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Claire Mack
Chief Executive
Scottish Renewables



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Scottish onshore wind: the prize and the puzzle



Tweet @ScotRenew
#SRONSHORE19

Paul Wheelhouse MSP

**Minister for Energy, Connectivity and
the Islands
Scottish Government**

The slide features a white background with decorative green geometric shapes in the corners. The top-right corner has a large green shape, and the bottom-left corner has a smaller green shape. The text is centered on the slide.

Paul Cooley

Director of Capital Projects
SSE Renewables

Lesley Black

**Sales and Marketing Function Leader
CS Wind UK**

Claire Mack

Chief Executive, Scottish Renewables

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Bills, bills, bills: can subsidy-free square with rising costs?

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The image features a white background with decorative green geometric shapes in the corners. In the top right, there are overlapping green polygons. In the bottom left, there are overlapping green shapes, including a triangle and a quadrilateral. The text is centered in a teal color.

Neil Douglas
Director
BVG Associates

Maximising volume and benefits

**Scottish Renewables Onshore Wind Conference
June 2019**

Neil Douglas - Director

BVG Associates

Strategy consulting in renewable energy

Our clients choose us when they want to do new things, think in new ways and solve tough problems



Founded in 2006



300 clients globally



18 consultants with over 200 years' industry experience



50 landmark publications



Business strategy

Market assessment

Cost reduction

Knowledge management



Economics

Economic impact analysis

Cost of energy modelling

Vision, supply chain plans, EIA



Technology

Enabling innovation

Services for asset owners

Due diligence



Onshore wind



Offshore wind



Wave and tidal



Energy Systems

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Maximising volume and benefits

Background

- 3.7GW consented onshore pipeline in Scotland
- Further ~3GW in planning process
- Only the fittest will be built
- All will need to deliver lowest LCOE to get to market
- Range of technical solutions to optimise LCOE
- Also, range of **regulatory and policy issues** to consider that influence LCOE

Regulatory and policy issues

- Tip-height restrictions
- Aviation solutions
- Grid charging regime
- Community ownership
- Community benefit
- Planning fees



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Maximising volume and benefits

Background

- Of these regulatory and policy issues:
 - **What impact on competitive volume (GW)?**
 - **What impact on economic benefit (GVA, FTE jobs)?**
- High-level analysis of two aspects
 - **Tip-height**
 - **Community benefit**

Regulatory and policy issues

- Tip-height restrictions
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Maximising volume and benefits

Background

- Levelised cost of energy (LCOE) merit order model of all projects in pipeline
- LCOE varies by site wind speed and distance from grid
- Analysed sensitivity of GW volume to policy issues, and subsequent impact on economic benefit
- **Volume:** Of existing project pipeline in Scotland, what GW falls above or below an assumed “competitive threshold”?
- **Economic benefit:** Difference in gross value added (GVA) and full time equivalent job years (FTE) in Scotland, over project lifetime
- Intent is to demonstrate sensitivity of pipeline to policy issues

Regulatory and policy issues

- Tip-height restrictions
- Aviation solutions
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Maximising volume and benefits

Model overview

1. Project data base:

- Existing fleet
- Consented pipeline
- Future pipeline
- Size (MW)
- Location



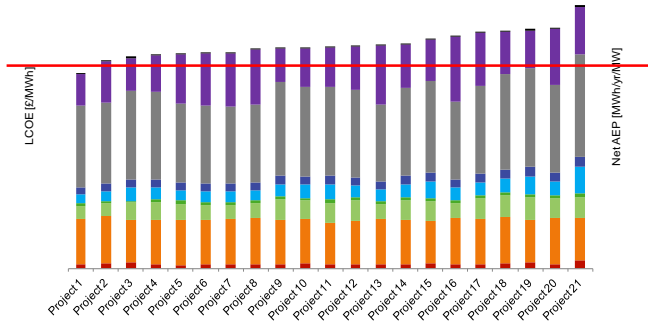
2. Baseline LCOE model for each site:

- Generic DEVEX
- Site specific CAPEX (distance from grid)
- Site specific OPEX (grid charging)
- Wind speed -> Energy yield
- Cost of capital



3. Model policy drivers:

- Tip-height
- Aviation solutions
- Grid charging regime
- Community ownership /benefit
- Planning fees



Data for illustration only.

4. Analysis and scenarios:

- Merit order
- e.g. Impact of tip-height
- Volume above/below threshold
- Economic impacts analysis (GVA/jobs)
- Geographical distribution



	Impacts on:		
	CAPEX	OPEX	GWh
a.	●		●
b.	●		
c.		●	
d.		●	
e.	●		

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Maximising volume and benefits

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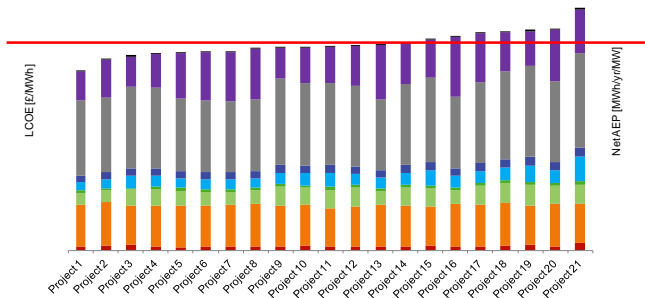
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Maximising volume and benefits

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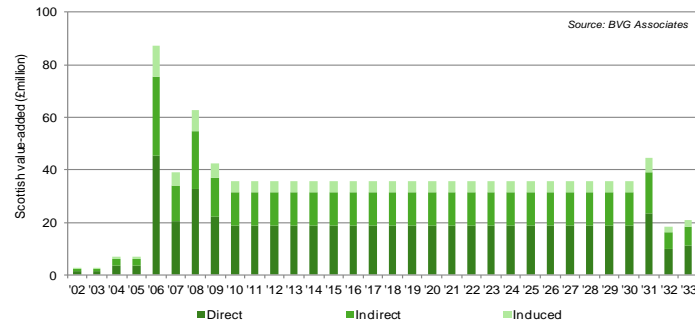
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Maximising volume and benefits

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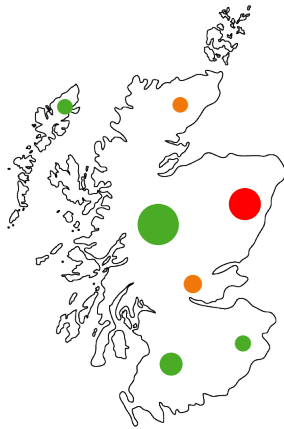
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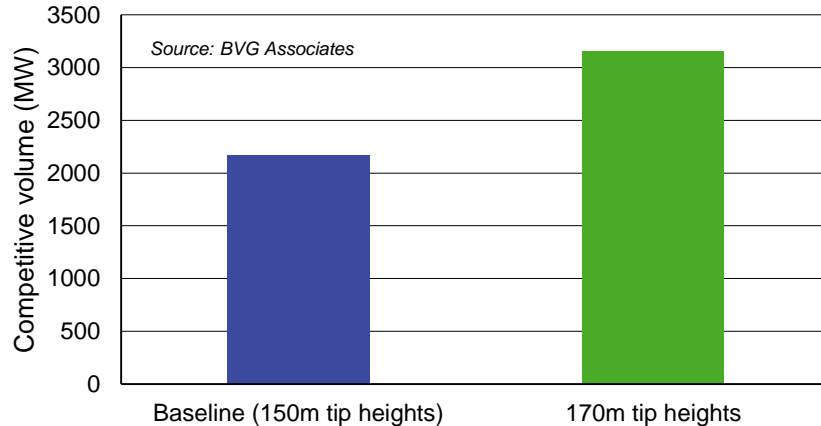


	Impacts on:		
	CAPEX	OPEX	GWh
a.	●		●
b.	●		
c.		●	
d.		●	
e.	●		

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Maximising volume and benefits

Tip-height: competitive volume



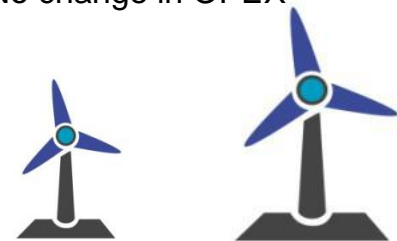
- With 170m tip-heights, an **additional 980MW** clears the competitive threshold

Assumptions

Baseline: Tip-height of 150m

Policy scenario: Tip-height of 170m

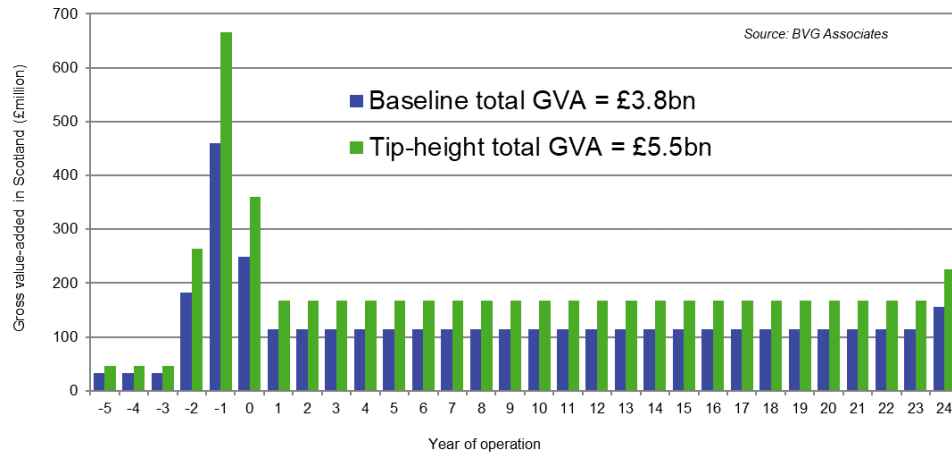
- Turbine capacity unchanged
- Project capacities decrease (same footprint)
- Larger rotor, taller tower
- 20% increase in yield
- Higher CAPEX
- No change in OPEX



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Maximising volume and benefits

Tip-height: economic benefits



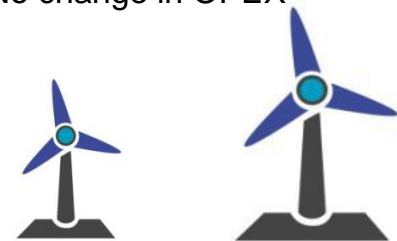
- With 170m tip-heights, an **additional £1.7bn GVA** flows to the Scottish economy

