SR Corporate PPA CPD Seminar

In association with

Pinsent Masons

CPD CERTIFIED
The CPD Certification Service
Collective Mark

Welcome & Chair

Jenny Hogan
Scottish Renewables

Commercial Drivers

Iain Robertson

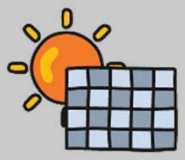
SmartestEnergy

Corporate PPAs – Commercial Drivers

Iain Robertson
Vice President, Renewables

26th April 2017

SmartestEnergy – a different type of energy company

Leading purchaser of independent generation	Licensed electricity supplier	Demand Side Response (DSR) aggregator	Commercial partner for battery projects
			

*100% of the electricity supplied is renewable, backed by certificates of renewable energy guarantees of origin.
Emission factors are compliant with the GHG Protocol Scope 2 Guidance and to be used for the 'market-based method'.

Continued growth in renewable supply and corporate commitments

RE 100

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Source: Renewable electricity supplied by all generating companies (exc Coal, Oil, Gas, Nuclear & Pumped Storage: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/511931/Electricity.pdf

UK Corporate PPAs

Belfast International Airport Lightsource (Solar) Capacity: 4.83MWp 15 year PPA	**Ming Foods** Lightsource (Solar) Capacity: 178kW 25 year PPA	**Thames Water** Lightsource (Floating Solar) Capacity: 6.3MW	**Amey Cespa** Lightsource (Floating Solar) Capacity: 4.83MW
Nationwide BayWa r.e. (Solar and Wind) Capacity: 45MW 15 year PPA	**Lloyds Bank** Infinis (Landfill Gas) Capacity: ~24MW 10 year PPA	**BT** EDF (Onshore wind) Capacity: 100MW 20 year PPA	**HSBC** Jacks Lane & Wryde Croft (Onshore wind) Capacity: 13.8MW & 26MW 12 year PPA
Vodafone EngieKontor (Onshore wind) 15 year PPA	**Mars** Enoco – Moy Wind Farm (Onshore wind) Capacity: 60MW	**Nestle** Community Wind Power (Onshore wind) Capacity: 31MW	**Sainsbury's** Muirhall and Lochhead (Onshore wind) Capacity: 6MW

Why enter into a Corporate PPA agreement?

Consumer drivers

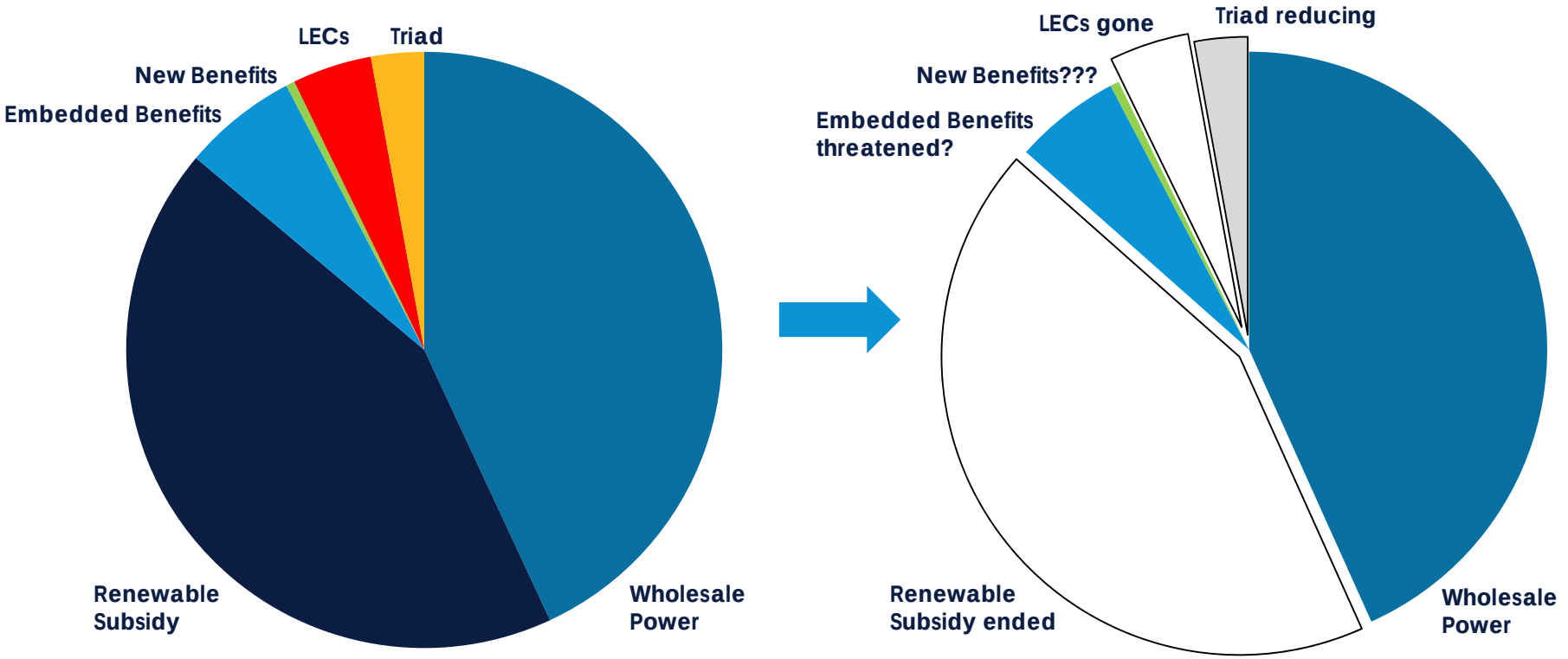
- CSR credentials
- Increasing customer awareness
- Sustainability targets
- Additionality
- Long-term price security
- Long-term price stability

