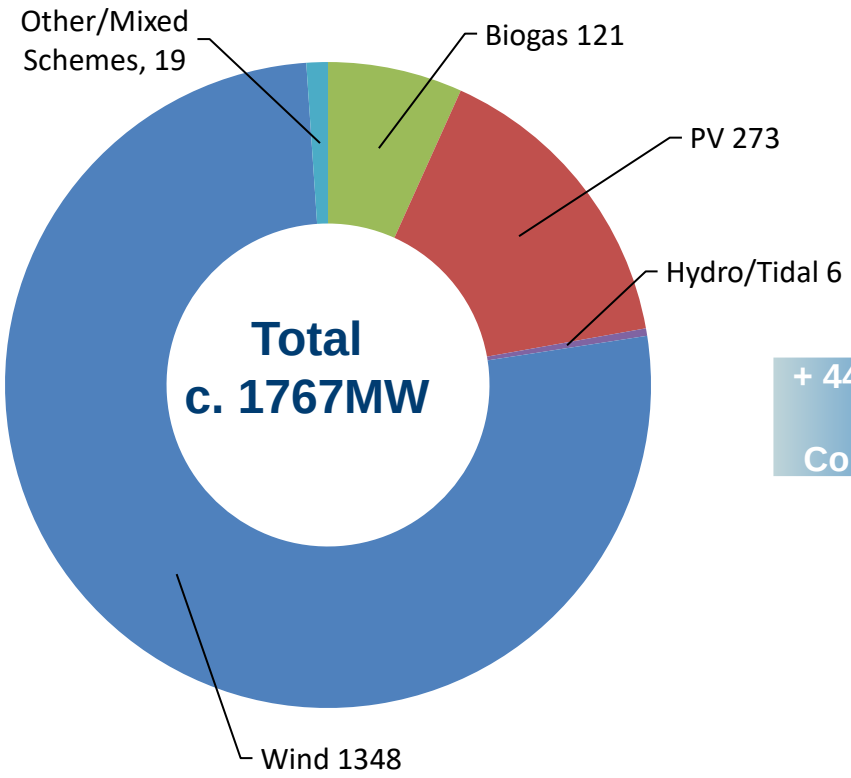
Renewable Grid Liaison Group (RGLG)

