IWEA
Irish Wind Energy Association


Sustainable Nation Ireland
Responsible Investing. Smart Business.

Climate Week Ireland 2018

# Offshore Wind in Ireland

DAVID CONNOLLY, CEO, IWEA

# IWEA & Our ~120 Members

## All-Island Network for Onshore & Offshore Wind

## Members from Various Sectors

## Represent ~80% of Existing Wind Energy in Ireland

- Wind farm developers
- Turbine manufacturers
- Construction companies
- Supply companies
- Accountants
- Insurance
- Consultancy
- Legal firms
- Banks
- Small local businesses

# 10 Committees within IWEA:
## https://www.iwea.com/committees

Irish Wind Energy Association

# IWEA Offshore Committee:
## ~20 Members & Chaired by Peter Lefroy, Innogy

IWEA
Irish Wind Energy Association

McCarthy Keville O'Sullivan
Planning & Environmental Consultants

ENGIE

SSE Renewables

DP ENERGY

ESB

SENVION
wind energy solutions

innogy

GeoSea
Geotechnical & Offshore Solutions

IONIC CONSULTING

natural power

DNV·GL

JENNINGS O'DONOVAN & PARTNERS LIMITED
CONSULTING ENGINEERS

SWECO

BEAUCHAMPS

Enerco Energy

SIEMENS Gamesa
RENEWABLE ENERGY

VATTENFALL

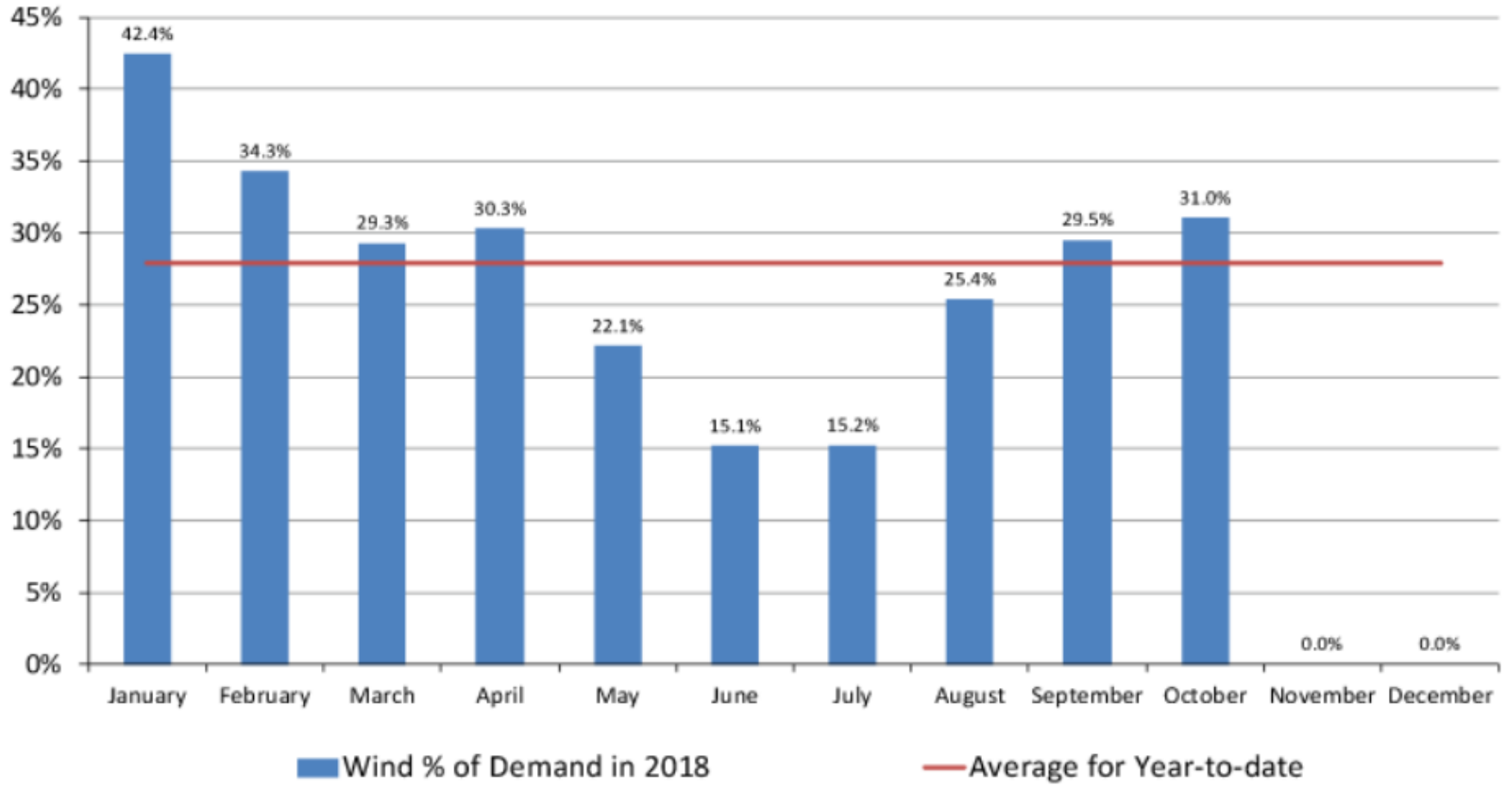
Statkraft

Brookfield

# Status of Wind Industry

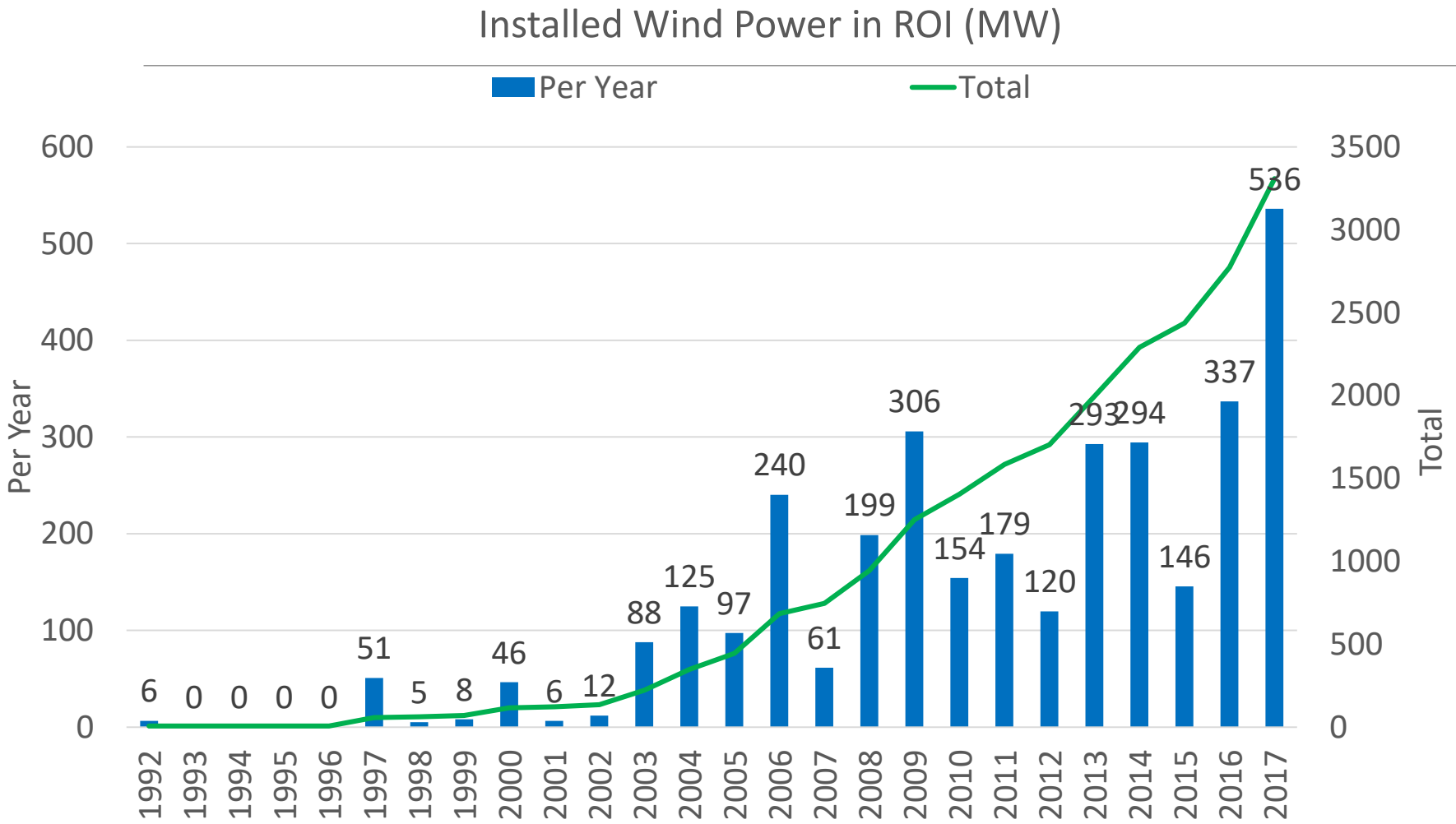
# For the first nine months of 2018, wind supplied on average **27.9%** of electricity demand compared with 25.7% in 2017