Generator drivers

- Reliable, stable revenue stream
- Long-term certainty

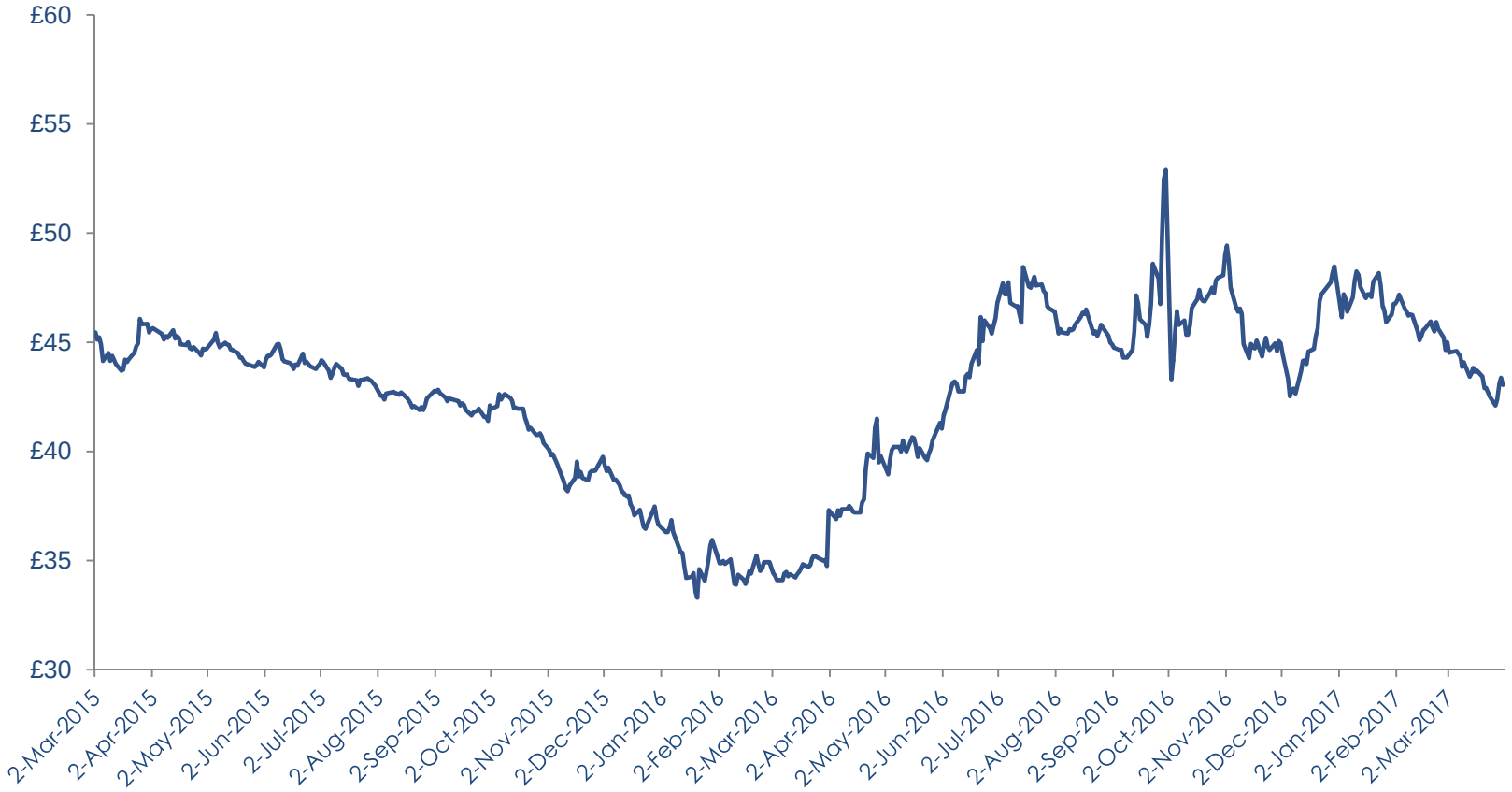
= Bankability

Changing landscape for generators



Revenue streams: example based on HV-connected wind in Scotland

Forward Annual Electricity price – Baseload, past 2 years



What are the challenges?

