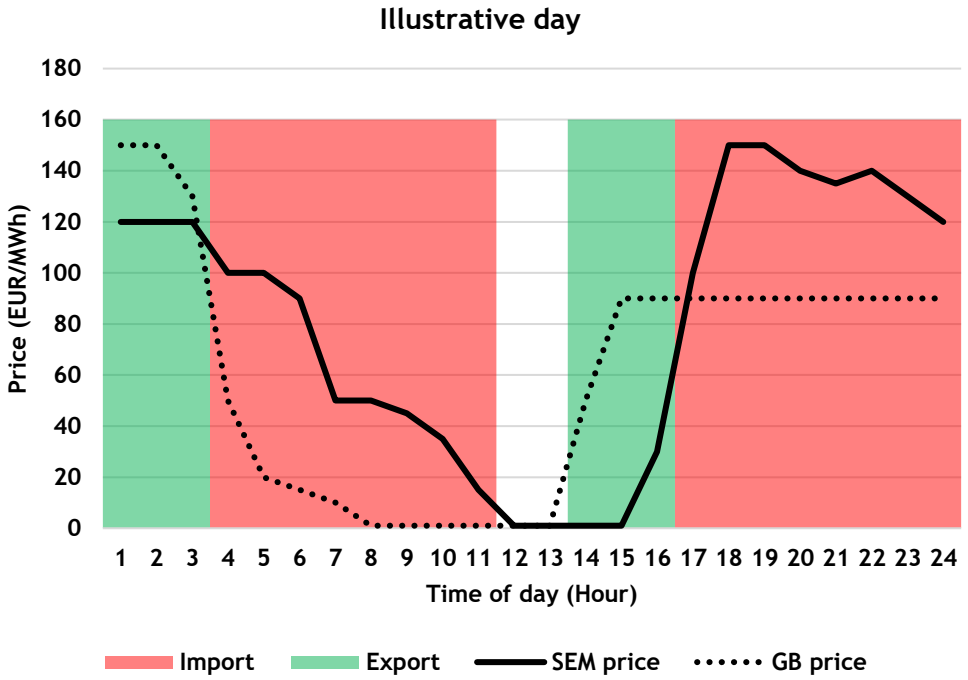
ECP 2.5 – Dynamic price

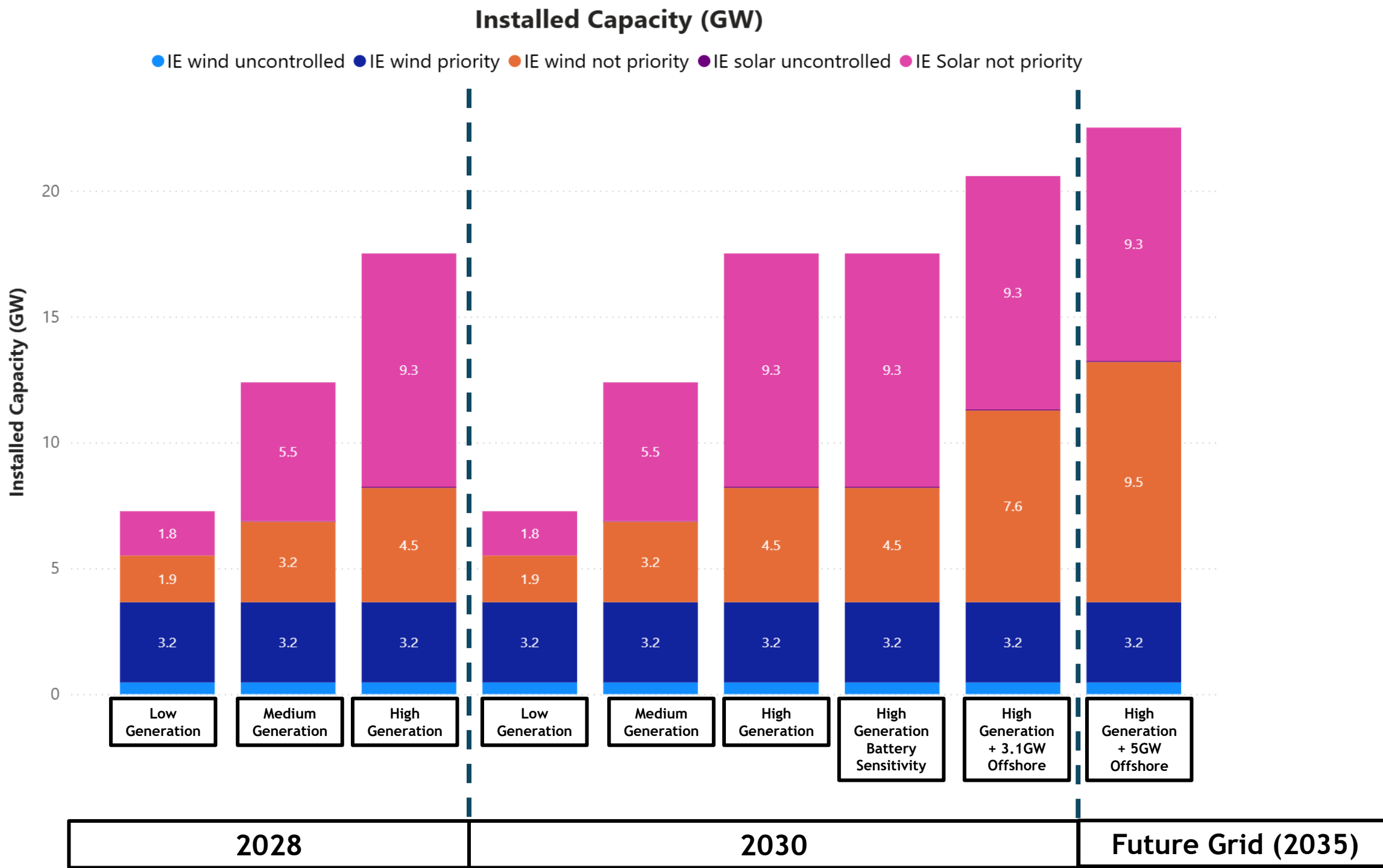
- A price model of GB and FR based on ERAA 2024 inputs producing a dynamic model
- Heat rates of units in GB and FR calibrated for historical flows

Benefits

- More realistic interconnector flows especially during high renewables
- Fixing flows at the surplus stage better representing when IC dispatch is scheduled






Installed Capacity (GW)
IE wind uncontrolled
IE wind priority
IE wind not priority
IE solar uncontrolled
IE Solar not priority
Installed Capacity (GW)
0
5
10
15
20
1.8
1.9
3.2
5.5
3.2
9.3
4.5
3.2
1.8
1.9
3.2
5.5
3.2
9.3
4.5
3.2
9.3
4.5
3.2
9.3
7.6
3.2
9.3
9.5
3.2
Low Generation
Medium Generation
High Generation
Low Generation
Medium Generation
High Generation
High Generation Battery Sensitivity
High Generation + 3.1GW Offshore
High Generation + 5GW Offshore
2028
2030
Future Grid (2035)

GENERATION

Initial (8.3 GW) → 50% (15.1 GW) → ECP (21.9 GW) → ECP + 3.1 GW offshore (25.0 GW) → ECP + 5 GW offshore (26.9 GW)

NETWORK

- 2028 (GF)
- 2028 (pro-rata)
- 2030(GF)
- 2030(pro-rata)
- Future Grid (GF)

CORE ECP 2-5 STUDIES

Study
Study
Study
Study*
Study
Study
Study
Study*

wo 3.4GW battery

Battery*

OFFSHORE STUDY

Study
Study*
Study
ECP 2.4 IC flow method
IC flow change*
Study*

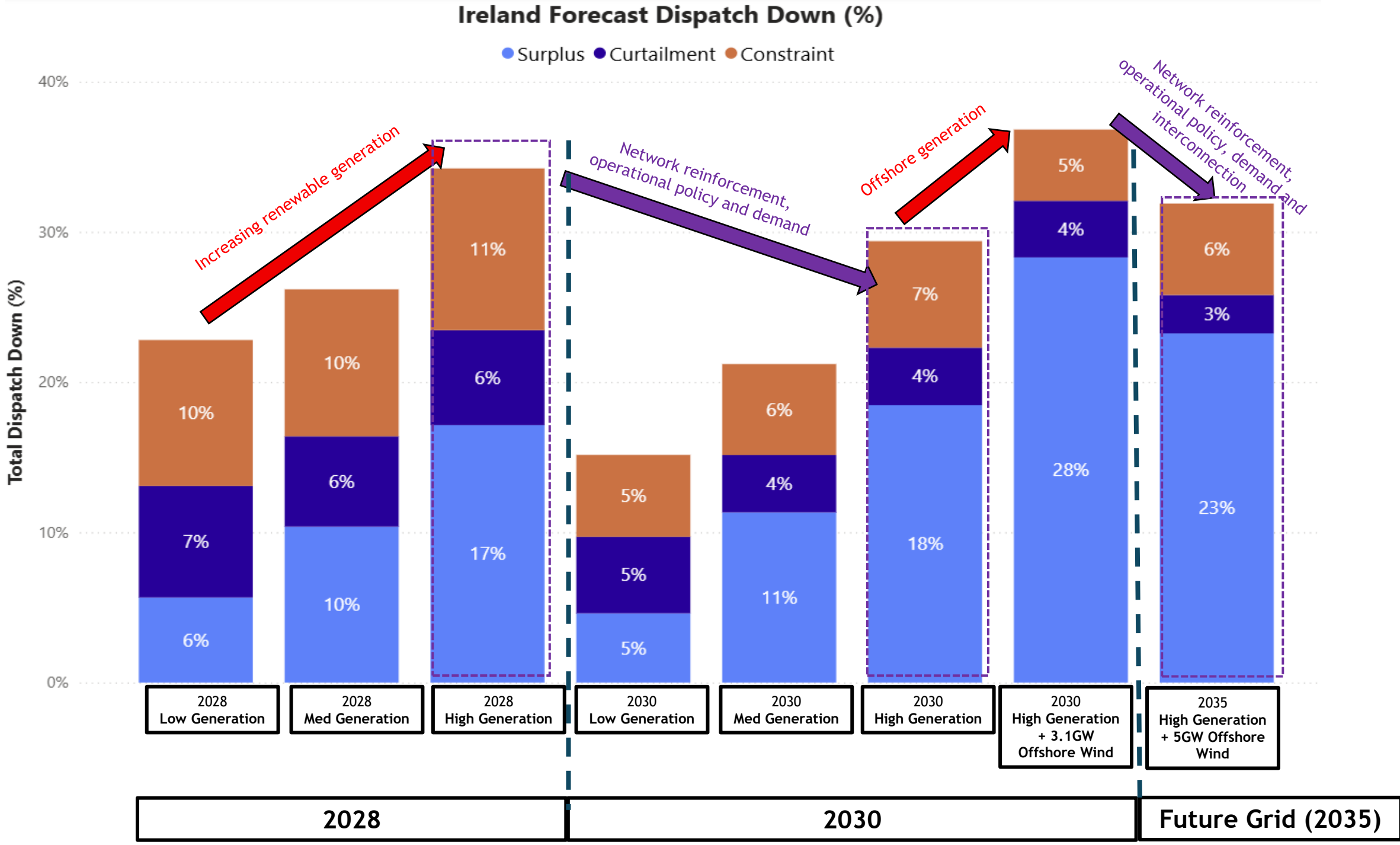
Core studies
Offshore sensitivity
Pro-rata sensitivity
Battery sensitivity

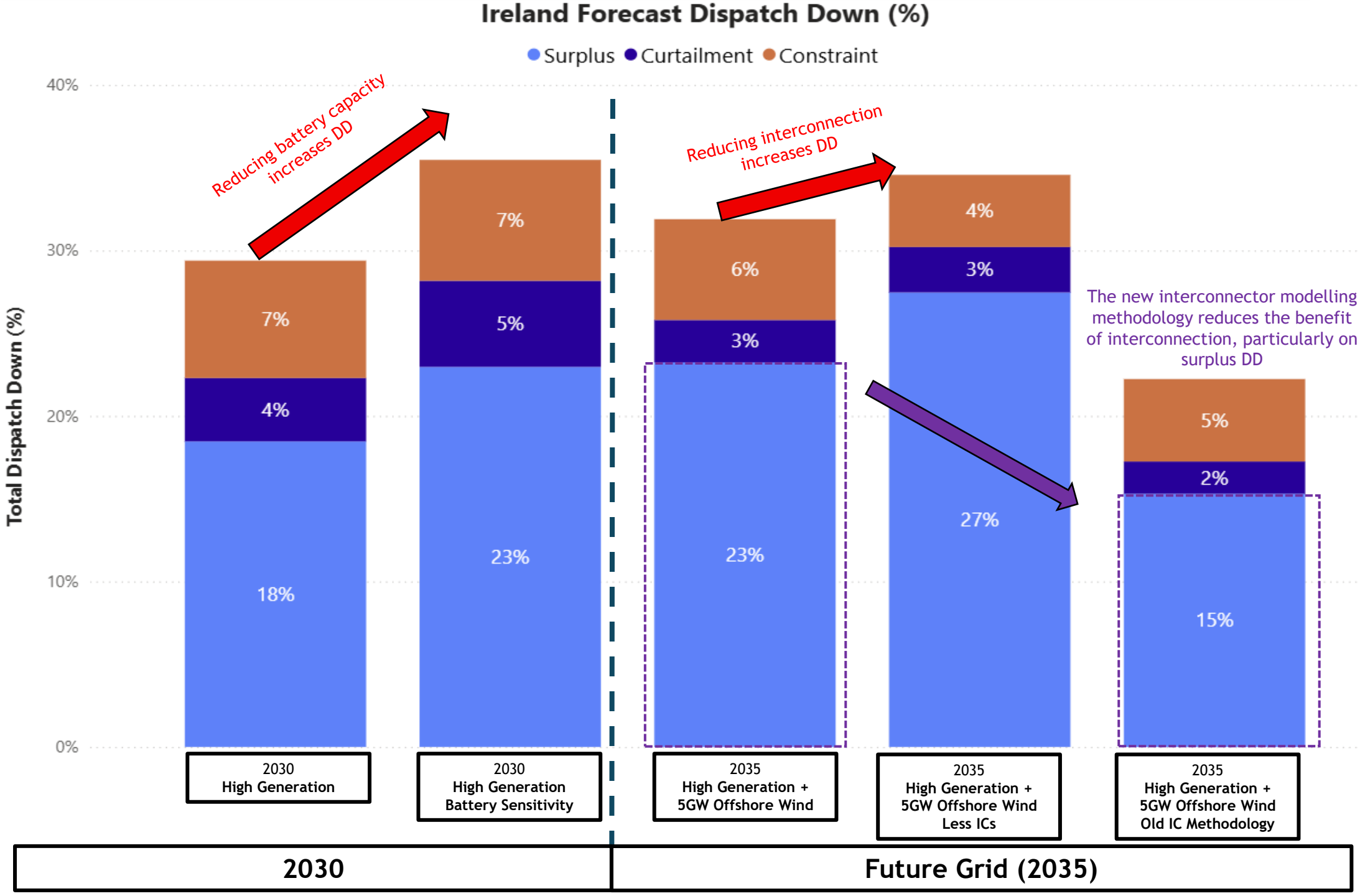
INTERCONNECTION

- EWIC, Moyle Greenlink Celtic
- EWIC, Moyle, Greenlink, Celtic
- EWIC, Moyle, Greenlink, Celtic, Liric, 2nd France, MarRES, 2nd NS
- EWIC, Moyle, Greenlink, Celtic, 2nd NS