Irish Wind Energy Association




Graph: Martin Howley, SEAI

# Wind Energy Aiming for 4000-4400 MW by 2020 Expected to be 32% RES-E (Target is 40% RES-E)




**2018:**
- Built = 152 MW
- To Build = 184 MW
- Potential Build = 336 MW
- **Max Total = 3719 MW**

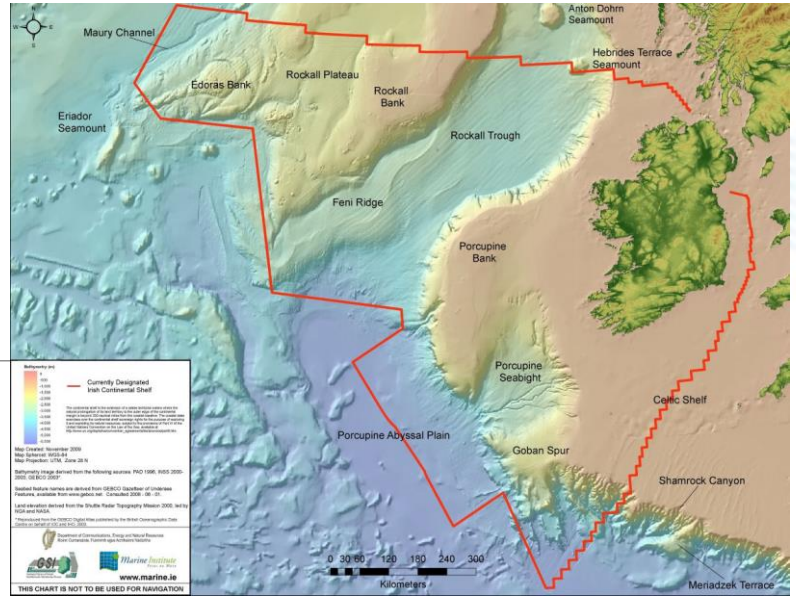
**2019:**
- Potential Build = 559 MW
- **Max Total = 4278 MW**

**Wind in 2020 will be ~4100-4400 MW**

**(~7% of 16% RES)**

# Replicating Success for Offshore

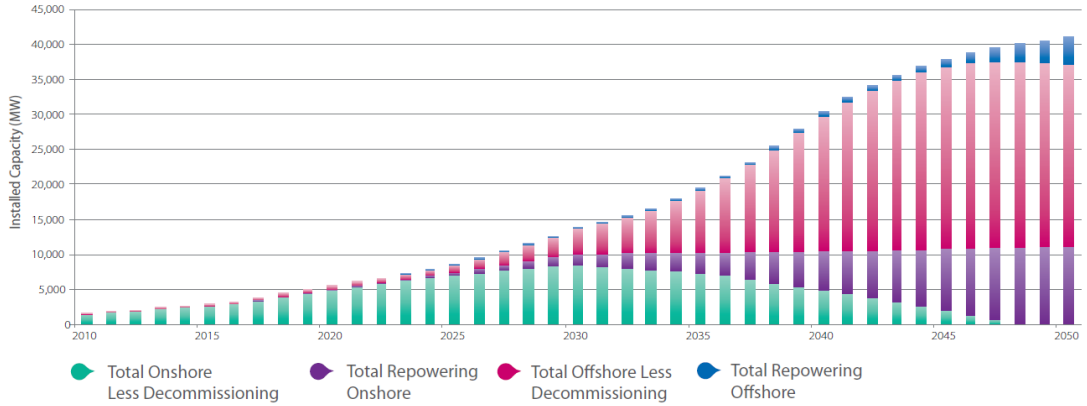
# Ireland's Offshore Potential: SEAI Predict ~30 GW




