GRID ANALYSIS · IRELAND · DATA CENTRE SITING

The Constraint Dividend

Siting Ireland's next gigawatt of digital demand where the grid is already paying for wasted energy

Abstract. *Ireland dispatched down 2,139 GWh of available wind energy in 2025, and constraint costs reached €567 million in the 2024/25 period, while data centres — now 23% of national metered electricity consumption — face a connection regime that requires them to source at least 80% of their demand from additional Irish renewables and, under EirGrid's transmission-level connection process, cannot currently progress an application in an identified transmission demand-constrained area. These are presented as separate problems. This paper argues the geography of the first substantially defines the solution space of the second. Drawing on public primary sources (EirGrid, SONI, CRU, CSO, the Oireachtas and Government publications) supplemented by identified high-quality secondary analysis — including direct extraction from the full text of the ECP-2.5 area reports for Areas A, B, J, H1, E, F and I, completing the pro-rata sensitivity for every ranked subgroup and the full E, F & I subgroup volumes — it reconstructs a ranked, constraint-subgroup-level exposure map of the island's transmission system with both dispatch-down allocation bases quantified; publishes the scoring methodology, its rubrics and its sensitivities; quantifies the trapped-energy pools behind the leading constraints; reads the map as a screening layer — with node-specific power-flow analysis reserved as the necessary second step — and sets it against the legal countdown of the Private Wires Bill. Substantive claims carry an epistemic label —* ***[verified]****,* ***[public-signal]****, or* ***[inference]*** *— in addition to numbered citations; for composite scores, underlying data and scoring transformations are labelled separately.*

Silviu Preoteasa & Daryll Collins

Amata Consulting · aifactor.ie · hello@aifactor.ie · Version 1.0 · August 2026

SECTION

About Amata

Amata Consulting (aifactor.ie) is an applied research practice working at the intersection of AI infrastructure, the electricity grid and Irish regulation. Its published work — regulatory submissions, whitepapers and open analyses — is produced with AI-augmented analysis of the public record, verified by a principal before release, and labelled by evidentiary status. Amata publishes to the public record and advises privately on data-centre infrastructure; the two activities are declared and kept distinct. Principals: Silviu Preoteasa and Daryll Collins.

Declared interest. Amata advises on data-centre density and retrofit, a market whose prospects are affected by the policy questions this paper examines. We state this so that readers may discount accordingly. Nothing in this document is written on behalf of, or at the request of, any operator, vendor or client.

SECTION

Executive summary

Ireland runs two rationing systems side by side. The first rations renewable generation: in 2025, 13.4% of available wind energy on the island — 2,139 GWh — was dispatched down **[verified — [1]]**. The second rations demand: under EirGrid's transmission-level Data Centre Connection Offer Process, an application in an identified transmission demand-constrained area cannot currently be progressed — a status determined per application; at distribution level, ESB Networks conducts case-by-case constraint assessment **[verified — [11], [25]]**.

The paper's contribution is to show that the geography of the first problem overlaps substantially with the solution space of the second — and to make that geography legible, with its machinery exposed, reproducible, and now quantified on both allocation bases from primary data. Its six findings:

1. **A defensible exposure map can be built from public data, to a stated floor of granularity.** The 2028 leaders by constraint intensity (grandfathering basis, non-priority wind): **J Country** (Midlands, 39%), **H1** (north Tipperary, 26%), **A & B North** (Donegal/north Connacht, 24%), **B South** (Galway, 22%), **E, F & I** (Kerry/Cork/Limerick, 18%) **[verified — [6], [7]]**.

2. **The trapped-energy pools behind the leading constraints are large and now quantified.** In the 2028 full-ECP scenario, the J Country subgroup alone traps roughly 840 GWh of non-priority wind (39% of 2,148 GWh available) plus roughly 730 GWh of non-priority solar (42% of 1,733 GWh) — approximately 1.57 TWh in one subgroup; A & B North traps roughly 910 GWh of non-priority wind across its Area A and Area B slices; B South roughly 150 GWh; H1 roughly 355 GWh (wind plus solar); and the E, F & I subgroup — now complete across its Area E, F and I slices — roughly 425 GWh. Across the five extracted subgroups, the 2028 pool approaches 3.4 TWh — nearly four times the Republic's entire 2025 actual wind-constraint volume — under the scenario's assumption that the full ECP portfolio connects **[verified volumes — [6a]–[6g]; multiplications are arithmetic; scenario caveat applies]**.

3. **The demand-side thesis is robust to the allocation basis; the generator-side read is not — and the sensitivity is now predictable.** Primary extraction of the pro-rata sensitivity across all five leading subgroups establishes the rule — and its closed form: the pro-rata blended rate equals the grandfathered non-priority rate multiplied by the non-priority share of the subgroup's available controllable energy. J Country, with almost no priority capacity, barely moves (39% → 36%); A & B

North sits mid-range (24% → 16%); H1 more than halves (26% → 11%); B South likewise (22% → 9%); and E, F & I — the most priority-heavy of all — drops by two-thirds (18% → 6%) **[verified — [6a]–[6g]; closed form is arithmetic on conserved volumes]**.