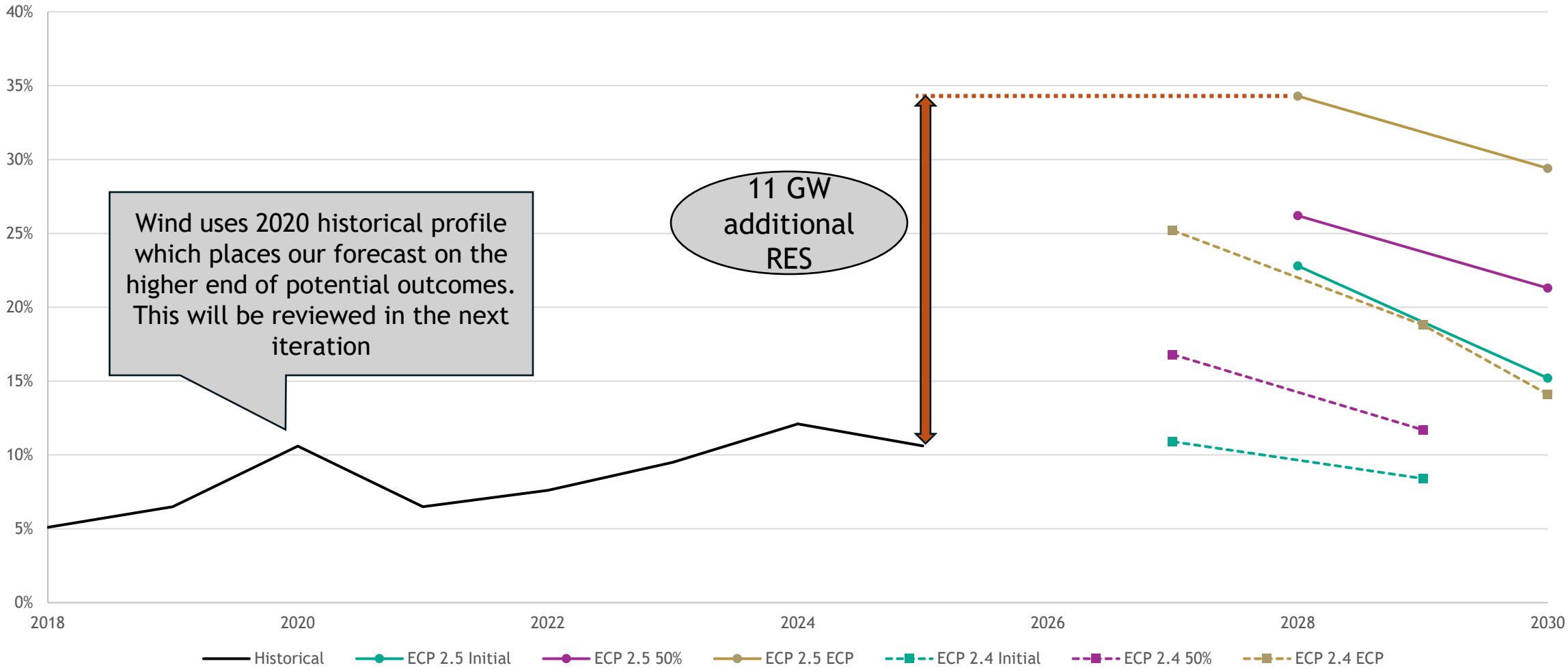
Maintenance sensitivity scenario are not displayed but are modelled

* Industry request

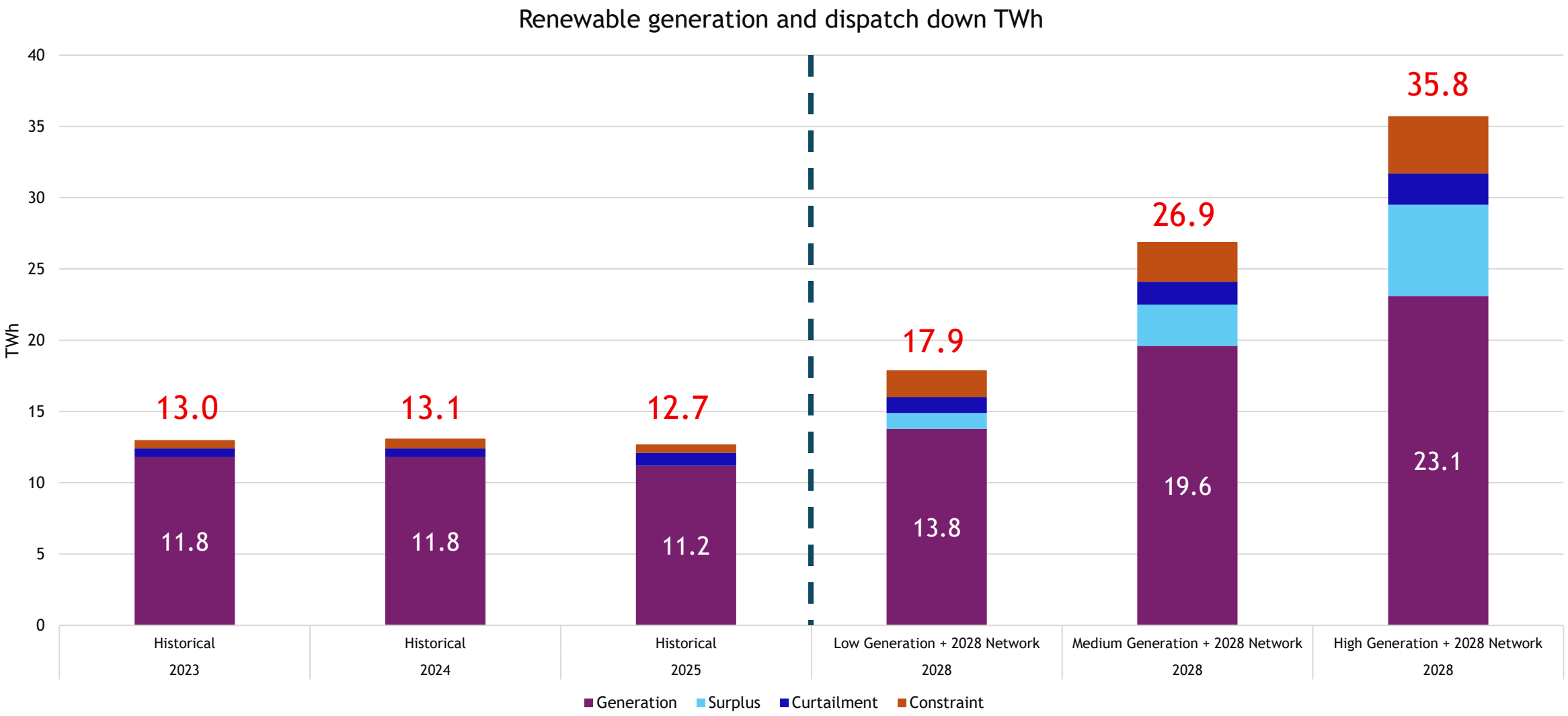

Ireland Forecast Dispatch Down (%)
Surplus
Curtailment
Constraint
Total Dispatch Down (%)
40%
30%
20%
10%
0%
Increasing renewable generation
Network reinforcement, operational policy and demand
Offshore generation
Network reinforcement, operational policy, demand and interconnection
10%
7%
6%
10%
6%
10%
11%
6%
17%
5%
5%
5%
6%
4%
11%
7%
4%
18%
5%
4%
28%
6%
3%
23%
2028 Low Generation
2028 Med Generation
2028 High Generation
2030 Low Generation
2030 Med Generation
2030 High Generation
2030 High Generation + 3.1GW Offshore Wind
2035 High Generation + 5GW Offshore Wind
2028
2030
Future Grid (2035)

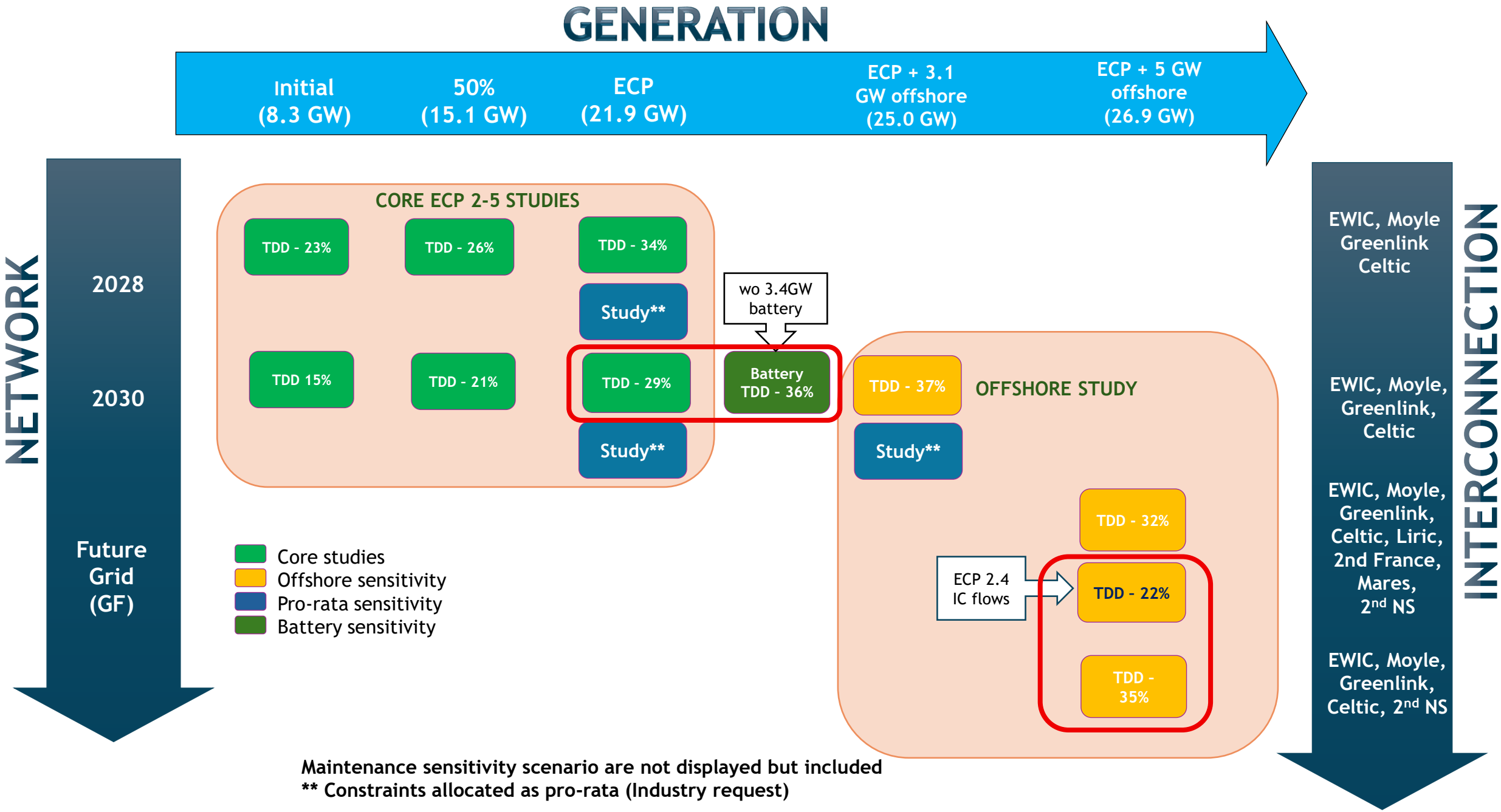

Ireland Forecast Dispatch Down (%)
Surplus
Curtailment
Constraint
Total Dispatch Down (%)
40%
30%
20%
10%
0%
Reducing battery capacity increases DD
Reducing interconnection increases DD
7%
4%
18%
7%
5%
23%
6%
3%
23%
4%
3%
27%
5%
2%
15%
The new interconnector modelling methodology reduces the benefit of interconnection, particularly on surplus DD
2030 High Generation
2030 High Generation Battery Sensitivity
2035 High Generation + 5GW Offshore Wind
2035 High Generation + 5GW Offshore Wind Less ICs
2035 High Generation + 5GW Offshore Wind Old IC Methodology
2030
Future Grid (2035)

Total Dispatch Down - Forecast vs Historical



RES TWh - Forecast vs Historical



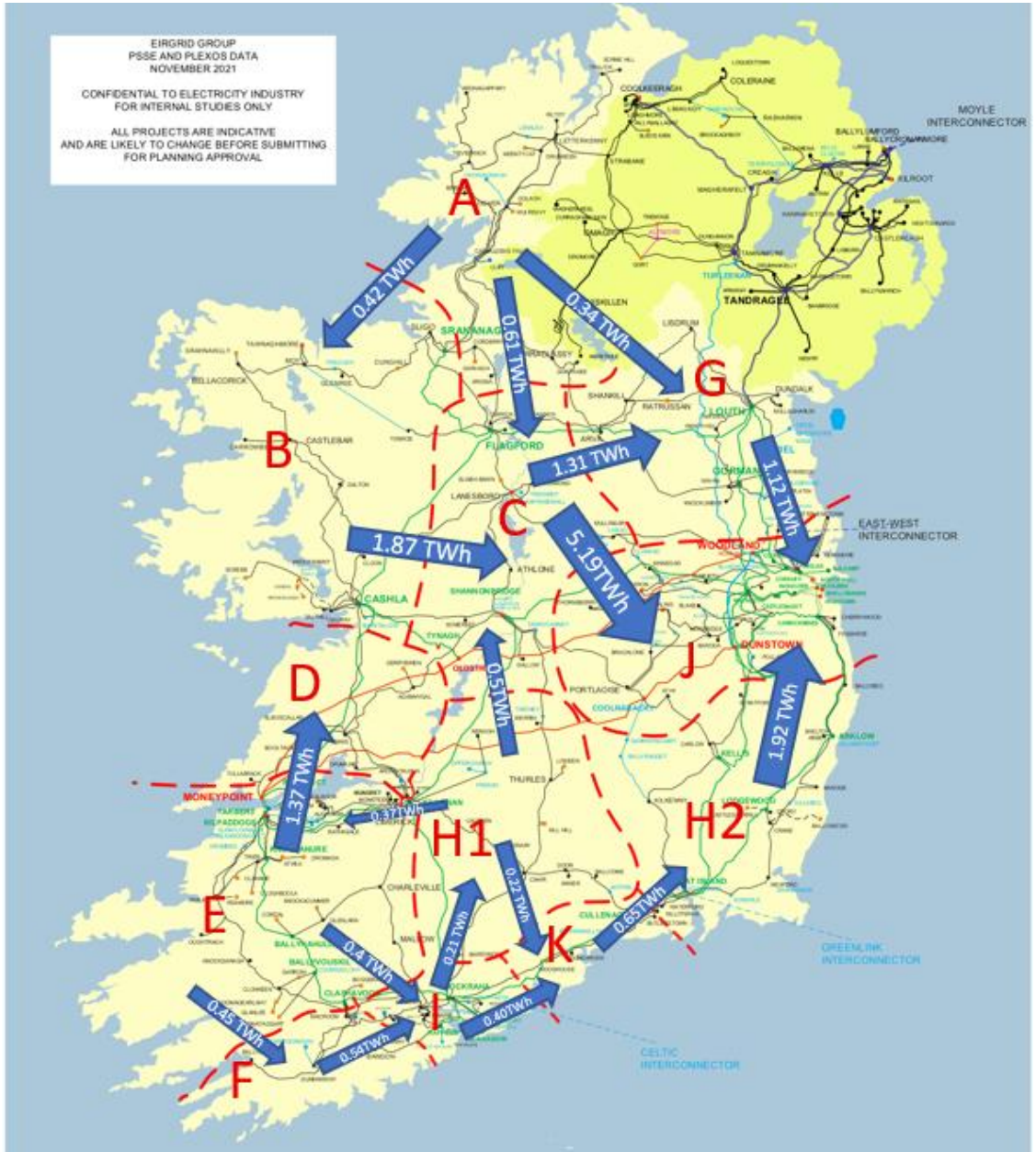


Maintenance sensitivity scenario are not displayed but included
**** Constraints allocated as pro-rata (Industry request)**