Assumptions

Baseline: Tip-height of 150m

Policy scenario: Tip-height of 170m

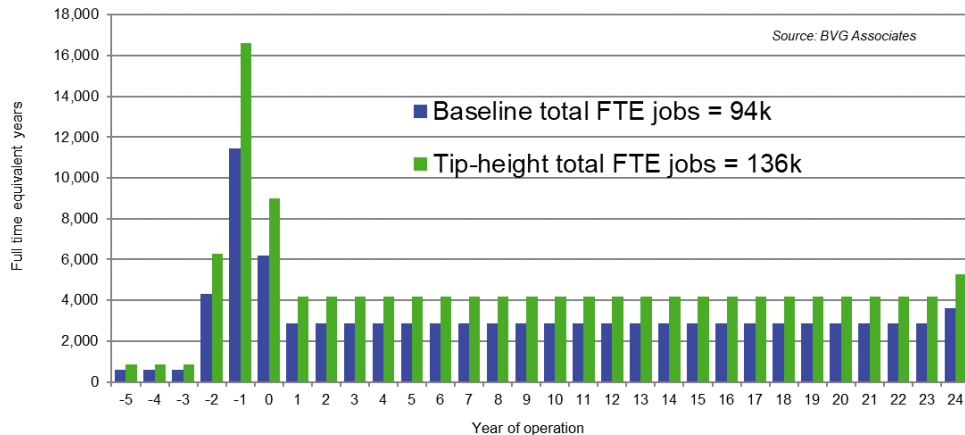
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- 20% increase in yield
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- No change in OPEX



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Maximising volume and benefits

Tip-height: economic benefits



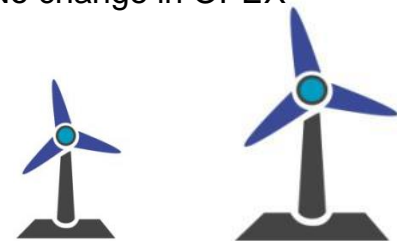
- With 170m tip-heights, an **additional 42,000 FTE job years** are created

Assumptions

Baseline: Tip-height of 150m

Policy scenario: Tip-height of 170m

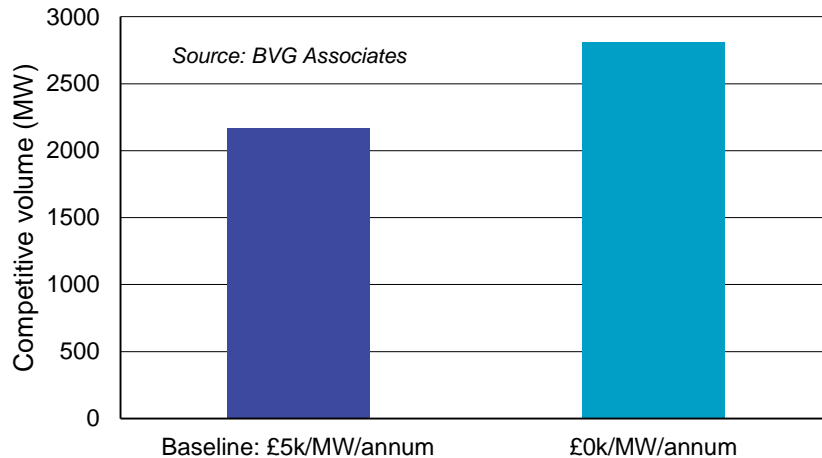
- Turbine capacity unchanged
- Project capacities decrease (same footprint)
- Larger rotor, taller tower
- 20% increase in yield
- Higher CAPEX
- No change in OPEX



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Maximising volume and benefits

Community benefit fund



- With a revised approach to community benefit, an **additional 640MW** clears the competitive threshold

Assumptions

Baseline: £5,000/MW/a

Policy scenario: No community benefit fund (£0k/MW/annum)

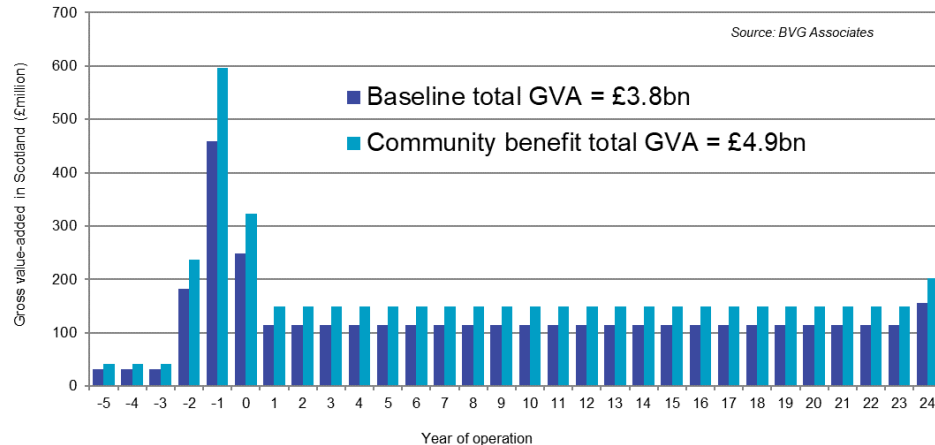
- Change to OPEX
- All other costs unchanged



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Maximising volume and benefits

Community benefit fund



- With a revised approach to community benefit, an **additional £1.1bn GVA** flows to the Scottish economy

Assumptions

Baseline: £5,000/MW/a

Policy scenario: No community benefit fund (£0k/MW/annum)

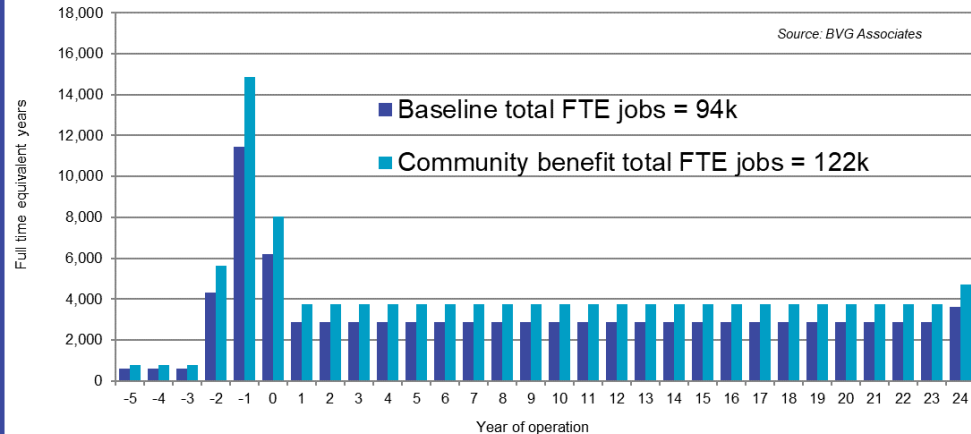
- Change to OPEX
- All other costs unchanged



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Maximising volume and benefits

Community benefit fund



- With a revised approach to community benefit, an additional **28,000 FTE job years** are created

Assumptions

Baseline: £5,000/MW/a

Policy scenario: No community benefit fund (£0k/MW/annum)

- Change to OPEX
- All other costs unchanged



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Maximising volume and benefits

Discussion

- Tip-height has a significant influence on the competitive volume
 - 28 million tonnes of CO₂ over 25 years
- Competitive volume also sensitive to community benefit
 - 18 million tonnes of CO₂ over 25 years
- Environmental agenda has higher prominence than anytime in last 10 years
- What is onshore wind's value proposition to the country?
 - Decarbonisation targets
 - Cheapest form of new electricity
 - Real economic benefits



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Peter Hutchinson

Head of Supporting Good Development
Scottish Natural Heritage

Bills, bills, bills: providing certainty and reducing costs for onshore wind

21st century regulation for 21st century challenges

Peter Hutchinson

Head of Supporting Good Development



Scottish Natural Heritage
Dualchas Nàdair na h-Alba

nature.scot



Outline

- Introduce SNH and nature
- Reflect on current better regulation
- Start a conversation on good regulation



Scottish Natural Heritage
Dualchas Nàdair na h-Alba
nature.scot

About Scottish Natural Heritage

- SNH is Scotland's nature agency
- Our role is to improve Scotland's natural environment...
- ...and invest in nature to increase prosperity and wellbeing

Connecting
people and nature



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Nature: supporting Scotland's competitive advantage



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Nature: providing solutions



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- Natural Stone Surfacing
- Street Lighting
- Roadside Memorials
- Disabled Persons Parking Places
- Sustainable Urban Drainage Systems for Roads
- National Roads Development Guide

GET IN TOUCH

We're always looking for examples of good practice. If



Sustainable Urban Drainage Systems (SUDS) for Roads

SUDS (Sustainable Urban Drainage Systems) were introduced to the UK more than ten years ago and much of the early work developed in Scotland concentrated on the hydrology and water quality aspects of SUDS. Roads designers have been required to adapt to this new strategy without apparently having input to the processes. Equally, legislation has advanced significantly in the area of water management and, arguably, roads legislation has not kept up.

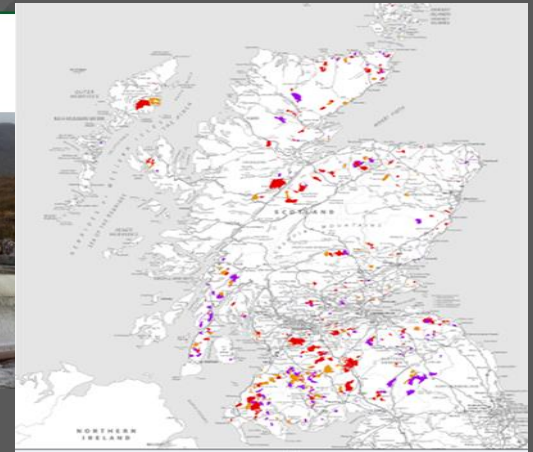


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Better regulation: has Planning and Regulators' Code achieved the right development in the right location?