4. **This is a screening map, not a siting model.** High subgroup constraint identifies search areas; whether a particular site captures the dividend requires node-specific power-flow analysis (Section 8).

5. **The map has an expiry structure, and it reorders the ranking.** Under the published, now fully deterministic rubric scoring (§5.3), **Donegal (A & B North) leads the composite grid score outright under the base and persistence weightings and by 0.002 — a dead heat inside the rubric's precision — under the intensity weighting**; the Midlands holds second under all three but erodes fastest. E, F & I heads the practical shortlist only after the separately-stated commercial overlay. Rubric compliance and verified capacities move A & B North 0.81 → 0.85 and B South one band lower; under the persistence weighting E, F & I sits within 0.002 of J Country — the top-two finding holds throughout, with both knife-edge margins disclosed (§5.3).

6. **The mechanism is legally pending, with a dated countdown — and the delay is a formal risk.** Private wires are not lawful today in the configuration contemplated; base-case executability 2027–2028; delay scenarios in §7.5 **[verified for the record — [12]–[16]; inference for the window]**.

SECTION

1. The national ledger

Year	All-island wind dispatch-down	Volume	Ireland	Northern Ireland
2023	10.7%	1,663 GWh	8.9%	18.6%
2024	14.0%	2,181 GWh	10.1% (1,266 GWh)	29.6% (915 GWh)
2025	13.4%	2,139 GWh	11.4% (1,476 GWh)	22.0% (663 GWh)

[verified — [1], [2], [3]]

Within the 2025 all-island figure: **8.9 percentage points constraint** against **4.5 points curtailment**; in Ireland, 6.7% constraint against 4.8% curtailment **[verified — [1]]**. Roughly 96% of Republic curtailment in 2024 traced to the minimum-generation requirement **[verified — [2]]**; the SNSP limit's share of total dispatch-down rose from about 1% (2024) to about 17% (2025) **[public-signal — [26]]**. H1 2026 wasted wind was publicly characterised as sufficient to power roughly 667,000 homes **[public-signal — [17]]**.

Cost: constraint costs of approximately **€567 million in 2024/25, forecast toward €700 million in 2025/26 [public-signal — [18]]**. Demand: data centres consumed **7,663 GWh in 2025 — 23% of metered electricity** (6,973 GWh / 22% in 2024; 5% in 2015) **[verified — [19], [20]]**; EirGrid's median scenario reaches ~31% by 2034 **[verified — [21]]**. Under CRU2025236, new large energy users above 10 MVA must meet at least 80% of annual demand from additional Republic-of-Ireland renewables **[verified — [10]]** — and under EirGrid's implementing transmission process, an application in an identified constrained area cannot currently be progressed **[verified — [11]]**.

Read together: Ireland is discarding renewable energy at nine-figure annual cost while obliging its fastest-growing demand class to procure new renewable energy — and while the transmission connection route is procedurally closed wherever EirGrid's per-application Constrained Area Assessment finds a transmission demand-constrained area, the greater Dublin region being the one geography publicly identified as constrained for the foreseeable future **[verified for the process — [11]; public-signal for the Dublin position]**. Generation-side and demand-side constraint are related but distinct geographies, and this paper does not equate them (§2.3, §8). The Large Energy User Action Plan's Green Energy Parks concept — co-locating energy-intensive users with renewable supply in locations with excess renewable capacity — is consistent with the same logic **[verified — [16]]**. A scope note on the demand side: the thesis applies most strongly to dispatchable, schedulable or interruptible digital load — latency-insensitive AI training above all — and progressively less to undifferentiated 24/7 data-centre load; the capture arithmetic of §5.4 presumes flexibility **[inference; stated as a scope condition]**.

> **For the developer:** generation-constrained renewable energy is a candidate source of structurally discounted power; where high generation-side constraint coincides with a transmission demand-constrained site, the value of an alternative supply route is greatest.
>
> **For the system:** constrained energy absorbed by appropriately sited and configured demand reduces the pool of dispatch-down that drives imperfections costs; the size of that reduction at any site is a power-flow question, not an accounting identity.

2.1 Sources and alignment

This paper is a public-source reconstruction aligned with the methodology EirGrid uses in its ECP constraints analysis and that TNEI Ireland follows in its commercial On-Demand Dispatch Down Report (April 2025). TNEI's stated assumption set — single baseline; study years 2028/2032; GCS 2023–2032 demand; TYTFS 2022–2031 network with Q4 2024 NDP updates; ECP-2.3/2.4 renewables; Phase 1 offshore in 2032 only; four interconnectors in both years; no batteries; pro-rata dispatch-down; Operational Policy Roadmap constraints — follows EirGrid's Wind Dispatch Tool Constraint Group Overview **[verified — [22], [23]]**. TNEI is also an active technical reviewer for the Commission (CRU202707/708 under CRU202704) **[verified — [24]; Amata was a respondent]**. This paper is the public screening layer; TNEI's model is the per-connection resolution layer above it.