- Changing buyer behaviour
  - procurement horizon
  - energy focus/ energy spend
  - other financial priorities/ boardroom buy-in
- Creditworthiness of buyer
- Contractual complexities
- Bringing willing buyer and seller together at the right price

Thank you

Iain Robertson | SmartestEnergy

smartestenergy.com

Sourcing energy for a sustainable future

Anna Kynaston

Scottish Government

Power Purchase Agreements Opportunities and Challenges

Presentation by Anna Kynaston, Head of Low Carbon Unit,
The Scottish Government

Power Purchase Agreements (PPAs) Opportunities and Challenges

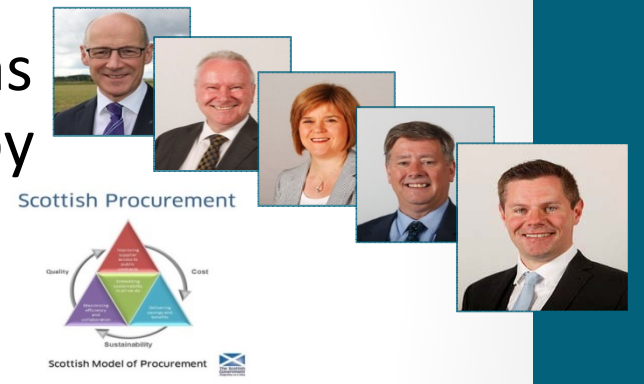
Presentation by Anna Kynaston, Head of Low Carbon Unit,
The Scottish Government

Content

1. National Contract for Electricity
2. Draft Energy Strategy, including Onshore Wind Policy Statement
3. Questions

National Contract for Electricity (1)

- The national contract for electricity has been and continues to be supported by a succession of Cabinet Secretaries
- The contract is used by the whole of the Scottish public sector
- The agreement manages 2.9TW (equivalent to around 0.1% of UK generation)



National Contract for Electricity

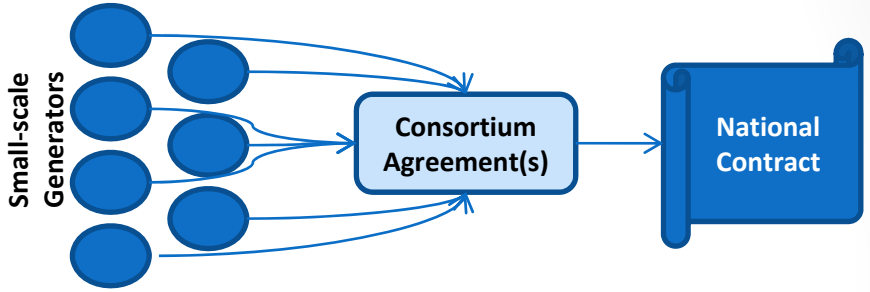
- The contract must comply with EU, UK and Scots law
- It operates a flexible purchasing model (power futures are traded)
- Trading operates against a strict set of risk management conditions – **Any PPA would have to meet these conditions before being considered**
- The contract is run on commercial terms (i.e. the public bodies will not pay over the market rate for their energy)
- The current contract allows for PPAs but this provision has not yet been used

National Contract for Electricity

- After the new contract is awarded further information will be available (Autumn this year)
- For further information email: *procurementutilities@gov.scot*

Moving Forward

Opportunities



- The contract is being re-tendered this year
- Scottish Procurement is seeking to expand the PPA provision within the new contract
- The number of PPAs will be limited by the practicality of managing multiple supplier relationships
- This means that small-scale generators might wish to consider forming consortia in order to make their PPA offerings simpler propositions

SG Contract Limitations

Challenges

- Not an alternative route to subsidy as it must comply with state aid and procurement rules.
- Any PPA provider must win an open tender process (open to any bidder-the competition could not be restricted to any particular sector, such as community projects or even to Scottish-based generators).
- Any PPA offering must also fit in with the hedging strategy.

Energy Strategy

Onshore Wind

- Increased Onshore Wind has a role in Scotland's energy mix moving forward.

- As at end of Q4 2016 Scotland had:
  - 6,135 MW operational
  - 132 consented sites in Scotland
  - 70 onshore wind sites in planning, with 2,860 MW capacity

Onshore Wind Policy Statement:

The case for onshore wind:

- Essential to Scotland's transformation to a fully decarbonised energy system by 2050
- Brings opportunities which underpin our vision to grow a low carbon economy
- Helps to build a fairer society

Onshore Wind PPAs

- Sector is rightly looking at the use of longer-term corporate PPAs
- SG Recognise securing income through PPAs to secure investor confidence
- Corporate PPAs of interest to SG
- **This is ultimately market driven**

Summary

- Some scope for SG to offer increased PPA provision.
- Welcome your views
- Please respond to draft Energy Strategy and Onshore Wind Policy Statement

scottish renewables

Q & A

Engaging Corporates

scottish
renewables

John Barclay

ITPEnergised

ITPEnergised
John Barclay – Associate Director

A leading consultancy offering energy, environmental, engineering technical advisory and renewable asset management services