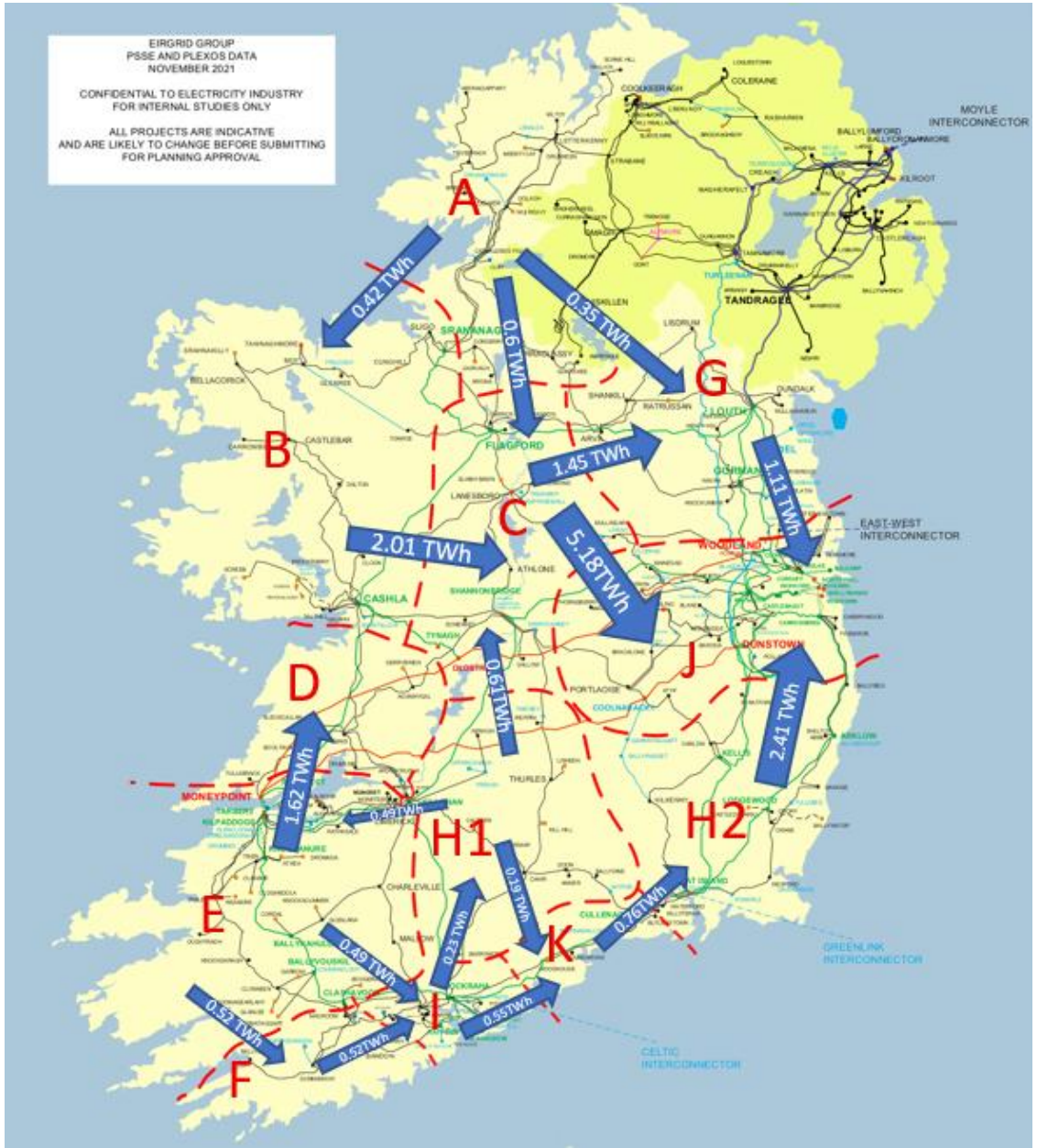
Area Results

Representative net flows between areas (TWh)

2028

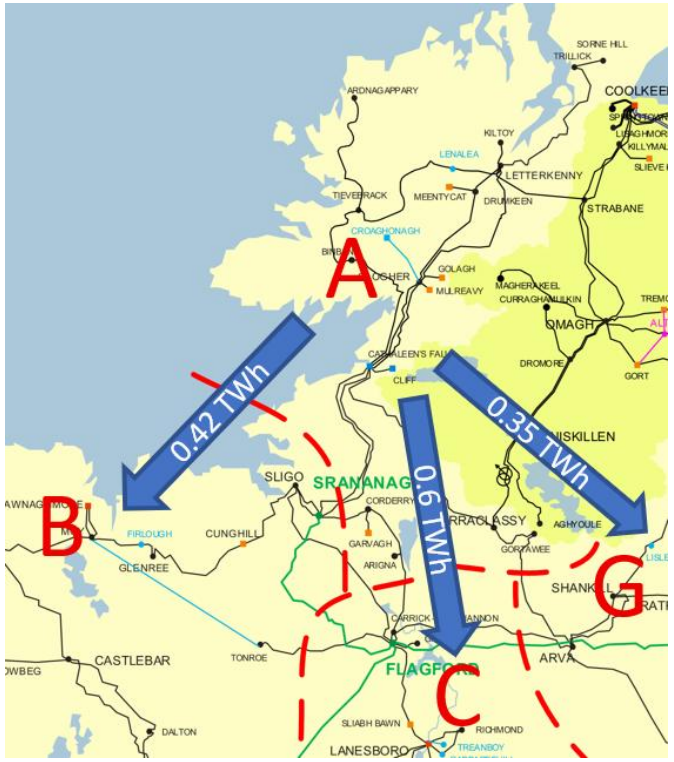


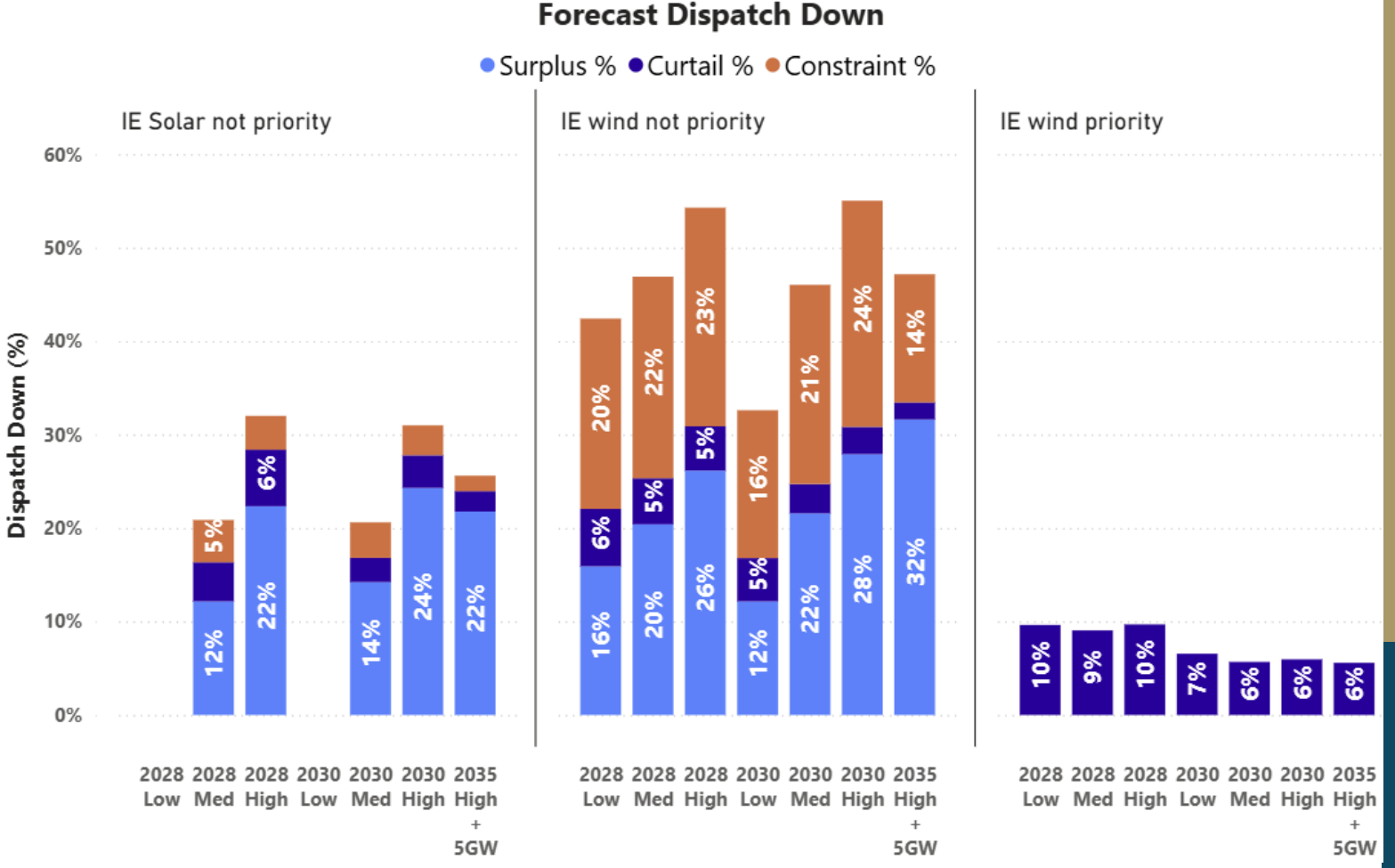
2030

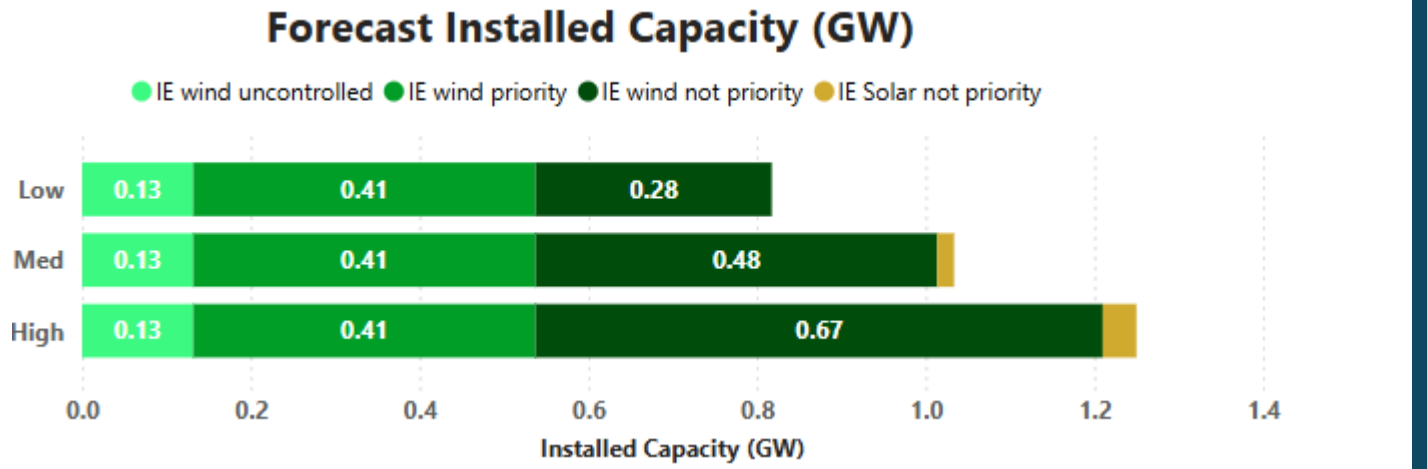


Area A

- Almost exclusively wind capacity.
- Net exporting to areas B, C and G.
- Major projects around the ‘Donegal Corridor’ and in areas B & C impact constraints.