## KEY BENEFITS IN IRELAND

- Large Sea Area/Potential
- High Wind Speeds
- High Capacity Factors
- Sites Located Close to Shore
- EU Benefits from Irish Location

Cumulative Capacity with Repowering of Onshore and Offshore Wind Installations to 2050




seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

WIND ENERGY Roadmap

# Pillars of Offshore Wind to Deliver

Irish Wind Energy Association

## Offshore Wind Industry

| Target: 55% RES-E? | Financing: RESS/cPPAs | Grid | Planning/ Consent |
|---|---|---|---|
| (70 by 30 - Energy Systems Committee) | (Positive Developments – Markets Committee) | (Need a connection regime) | (Need to Process Consent ASAP) |

# Pillars of Offshore Wind to Deliver

Irish Wind Energy Association

## Offshore Wind Industry

| Target: 55% RES-E? | Financing: RESS/cPPAs | Grid: ECP2? | Planning: Foreshore/ MAFA/MSP |
|---|---|---|---|
| (70 by 30 - Energy Systems Committee) | (Positive Developments – Markets/Offshore Committee) | (Need a connection regime – Grid/Offshore Committee) | (Need to Process Consent ASAP - Offshore Committee) |




# Renewable Electricity Support Scheme

# RESS High Level Design
## (Clarity required on application to offshore)

**Auction structure is pay as clear:**

- 2-way CfD

**Technology Neutral Auctions:**

- Generation diversity encouraged through Technology Caps within Price Ranges

**To Participate at Auction:**

- Planning consent and grid offer
- Place bid bonds

**Community Engagement:**

- €2/MWhr Community Benefit
- Mandatory Community Investment Offering
- Ring-fenced volumes for community-led projects

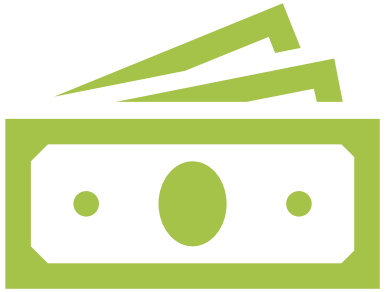
More Details: View IWEA Video with Overview of RESS on website under Markets Committee

| | Auction Capacity (GW/hrs) | Auction Year | Delivery Year (end of) | Single Technology Cap |
|---|---|---|---|---|
| RESS 1 | 1,000 (~250 MW) | 2019 | 2020 | No |
| RESS 2 | 3,000 (~750 MW) | 2020 | 2022 | Yes |
| RESS 3 | 3,000 (~750 MW) | 2021 | 2025 | tbc |
| RESS 4 | 4,000 (~1000 MW) | 2023 | 2027 | tbc |
| RESS 5 (possible) | 2,500 (~625 MW) | 2025 | 2030 | tbc |

TOTAL
13,500 GWh: ~3375 MW Offshore
(~4750 MW Onshore)

RESS to Support 55% RES-E by 2030
(can only increase)

Sufficient Volume

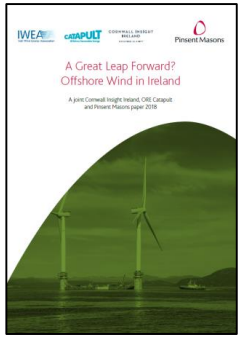


Competitive Price

# Opportunity for Offshore in RESS Auctions

| Project | Capacity | Status | Notes |
|---|---|---|---|
| Arklow Bank 2 | 494.8MW | Consent authorised.<br><br>No connection agreement. | Survey works results to be completed in early 2019. SSE is moving forward with plans to fully develop the wind farm and invest over €1bn in the project. |
| Codling Bank | 1,100MW | Consent authorised.<br><br>No connection agreement. | Joint venture between Hazel Shore and Fred Olsen Renewables. |
| **1,594.8MW** | | **Consent authorised** | |
| Codling Bank Extension | 1,000MW | Consent application submitted. No connection agreement | Joint venture between Treasury Holdings and Fred Olsen Renewables. |
| Dublin Array | 600MW | Consent application submitted. No connection agreement | In development. Joint venture between Innogy and Saorgus Energy. |
| Oriel Wind Farm | 330MW | Consent application submitted. 210MW connection (Gate 3) signed March 2015. | Oriel Wind Farm Limited and Parkview (Belgium) partnership. Originally planned to be developed in parallel to NISA (see below) |
| Skerd Rocks | 100MW | Consent application submitted. No connection agreement. | Being developed by Fuinneamh Sceirde Teoranta. First proposed west coast offshore wind farm. |
| **2,030MW** | | **Consent application submitted** | |
| Clogher Head | Up to 500MW | Concept phase | Hibernian Wind Power (ESB subsidiary). Application for Foreshore Licences to undertake surveys and investigations have been made. |
| Kilmichael Point | Up to 500MW | Concept phase | Hibernian Wind Power (ESB subsidiary). Application for Foreshore Licences to undertake surveys and investigations have been made. |
| North Irish Sea Array | 750MW | Concept phase | Element Power purchased project from Gaelectric in April 2018. |
| **Up to 1,750MW** | | **Concept phase** | |
| **TOTAL** | **Up to 5,374.8MW in development pipeline** | | |