The numeric backbone: **ECP-2.5 constraints analysis** (11 February 2026; horizons 2028/2030/Future Grid; PLEXOS with subgroup post-processing), including **full-text extractions of the Area A, Area B, Area J, Area H1, Area E, Area F and Area I reports [6], [6a]–[6g], [7]**; the **WDT Constraint Group Overview** (1 Feb 2024) **[5]**; the ARCC series **[1]–[4]**; EirGrid project pages **[8], [9]**. TNEI's pro-rata baseline is now directly bridged by the extracted ECP-2.5 pro-rata sensitivity (§3.1).

2.2 The epistemic labelling regime

[verified] — confirmed against a directly reviewed primary or high-quality secondary source. **[public-signal]** — credible but not audited to a primary record. **[inference]** — reasoned from verified inputs. For composite scores: underlying data labelled on their own evidence; **every transformation into an ordinal score is [inference]** under its published rubric. Absence claims record method and date.

2.3 Granularity floor

The finest defensible public granularity is the **ECP constraint subgroup**. Node-level figures in the area reports are allocation artefacts — constraint is allocated pro-rata within each priority class across the subgroup, and EirGrid selects subgroups "based on an assessment of the raw PLEXOS results and based on TSO experience," precisely because the model over-constrains particular nodes **[verified — [6a]–[6c], [7]]**. The named bottlenecks give the physical texture: in A & B North, the Cathaleen's Fall–Srananagh 220 kV path, the Letterkenny–Srananagh 110 kV parallels, the Cunghill/Sligo 110 kV region and the Bellacorick circuits; in J Country, the Maynooth/Mulgeeth region and the Derryiron/Finglas region, with 110 kV midlands circuits overloading as power flows east toward the Dublin load centres; in H1, the Cahir–Barrymore region, with the Cauteen–Killonan region becoming prominent from 2030; in E, F & I, the Knockanure 220 kV and Ballyvouskil 220 kV regions on the export path toward Knockraha and the Celtic interconnector, with the Clashavoon 220 kV region binding for the Area F slice and the Knockraha–Barrymore region for the Area I slice **[verified — [6a]–[6g]]**. The Area E report also identifies a separate D and E North subgroup (including Moneypoint 220 kV, where the 450 MW Sceirde Rocks project enters from 2030 at near-zero modelled constraint); it is not one of this paper's seven ranked subgroups and is noted for completeness **[verified — [6e]]**.

Subgroup-level constraint identifies search areas; it does not establish that an arbitrary megawatt of demand anywhere within the subgroup delivers an equivalent megawatt of relief to the limiting element. Site-level capture requires node-specific power-flow analysis, which this paper does not attempt.

Terminology. Throughout, *generation-constrained subgroup* means an ECP constraint subgroup — energy trapped behind identified circuits, the ranking unit of §3. *Transmission demand-constrained area* means an area in which, under EirGrid's DCCOPP, a data-centre application cannot be progressed — a status determined per application by the Constrained Area Assessment under the Transmission System Security and Planning Standards **[verified — [11]]**. The two geographies are related but not identical, and no formal crosswalk between them is established in this paper (§8).

3.1 The 2028 table, both allocation bases

Primary metric: ECP-2.5 non-priority wind, 2028 full-portfolio ECP scenario. Grandfathering (GF): non-priority reduced ahead of priority, pro-rata within class. Pro-rata (PR): constraint allocated pro-rata across both classes — the basis TNEI's baseline uses. † = extracted from the full text of the area report (11 Feb 2026 series; accessed 12 August 2026). ‡ = area-slice value from an adjacent area report (the subgroup's minor slice); full-subgroup figure pending.

Subgroup	Geography	Constraint % (GF)	Constraint % (PR)	TDD % (GF)	TDD % (PR)	Relief timing
J Country	Midlands 110 kV west of Dublin	**39%**	**36%†**	**73%**	69%†	2026–2029
H1	North Tipperary	**26%**	**11%†**	**60%**	45%†	2027
A & B North	Donegal, north Sligo/Mayo	**24%**	**16%†**	**54–57%**	47–50%†	2028 → post-2030
B South	Galway	**22%**	**9%†**	**48%**	35%†	2027

Subgroup	Geography	Constraint % (GF)	Constraint % (PR)	TDD % (GF)	TDD % (PR)	Relief timing
E, F & I	Kerry, Cork, Limerick	**18%**	**6%†**	**48%**	37%†	2027–2029
C	Roscommon, Longford, Leitrim	**5%**	**5%‡**	**39%**	38%‡	2027
G North	Cavan, Monaghan, Louth	**3%**	**2%‡**	**34–36%**	33%‡	2029–2031
NI (all groups)*	Tyrone, Fermanagh, Antrim	separate study basis*	—	29.6% actual 2024; 22.0% 2025	—	Oct 2031

[verified — [6], [6a]–[6g], [7]; ARCC [1], [2] for NI actuals] * NI figures are historical actuals from the ARCC series, not ECP-2.5 forecast outputs, and are not directly comparable with the Irish subgroup columns.