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Better regulation: reflections

Also delivered:

- Economic development
- Community benefits
- Conservation

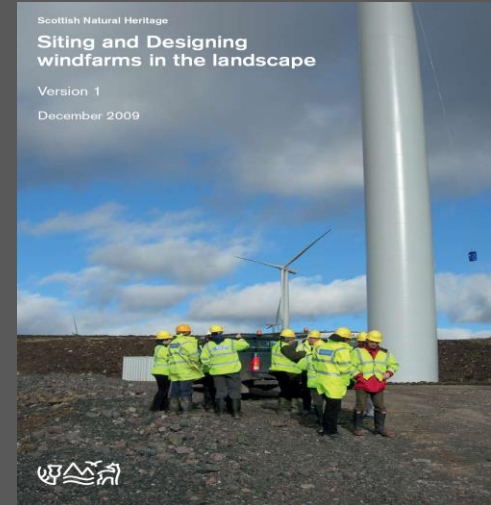
**SCOTTISH REGULATORS’
STRATEGIC CODE OF
PRACTICE**

**Our approach to
Planning -
upstream, targeted,
balancing**



But: is 'better' good enough?

- **Costly** - inquiries and hearings
- **Slow** - time to get decisions
- **Disconnected** – route to market
- **Protecting** – limited enhancement
- **Unbalanced** – not targeting the right mix, or short and long term
- **Adversarial** – conflicting opinions



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What about 'good regulation'?

1. **Greater collaboration** – *public and private* – clear and common goals
2. **More Integrated** – *plan for energy* – land use and marine planning
3. **Sharing** – *data, technology, expertise* – sharing costs
4. **Scenario planning** - *Regional conversations* – place-based planning



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...providing greater
certainty for investment

SCOTTISH REGULATORS' STRATEGIC CODE OF PRACTICE

1. This Code is focused on the roles and responsibilities of Scottish regulators. There is merit however, in briefly stressing that businesses, in particular, also have a key role to play in the achievement of regulatory outcomes: businesses must behave ethically, engage early and openly with regulators and strive to comply. Most do – or wish to do better – and many are increasingly going voluntarily beyond compliance in pursuit of higher levels of corporate and social responsibility. The Scottish Government and Scottish regulators recognise that the minority of businesses which deliberately or persistently avoid their regulatory responsibilities do so largely to secure an unfair competitive advantage over legitimate businesses and with insufficient regard to the adverse impact on consumers, communities and the environment. This Code should not be interpreted as a justification for non-compliance or a signal that regulators will tolerate that.
2. Regulators should adopt the following high level operational approaches:
 - Adopt a positive enabling approach in pursuing outcomes that contribute to sustainable economic growth.
 - In pursuing their core regulatory remit be alive to other interests, including relevant community and business interests, taking business factors appropriately and proportionately into account in their decision making processes; and protecting public health and safety.
 - Adopt risk and evidence based protocols which help target action where it's needed and help to ensure the achievement of measurable outcomes.
 - Develop effective relationships with those they regulate and have clear two-way communication in place.
 - Tailor their approach depending on the nature of the sector they are regulating and the desired outcomes. This includes a commitment to advice and support for those who seek to comply, allied with robust and effective enforcement when justified.
 - Recognise, in their policies and practice, a commitment to the five principles of better regulation: regulation should be transparent, accountable, consistent, proportionate and targeted only where needed.
 - Pursue continuous improvement in regulatory practice based on the principles of better regulation.

Regulators are enablers

3. Regulators should be enablers and carry out their activities in a way that helps businesses and regulated bodies to comply and also grow sustainably. Regulators should:
 - Deliver an efficient, effective and timely service and minimise business compliance costs, where possible, by reducing unnecessary bureaucracy and delays.
 - Help those they regulate to design simple and cost-effective compliance solutions to improve confidence and day to day management control.
 - Work collaboratively with other regulators and those they regulate to anticipate, generally, and to understand and address compliance challenges associated with strategic innovations or growth plans.



**Thank you: we can continue
with the current better
regulation or...**



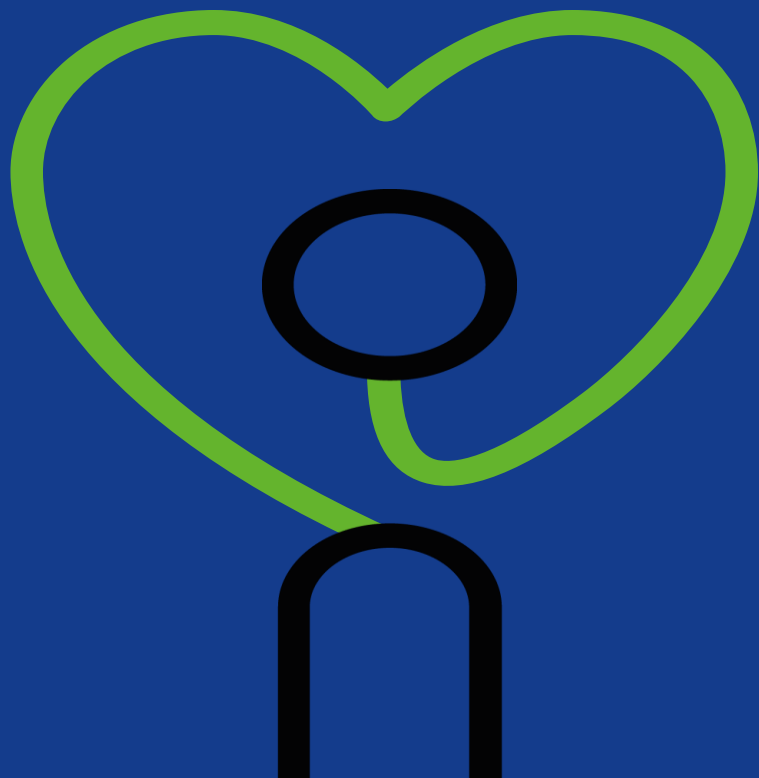
**...can we work more
collaboratively to
deliver our low carbon
economy?**



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nature.scot



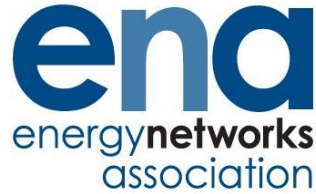
Nicola Percival
Policy & Regulations Manager
innogy Renewables UK



Grid regulation reforms- what could happen?

innogy SE · Nicola Percival · June 2019

Grid – what is going on?



Open Networks Project
Including DNO - DSO

Capacity Market
Future of Balancing Services
RIO price controls
Carbon targets
CCC net zero recommendation

...



UPGRADING OUR ENERGY SYSTEM

Smart Systems and Flexibility Plan: Progress Update

October 2018

Ofgem-BEIS
joint Smart
System &
Flexibility Plan



Grid – what is going on?

- There are two ongoing fundamental reviews being managed by Ofgem:

- **The Targeted Charging Review (TCR)**
- **The Electricity Network Access Project (ENAP)**
- **Effectively part 1 and part 2.**

- Both are classed as **‘Significant Code Reviews’** (SCRs). An SCR is a tool for Ofgem to initiate wide ranging and holistic change, often to multiple Codes.
- Industry have been **supportive of network charging reform in principle**, as the Codes were written decades ago for a system dominated by large, thermal plant. A **review to make the Codes suitable for a low carbon system** with high flexibility and lots of renewables is what was called for.

Targeted Charging Review (TCR)

Demand residual charges – BTM flexibility loses revenue/credit.

Transmission Generation Residual (TGR) – set to **£0/kW**, subject to compliance with the EU ‘cap’. This is currently negative, so is a loss of revenue for generators who pay G-TNUoS.

Remove BSUoS embedded benefits (“**partial reform**”)

Possibly also charge embedded generators <100MW (EGs) BSUoS (“**full reform**”).

Since November 2018:

Industry ‘**Task Force**’ concluded it is unfeasible to charge **BSUoS** so as to influence behaviour... **so should it be charged to generators at all?**

Therefore a number of actual outcomes are possible...

Electricity Network Access Project (ENAP)

Included in the SCR – Ofgem-led

- > Review of the definition and choice of transmission and distribution access rights
- > Wide-ranging review of Distribution Use of System (DUoS) network charges
- > Review of distribution connection charging boundary
- > Focussed review of Transmission Network Use of System (TNUoS) charges

Areas led by industry outside the SCR

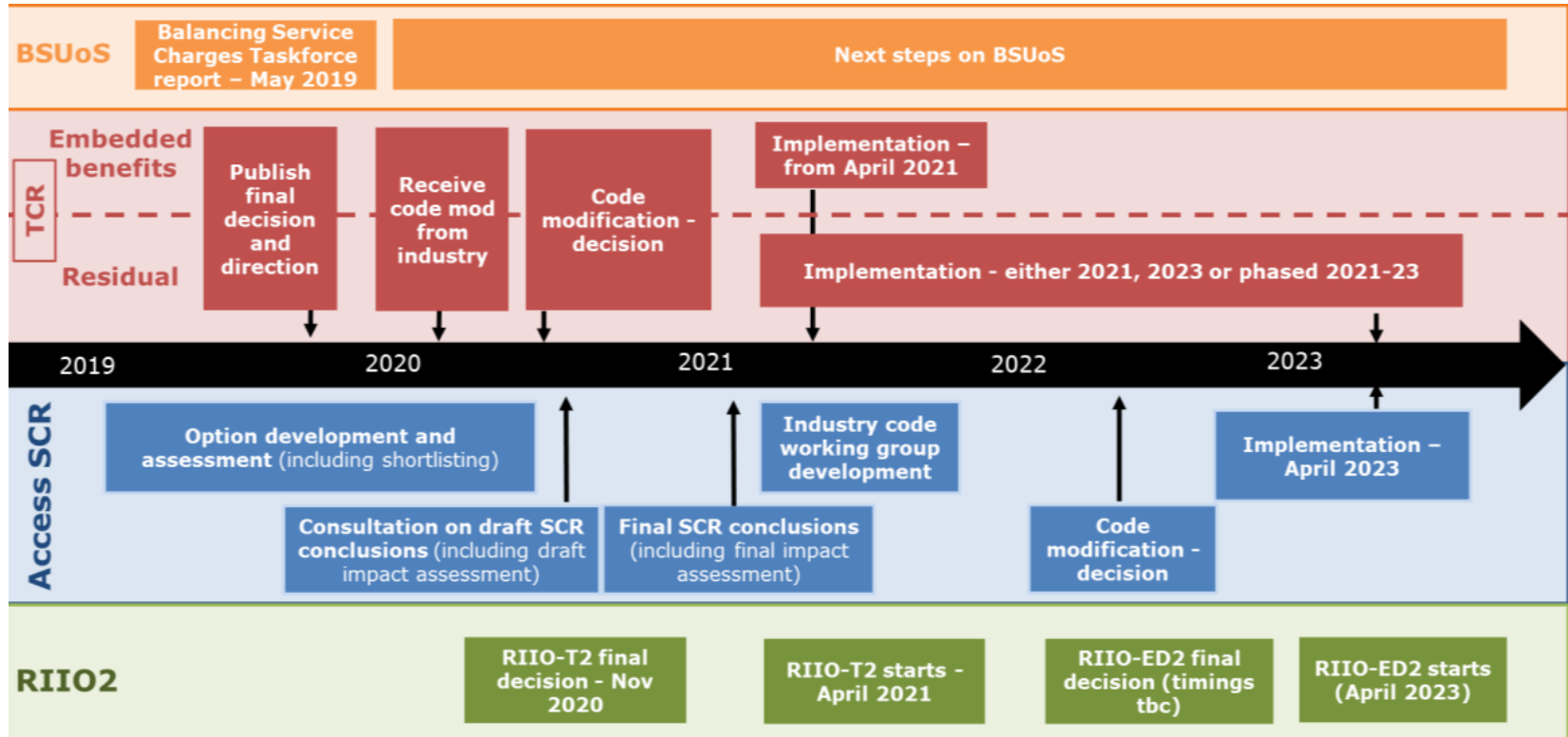
- Review of balancing services charges (BSUoS)
- > Access right allocation