C&I Approaches to Energy – State of Play

- 2016 difficult year for engagement
- Uncertainty of subsidy for LZC technologies
- Reduction in energy prices; 40% in NG (~1.6 per kWh) and 15% in electricity (~8p per kWh)
- Hangover from Energy Savings Opportunities Scheme – race to the bottom
- Policy uncertainty – Still no visibility of simplified reporting framework consultation highlighted in UK Budget March 2016
- The above has swayed some but not all e.g. retailers
- But some positive signs……

C&I Approaches to Energy – Some positive signs

- PPAs with large tech companies and resulting coverage
- SEEP and proposed ambitious targets from SG
- Gas and electricity prices on the way up
- NDEE Framework for Public Sector
- LCITP transformation projects will start this year
- High profile of battery energy storage systems and balancing market
- Minimum energy efficiency standards and section 63
- Huge increases in EV uptake and charging points
- Experience suggest significant variations in C&I awareness

C&I PPA Challenging Customer?

- Objects to renewable energy as they only see costs hitting their bill
- No carbon management plan or reduction strategy
- Only interested in lowest cost of energy today with no hedging strategy
- Procurement department with no real understanding of energy markets.
- Buys energy exclusively via TPI
- Buys energy through a national framework. No current option to go elsewhere. In Scotland that includes NHS Boards, LAs, Higher Education boards etc
- May be in a sector where recent history would suggest that their market is under threat. Example; Scottish Paper Industry over the last 15 years.
- Organisations who already generate much of their own electricity due to nature of operation such as refining and chemicals or via on-site CHP, renewables or conventional power generation.
- Examples like Michelin, DSM, Ineos, GSK, AG Barr, grain distilleries via AD

C&I PPA Target Customer?

- Fully engaged in carbon reduction and has publically stated reduction goals and may be a member of RE100
- May already have a PPA outside the UK so has some internal knowledge
- Takes long term view on energy procurement
- Has a senior director with buy in on carbon reduction
- Has a dedicated member of staff who understands energy procurement
- Has a reasonable degree of energy consumption and pays the bills. Many companies with large numbers of office based staff will be tenants and a landlord pays the bills.
- Potential to engage with large landlords who could potentially market their renewable electricity supply to tenants
- Sectors; F&D, automotive, hospitality, manufacturing, tech, real estate, retail

Some of our clients

ITPENERGISED
Earth. Smart. Solutions

Head Office

ITPEnergised
7 Dundas Street
Edinburgh, UK
EH3 6QG

John Barclay IEng MEI Chartered Energy Manager

T: +44 7881 385633
E: john.barclay@itpenergised.com

scottish renewables

James Hinchcliffe

Brookfield Asset Management

Brookfield Renewable

SCOTTISH RENEWABLES – CORPORATE PPAS

James Hinchcliffe (james.hinchcliffe@brookfield.com)

APRIL 26, 2017

Agenda

Brookfield

- Introduction to Brookfield
- Evolution of the corporate PPA market
- Considerations when entering a corporate PPA
- Case study

Introduction to Brookfield Renewable

Brookfield

One of the largest public pure-play renewable power businesses globally

- Brookfield Asset Management has **$250 billion of assets under management** across the **renewable energy, infrastructure, real estate and private equity** asset classes
- Brookfield Renewable builds **continental renewable platforms** with fully integrated operations, greenfield development, commercial and power marketing capabilities
- Brookfield established its European renewable platform in 2014, and today has **473 MW operating capacity**, a **1 GW+ development pipeline** across the UK, Ireland and Portugal, which includes **20 MW in construction and 131 MW of consented projects in Scotland**
- We have **significant corporate PPA experience** in the U.S., Canada, Brazil, Colombia and Ireland, and are looking to replicate our expertise in the UK

$30 Billion
POWER ASSETS

260 power generating facilities

10,700
MEGAWATTS OF CAPACITY

15 markets in 7 countries

88%
HYDROELECTRIC GENERATION

Situated on **82** river systems

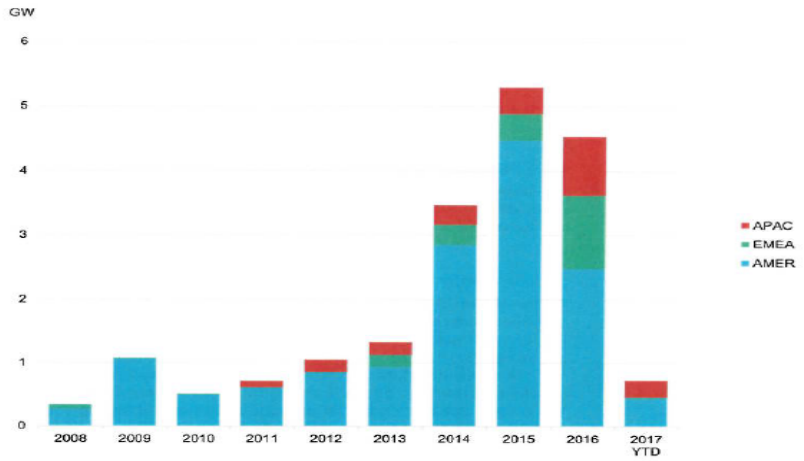
Corporate PPA market in EMEA

Brookfield

Green power supply is increasingly becoming a core component of businesses' social responsibility programs in response to investor demand