*Source: Cornwall Insight Ireland, data from EirGrid, company statements and other public data.*

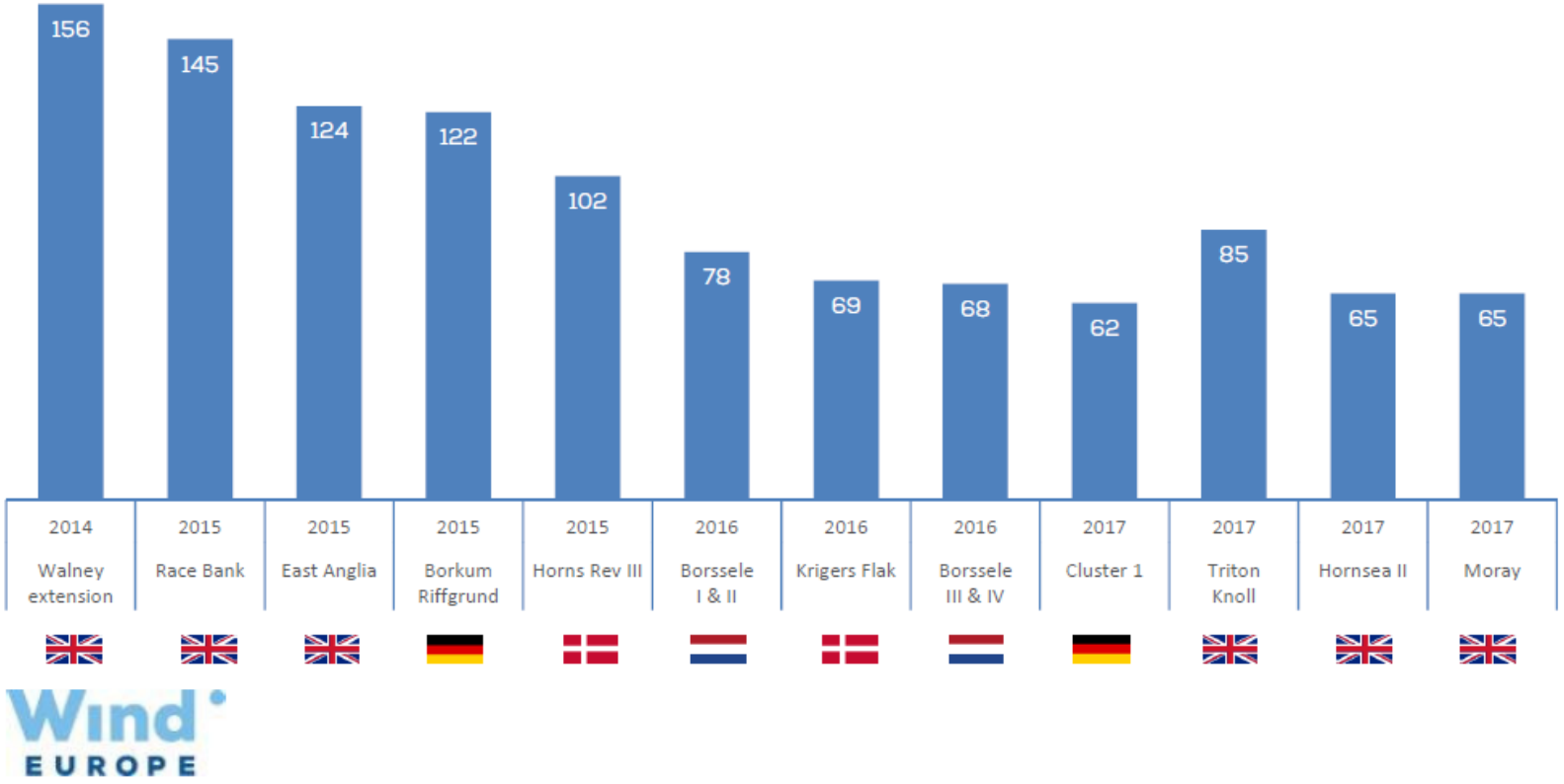



# ~5000 MW of Offshore in Pipeline in Ireland, Sept 2018

CORNWALL
CREATING CLARITY

# Prices Dropping in Other Auctions

**Levelised revenue of electricity, incl. transmission costs**
EUR/MWh*, 2016-prices

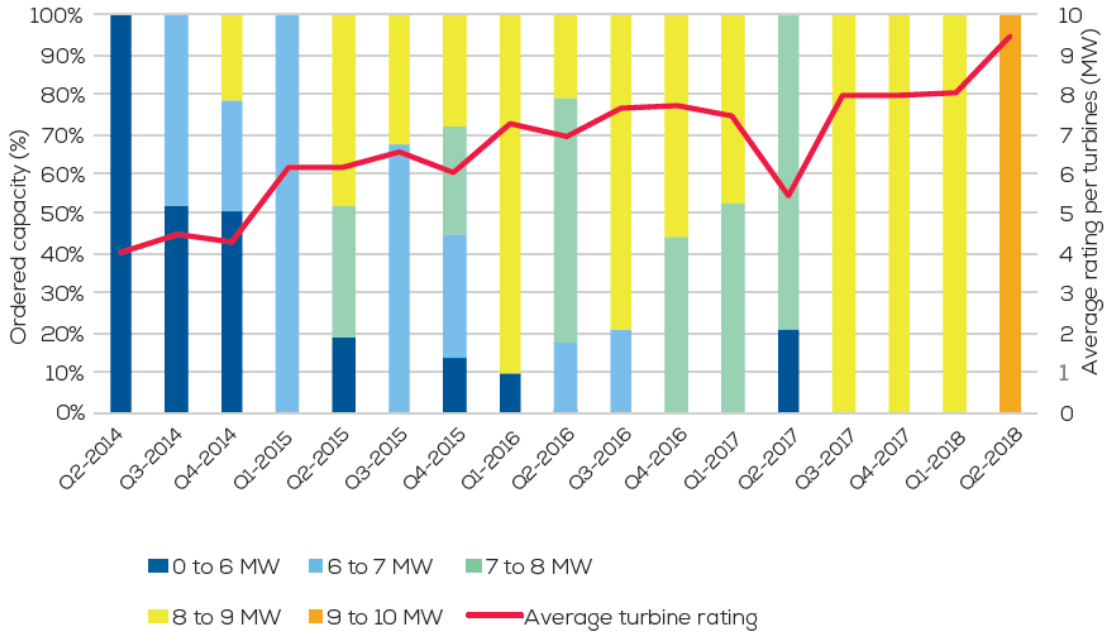



Wind EUROPE

IWEA Irish Wind Energy Association

# Prices Decline As Industry Develops


# Offshore Turbine Orders




Source: WindEurope

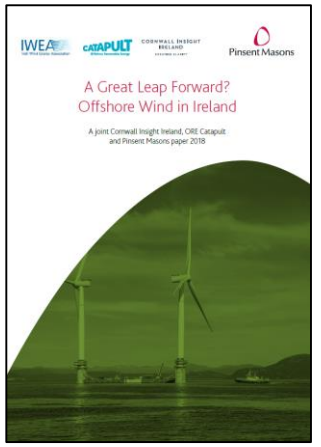
# Offshore Turbines Ordered now >10 MW

# Recommendations to Accelerate the Offshore Wind Sector in Ireland & Minimise Costs

Irish Wind Energy Association

### 6.1 Recommendations

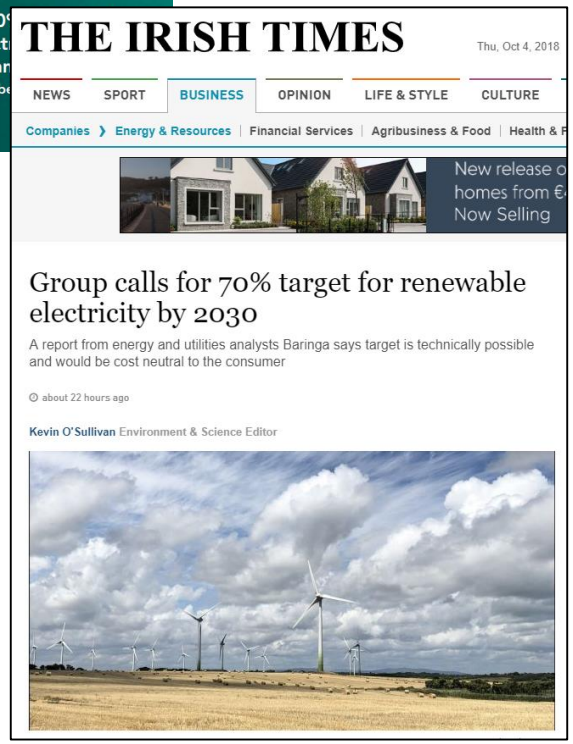
| | Issue | Recommendation |
|---|---|---|
| PLANNING | Simplifying the consenting and permitting regime | The Maritime and Foreshore (Amendment) Bill should be enacted into law at the earliest opportunity |
| GRID | Process to gain network connection agreement is uncertain for offshore wind | How the longer-term Enduring Connections Policy will manage offshore wind should be resolved as rapidly as possible, as a connection offer is necessary to obtain investor confidence and support under RESS |