The priority-share rule (established across all five extracted subgroups, now with a closed form). Pro-rata conserves the subgroup's trapped volume while re-allocating it across priority classes — priority generators move from 0% constraint under GF to the blended rate under PR (J Country priority wind: 0% → 36%; A & B North: 0% → 16%; H1: 0% → 11%; B South: 0% → 9%; E, F & I: 0% → 6%) **[verified — [6a]–[6g]]**. The blended rate has a closed form: it equals the grandfathered non-priority rate multiplied by the non-priority share of available controllable energy — H1: 26% × 976/(976+1,316) ≈ 11%; E, F & I: 18% × 2,222/(2,222+3,920) ≈ 6% on the now-complete subgroup volumes — exact to rounding in every extracted subgroup **[arithmetic on verified volumes]**. The swing in the *non-priority* figure is therefore proportional to the subgroup's priority share of controllable capacity: J Country (79 MW priority against 692 MW non-priority) barely moves; A & B North (≈570 MW against ≈1,270 MW) sits mid-range; H1 (416 MW against 308 MW) more than halves; B South (244 MW against 156 MW) likewise; E, F & I (1,203 MW against 683 MW across all three area slices; the Area I slice carries no controllable wind before the Future Grid scenario) drops by two-thirds **[verified capacities — [6a]–[6g]]**. Consequences: the demand-side thesis, which keys on subgroup volume, is robust to basis; any generator-facing use of these figures must state the basis and the subgroup's priority mix; and TNEI's pro-rata baseline will systematically show milder non-priority exposure than ECP's grandfathered headline in priority-heavy subgroups — E, F & I now the extreme case, ahead of B South.

The solar dimension (new in this revision). J Country's constraint is not only a wind story: non-priority solar in the subgroup carries **42% constraint (GF) and 71% TDD in 2028**, on 1,350 MW installed and 1,733 GWh available — and the pro-rata sensitivity leaves it essentially unchanged **[verified — [6c]]**. The Midlands play is substantially a solar-constraint play, concentrated in exactly the daytime hours when flexible compute load is easiest to schedule **[verified figures; final clause inference]**. The extension to H1 and E, F & I shows J's solar character is exceptional rather than general: H1 non-priority solar carries 10% constraint / 39% TDD on 859 MW and 1,007 GWh available (surplus-dominant), and E, F & I solar just 2% constraint / 31% TDD on 1,048 MW and 1,228 GWh across the full subgroup — in both, the constraint story remains a wind story **[verified — [6d]–[6g]]**.

3.2 Constraint versus curtailment

Constraint is energy trapped behind identified circuits; demand correctly located and configured relative to the limiting element can consume energy the network could not otherwise deliver — subject to §2.3. Curtailment and surplus are system-wide. Area C (39% TDD, 5% constraint) exits the siting thesis **[inference from verified figures]**.

3.3 The intensity–persistence matrix

	Relief before ~2030 (short window)	Relief after ~2030 (durable)
High constraint intensity (≥20%, GF)	**J Country · H1 · B South** — high-intensity, fast-eroding; note the PR figures (H1 11%, B South 9%) — both basis-fragile entries	**A & B North (Donegal)** — the island's durable constraint; the long-asset play
Lower constraint intensity (<20%)	**C** — surplus-dominant; exits thesis	**E, F & I · G North** — moderate exposure with late or partial relief; E, F & I's PR figure (6%) makes it proportionally the most basis-sensitive subgroup of all. *(NI: elevated historical dispatch-down, separate study basis — §3.1 note.)*

[transformation inference; axis values verified]

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4. The reinforcement relief timeline