13th December 2022

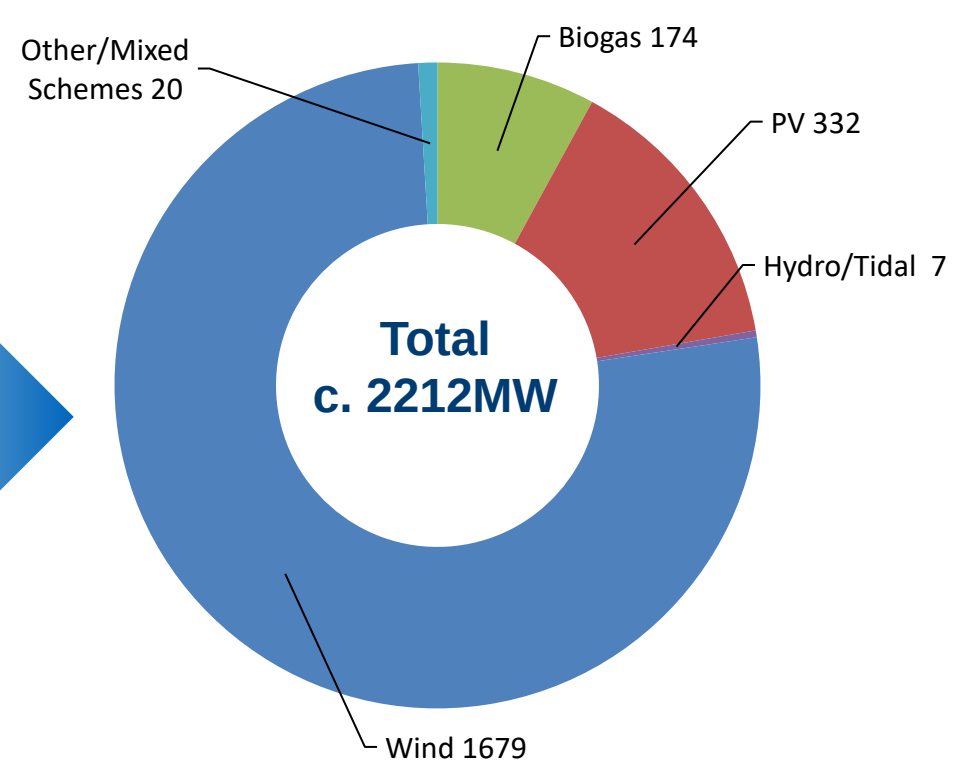
RENEWABLE STATUS UPDATE

RGLG 13th December 2022 – Q3 Report

Renewable Generation Status – Q3 2022



NI Connected Renewable Generation Technology Mix



NI Connected and Committed Renewable Generation Technology Mix

Storage Status – Q3 2022

Connected – 200MW

Connected and Committed – 250.8MW

Transmission Connection Applications

RGLG

13th December 2022

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Generation Applications			
Unit	**Connection Level**	**User's Name**	**Maximum Export Capacity (MW)**
Curraghmulkin Wind Farm	Transmission	Dooish Wind Farm Ltd	42
EP Kilroot GT6 OCGT	Transmission	EP NI Energy Limited	350
Aught Wind Farm	Transmission	Aught Wind Farm Limited	37.2
Pigeon Top Wind Farm	Transmission	Pigeon Top Wind Farm Limited	51.6
EP Kilroot GT7	Transmission	EP NI Energy Limited	299
EP Kilroot GT7 OCGT (Increased MEC)	Transmission	EP NI Energy Limited	50
EP Kilroot CCGT ST2	Transmission	EP Kilroot Limited	300
EP Kilroot GT West	Transmission	EP Kilroot Limited	500

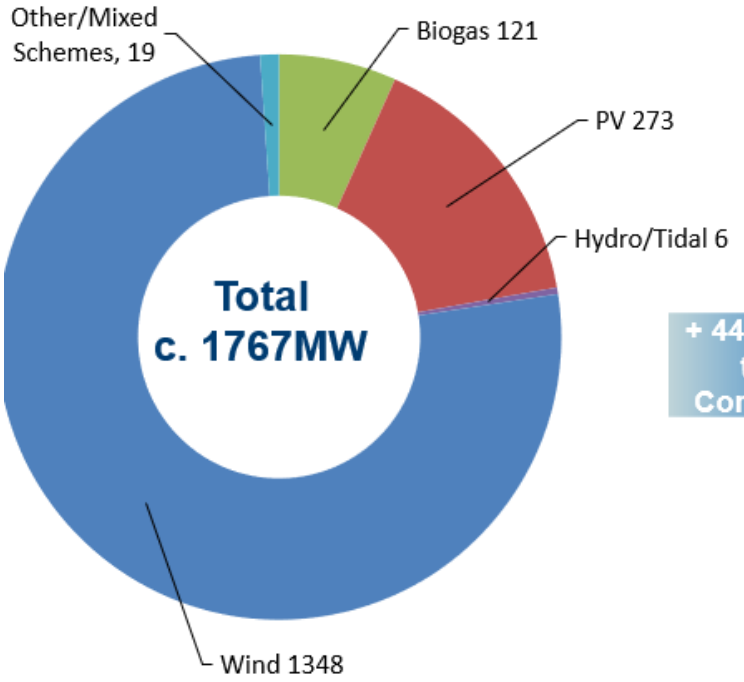
Large Demand Applications			
Unit	**Connection Level**	**User's Name**	**Maximum Export/Import Capacity (MW)**
Atlantic Hub Data Centre	Transmission	Atlantic Hub Property Limited	80
Atlantic Hub Data Centre	Transmission	Atlantic Hub Property Limited	80