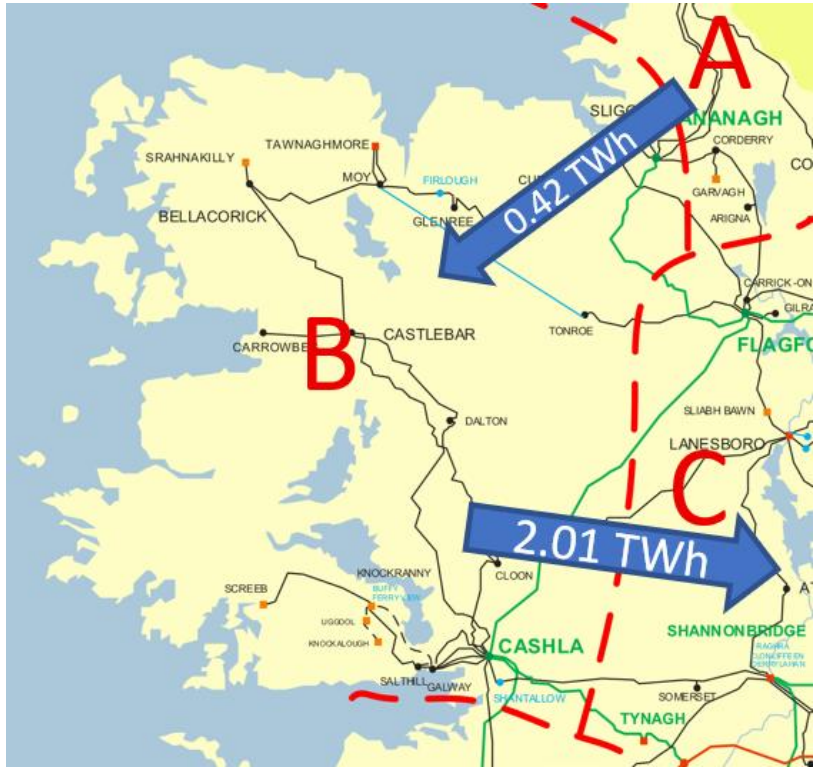


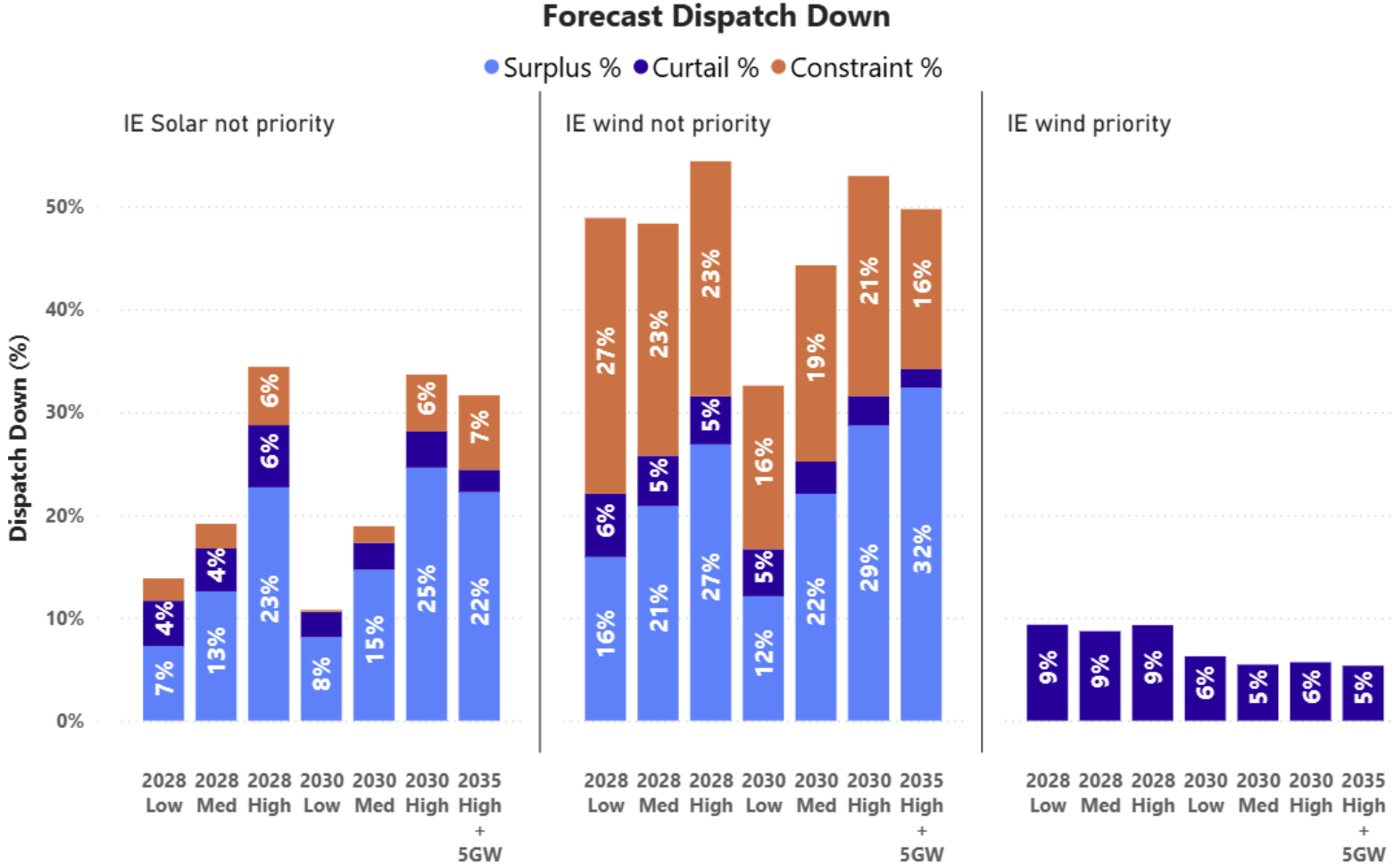


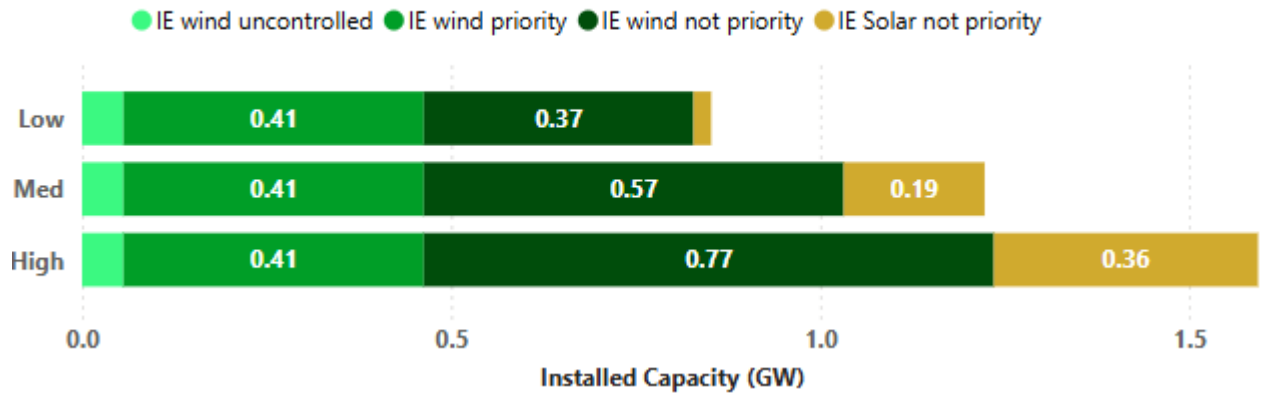


Area B

- Wind heavy region with solar increasing in ECP portfolio.
- North Connacht and Flagford Sligo impact the north.
- Number of uprates in B south.
- Mostly flowing towards area C from north and south.

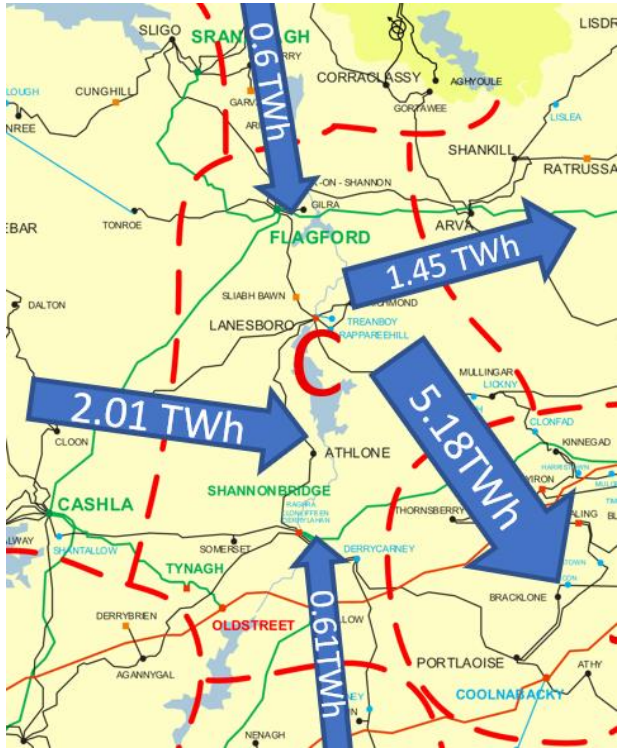


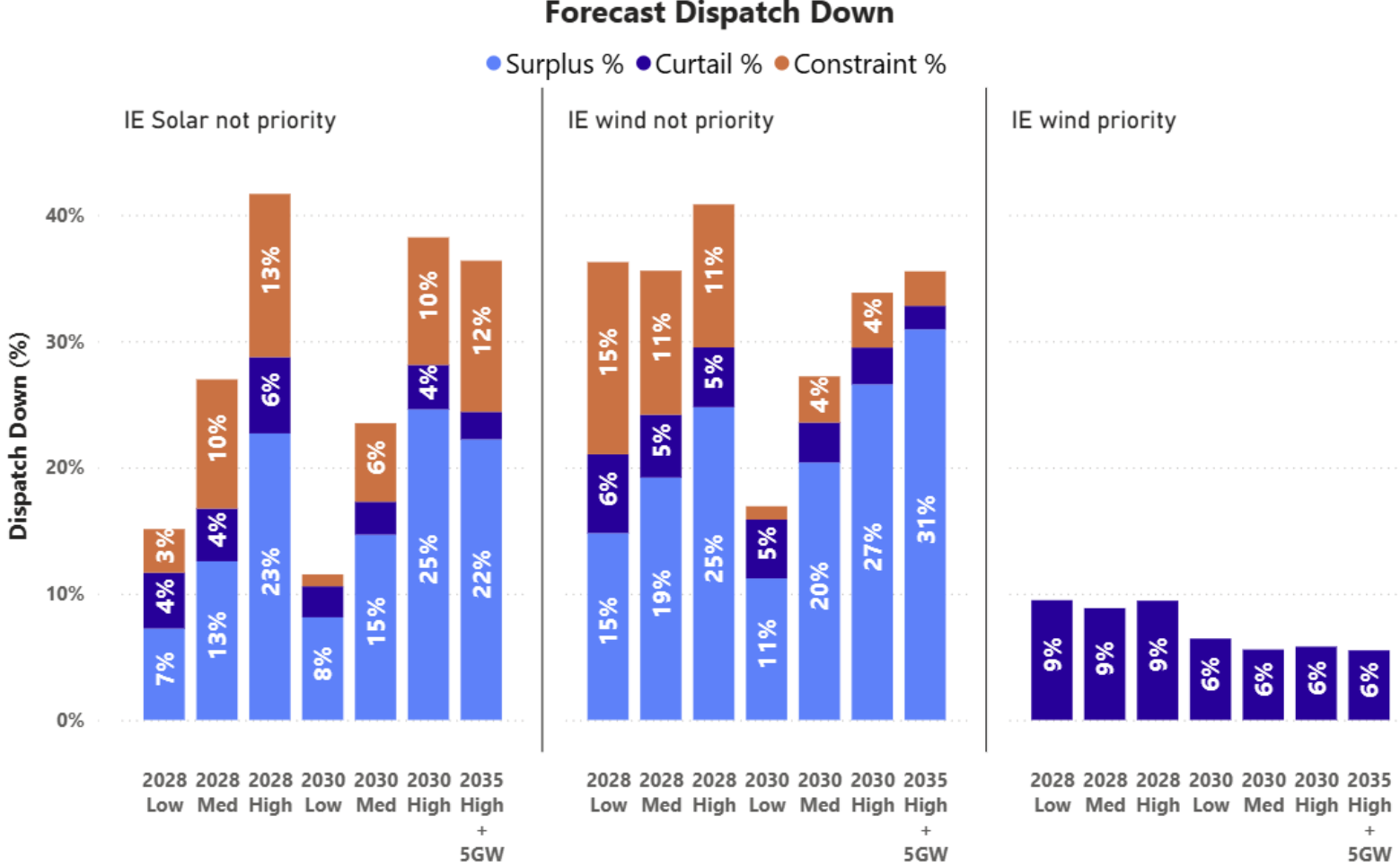


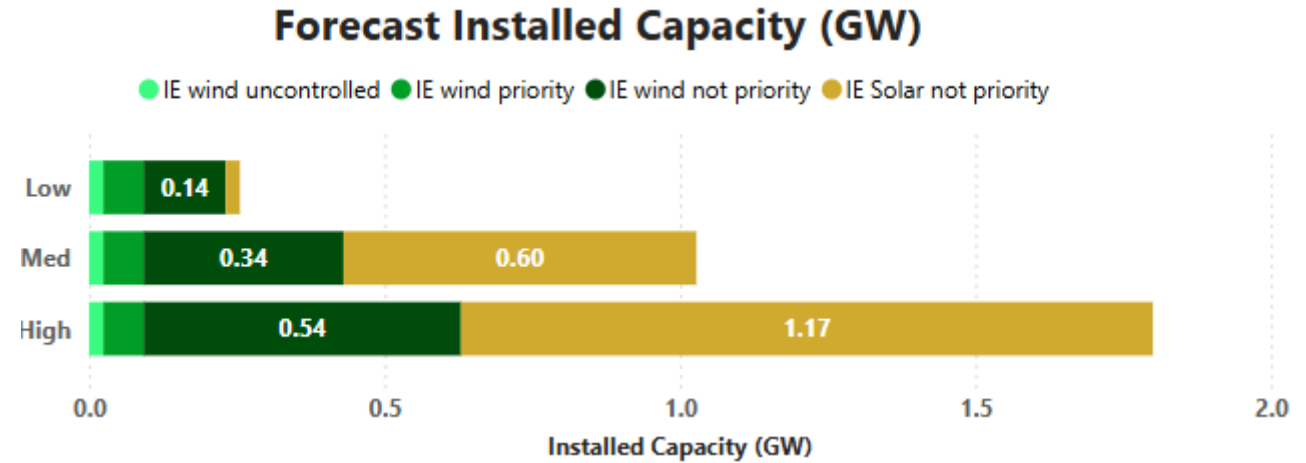


Area C

- Solar becomes a major factor in ECP.
- High power flow area with most flowing towards area J, some via the 220kV network in area G.
- Large reduction in constraints in 2030.