- **Binbane–Cathaleen's Fall 110 kV uprate** — completed December 2024 (+64.4 MW) **[verified — [8]]**.
- **Laois–Kilkenny / Coolnabacky 400 kV** — Q4 2026 – Q2 2027; primary relief for J Country **[verified]**.
- **Galway 110 kV redevelopment; Cashla–Salthill/Dalton uprates; Lisheen–Thurles DLR; Killonan refurbishment; Lanesboro–Mullingar and Flagford–Sliabh Bawn uprates; Moneypoint synchronous condenser** — 2027 **[verified — [6]–[8]]**. The Area B report confirms North Connacht active in all study years and Flagford–Sligo delivering its main benefit in the Future Grid scenario **[verified — [6b]]**.
- **North Connacht 110 kV** — concluding 2028; partial relief for A & B North; further north-west relief later than 2030 **[verified — [8], [7]]**.
- **Celtic Interconnector (700 MW, Knockraha)** — expected Q4 2028, moved back from spring 2028 **[verified — [9], [9a]]**; TNEI's 2028 assumption now optimistic **[verified — [22]]**.
- **Cross-Shannon 400 kV; Kildare–Meath underground; Dunstown/Oldstreet series capacitors; Meath Hill–Louth** — 2029 **[verified]**.
- **North–South Interconnector** — October 2031; ~£55,000/day consumer cost of its absence **[verified for date; public-signal for cost]**.

5.1 The inversion, correctly bounded

The generator-side ranking and the demand-side opportunity map are two readings of the same subgroup-level quantity. The inversion holds at screening level; it does not hold automatically at site level. The screening map says where to search; power-flow analysis says whether a specific site captures the dividend.

5.2 The connection-policy overlay — a hard bar at transmission level

CRU2025236: dispatchable on-site/proximate generation matching MIC; ≥80% additional Irish renewables on a six-year glide path (up to 80% of the de-rated match creditable against the dispatchable requirement); locational assessment **[verified — [10]]**. EirGrid's DCCOPP V3 (May 2026) converts the locational criterion into a procedural bar at transmission level — an application in a transmission demand-constrained area cannot be progressed, and pre-application meetings are facilitated only outside such areas **[verified — [11], accessed 12 August 2026]**. ESB Networks conducts case-by-case assessment across its 27 distribution planning zones **[verified — [25]]**.

Nominated generation (correction carried from v0.3): DCCOPP V3 treats nominated generation as a sequencing/compliance element; its full text, as accessed on 12 August 2026, contains no exception to the demand-constrained-area bar **[verified; absence claim, method and date recorded]**. In a transmission demand-constrained area the routes are: a private-wire configuration once the legal regime exists; on-site self-supply within a single premises under existing law; a distribution-level application subject to ESB Networks' case-by-case zone assessment; or deferral until relief converts the status.

Consequence — stated conditionally. The demand-side determination is made per application through EirGrid's Constrained Area Assessment; the greater Dublin region is the one geography publicly identified as constrained for the foreseeable future **[verified for the process — [11]; public-signal for the Dublin position]**. Where a site inside a high generation-constrained subgroup is found demand-constrained, the grid-import route is closed and the realistic routes are those enumerated above — making the private wire a procedural necessity. Where the assessment does not find the site constrained, grid import remains open and the private wire is instead the economic instrument: the most direct access to structurally discounted trapped energy. In both cases the Private Wires Bill is load-bearing for the paper's central configuration (§6, §7.5), and LEAP's Green Energy Parks concept is consistent with the same co-location logic **[verified — [16]]**. Whether private-wire renewable supply counts toward the 80% obligation remains the largest single implementation uncertainty this paper identifies **[inference]**.

5.3 The composite siting ranking — machinery exposed and reproducible

Layer 1 — grid screening score (0.4 / 0.2 / 0.2 / 0.2; every transformation [inference] under its rubric):

- **Constraint intensity (0.4).** 2028 GF non-priority wind constraint %, ÷39%. *Data verified [6]; linear, reproducible.*
- **Historical signal (0.2).** Named among highest-DD areas in ≥3 ARCC reports 2022–2024 = 1.0; within the named West region = 0.9; peripheral = 0.7; partially referenced mid-west = 0.6; moderately referenced south-west = 0.5; not named = 0.3. *Data verified [1]–[4].*
- **Controllable capacity (0.2).** The variable is the subgroup's 2028 controllable **wind** capacity, both priority classes, taken from the area reports; it is not Maximum Export Capacity, and solar capacity is reported for context but deliberately not scored — wind is the dominant constrained

carrier in every ranked subgroup except J Country, whose solar dimension is treated separately in §3.1. Deterministic bands: ≥1,500 = 1.0; 1,000–1,499 = 0.8; 700–999 = 0.7; 550–699 = 0.6; 400–549 = 0.5; <400 = 0.4. Verified anchors: A & B North ≈1,840 MW (≈570 MW priority + ≈1,270 MW non-priority across the Area A and Area B slices) → **1.0** — two corrections: the previous "conservative" 0.8 violated the rubric's determinism, and the earlier parenthetical derivation ("Area A 1,078 + Area B share of 1,179") mis-stated the decomposition; J Country 771 MW → 0.7 (its ≈1,350 MW non-priority solar is not scored, per the definition above); H1 724 MW → 0.7; E, F & I 1,886 MW → 1.0; B South 400 MW (244 priority + 156 non-priority) → **0.5** under the deterministic split, one band below the earlier 0.6 **[verified capacities — [6a]–[6g]]**. C and G North remain at provisional bands, and the question is closed by bounding rather than tabulation: at any band value from 0.4 to 1.0, C's composite score spans 0.31–0.43 and G North's 0.37–0.49 — neither re-orders any subgroup above the bottom tier (G North's ceiling, 0.49, sits below B South's 0.54), and C is excluded from the siting thesis on constraint character (§3.2), not score **[arithmetic; provisional bands retained as immaterial]**.