- Corporate PPAs have been on the rise globally:
  - The **US market** has been leading the way, but EMEA is catching up
  - The UK, Ireland, Norway and Sweden are the most developed across EMEA
  - We believe **Scotland is uniquely positioned** to become a leading market for post-subsidy onshore wind with the associated inward investment
  - Brookfield is currently ranked number two in EMEA in terms of current project owners providing corporate PPAs[1] – **we hope to move to number one in 2017**

Volume of new corporate PPAs signed by year, GW
Source: Bloomberg New Energy Finance



[1]Source: Bloomberg New Energy Finance Corporate PPA Project Owner League Table

Advantages of renewable PPAs for corporates

Brookfield

Corporate sustainability and price are driving corporate renewable procurement but these are not the only advantages. We see the following five areas being focussed on by corporates.

- **Price stability and cost reduction** – PPAs protect against fluctuating energy prices over a long time horizon. They can give the ability to fix power prices at low levels.
- **Environmental benefits** – It may seem an obvious point but entering renewable PPAs is good for the local (and global) environment
- **Branding** – PPAs provide an opportunity to align a brand with corporate social responsibility and green practices
- **Employee and Investor engagement** – We increasingly see the importance of sustainability to the investment industry and potential/existing employees
- **No upfront costs** – Terms may be structured so that periodic invoicing spreads the costs while still enabling new renewable capacity to be built under long term agreements

Challenges of renewable PPAs for corporates in the UK

Brookfield

There are a number of challenges in the UK market at the moment

- **Price** – Price is a challenge for post-subsidy onshore wind in the UK
- **Bankability** – The creditworthiness of the offtaker(s) is critical to secure financing, which can limit the pool of potential counterparties and the ability to finance a project
- **Volume** – Sizing customer requirements to projects can be tricky
- **Tenor** – Agreeing long-term (5+ year contracts) often involves internal approvals in companies where energy procurement has traditionally been done on a shorter term basis, and is not a core function. Again this will impact the ability to finance a project
- **Legal complexity –** These agreements can be complex to negotiate, for example clauses relating to termination, curtailment and sleeving with licensed suppliers

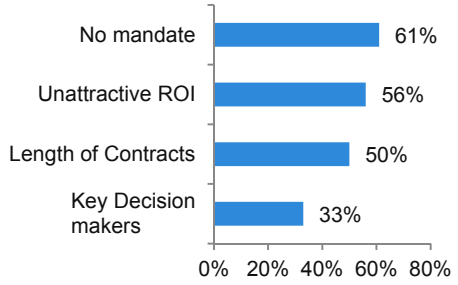
Brookfield

We see that internal buy-in is critical to gaining approval for a corporate PPA with the following areas of particular interest

- **Cost effectiveness** - Good investment return, price is key
- **Additionality** – Bringing new renewable generation to the grid
- **Location** – Located on the same grid network as the demand
- **Bundled products** – ability to buy power and green attributes together

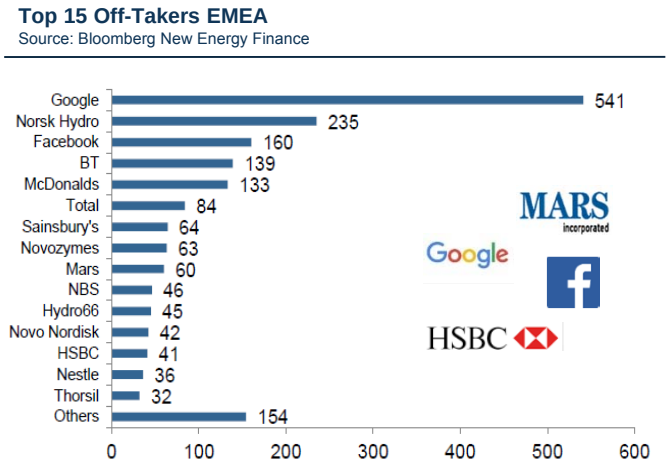
Drivers of intent to purchase
Source: PwC Independent survey

Drivers for lack of intent to purchase
Source: PwC Independent survey



Brookfield Renewable has entered into long-term agreements to provide green power to numerous clients across the globe

- **Ireland** - 10-year green power supply agreement to a datacentre and European office HQ
  - >100 MW of new onshore wind contracted
  - 100% Irish wind providing traceable green power to Irish facilities
- Other deals include **using hydro and wind** to supply customers ranging from large multinationals to railroad operators to supermarkets across the **United States, Canada, Brazil and Colombia**



scottish renewables

Victoria O’Connor

K2 Management

Engaging Corporates

Vicky O'Connor
Senior Consultant
Scottish Renewables Corporate PPA Seminar
26 April 2017

Courtesy: Trianel

For better **wind projects**

K2 MANAGEMENT



About us

- Founded in 2007 by Lars K. Hammershøj and Per K. Melgaard in Denmark
- Today, 10 local offices worldwide
- 100% independent.