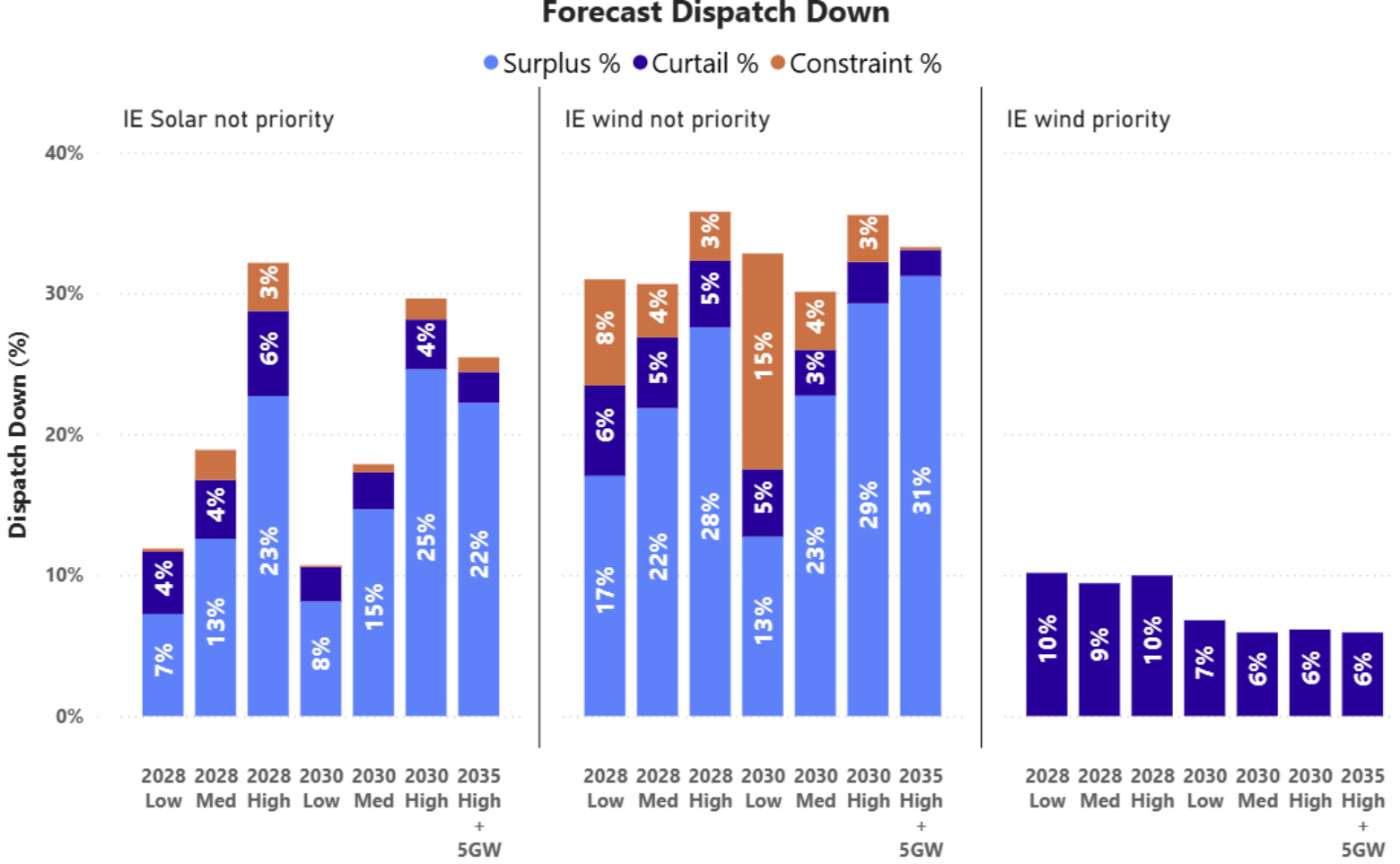


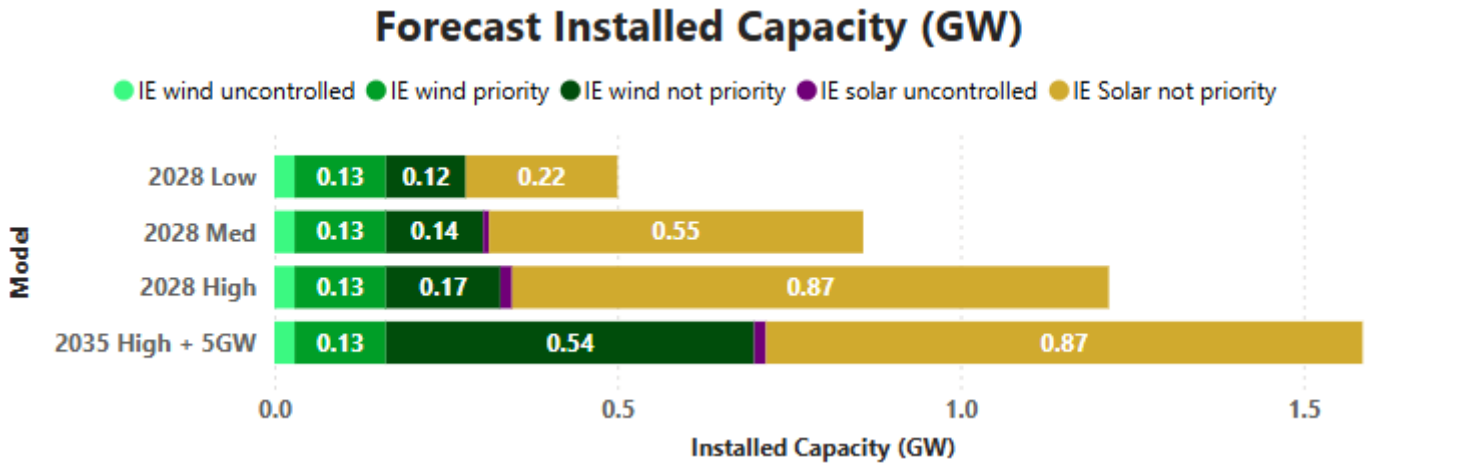




Area G

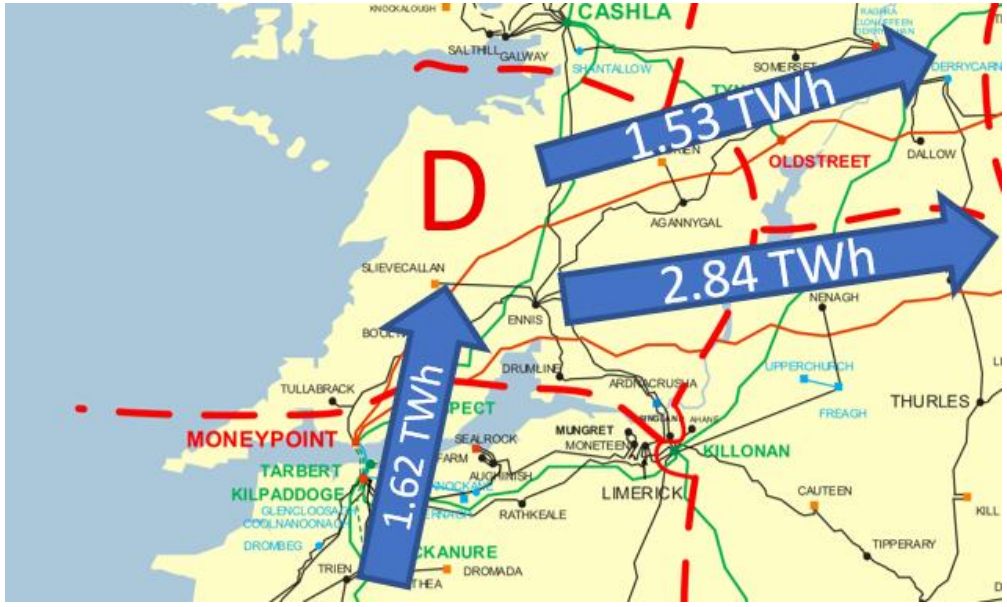
- Solar and offshore increasing capacity significantly.
- Flows in from area A & North and significant flow from area C 220kV.
- Flows out down to area J.
- Number of DLR & Uprates, N-S2

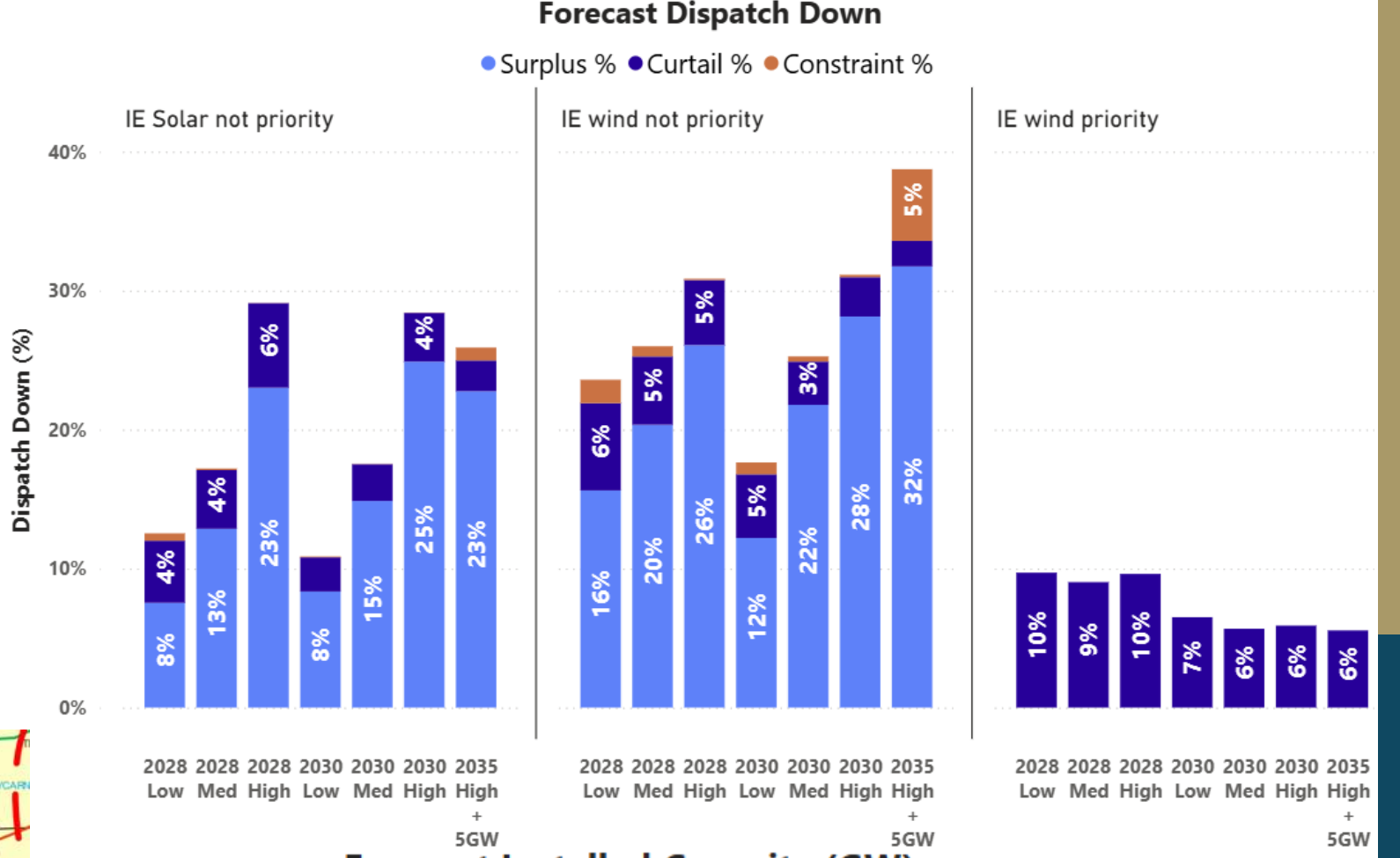


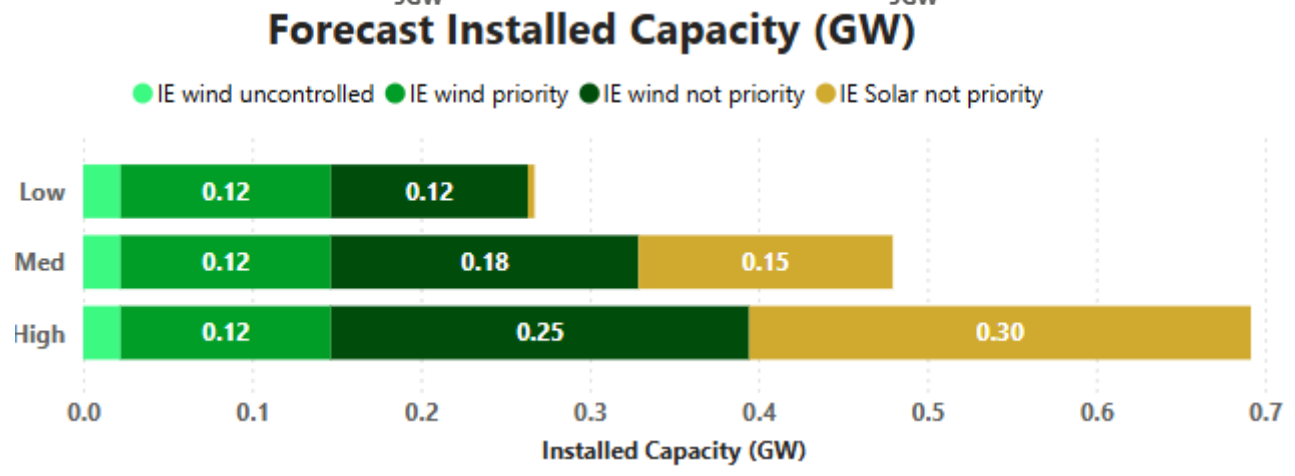


Area D

- Relatively lower level of renewables installed.
- Most generation is able to get straight on the 400kV network towards area J.
- Cross-Shannon projects have increased the flow through this area.