Excluded from the SCR and wider industry review

- > Introducing fixed duration long-term access rights
- > Introducing geographically exclusive local access rights which do not allow access to the rest of the system
- > Wider changes to transmission network charges
- > The transmission connection charging boundary

- Early stages, little is known for certain
- Challenge Group meets monthly
- Working papers expected in June 2019

Ofgem's proposed timelines



What happens next?

Targeted Charging Review impacts

Impact assessment:

- **Fundamental gaps** - non-CM renewables assumed not to respond to changes.
- Expects **limited system benefits**, but large shift in welfare from generators – consumers,
- **Oxera & Aurora** report that generators in general will have >> costs and welfare shift may not materialise as IA suggests,
- **Renewables particularly affected.**

Ofgem have agreed to review this...

- What is the cost of uncertainty?
- Part 1 (TCR) is not great news on its own, will part 2 (ENAP) deliver what is necessary to enable a smart, low carbon system?
- Links to the Ofgem-BEIS joint Smart Systems and Flexibility Plan...
- Will new revenue streams from DSO services be dependable?
- Are Ofgem's statutory obligations holding us back from hitting carbon targets?

The solutions require joined-up thinking across many stakeholders

Thank you!

nicola.percival@innogy.com

Hannah Smith
Senior Policy Manager, Scottish Renewables

Neil Douglas
Director, BVG Associates

Peter Hutchinson
Head of Supporting Good Development, Scottish Natural Heritage

Nicola Percival
Policy & Regulations Manager, innogy Renewables UK

Mark Evans
Head of UK Business Development, ERG

Simon Peltenburg
Chief Projects Officer, Ripple Energy



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Less is more: innovation and optimisation

 Tweet @ScotRenew
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Chris Smith
Head of Renewable Sales
SmartestEnergy

A close-up, low-angle shot of a white wind turbine against a clear blue sky. The image shows the nacelle, the hub, and three blades extending outwards. The perspective is from below, looking up at the turbine.

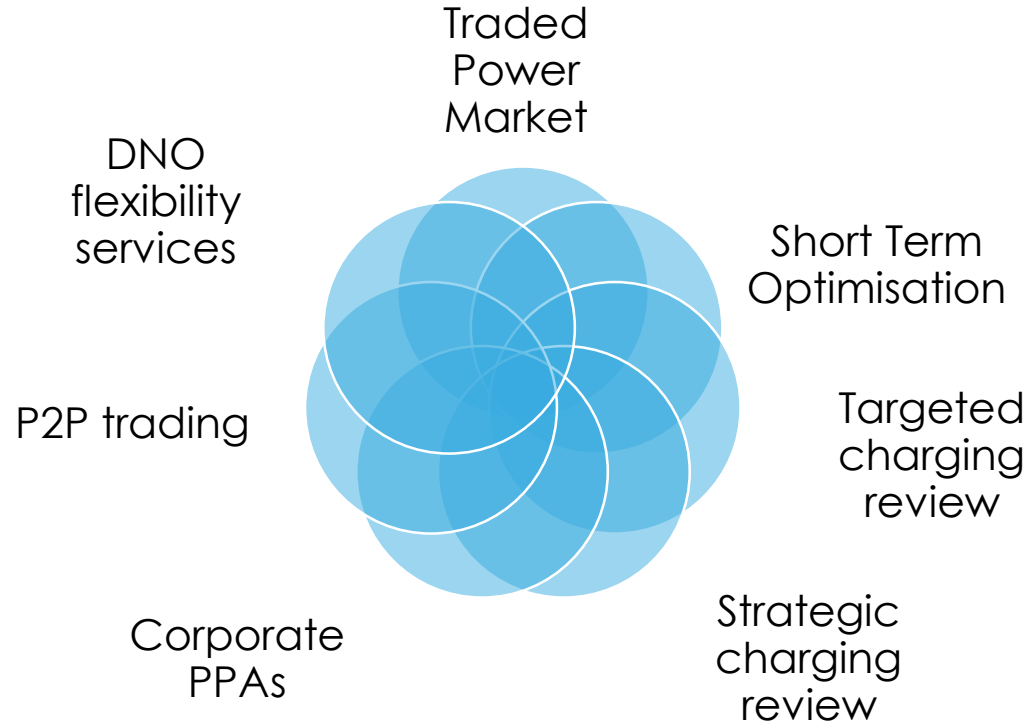
Optimising the sale of power to maximise value