At a glance:

- **100+ employees** with experience from
  - 1,000+ onshore and offshore wind projects globally.
- **K2 Management**
  - 150+ onshore projects
  - 110+ offshore
  - 30+ countries.
- **Recent Projects**
  - Macquarie Group purchase of the Green Investment Bank (GIB)
  - CGN EE acquisition of 230 MW of Gaelectric assets.

Investment market

- Operating assets is a busy market, more competitive
- Investors are looking to:
  - Invest earlier in the development process
  - Look at markets not invested in before, including emerging markets.

→ Additional complexity or uncertainty

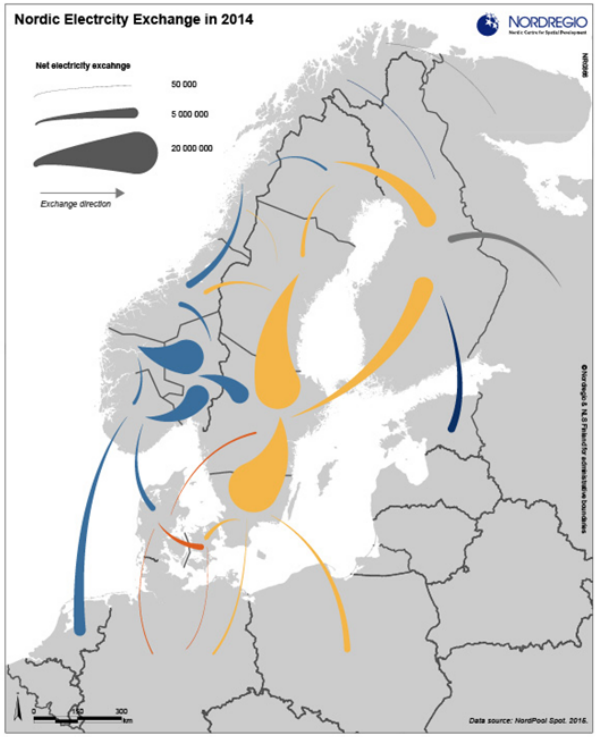
→ Increased risk

→ Corporate PPAs can help balance this

Example

Scandinavia

- Nord Pool integrated grid
- Terrain complexity
- Dense forestry
- Low wind speeds
  - Higher hub heights
  - Larger rotors
- Confidence in regulatory support
- Market energy pricing.



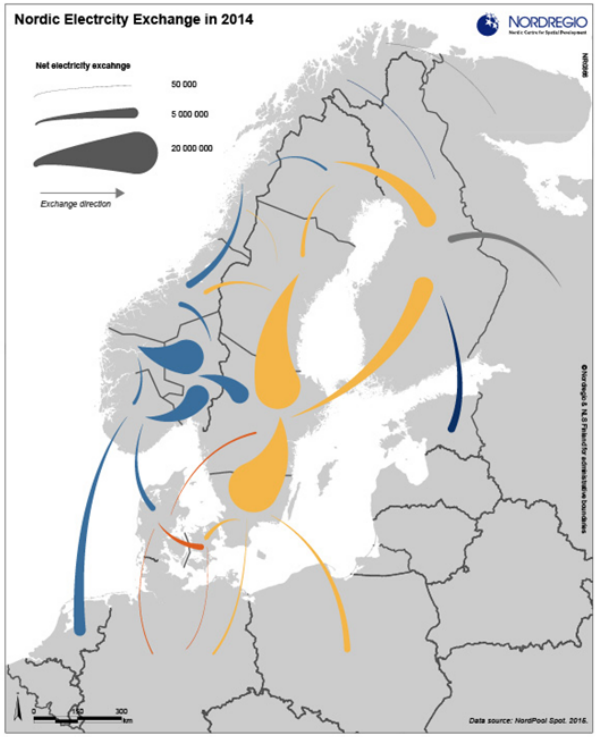
Example

Scandinavia

- Nord Pool integrated grid
- Terrain complexity
- Dense forestry
- Low wind speeds
  - Higher hub heights
  - Larger rotors
- Confidence in regulatory support
- Market energy pricing.

Google

- Wind farms in Norway and Sweden
- Power used in Finland
- Multiple developers and investors
- 624 MW.



Going forward

Challenges

- Education, common language
- Competitiveness post subsidy
- Reduction in costs
- Contract length
- Innovation
- Uncertainty in power price prediction models.