| RESS | Final details on the levels of support, auction qualification and participation rules for offshore wind in RESS are not yet known | Details on the RESS auction rules should be forthcoming as soon as possible. The scale of offshore wind projects means that they require longer lead times to put in place finance and obtain the necessary consents and permits than most onshore developments |
| TARGET | The potential size of the Irish offshore sector is presently too wide-ranging for international investors to take a view on whether to invest | The approach for introducing auction technology caps within RESS will determine the scale of the offshore wind sector in Ireland. The most up to date data on technology costs should be used to underpin the setting of caps, as well as consideration of how technology developments across Europe have significantly increased turbine capacities and load factors |
| RESS | It is not known if RESS support will take account of possible price cannibalisation impacts and system management costs. | The impact of increased volumes of variable generation on the Irish system and wholesale prices in the new I-SEM should be considered when appraising support costs and DS3 values so that whole-system impacts are adequately considered and planned for now |
| COORDINATION | Industry has had a limited formal role to play in developing policy and supply chains | Efforts for collaboration between government, regulatory authorities and the offshore wind industry should be accelerated |



# Creating More Volume!

INCREASING THE OPPORTUNITY FOR OFFSHORE WITH A TARGET OF 70% RENEWABLE ELECTRICITY BY 2030

# IWEA Energy Vision Calling for 70% Renewable Electricity by 2030

THE IRISH TIMES

Thu, Oct 4, 2018

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New release o
homes from €
Now Selling

Group calls for 70% target for renewable electricity by 2030

A report from energy and utilities analysts Baringa says target is technically possible and would be cost neutral to the consumer

about 22 hours ago

Kevin O'Sullivan Environment & Science Editor

Launched in October with 8 Other Associations

1. Detailed modelling by Baringa, showing how one **70% RES-E scenario is possible** by 2030

2. **Cost neutral** for the consumer if wind power has an LCOE of ~€60-70/MWh
   - **The wind industry will achieve its target**

3. Requires an **'energy system' approach**
   - Interconnection, heat pumps, electric cars, etc

International journal of Sustainable Energy Planning and Management Vol. 01 2014 7-28

International journal of
Sustainable Energy Planning and Management

## A technical and economic analysis of one potential pathway to a 100% renewable energy system

**David Connolly*and Brian Vad Mathiesen**

*Department of Development and Planning, Aalborg University, A.C. Meyers Vænge 15, DK-2450 Copenhagen SV, Denmark*

ABSTRACT

This paper outlines how an existing energy system can be transformed into a 100% renewable energy system. The transition is divided into a number of key stages which reflect key radical

*Keywords:*

100% renewable energy;
smart energy system;