– **Relief lag (0.2).** Principal relief energised ≤2027 = 0.2; 2028 = 0.4; 2029 = 0.6; 2030 = 0.8; □2030 = 1.0. *Dates verified [8], [9].*

Subgroup	Intensity	Historical	Capacity	Relief lag	Grid score (base)
A & B North	0.62	1.00	1.00	1.00	**0.85**
J Country	1.00	0.30	0.70	0.40	**0.68**
E, F & I	0.46	0.50	1.00	0.60	**0.60**
H1	0.67	0.60	0.70	0.20	**0.57**
B South	0.56	0.90	0.50	0.20	**0.54**
G North	0.08	0.30	0.40	1.00	**0.37**
C	0.13	0.70	0.50	0.20	**0.33**

Sensitivities (recomputed on the deterministic rubric): *persistence-weighted* (0.3/0.1/0.2/0.4): A & B North 0.89 □ J Country 0.630 □ E, F & I 0.628 □ G North 0.53 □ H1 0.48 □ B South 0.44 □ C 0.29 — J holds second by 0.002, inside the rubric's precision. *Intensity-weighted* (0.6/0.2/0.1/0.1): A & B North 0.772 against J Country 0.770 — a dead heat inside the rubric's precision — then H1 0.61 □ B South 0.59 □ E, F & I 0.54. **A & B North and J Country hold the top two positions under all three weightings; A & B North is now first or joint-first in each.** The basis-sensitivity rescoring, recomputed from the displayed rounded figures (the intensity component becomes the displayed PR rate ÷ 36%, taken to two decimals before weighting): A & B North 0.85 → ≈0.78, B South 0.54 → ≈0.42, H1 0.57 → ≈0.42, E, F & I 0.60 → ≈0.49; J Country is unmoved by construction — the priority-share rule of §3.1 propagates directly into the screening score, and both bases are reported for that reason **[arithmetic from displayed figures; rounding convention stated]**.

Layer 2 — commercial overlay (fibre, latency class, water, workforce, planning, ecosystem, interconnection), applied separately: elevates **E, F & I** to the head of the practical shortlist **[inference]**. Shortlist: 1. E, F & I; 2. A & B North (durable grid leader; latency-insensitive AI training load); 3. H1 / B South (short-window; both basis-sensitive — H1 the stronger grid entrant on its verified capacity); 4. J Country (highest intensity, fastest erosion — and now, per §3.1, substantially a daytime solar-constraint play).

5.4 What a gigawatt could actually capture — now anchored in subgroup volumes

The trapped-energy pools, 2028 full-ECP scenario, grandfathering basis (volumes conserved under pro-rata):

Subgroup	Non-priority wind available (GWh)	Wind constraint pool (GWh)	Non-priority solar pool (GWh)	Total pool (GWh)
J Country	2,148	≈838 (39%)	≈728 (42% of 1,733)	**≈1,566**
A & B North	3,787 (both slices)	≈909 (24%)	≈1 (small solar base)	**≈910**
B South	695	≈153 (22%)	negligible	**≈153**
H1	976	≈254 (26%)	≈101 (10% of 1,007)	**≈355**
E, F & I	2,222	≈400 (18%)	≈25 (2% of 1,228)	**≈425**
Five-subgroup total				**≈3.4 TWh**

[verified inputs — [6a]–[6g]; multiplications arithmetic]. The scenario caveat is stated plainly: the 2028 "ECP" case assumes the full ECP portfolio connected by 2028 — an optimistic build-out — and the pools scale down with slower connection. For calibration, the Republic's entire *actual* wind constraint in 2025 was ≈870 GWh (6.7% of available, derived from [1]) **[inference; arithmetic]**; the forward pool in five subgroups alone is nearly four times today's national total.

A hypothetical 1 GW of flexible demand distributed across the top-ranked subgroups, capturing 20–50% of a pool bounded below by today's ≈870 GWh national actual and above by the ≈3.4 TWh five-subgroup 2028 forecast, would absorb roughly **175 GWh to 1.7 TWh per year** depending on scenario and capture — at €40–80/MWh displacement value, approximately **€7 million to €136 million per year**, with the central case a point estimate of approximately **€18 million per year** (today's pool × mid capture × mid price: 870 GWh × 35% × €60/MWh ≈ €18.3m) **[inference; all assumptions stated; wide band deliberate]**.