Co-operation across all stakeholders

Contact Details

Vicky O'Connor
Senior Consultant – Due Diligence, Engineering
Mobile: +78 2694 9699
Email: voc@k2management.com
Web: www.k2management.com

Courtesy: Trianel

For better **wind projects**

K2 MANAGEMENT

Stuart Donnelly

Schneider Electric

Corporate PPA Seminar; Engaging Corporates

Stuart Donnelly, Solutions Consultancy Director, Schneider Electric Energy & Sustainability Services

Life Is On Schneider Electric

Agenda

- Schneider Electric
  - Introduction
- ESS & Renewable Choice Energy
  - Global Presence
- Engagement Case Study
  - Importance of internal engagement
  - A Challenge, an Example of what can go wrong
  - Lessons Learned

The Global Specialist in Energy Management

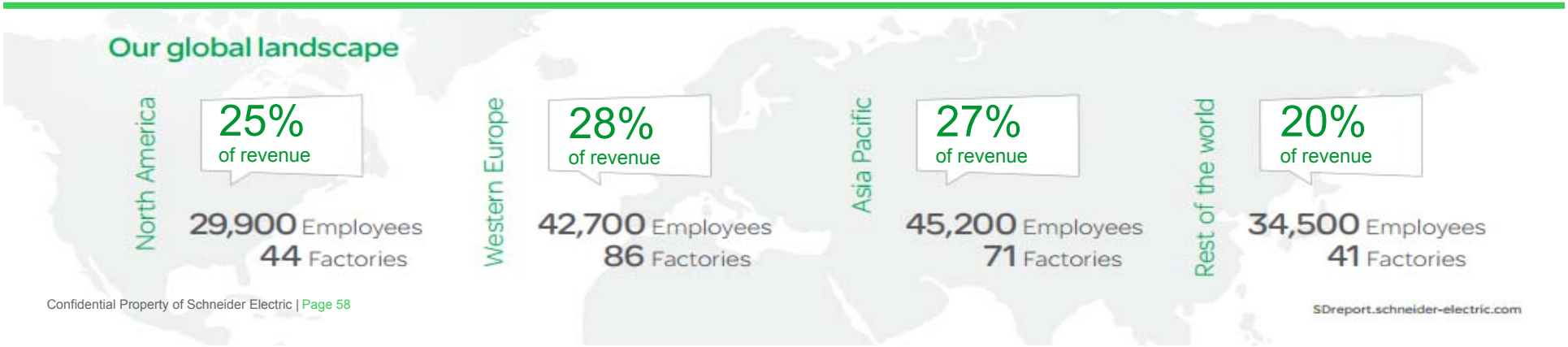
€24.69
billion revenue in 2016

43%
revenue, new economies

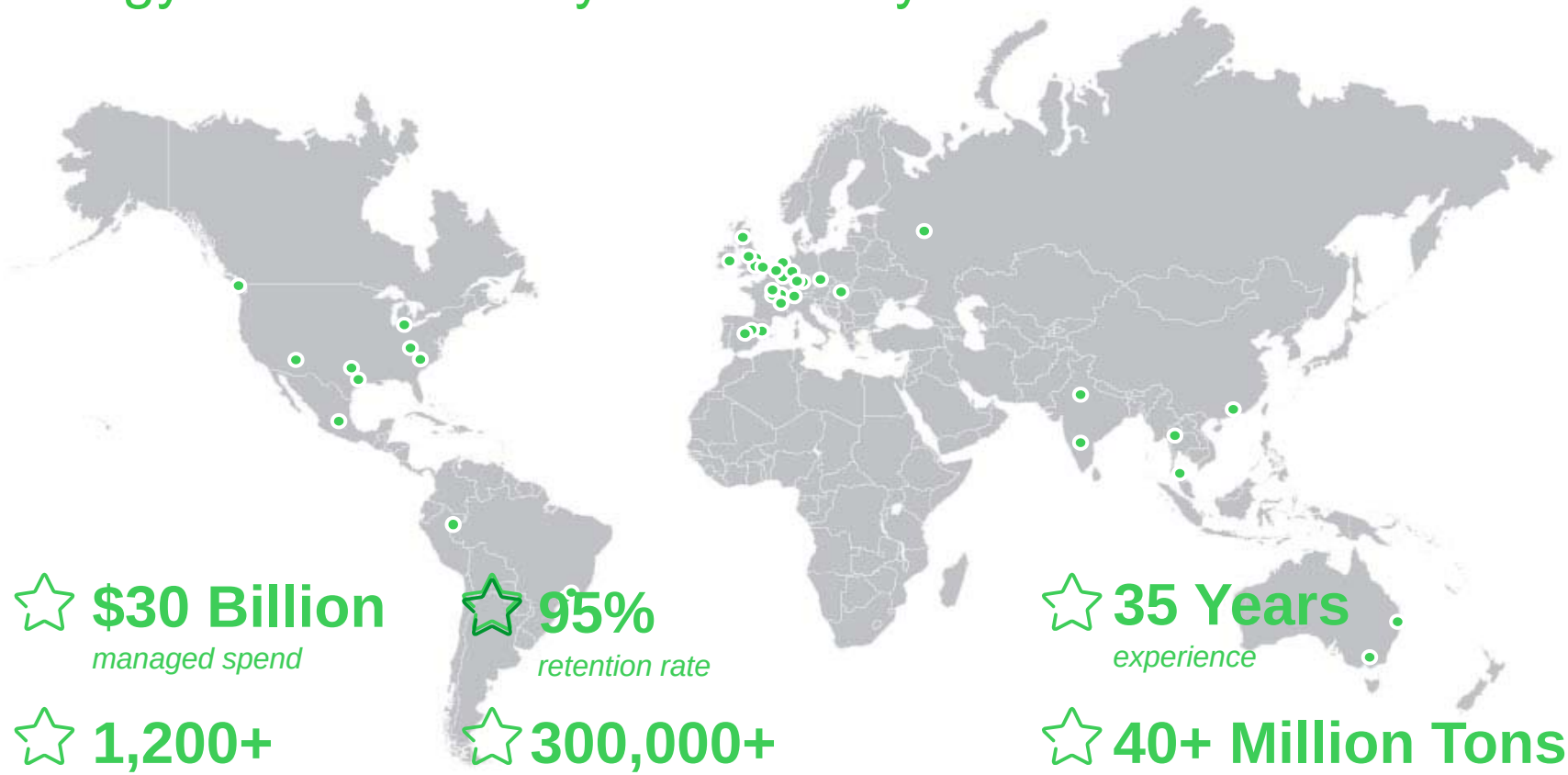
40%
revenue, solutions

€1.14
billion revenue spent in R&D

150,000+
employees in 100+ countries



Energy & Sustainability Services by the Numbers



$30 Billion
managed spend

95%
retention rate

35 Years
experience

1,200+
dedicated employees

300,000+
client sites

40+ Million Tons
carbon managed

Life Is On | Schneider Electric

Energy & Sustainability Services