Chris Smith

Head of Renewable Sales

11/06/2019

Current and Future Earning Potential

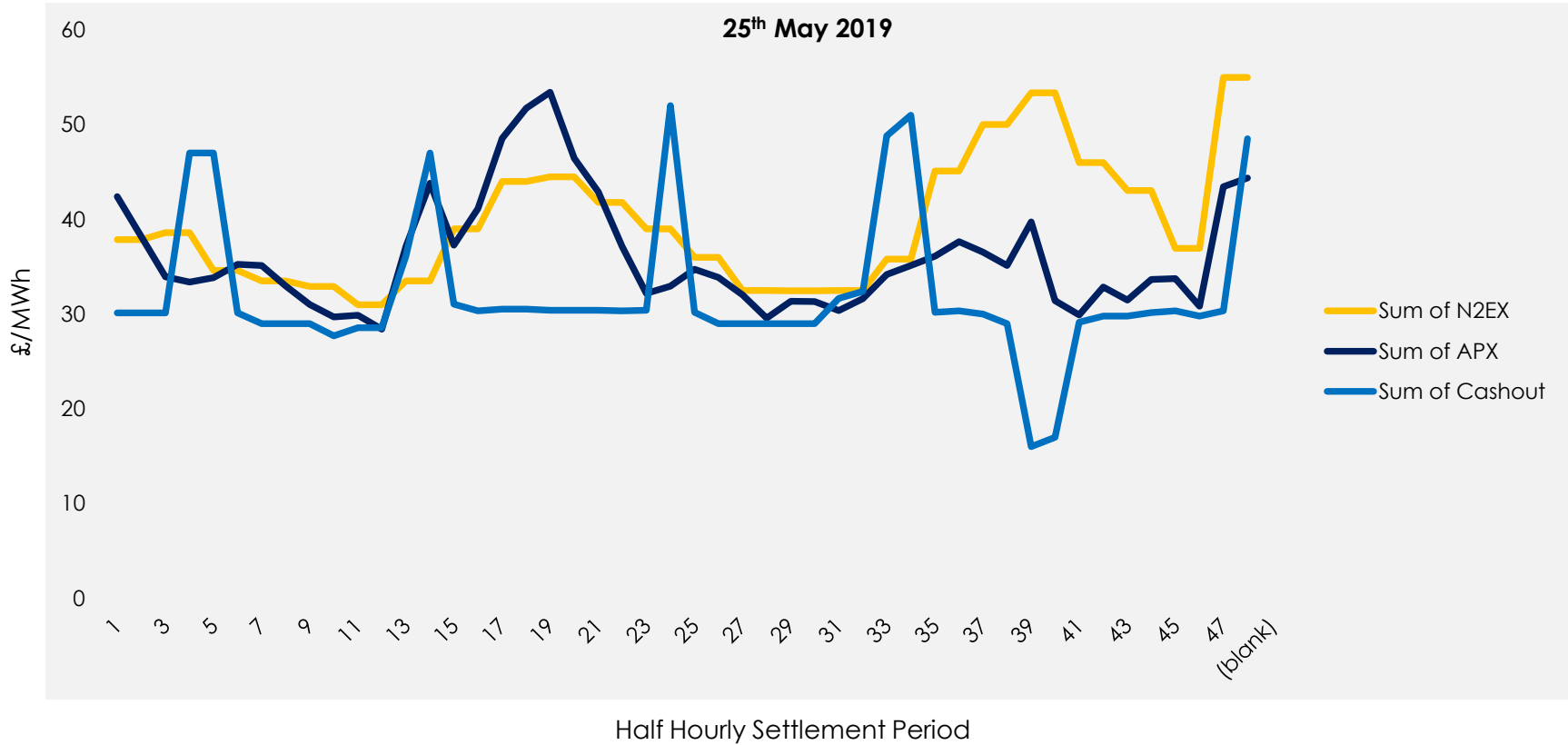


Optimisation in short-term energy markets

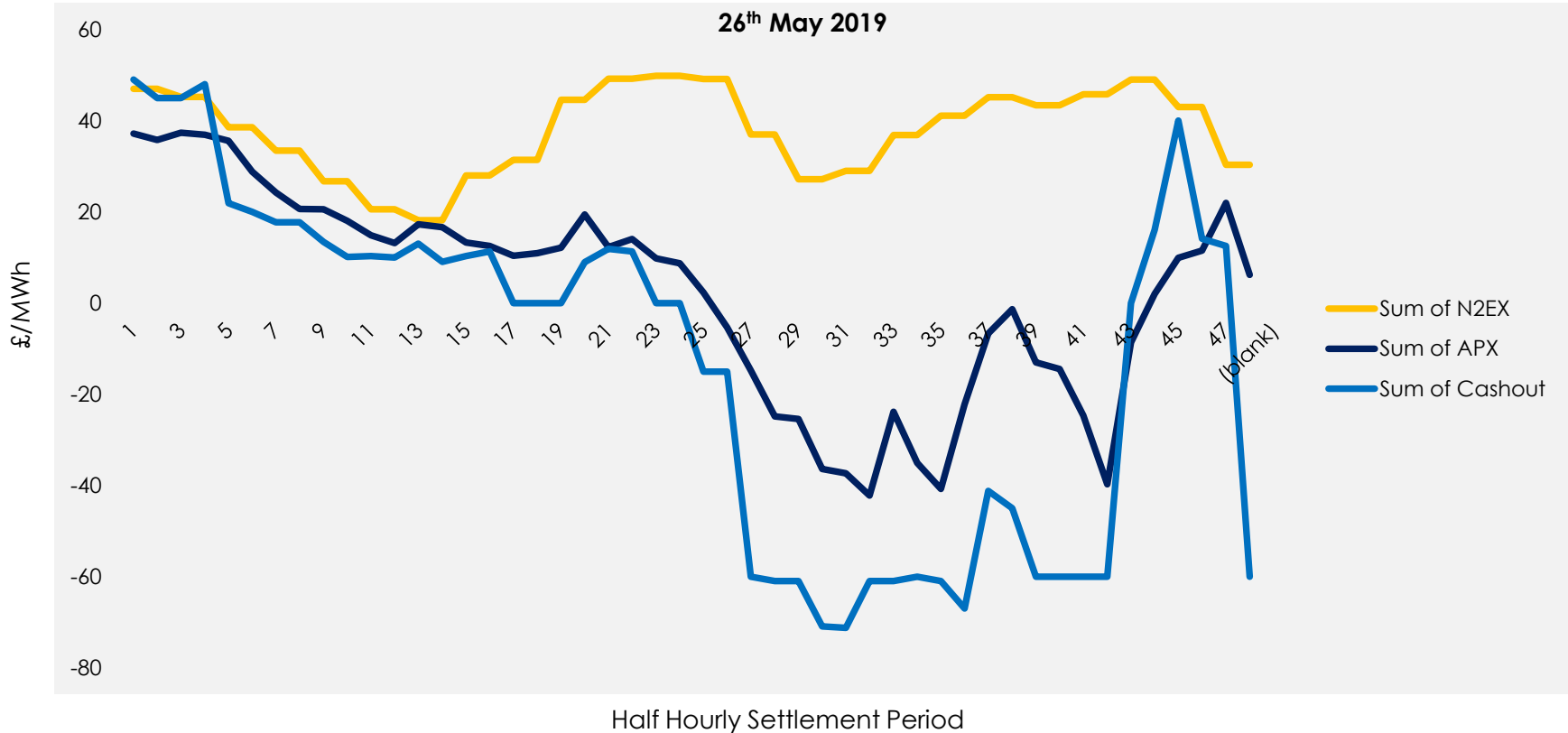
Continual churn of sales and buy backs



Power market developments



Power market developments



Changing Investor and Generator Perspective



Risk V Reward



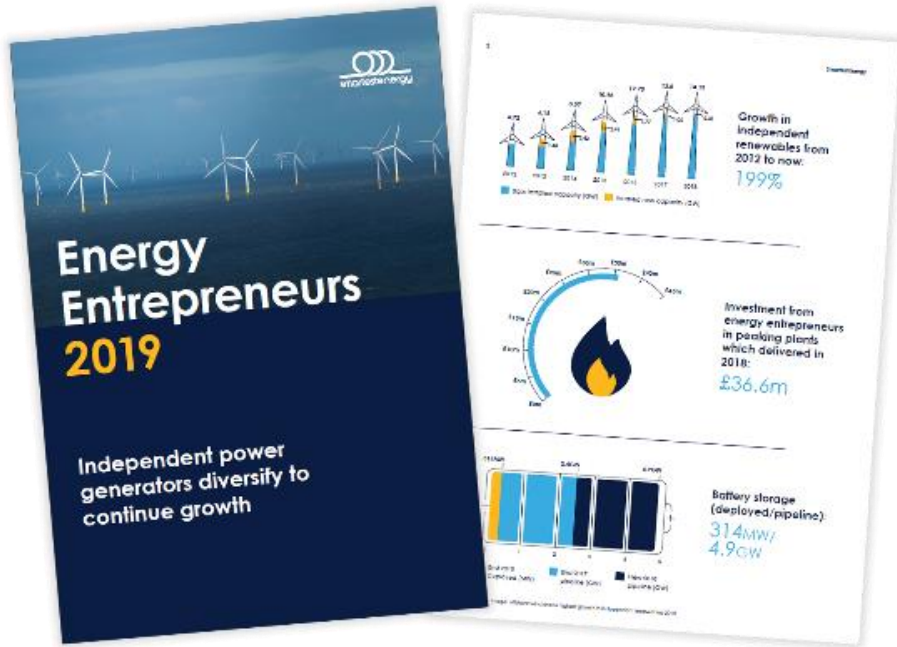
Innovation



Market Access



Technology



Thank you


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Stephen Ford
Key Account Director
Vestas



Less is more:
innovation and optimisation

Stephen Ford

Key Account Director

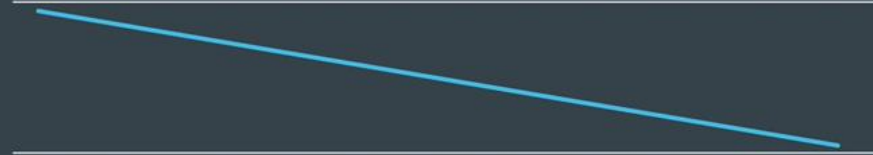
Vestas Northern and Central Europe

Onshore wind is the most cost efficient source of new build power in the UK.

New, larger and more efficient turbines = **cheaper electricity**



Cost of onshore wind (€/MWh)



- **£52-(\$63)** was UK's onshore wind average LCOE in H2 2018 compared to a global average of £41-(\$52)*
- As technology has evolved, the Levelized Cost of Energy (LCOE) of onshore wind has decreased.
- Increased tip heights and larger rotors are the most effective lever to reduce levelized cost of energy.

How to continue to reduce LCOE?



Improve AEP

Examples:

- **Permitting** – Tip Heights & Rotors
- **Latest technology** – Generator Evolution
- **Power modes and over installation**
- **Extended project lifetime and service strategies**



Reduce Project Costs

- CAPEX
- OPEX

Examples:

- **Total project review** - WTG, BoP, Finance, Operations
- **Full project optimization** – Tower, Foundations, Civils
- **Reducing scope to remove non-essential items** – Technical & Contractual
- **Site specific requirements**
- **Total lifetime costs**

Keeping UK at the technology forefront.

By ensuring a suitable planning envelope for latest technology deployment

- Current UK tip height constraints prevent onshore wind from delivering power at the lowest cost of energy as they do not accommodate the latest turbine developments
- **Planning policy / planning applications are key for a project to deliver the lowest cost of energy.**
- Increased AEP is the most effective lever to reducing **LCOE** and ensuring that projects stand a better chance of being built out in a low revenue merchant environment.

Need for 180 – 200m+
Latest tip heights

Tip height limit: ~150m
Current



New Opportunities

Innovation through hybrid and storage

- ▶ Hybrid solutions have significant potential to provide the efficiency and flexibility.
- ▶ Efficient plant utilization, and an ability to closer match production to consumption or remuneration.
- ▶ Hybrid and battery solutions increase the ability to participate at favorable electricity prices.

Lithium-ion battery price survey results: volume-weighted average

Battery pack price (real 2018 \$/kWh)



Source: BloombergNEF



Summary

- Onshore Wind is the cheapest form of new generation
- Increasing yield delivers the biggest impact in further lowering LCoE
 - Higher tip heights, larger rotors and latest technology are the key to increasing yield
- OEM's are striving to optimise the project business case, in conjunction with developers, through CAPEX and OPEX optimisation.



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Karen Anne Hutton

Head of Innovation and Optimisation
RES

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David Collett
Managing Director
Collett & Sons Ltd

Collett Transport at a glance

- ❖ *Established 1928 - Now a Multimodal Specialist Heavy Transport operator Supplying Factory to Foundation Logistics*



- ❖ Currently operating from:
 - Halifax** – Head Office
 - Goole** – Heavy Lift & Marine
 - Grangemouth** – Scotland

Collett (Ireland) Ltd

Registered Office: Dublin

Operators License: Cork



COLLETT

EXPERTS IN MOTION

Previous Experience in Wind Energy

- ❖ Over 20 Year Experience
- ❖ Over 750 Site investigations
- ❖ Delivered to over 150 sites
- ❖ Over 950 Turbines delivered
- ❖ Over 9000 Abnormal Loads delivered



Turbine Comparison – GE 3.x and GE 5.x Cypress Turbine

3.x Turbine 85m HH						5.x Cyprus Turbine 101m HH					
Component	L	W	H	Kg	Vol m ³	Component	L	W	H	Kg	Vol m ³
Blades	50.20	2.30	3.60	12,340	1,247	Blades (root part)	65.75	4.11	3.12	23,118	2,529
						Blades (tip part)	15.10	2.00	0.80	850	72
Hub	3.80	3.70	3.60	30,900	51	Hub	3.50	4.00	3.80	51,500	53
Nose Cone	3.00	3.00	2.00	450	18	Yaw blisters	5.44	2.70	1.14	306	17
						Donut semi ring	3.46	1.75	0.40	151	2
						Yaw pad	4.70	2.10	0.34	97	3
Machine Head	9.60	3.95	3.90	84,500	148	Machine Head	14.10	3.90	3.45	86,200	190
						Drivetrain & Gearbox	6.23	3.63	3.08	90,200	70
						Side walls (part A)	7.14	1.32	0.15	180	1
						Side walls (part B)	6.47	1.32	0.15	117	1
						Side wall (part C)	3.60	1.33	0.10	88	0
						Side wall (part D)	3.60	1.33	0.20	40	1
Tower Top	25.10	4.30	4.30	38,418	464	Tower Top	28.07	4.30	3.70	50,400	447
Tower Mid	24.63	4.30	4.30	46,884	455	Tower Mid A	25.20	4.30	4.30	56,900	466
Tower Base	23.38	4.30	4.30	66,400	432	Tower Mid B	18.20	4.30	4.30	56,400	337
						Tower Mid C	14.84	4.30	4.30	54,000	274
						Tower Base	10.33	4.30	4.30	50,400	191
TBR	4.30	4.80	1.00	9,827	21	TBR	4.80	4.80	1.15	21,500	26
Transformer	3.75	1.97	3.16	9,250	23	Generator	3.45	1.85	2.60	16,000	17
Controller	3.21	3.15	3.20	4,300	32	Controller level	3.10	3.00	3.20	4,300	30
Converter	3.54	2.75	3.18	8,700	31						
WFMS	1.00	1.00	2.40	412	2						
SCADA	1.50	1.10	2.20	695	4						
SCADA	1.20	0.80	0.80	118	1						
Total Truck loads = 10				337,874	5,423	Total Truck Loads = 15				610,683	9,932