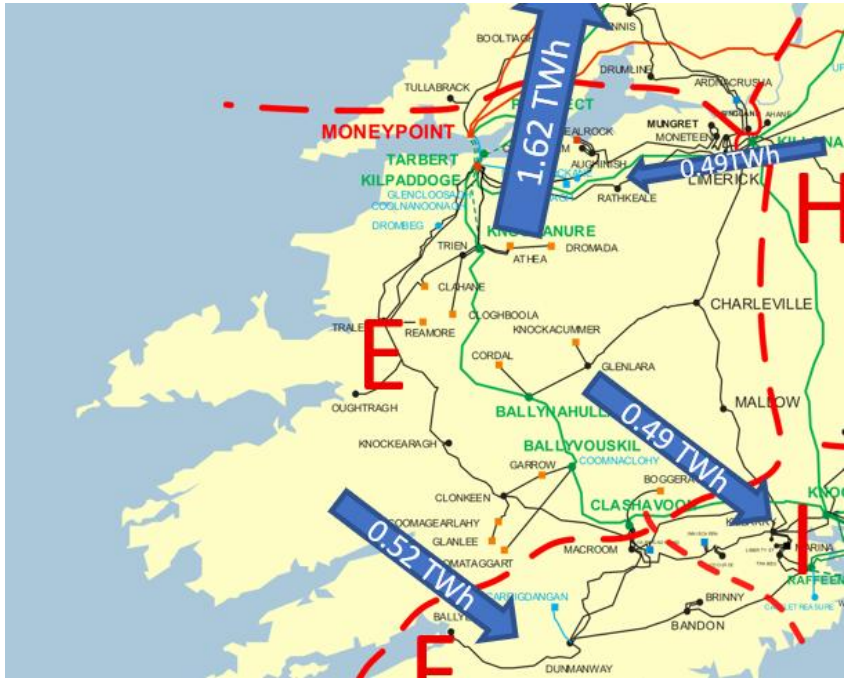


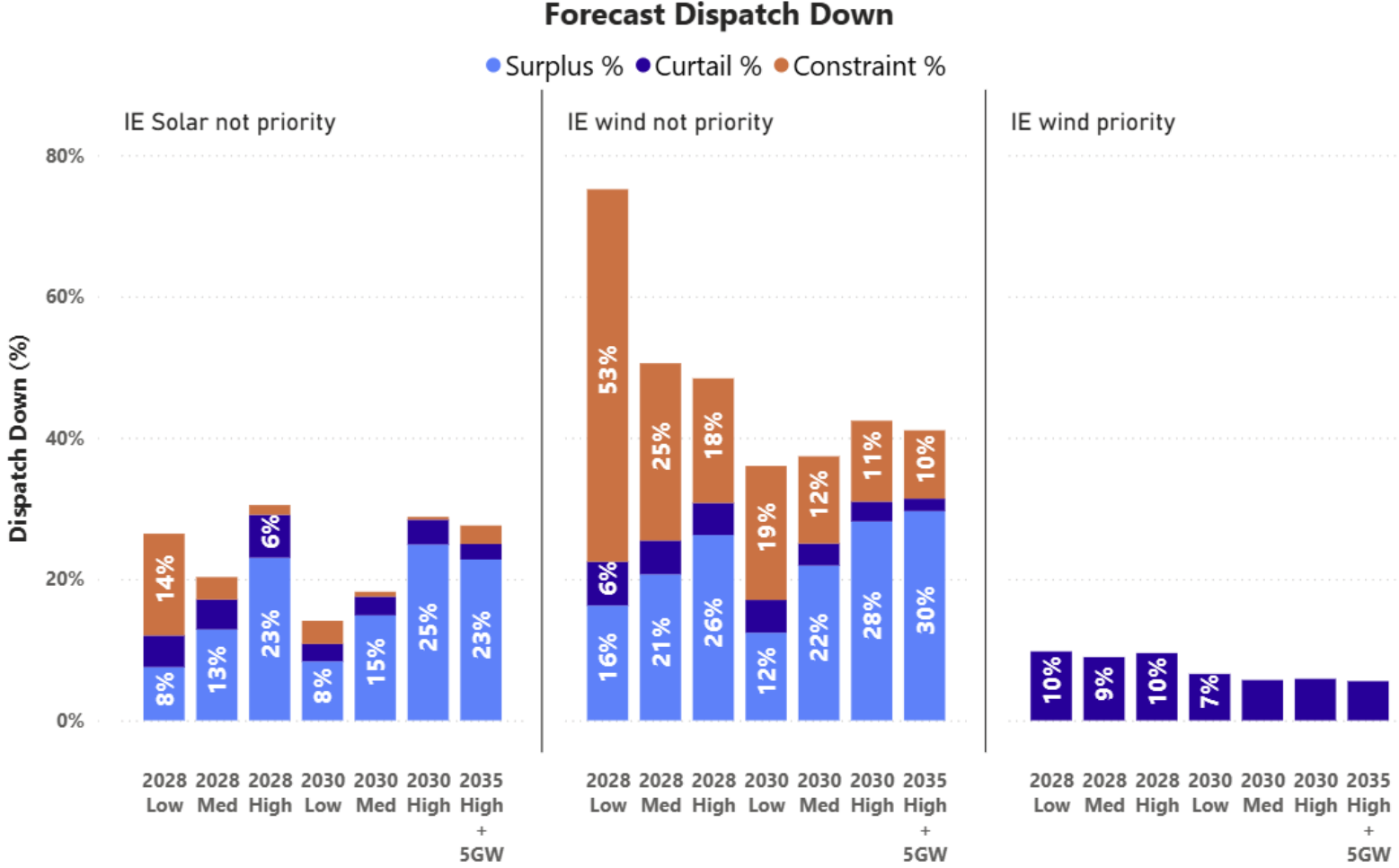


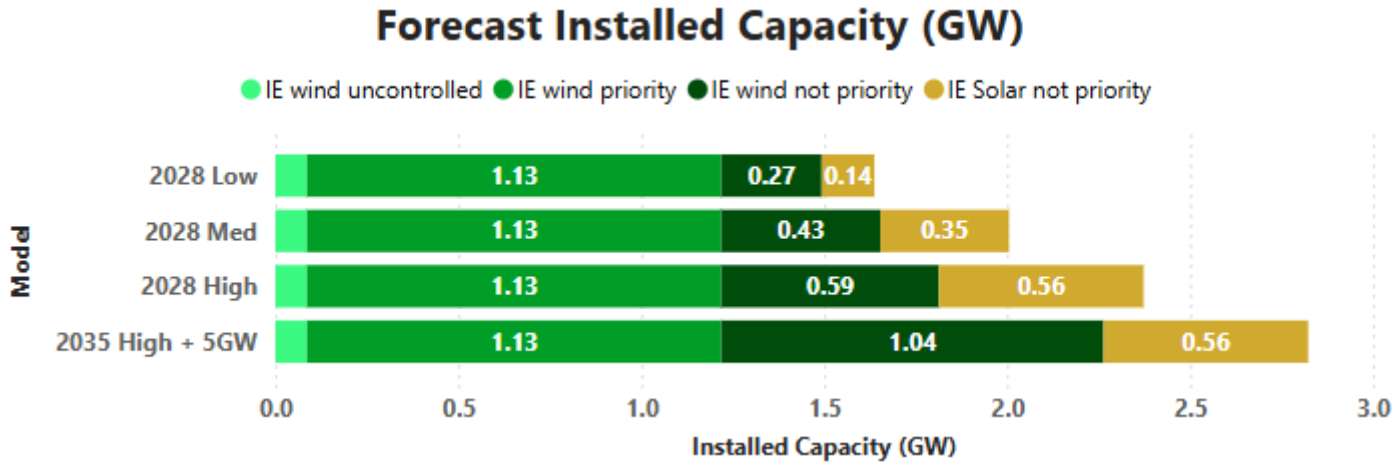


Area E

- High amount on priority wind.
- Non-priority installed capacity increases in 50%, ECP & OS scenario.
- Constraints reduce as more non-priority wind connects to share the DD.
- Prospect – Tarbert 220kV & Cross-Shannon

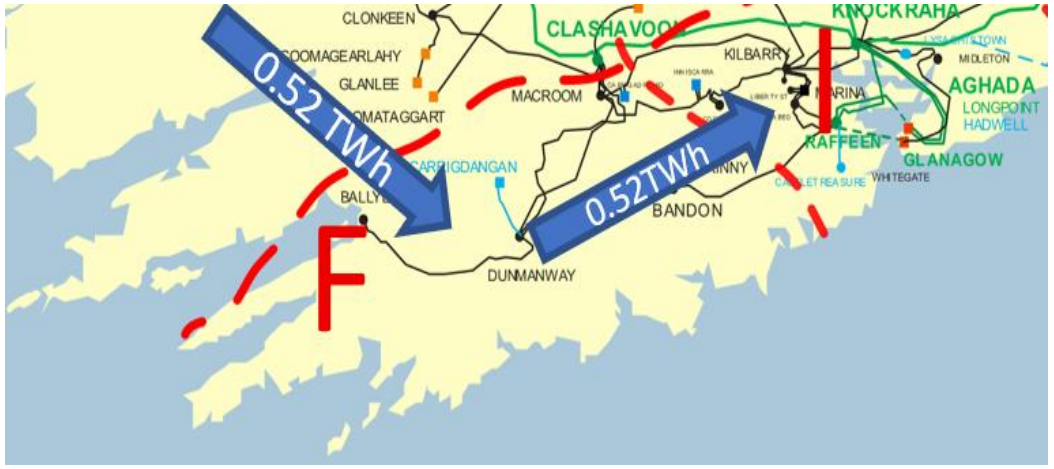


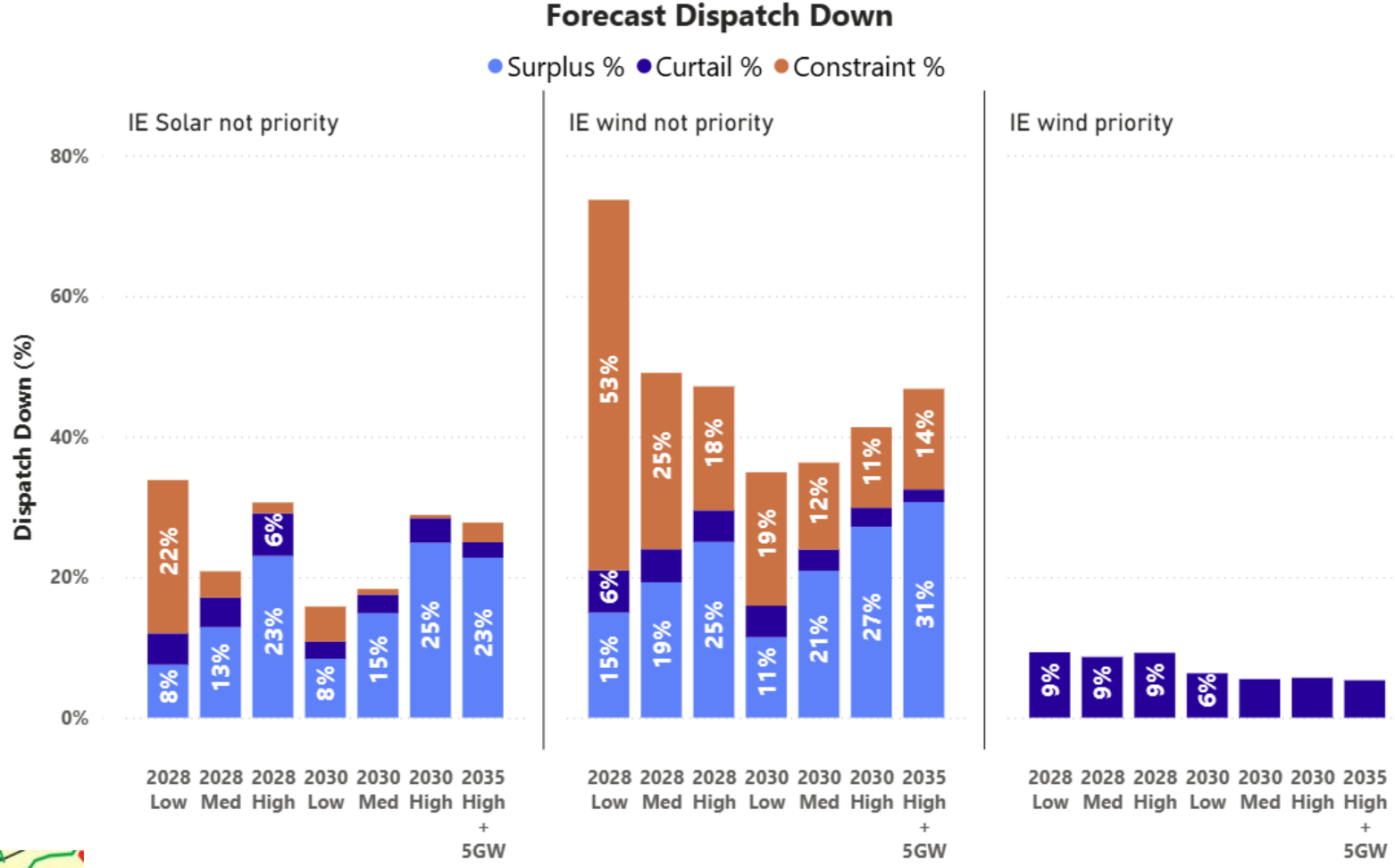


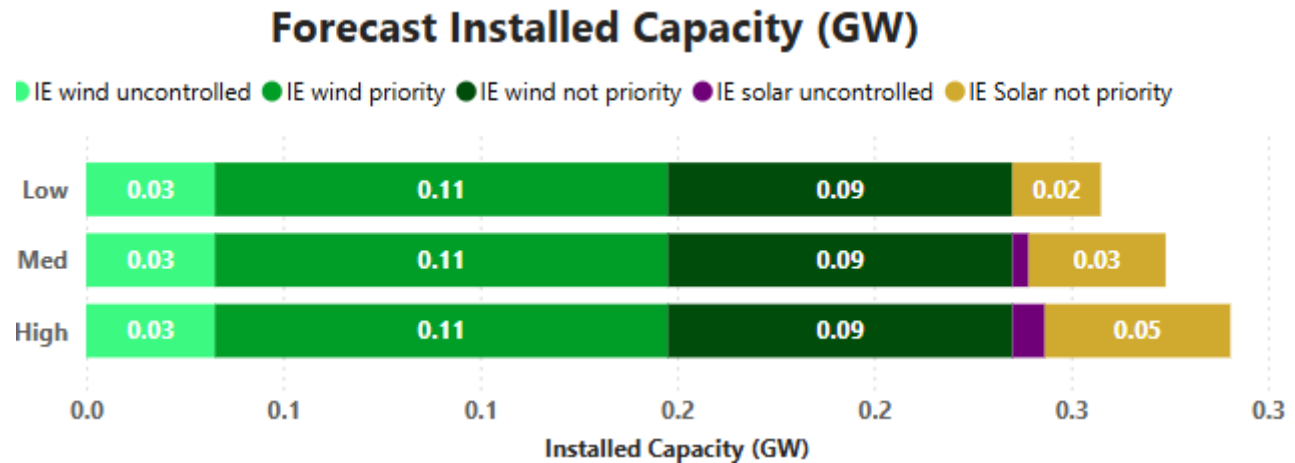


Area F

- Low level of installed capacity.
- Shares a subgroup with area E so similar reduction of constraints with additional capacity in area E.