The conclusion still cuts both ways, now with better numbers. Constrained energy alone cannot power a gigawatt of firm load — even the upper-bound pool is a ~19% capacity-factor contribution. But as a layer on a conventional supply stack it is unambiguously material, located in generation-constrained subgroups predominantly outside the publicly identified greater-Dublin demand constraint — and consistent with LEAP's Green Energy Parks co-location concept **[verified for the bar and the concept — [11], [16]; Dublin position public-signal]**. The dividend is real; it is a dividend, not a principal.

> **For the developer:** the grid score says where to search; the overlay says where to build; node-level power-flow analysis says whether a specific site captures the dividend; and the §3.1 basis rule says how to read any generator's quoted exposure — ask for the priority mix.
>
> **For the system:** the quantified pools are the deferral prospectus: a gross forecast pool of ≈3.4 TWh of 2028 trapped energy in five subgroups — before locational, temporal, operational and configuration losses — is what locational demand policy, node-level heat maps, and the private-wire regime jointly address; the capturable fraction is bounded by the 20–50% assumption above.

6.1 Legal status as of August 2026

Private wires are **not lawful today** in the configuration contemplated; the 1999 Act's Article 7(4)-style trigger (refusal of access) does not fire because applications are queued, not refused **[verified — [12], [15]]**.

Date	Event	Ref
18 Aug 2023	DECC consultation opens (128 responses)	[12]
5 Jul 2024	Guiding Principles approved	[12]
15 Jul 2025	**Private Wires Policy Statement** (four use cases)	[12]
12 Dec 2025	**CRU2025236** LEU connection decision	[10]
16 Dec 2025	**General Scheme of the Private Wires Bill** + RIA approved; drafting begins	[12]
13 Jan 2026	LEAP: enactment "during 2026"; Green Energy Parks	[16]
19 Mar 2026	Minister: passage as early as possible this year	[13]
31 Mar 2026	EirGrid/ESB Networks LEU connection processes	[11], [25]
23 Apr 2026	PLS report: 47 recommendations	[14]
May 2026	Data Centre Constrained Area Overview; DCCOPP V3	[11], [25]
17 Jun 2026	Heneghan PMB — Electricity Regulation (Amendment) (No. 2) Bill 2026 — First Stage	[15], [27]
Aug 2026	Government Bill **not yet published as an Oireachtas bill**	[12] **[inference; §8]**

The **Government Bill** (General Scheme approved, drafting ongoing) is the operative track, directed at industrial-scale configurations including private networks for data centres **[verified — [12], [27]]**. The **Heneghan PMB** (recorded as No. 68 of 2026 in the Oireachtas record consulted; one press source renders the number inconsistently) would insert a new Part VA with a CRU permitting regime open to all user classes; unlikely to be enacted, but substantively analysed by major energy practices **[verified — [15], [27], [28]]**.

The General Scheme's first use case is this paper's mechanism: a private wire from a single generation asset to a single user — the Scheme's own example is a decarbonising factory or data centre — storage included; CRU licence; no wayleaves; ESB step-in right; three CRU tests (renewable-promoting, non-interfering with operation/security, non-interfering with planned reinforcement) **[verified — [12]]**.

6.2 The executability verdict

Not executable now; executable upon enactment + commencement + CRU licensing implementation. Base case **2027–2028 [inference]**. Trigger events: publication of the drafted Bill with a number; a CRU licensing/tariff consultation; a commencement order. The window approximates site assembly, generator contracting, planning and connection design for a project energising into the regime's first operative years.

> **For the developer:** the Bill's passage is the investment clock; capital gates on the trigger events; §7.5's delay scenarios are priced before commitment.
>
> **For the system:** the first private-wire licences set precedent; applications behind verified constraints most directly align with the three statutory tests **[inference]**.

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7. Risk register

7.1 Article 13(7) — CJEU reference. Pending; reported exposure ≈€158m **[verified — [29], [30]; public-signal on the figure]**. Full-compensation branch: generators made whole, discount incentive weakens, the system becomes the principal *economic beneficiary* of constraint-absorbing demand — but no existing instrument transfers that value to a project; authority sits across the CRU, SEM Committee and TSOs, and a mechanism (locational flexibility product, constraint-management contract, connection-charge differential) would have to be created. Discretion branch: trapped energy stays uncompensated, bilateral private-wire pricing captures the value. Modelling: **branch one — book nothing; branch two — book contracted terms only [inference]**.

7.2 Battery build-out. Faster-than-ECP deployment erodes surplus quickly and constraint more slowly (batteries behind a constraint face the same export limit); slower deployment leaves the ranking intact **[inference]**.

7.3 North–South Interconnector timing. Slippage past October 2031 extends border/NI exposure and consumer cost alike **[verified date; inference consequences]**.