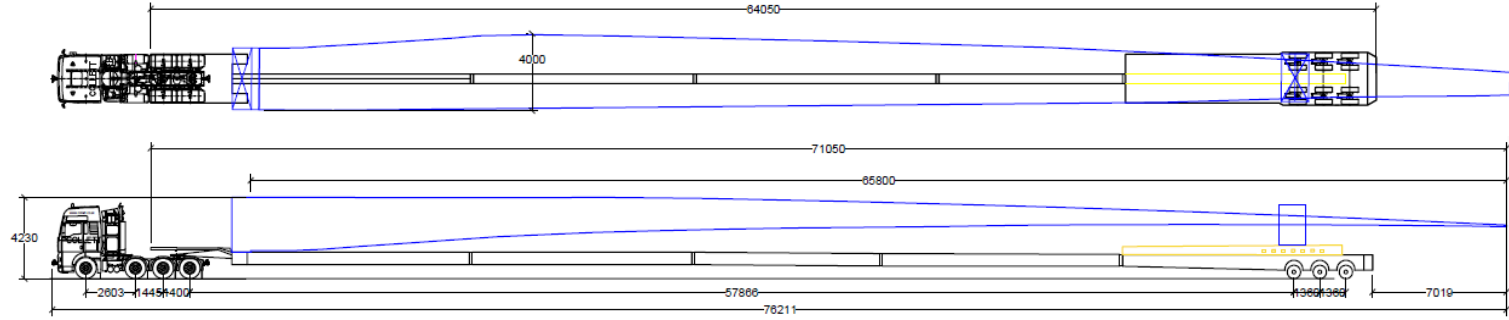
Transport Comparison – GE 3.x and GE 5.x Cypress Turbine

- Assess Port infrastructure, Handling equipment and suitability
- Carry out assessment of Route from Port to site along with site roads and infrastructure
- Check Street Furniture and obstacles, Carry out Swept Path Analysis (SPA) and produce Route survey reports
- Obtain Special Abnormal Load transport permits and authorisations and assess transport logistics
- Arrange Police escorts and organise 'Road closures' where necessary



Transport Equipment Comparison for 65m+ Blades

- Latest Technology for transport of Blades by Road



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Transport Equipment Comparison for 65m+ Blades

- Latest Technology for transport of Blades by Road

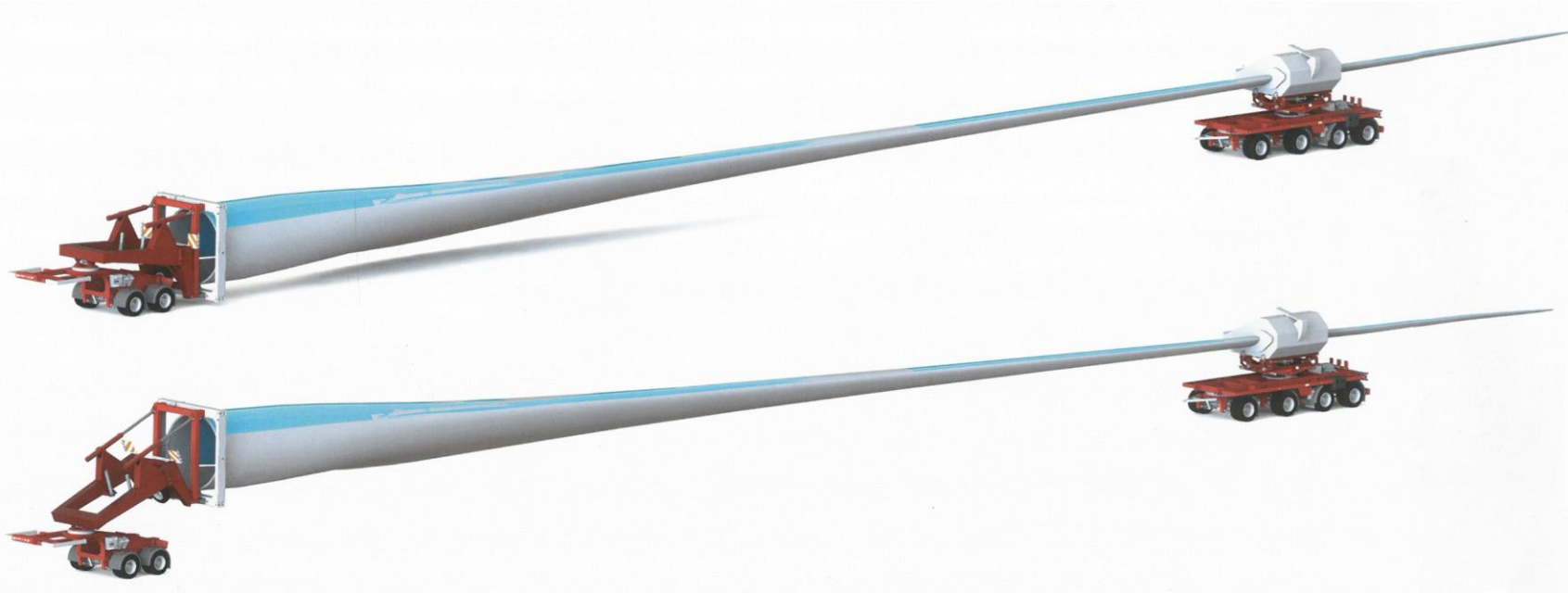


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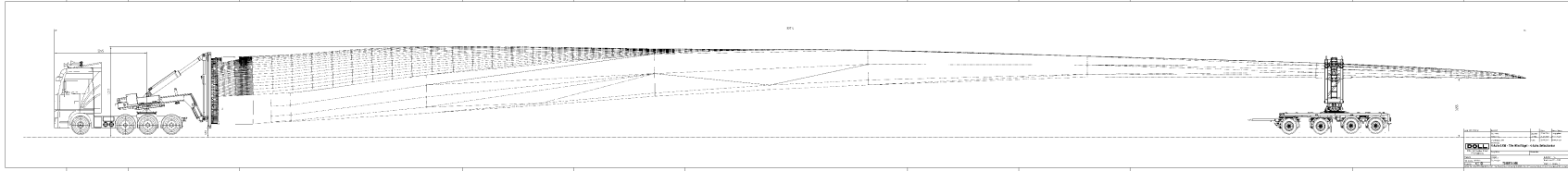
Transport Equipment Comparison for 65m+ Blades

- Latest Technology for transport of Blades by Road



Transport Equipment Comparison for 65m+ Blades

- Latest Technology for transport of Blades by Road



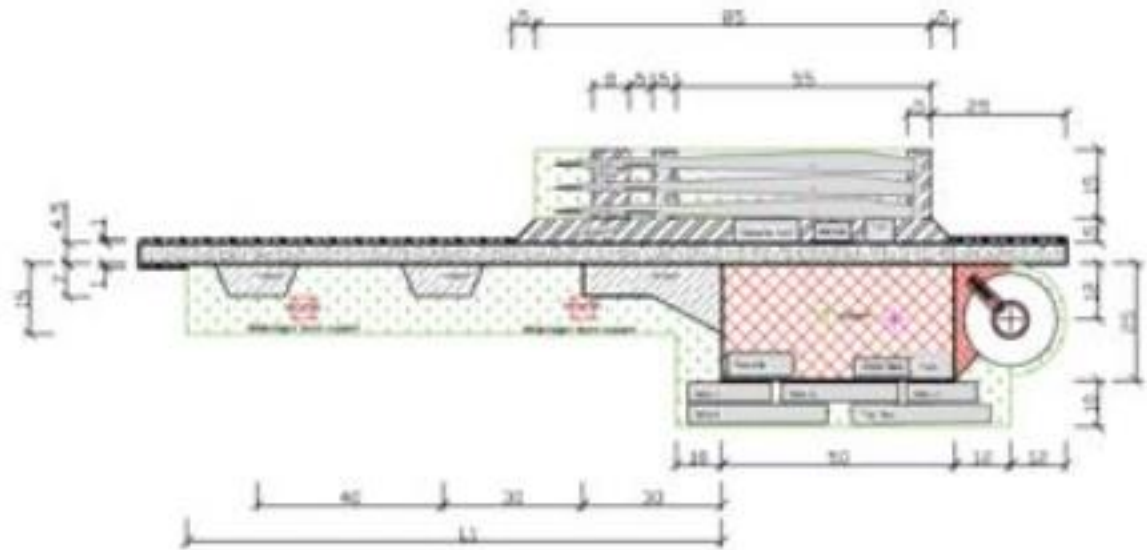
Transport Equipment Comparison for 65m+ Blades

- Blade Adapter system – For Special purpose
- Not for normal road delivery – 5 mph
- Staging points required to transfer before and after Pinch points
- Cranes required to transfer from Trailer to Blade adapter and vice versa.
- Weather / wind sensitive for operating
- Wire charges / Arborists required
- Approx 100 Te. GVW (20 Te. Blade)
- Slow delivery routine



Comparison Hardstand Layout 5.x

5MW → 101m - 121m HH



The logo features a stylized 'C' shape on the left side, composed of a dark grey outer line and a blue inner line. At the top of this 'C' are two short vertical bars, one grey and one blue. The word 'COLLETT' is written in a bold, red, sans-serif font with a yellow outline, positioned to the right of the top of the 'C'.