Synchronous Condenser Applications			
Unit	**Connection Level**	**User's Name**	**Maximum Export/Import Capacity (MW)**
Coolkeeragh High Inertia Synchronous Compensator Stability Project	Transmission	Statkraft Ireland Limited	0 / 8
Coleraine High Inertia Synchronous Compensator Stability Project	Transmission	Statkraft Ireland Limited	0 / 8
Coolkeeragh Synchronous Condenser	Transmission	ESB Asset Development UK Limited	0 / 12

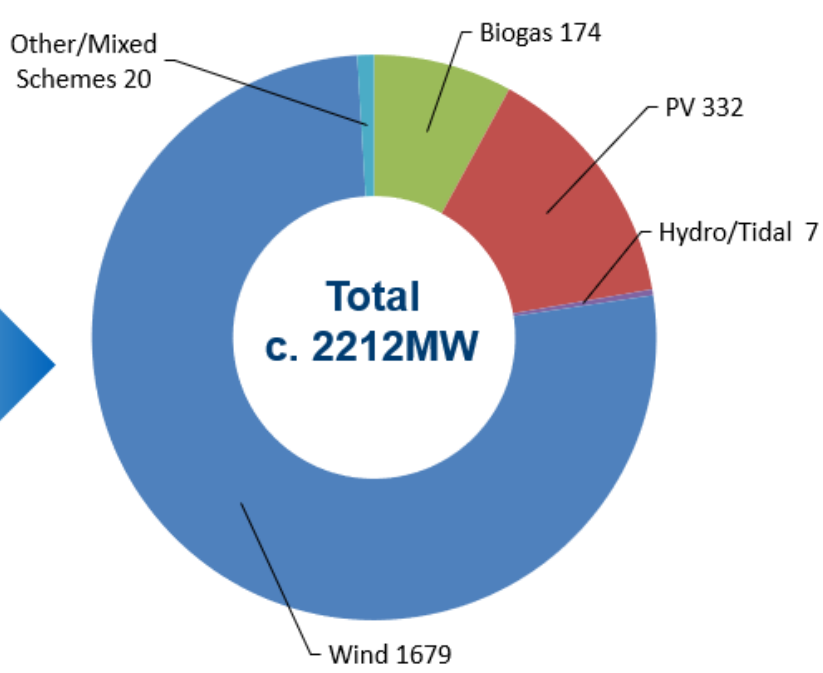
Connection Innovation Working Group Update - SSG Export

13th December 2022

Success to Date



NI Connected Renewable Generation Technology Mix



NI Connected and Committed Renewable Generation Technology Mix

- 90.5MW of G83 connected, 321.5MW of SSG connected and a further 55MW committed to connect
- 47.1 per cent of total electricity consumption in Northern Ireland was generated from renewable sources located in Northern Ireland for the 12 month period July 2021 to June 2022.
- 75% SNSP achieved

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SSG Export Offers

- G99/NI applies to all generators who are paralleled to NIE Networks system and have a Installed capacity> 16Amps per phase

- You must gain permission ahead of installation

- NIE Networks are responsible for issuing connection offers to the distribution system within 3months from the date we have received both a valid application and relevant fee, unless an extension has been agreed with UR and customer

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SSG Export Offers

- ACAOP process is used to determine if a connection offer can be issued for generation <5MW
- Joint NIE Networks and SONI consultation with industry in 2016
- Criteria for offer issuance for G99/NI applications seeking export:
  - Distribution Capacity
  - Bulk Supply Point Capacity
  - Firm Transmission Capacity
  - Operational Limit
- <u>Your application must pass all four to get an export offer</u>

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SSG Export Offers

- To determine if there is Distribution Capacity for export applications, NIE Networks carry out the following assessments:
  - Check transformer capacity at the various level 11/0.4kV and 33/11kV
  - If the application causes a substation to go into reverse power, we will check 33/11kV transformers are capable of reverse power flow
  - Voltage rise on LV cables, 11kV and 33kV networks
  - Thermal ratings on LV cables, 11kV and 33kV networks
  - Fault level capacity