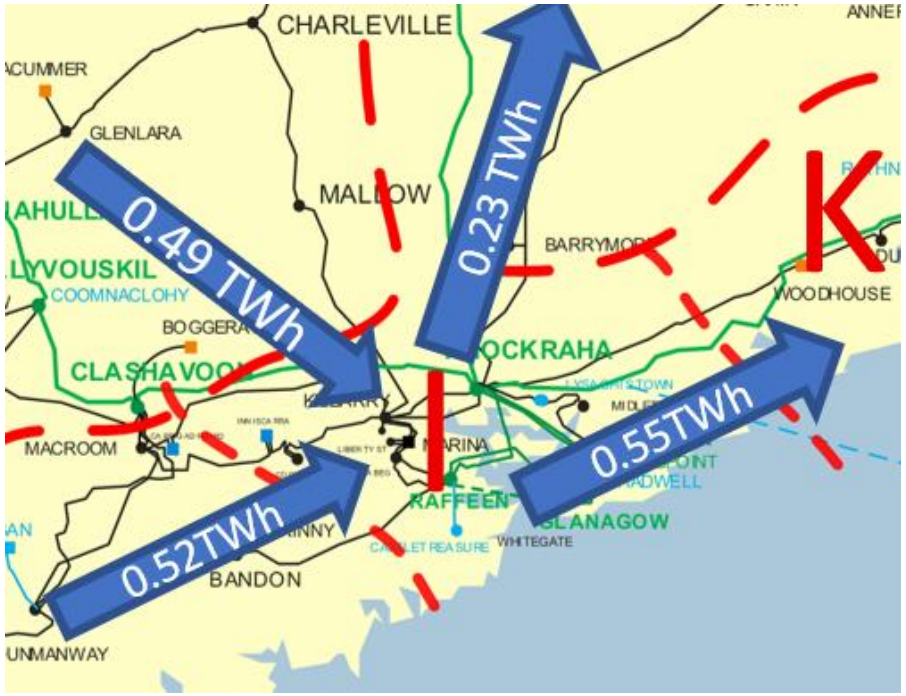


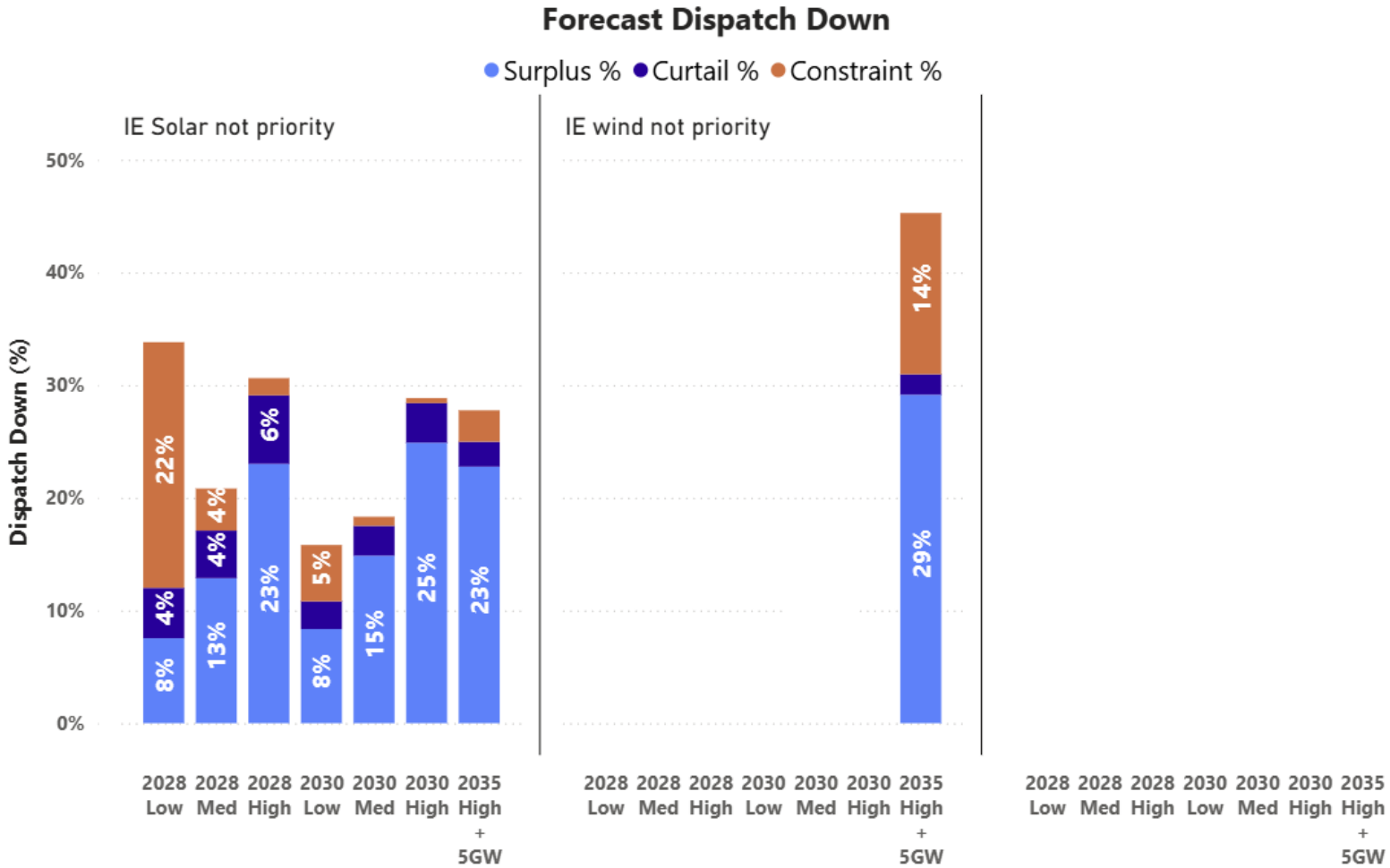


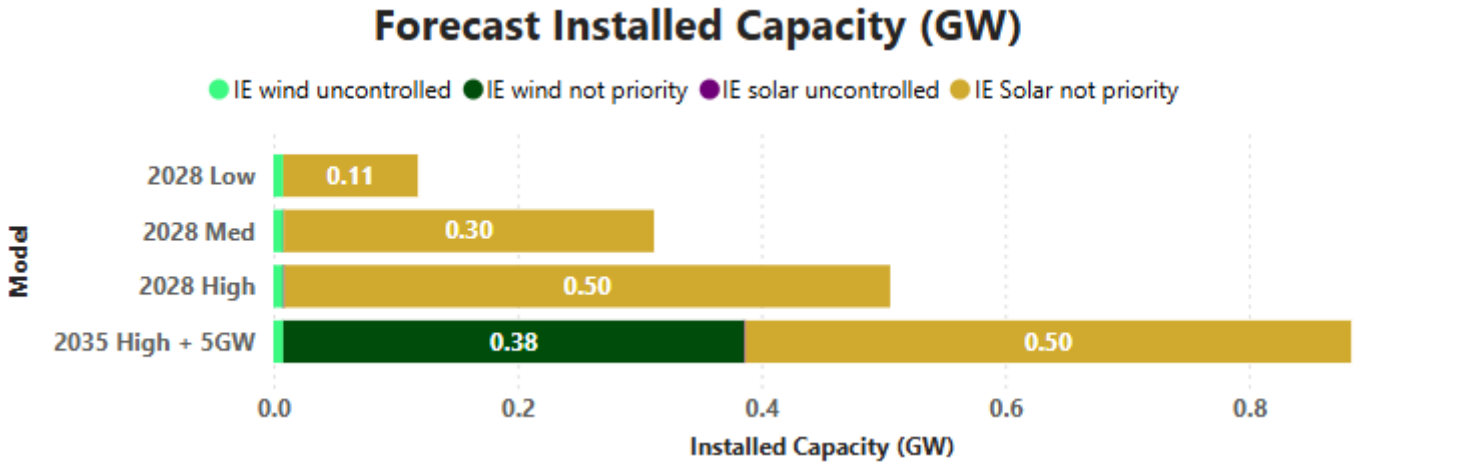


Area I

- Flows in from E & F but some flow towards J via 220kV network.
- Major developments with offshore projects and Celtic.

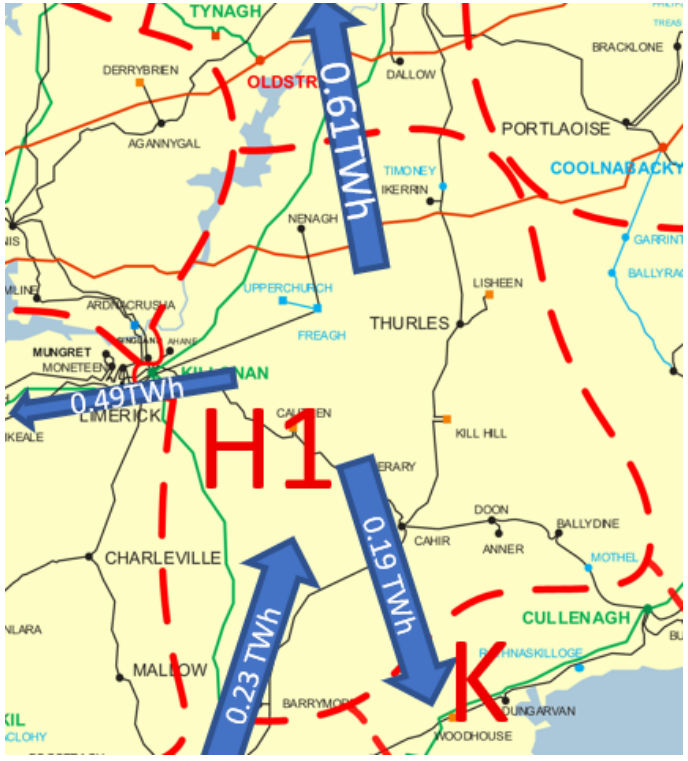


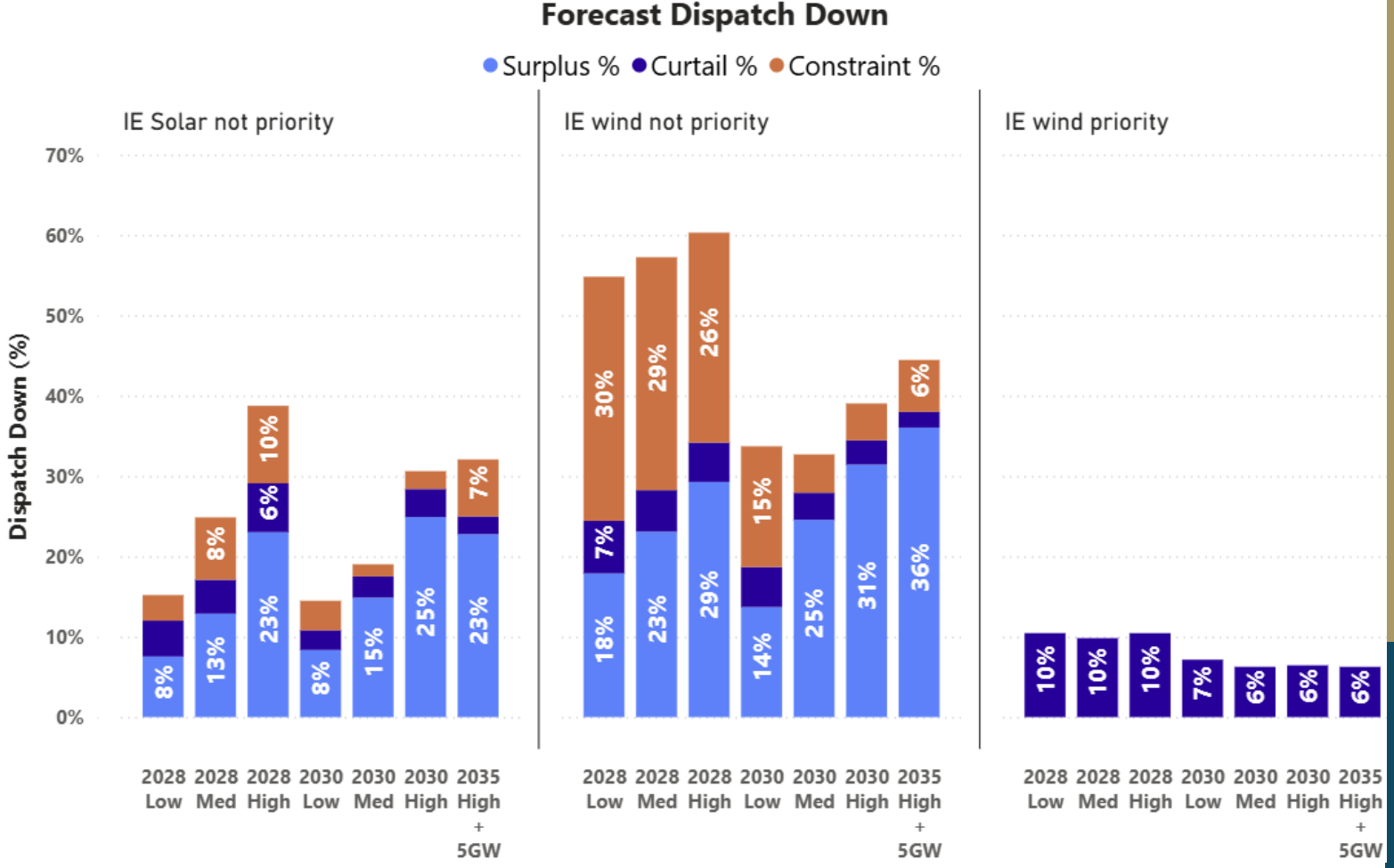


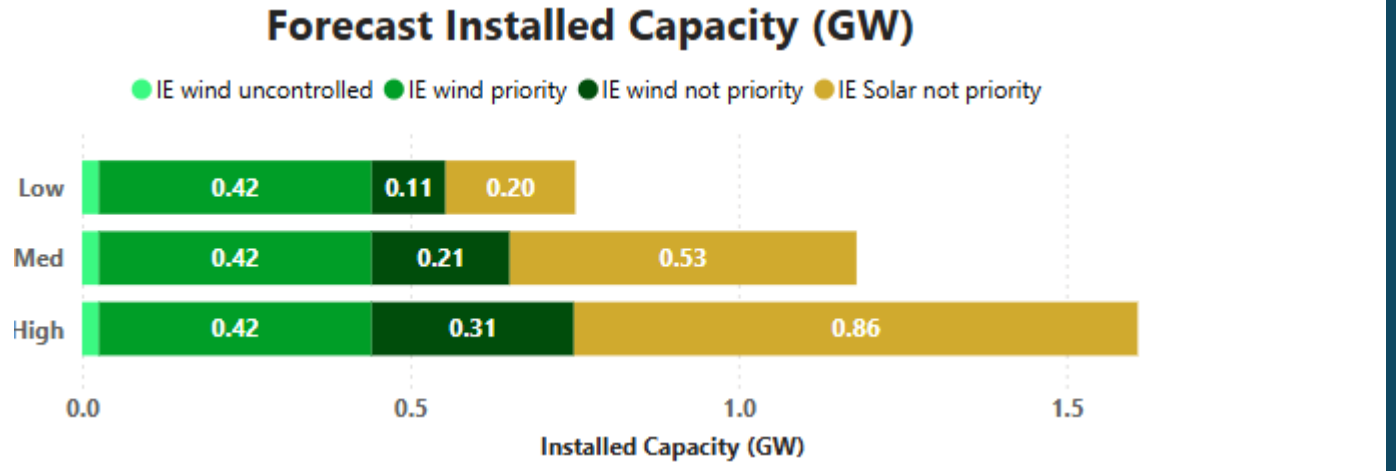


Area H1

- Solar capacity significantly increases in ECP.
- Relatively high proportion of priority wind.
- Flow towards load centres via 220kV network.