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EXPERTS IN MOTION

Q & A

Nick Sharpe
Director of Communications, Scottish Renewables

Chris Smith
Head of Renewable Sales, SmartestEnergy

Stephen Ford
Sales Director, Vestas

Karen Anne Hutton
Head of Innovation and Optimisation, RES

David Collett
Managing Director, Collett & Sons Ltd



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Planning & consents: enabling the next generation



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David Bell
Director
David Bell Planning Ltd



DAVID BELL
PLANNING
CHARTERED TOWN PLANNERS

Planning & Consents Enabling the Next Generation

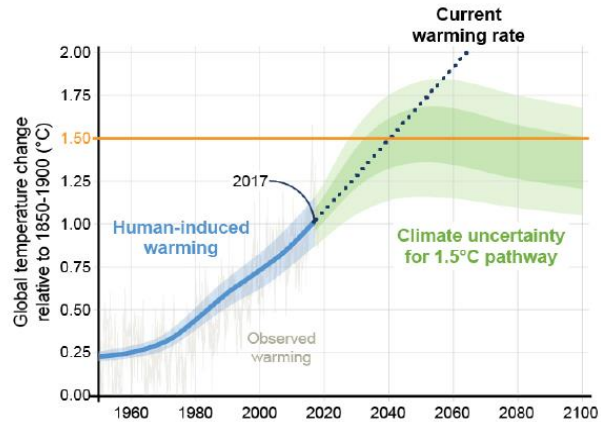
David C Bell

June 2019

1. Climate Emergency: Reflect in Public Policy

FAQ1.2: How close are we to 1.5°C?

Human-induced warming reached approximately 1°C above pre-industrial levels in 2017



2. Implement the OWPS into National Planning Policy



Onshore Wind Policy Statement



December 2017

3. Presumption in Favour: Retain and Clarify Operation

“If the proposed development is found to be that which would contribute to sustainable development, then as a result of SPP paragraph 33, the planning balance should be tilted in its favour, such that any adverse impact it would have must be shown significantly and demonstrably to outweigh its benefits”

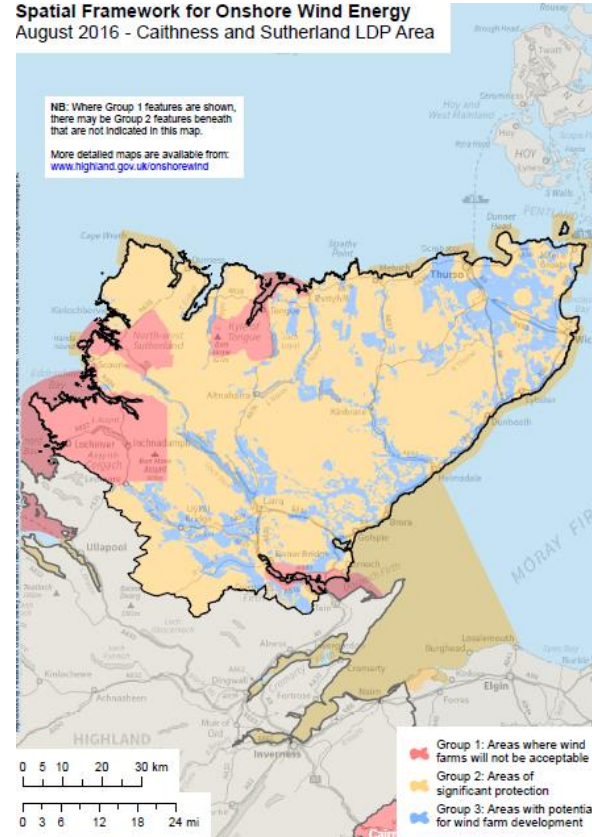
Reporter in Caplich s.36 Inquiry Report (2018)



4. Presumption in Favour: Apply in 'Group 3' Areas



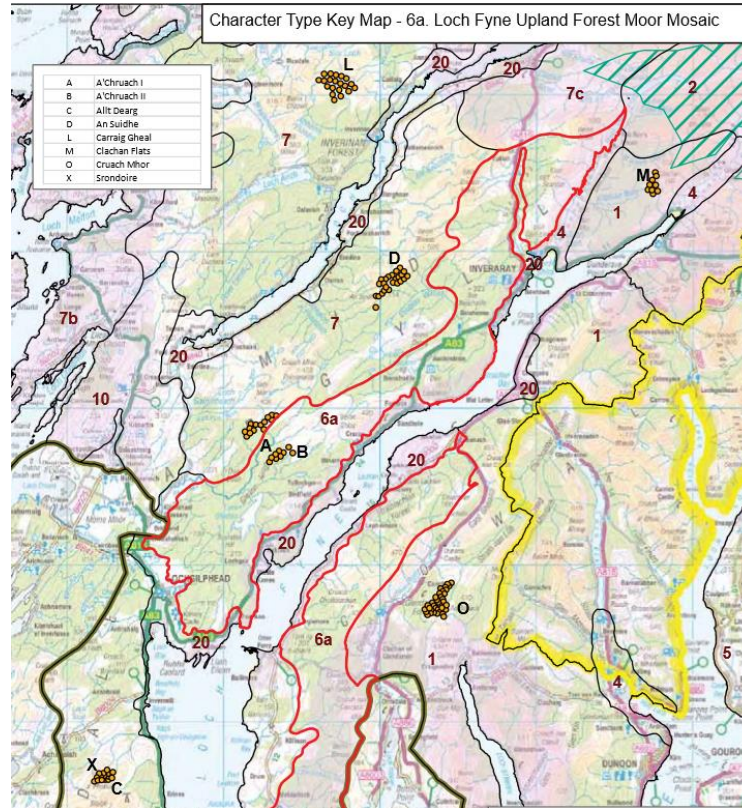
Spatial Framework for Onshore Wind Energy
August 2016 - Caithness and Sutherland LDP Area



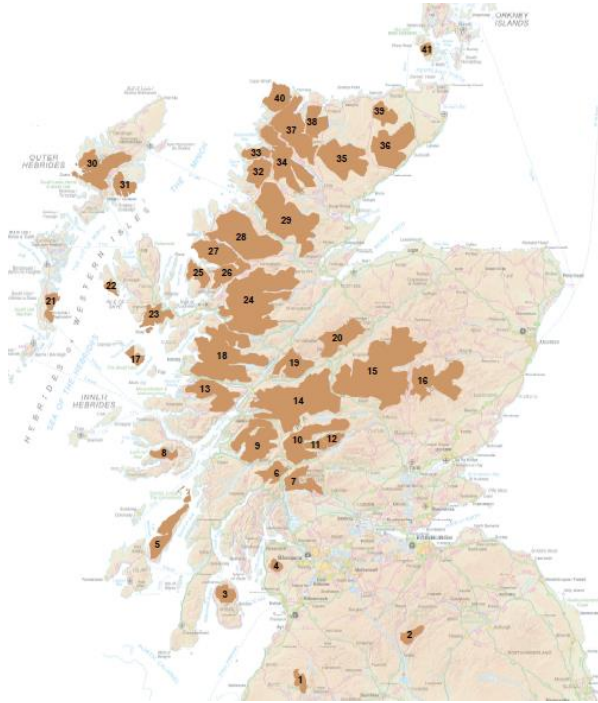
5. Acknowledgement of Landscape Change



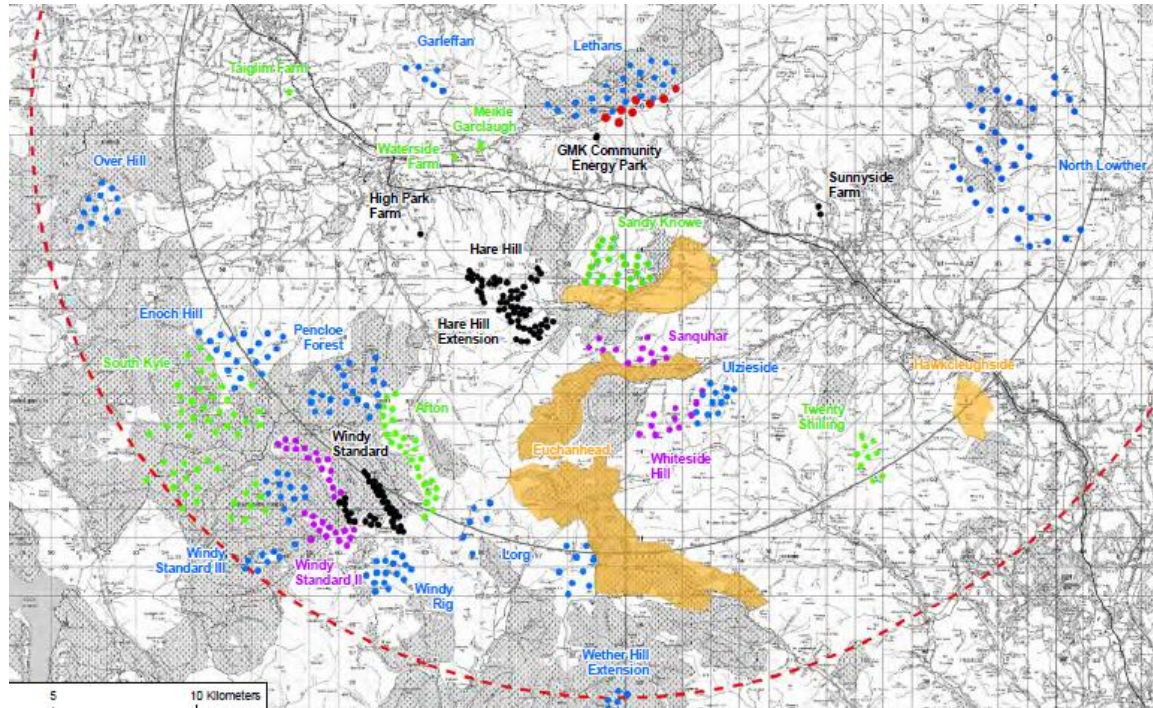
6. The Role of Landscape Sensitivity Appraisals



7. Wild Land Proximity



8. Development Frameworks: Global Heating Response Zones

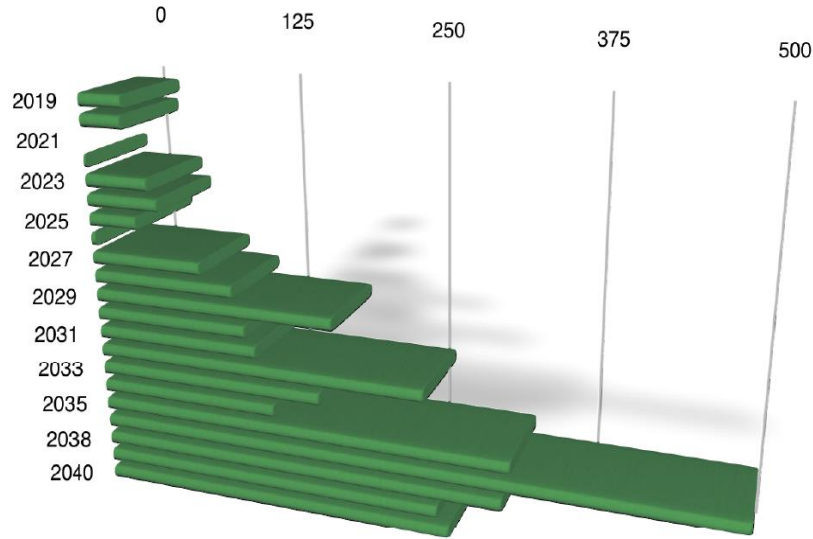


9. Development Plan Status of National Policy: Get it Right

s.25 “Where in making any determination under the planning Acts, regard is to be had to the development plan, the determination shall be made in accordance with the plan unless material considerations indicate otherwise.”