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SSG Export Offers

- NIE Networks seek assessment from SONI for all G99/NI applications seeking export on:
  - Bulk Supply Point Capacity
  - Firm Transmission Capacity
  - Operational Limit

- Firm Transmission Capacity element
  - There is no remaining firm transmission capacity

- Operational Limit has also been reached

- You must meet all four assessments in order to get an export offer. At present NIE Networks is unable to issue export offers for G99/NI application <5MW.

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Other Routes to Market

- G98/NI Stage Process not impacted by ACAOP. The limits for G98/NI are:
  - 3.68kW for single phase properties
  - 11.04kW for three phase properties
  - For inverter based connections the limits are based on the name plate rating of the inverter. NIE Networks does not monitor the DC side of the connection

- G99/NI Fast Track Process is not impacted by ACAOP. The criteria for applying under G99/NI Fast Track can be found on NIE Networks website but essential it allows:
  - 16Amps per phase of generation to be connected in parallel with 16Amps per phase of storage connected via an inverter, with a export limiting device that restricts the output to the network to 16Amps per phase

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Other Routes to Market

- G99/NI Zero Export/Over-install Process is not impacted by no firm transmission capacity the only criteria is that distribution capacity is available and for over-install the Total Installed Capacity>120% of MEC

- The assessments carried out to determine if distribution capacity is available for zero export/over-install applications are:
  - Voltage rise and thermal limits on LV Cables studied to ensure they are adequately design to cope with the TIC for the period of time the export limiting device takes to operate
  - Transformer capacity
    - LV connected we will assess only the 11/0.4kV transformer
    - 11kV connected we will asses the 33/11kV transformers to ensure they are capable of reverse power flow
  - Fault level capacity – where NIE Networks has reached the fault level capacity of the associated substation an offer with a delay connection date may be offered or in some cases an offer may be refused

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Other Routes to Market

- NIE Networks and SONI are currently proposing to consult on the over-install limit set by the ACAOP in early 2023
- G99/NI ≥ 5MW process is no longer impacted by ACAOP and follows a new process which was consulted on and went live in January 2022
- The main reason for the two different approaches is that generation ≥ 5MW is controllable and therefore can be curtailed and constrained
- The assessments carried out to determine if capacity is available are:
  - Distribution Capacity (same criteria as indicated for SSG export)
  - Bulk Supply Point Capacity
  - For projects connecting into cluster
    - The customer will pay for the second transformer and any connection assets that need upgraded

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Enduring Policy

- New process is required to replace ACAOP required for SSG
- Will need to take account of operational concerns raised by SONI in the Jointly consulted NIE Networks and SONI ACAOP Decision Paper May 2016
  - Erosion of min system demand due to increasing volume of uncontrollable generation
  - Distribution connected uncontrollable generation has the effect of meeting some local demand on the distribution system
  - This erodes the system demand seen by the system operator
- Risk in maintaining system security licence condition
- NIE Networks and SONI are working together to identify potential mitigations to be factored into any new process

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Next Steps

- Industry paper will be issued on potential process changes
- NIE Networks and SONI will engage with CIWG in preparing options to be included in paper

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Thank you

Any Questions?

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Transmission Network Developments

RGLG

ATR Update

- **North-South Interconnector - ECD 2026**
- **Mid Antrim Reinforcement** in Part 2 of Grid Development Process, stakeholder engagement ongoing, **ECD 2029**
- **Omagh – Dromore Uprate** handed over to NIEN for construction – planned for **2023**
- **Drumnakelly – Tamnamore Uprate** options report in progress, **ECD 2026**
- **North and West Reinforcement** options report commencing shortly, **ECD 2030**
- **Mid Tyrone Reinforcement** environmental report in progress, TNPP submission early 2023, **ECD 2030**