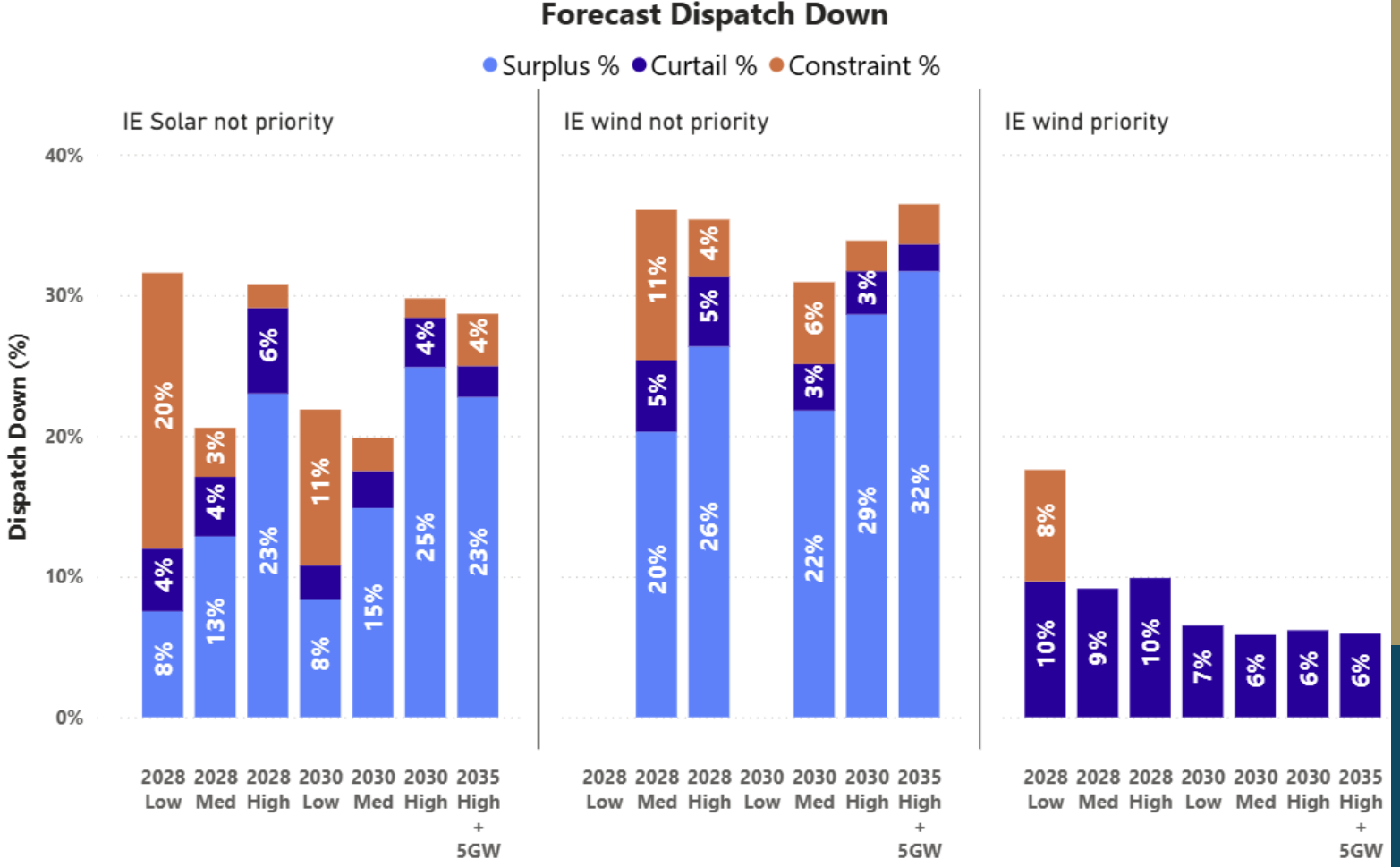


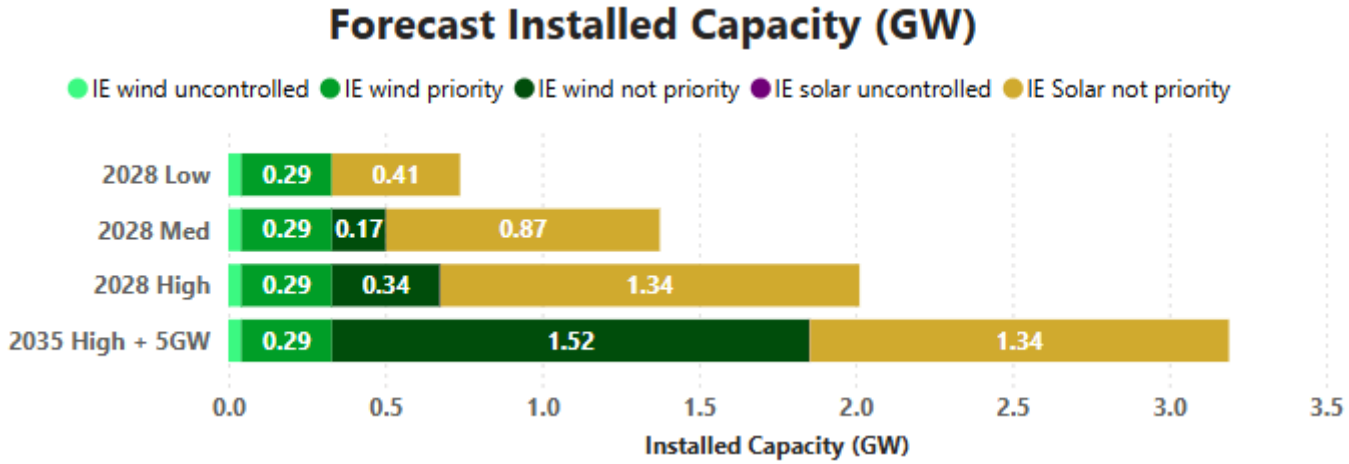




Area H2

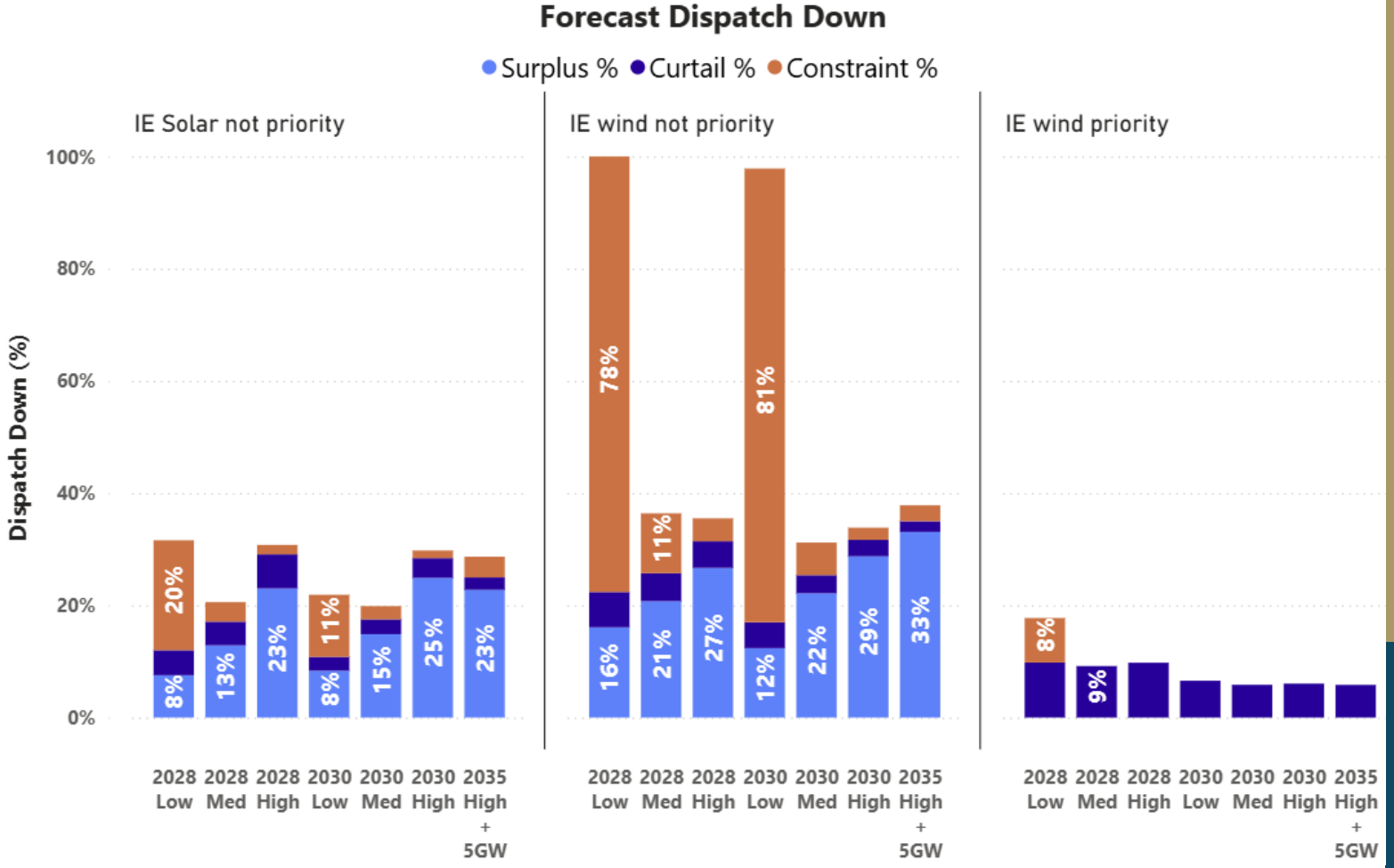
- High levels of solar connecting.
- Flow from the south via 220kV network towards area J.
- Large offshore capacity connecting
- A number of reinforcements on 110kV & 220kV network

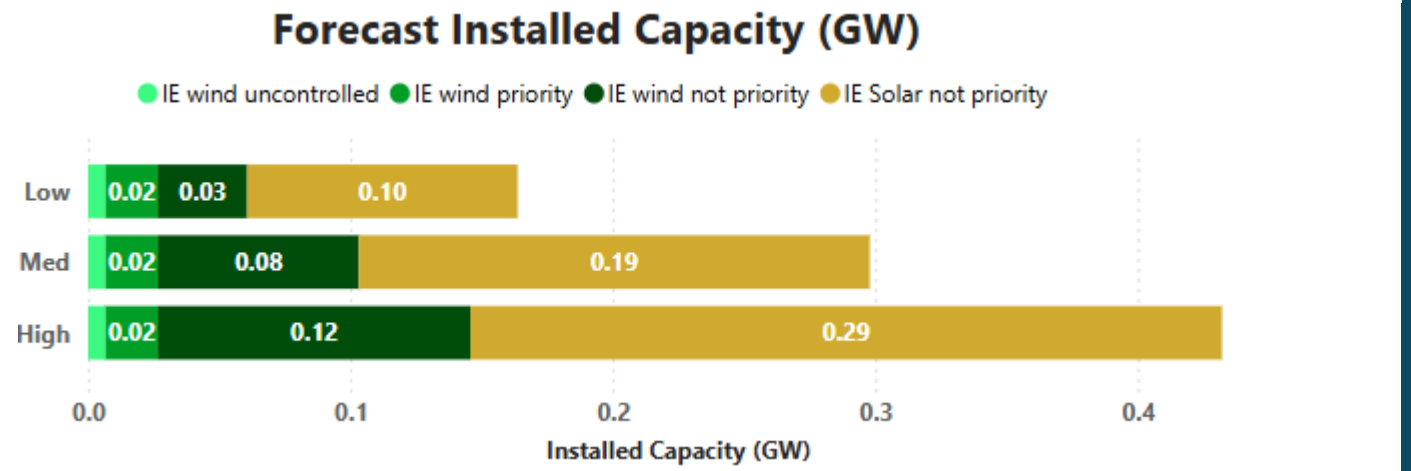




Area K

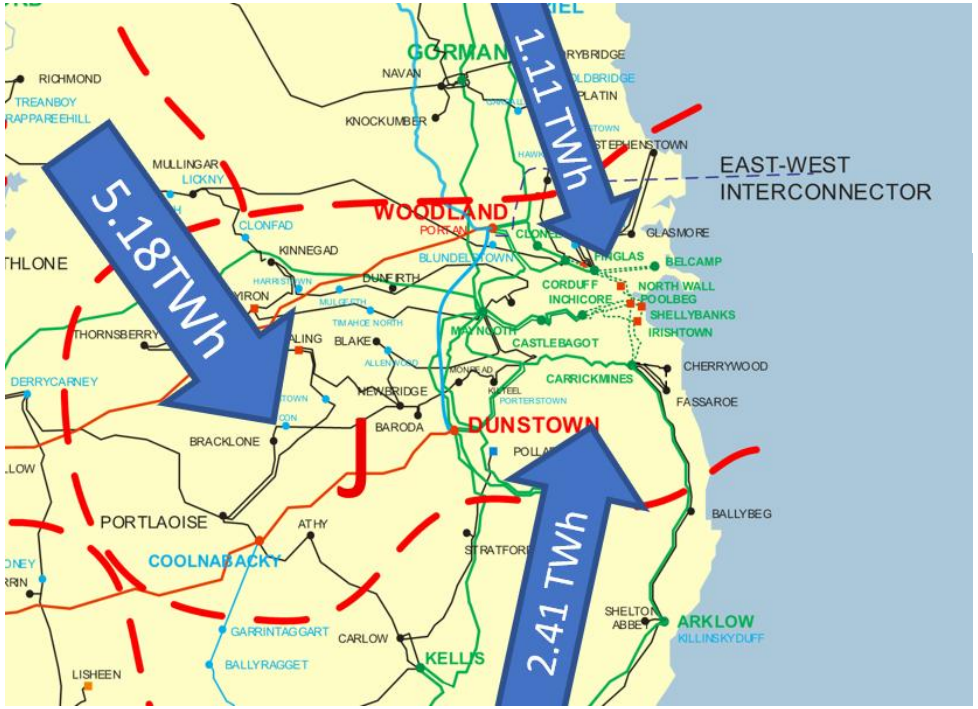
- All flow through towards area J via 220kV network.
- Same subgroup as area H2 where the initial portfolio has a small quantity of non-priority generators sharing priority DD.

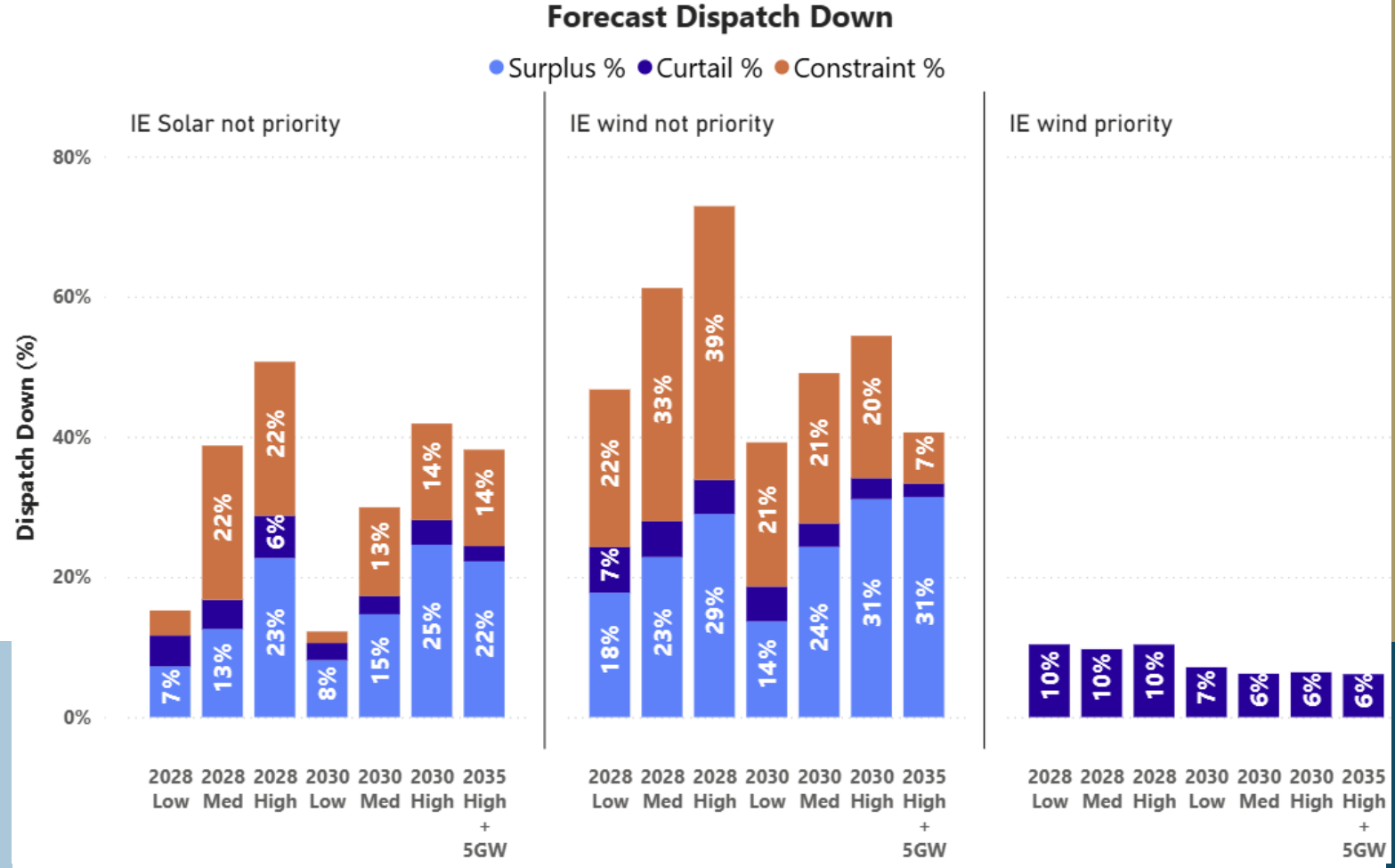


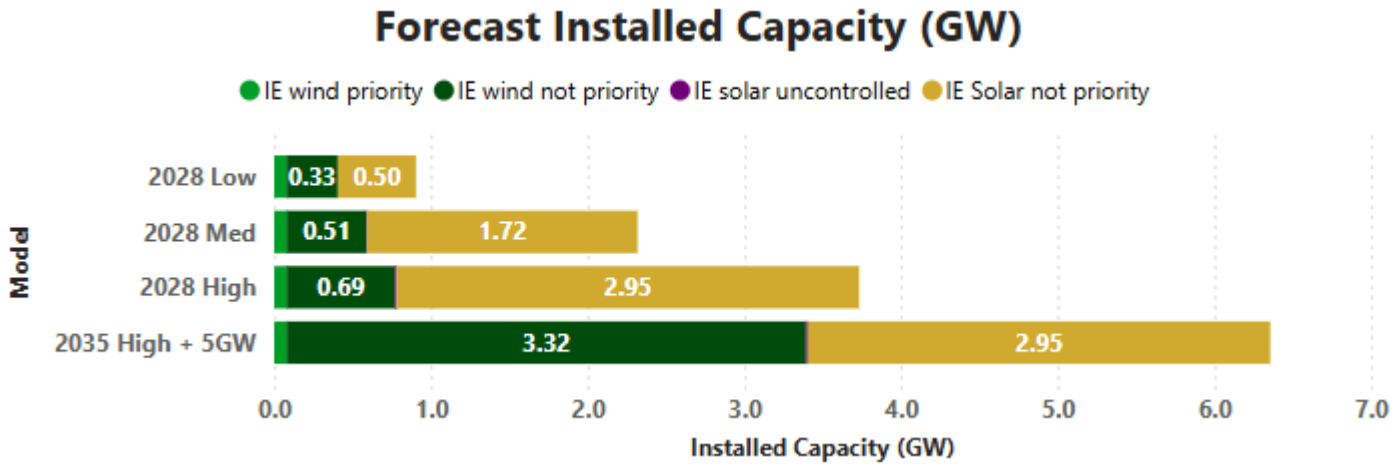


Area J

- Large power flows towards area J.
- Large increases in solar and offshore wind capacity.
- Large number of NDP projects in this area.







ECP - GSS

Biannual reporting

Review of weather profiles

Updated generation portfolio

Reviewing a range of modelling improvements

- Long duration energy storage
- Strategic reinforcement delivery
- Interconnector modelling
- Operational policy roadmap

Thank You