“In the practical application of sec 18A it will obviously be necessary for the decision-maker to consider the development plan, identify any provisions in it which are relevant to the question before him and make a proper interpretation of them. His decision will be open to challenge if he fails to have regard to a policy in the development plan which is relevant to the application or fails properly to interpret it.”

10. Strengthen Repower Policy



**DAVID BELL
PLANNING**

CHARTERED TOWN PLANNERS

David C Bell BSc(Hons) DipUD MCIHT MRTPI

Director



Email: david.bell@dbplanning.co.uk

Mobile: +44 (0)7876 597494

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Rebecca Rylott

Technical Director: Landscape
Architecture & Urban Design

Wood Environmental & Infrastructure
Solutions UK



Planning & consents: enabling the next generation

Rebecca Rylott
Technical Director: Landscape Architecture
Wood Environmental & Infrastructure Solutions UK

11 May 2019

woodplc.com

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Where **in the landscape** can we fit taller turbines (150-200m+)?

SPP Spatial Framework:

- Group 1: Not in National Parks or National Scenic Areas
- Group 2: Areas of significant protection may be in **Wild Land Areas** – in some circumstances if significant effects can be substantially overcome by siting and design.
- Group 3: **Anywhere else** - wind farms are likely to be acceptable, subject to policy criteria.

Where is the ‘anywhere else’?



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Landscape Capacity / Sensitivity Studies:

- Difficult documents to get right,
- No consultation,
- No standard methodology.

"The existing pattern of Wind Energy Development is respected."

Yet

"The need for separation between developments and/or clusters is respected."

There is no scope for new developments of Very Large turbines (>150m)

CHARACTER TYPE 18C: PLATEAU MOORLANDS WITH FORESTRY AND WIND FARMS – High to Medium sensitivity, some limited scope for the Very Large typology

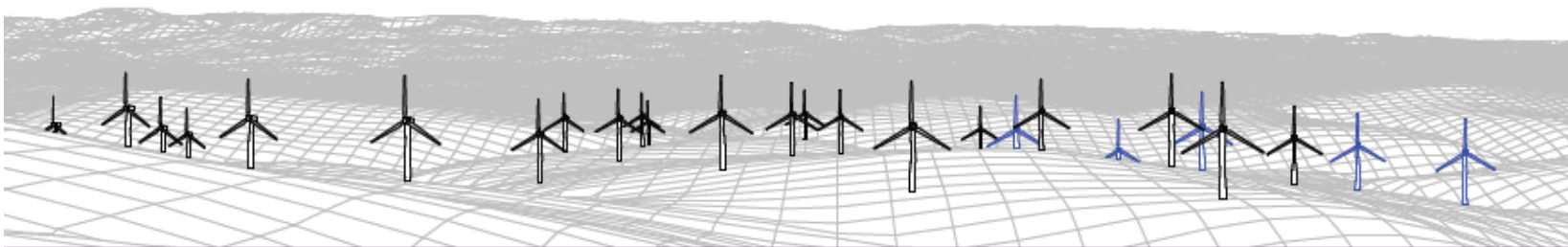


Landscape Character Type:
Moorland with Forestry and Wind Farms?



Landscape Character Type:
Not Moorland with Forestry and Wind Farms?

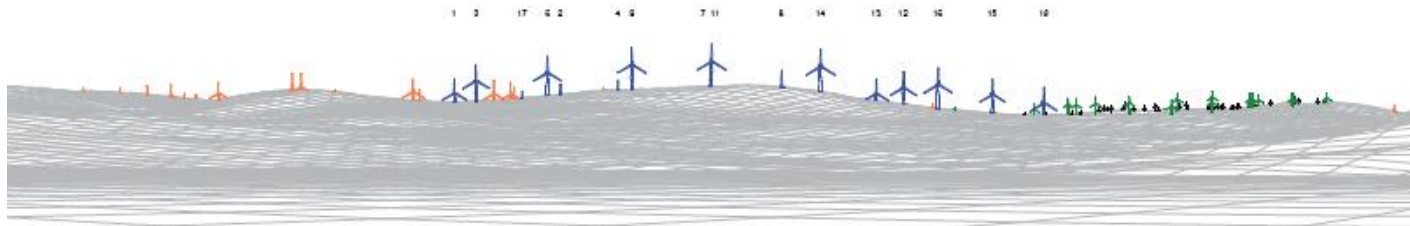
Perception: spot the 'BIG' ones?



Spot the 'BIG' ones?

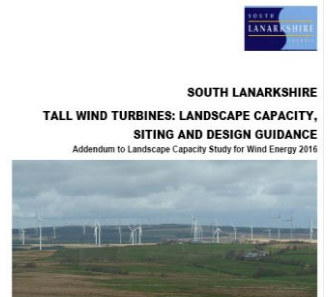
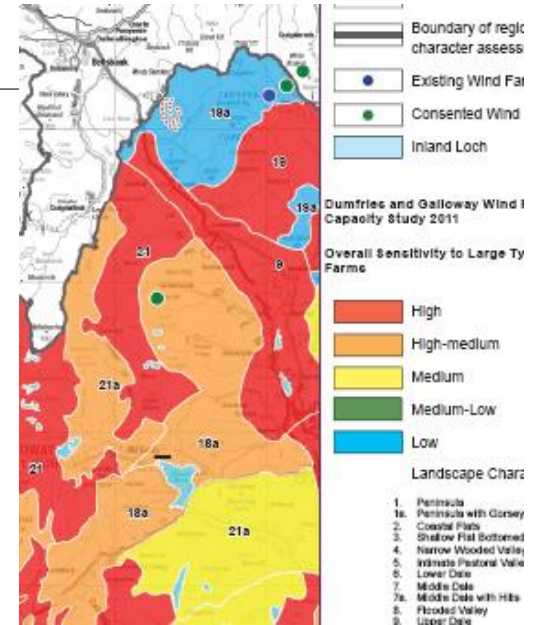


Composing different heights



Experiences and top tips

- **Larger turbines often sound worse, but can look better.** Good consultation and communication - working towards a pragmatic approach
- Site selection may not always be prime and maintaining **SNH design** principles and demonstrating this successfully is important
- Optimum height is **unknown** and has to be tested in the field - capacity capacity studies are often limited and conservative.



Experiences and top tips

• Landscape Advantages!



- Fewer, larger turbines can result in an improved composition.
- Increases in turbine height and number are not strictly proportionate to landscape effects. (Turbines in Belgium 198m high, but can you tell?)
- Larger turbines can simply appear 'more suitable' in certain landscapes.
- Careful design can allow multiple height options to co-exist – important for site extensions and repowering.
- Larger turbines can allow alternative approaches to forestry management, integration, design and lighting.



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Landscape capacity:

This relates to how far a landscape can accommodate development without significant adverse impacts occurring on its character.

Alternatively:

The ability of a landscape to accommodate different amounts of change or development. Capacity reflects landscape sensitivity and value is dependent on judgements about the desirability of retaining landscape characteristics and the acceptability of their loss.

Landscape Accommodation:

Within local landscape designations and Wild Land Areas, the degree of landscape protection will be less than for National Scenic Areas. In these areas, an appropriate objective may be to accommodate wind farms, rather than seek landscape protection.

Landscape Change:

This objective recognises that the area is one whose landscape character may be allowed to change, which could result in a perception of a wind farm landscape.

Landscape change does not imply that 'anything goes' ... good landscape design principles still need to be followed.



Realism and SNH / THC presentation



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James Wright

Planner – Minerals, Waste and Energy
South Lanarkshire Council

Planning & Consents

James Wright

Planner – Minerals, Waste and Energy

South Lanarkshire Council

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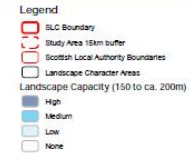
- Background
 - Repowering
 - Tall Turbines

Existing Size Categories	Proposed Size Categories
15m to <30m	15m to <30m
30m to <50m	30m to <50m
50m to <80m	50m to <80m
80m to <120m	80m to <120m
120m+	120m to <150m
	150m to 250m

South Lanarkshire Landscape Capacity Study for Wind Energy

Addendum: Tail Wind Turbines
Capacity and Siting Guidance

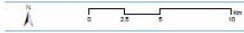
September 2017 8543 GIS 112



Note:
Refer to Table 6.1 for more detail on background assessment and capacity for specific turbine sizes.

Code	Type	Landscape Character Types
1	Urban Fringe	Parkland
2	Urban Fringe	Parkland
3A	Urban Fringe	Wooded
3B	Urban Fringe	Wooded
3C	Urban Fringe	Wooded
4	Urban Fringe	Wooded
5A	Urban Fringe	Wooded
5B	Urban Fringe	Wooded
5C	Urban Fringe	Wooded
6	Urban Fringe	Wooded
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97	Urban Fringe	Wooded
98	Urban Fringe	Wooded
99	Urban Fringe	Wooded
100	Urban Fringe	Wooded

Figure 6.1f
Underlying Landscape
Capacity for Wind Turbines
(150 - ca. 200m)



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Planning & Consents

- Planning Bill:
 - Development Plan
 - Removal of Supplementary Guidance
 - Supporting Planning Guidance
 - SPP/ NPF

Planning & Consents

- Planning Bill
 - Schedule 19 – Local Place Plans
 - Declining to determine applications
 - Section 42?

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Technical Director: Landscape Architecture & Urban Design,
Wood Environmental & Infrastructure Solutions UK

James Wright

Planner – Minerals, Waste and Energy, South Lanarkshire Council

Euan Hutchison

Associate Technical Director (Planning), Natural Power

Rachel Furlong

Planning & Environmental Policy Manager, ScottishPower Renewables



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