7.4 LEU enforcement posture. The transmission constrained-area bar is procedural **[verified — [11]]**; the open variable is treatment of the dispatchable and renewables obligations for private-wire configurations. Stress-test capital structures against the strict reading **[inference]**.

7.5 Legislative timing. *Enactment 2026–H1 2027* → executability 2027–2028 as modelled. *H2 2027–2028* → first operative year 2028–2029; opportunity narrows toward the persistence-weighted ranking (Donegal, border) and away from the fast-eroding zones. *Beyond 2028* → thesis contracts to the durable constraints plus whatever the 2027 TYTFS newly identifies; interim routes are on-site self-supply within a single premises under the existing framework — the configuration that does not require the pending direct-lines regime — and siting where the Constrained Area Assessment does not find the site demand-constrained, with conventional PPAs **[existing-law basis [12], [15]; route framing inference]**. Structural mitigation: the top-two robustness finding means the ranking's leaders are the zones least damaged by delay **[inference; scenario construction]**.

Noted without treatment: Phase 1 offshore landing geography loads the south and east coasts with surplus-type dispatch-down — a different thesis, out of scope.

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8. What this paper does not claim

No node-level precision (§2.3); node figures in area reports are allocation artefacts. **No replication of proprietary models** — TNEI's product computes nodal sensitivity factors, hourly 8,760 profiles, concurrent-constraint dispatch order, exact operating assumptions and calibration residuals; commission that layer before committing capital. **No claim that flexible demand substitutes for reinforcement. No executable private-wire route today.**

Verification limits (method and dates recorded). Government Bill status inferred from sources reviewed through early August 2026; gov.ie General Scheme page (accessed 12 Aug 2026) confirms the Bill returns to Government before publication; no bill number found. Heneghan number per the Oireachtas record consulted; one press discrepancy noted. €567m/€700m and £55,000/day figures are secondary. ECP figures are forecasts EirGrid labels indicative, on 2020 weather profiles toward the higher end of outcomes; the 2028 "ECP" scenario assumes full-portfolio connection. **Pro-rata extractions and subgroup volumes are complete for all five leading subgroups** (Areas A, B, J, H1, E, F and I reviewed in full; accessed 12 August 2026); C and G North remain at area-slice level in the ranking columns. E, F & I volumes now sum all three slices; the Area I slice contributes no controllable wind in 2028 — its 378 MW Knockraha offshore enters only in the Future Grid scenario. Capacity bands for C and G North remain provisional and are closed by the §5.3 bounding argument: no band value in [0.4, 1.0] alters any finding. **No demand-side crosswalk is established**: transmission demand-constrained status is determined per application by EirGrid's Constrained Area Assessment, with only the greater Dublin region publicly identified as constrained; every conclusion depending on a site's demand-side status is stated conditionally (§5.2) **[verified process — [11]; Dublin position public-signal]**. The WDT Constraint Group Overview is now cited to its direct PDF [5]. A direct PDF URL for the ARCC 2025 report could not be located during review (12 August 2026); the landing pages in [1] stand, with the report's publication (25 May 2026) independently confirmed **[public-signal — [1]]**. The DCCOPP V3 absence claim (no nominated-generation exception) rests on full review of the document as accessed on 12 August 2026.

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9. Recommendations

To developers, operators and investors. Screen by the published grid score; read any generator-facing exposure figure against the §3.1 priority-share rule — ask for the subgroup's priority mix and the allocation basis before pricing a PPA or private-wire term sheet. Apply the commercial overlay separately; commission node-specific power-flow analysis before capital. E, F & I as risk-adjusted entry; Donegal as the durable grid leader for latency-insensitive AI training load; the Midlands as a fast-window, substantially solar-constraint play gated on pre-2028 energisation and §7.5. Gate capital on the trigger events. Book no Article 13(7) outcome.

To EirGrid and ESB Networks. Node-level constraint heat maps ahead of the 2027 TYTFS remain the highest-value release — they would let applicants demonstrate, rather than assert, delivered relief, providing the evidentiary basis for evolving the demand-constrained-area bar from a wall into a filter. The quantified pools of §5.4 size the deferral opportunity the connection processes could weight.

To the CRU. The LEU decision, the DCCOPP V3 constrained-area implementation, and the forthcoming private-wire licensing framework point one direction and lack a locational integration layer; consulting on the licensing framework ahead of enactment shapes precedent. Early clarification of private-wire supply's treatment under the 80% obligation removes the largest implementation uncertainty identified here.

To Digital Infrastructure Ireland and the Infrastructure Taskforce. LEAP commits to private-wire enactment and Green Energy Parks; this paper supplies the ranked, quantified *where* — and a bounded, primary-sourced counter to "data centres only strain the grid": sited and configured against the constraint map, they can relieve it, to a degree that is site-specific, measurable, and bounded by a gross forecast pool of up to approximately 3.4 TWh across five subgroups in the 2028 forecast.

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