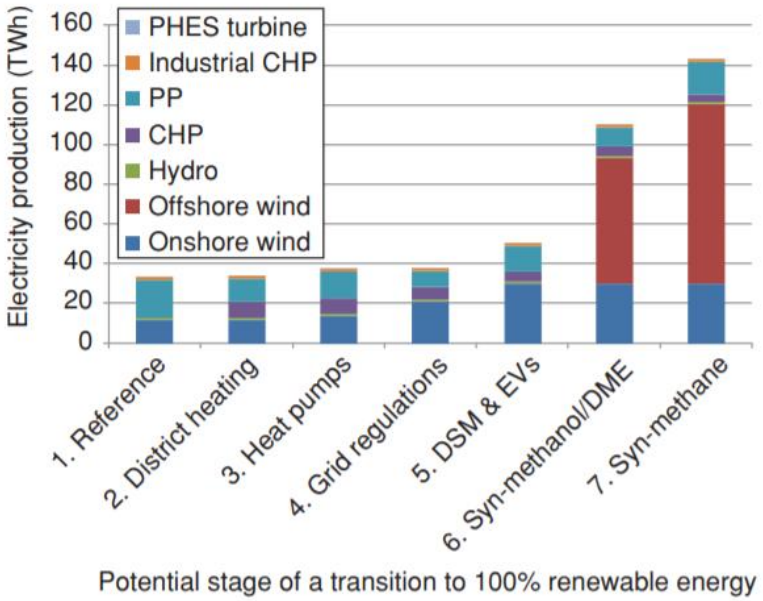
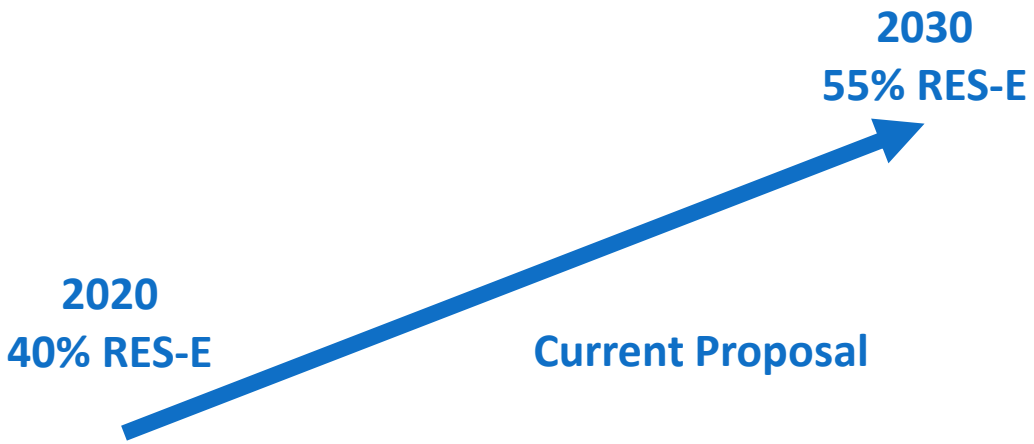



Figure 8: Electricity production for each potential stage of the transition to 100% renewable energy.

# 100% Renewable Energy in Ireland Requires >20 GW of Offshore

http://dconnolly.net/greenplanireland/


# National Energy & Climate Plan

- Will set Ireland's 2030 renewable energy target
  - Currently 55% being proposed
- First draft due by end of 2018
- NECP Consultation open now: https://www.dccae.gov.ie/en-ie/energy/consultations/Pages/Initial-Consultation-NECP-2021-2030.aspx
- Respond by Promoting 70% renewable electricity by 2030

**Taoiseach tells EU he is not proud of Ireland's role as Europe's climate 'laggard'**

*January 18th, 2018*


# Ireland
# Laggards or Leaders?

- **70 by 30 - AN OPPORTUNITY FOR LEADERSHIP:**
  - Ireland will set a 2030 Renewable Energy Target in our '**National Energy & Climate Plan**' due by end of 2018
  - Call on the Government to at least match the EU's 2030 target of 32% RES, supported by a **70% renewable electricity share**

# Next IWEA Offshore Event: 14th Nov

## Offshore Consenting and Development – Creating Value and Reducing Risk

**Location:** IWEA Training Facility, Naas, Co. Kildare

**Duration:** 2 Days

**Course Date:** Wednesday, 14 November 2018

**Registration:** 9am. (2 Day Course)

**Course Time:** 9.30am to 5pm

https://www.iwea.com/learning-hub/1087-wind-power-offshore-consenting-and-development-2-day-course





# Thank You

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- Sustainable Nation Climate Week

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