Mitigate risk while improving sustainability, energy efficiency and power reliability

Sustainable development

Need for transparency, innovation

Energy cost volatility

Need to manage and predict energy pricing

Data explosion

Need to translate growing data into action

Cleantech resources

Global targeting and reporting, cost management, resiliency planning & business continuity

6000 + clients

300k managed sites around the world

€30B managed energy spend

40+ million metric tons of CO2 managed

1200 experts from energy supply, sustainability, and resource efficiency

1st (and the most) ISO 50001 certified buildings in the world

Life Is On Schneider Electric

Establishing Long-Term Relationships

Delivering consistent value to establish a “client for life”

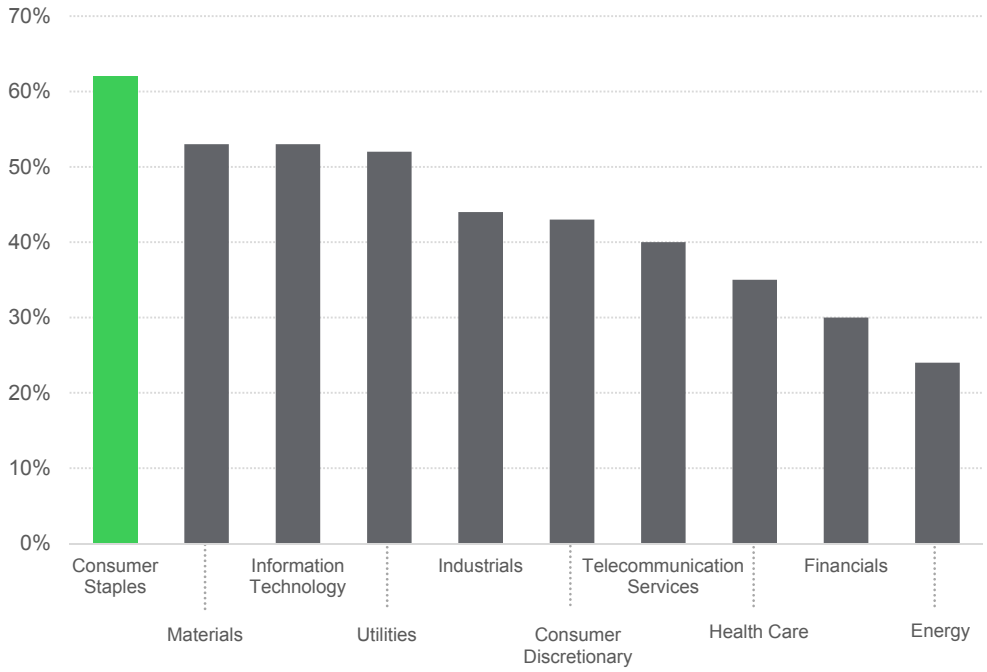
95%

Client Retention Rate

Life Is On Schneider Electric

Corporate Energy Goals on the Rise

Companies have increased their public commitment to energy and renewable targets



Fortune 500: Renewable Energy Targets

- 43% of Fortune 500 have established a public commitment to **GHG reductions**, **energy savings** or **renewable energy procurement**
- Consumer Staples leads the pack with a 62% participation rate

Source: Ceres, Power Forward 2.0 Report

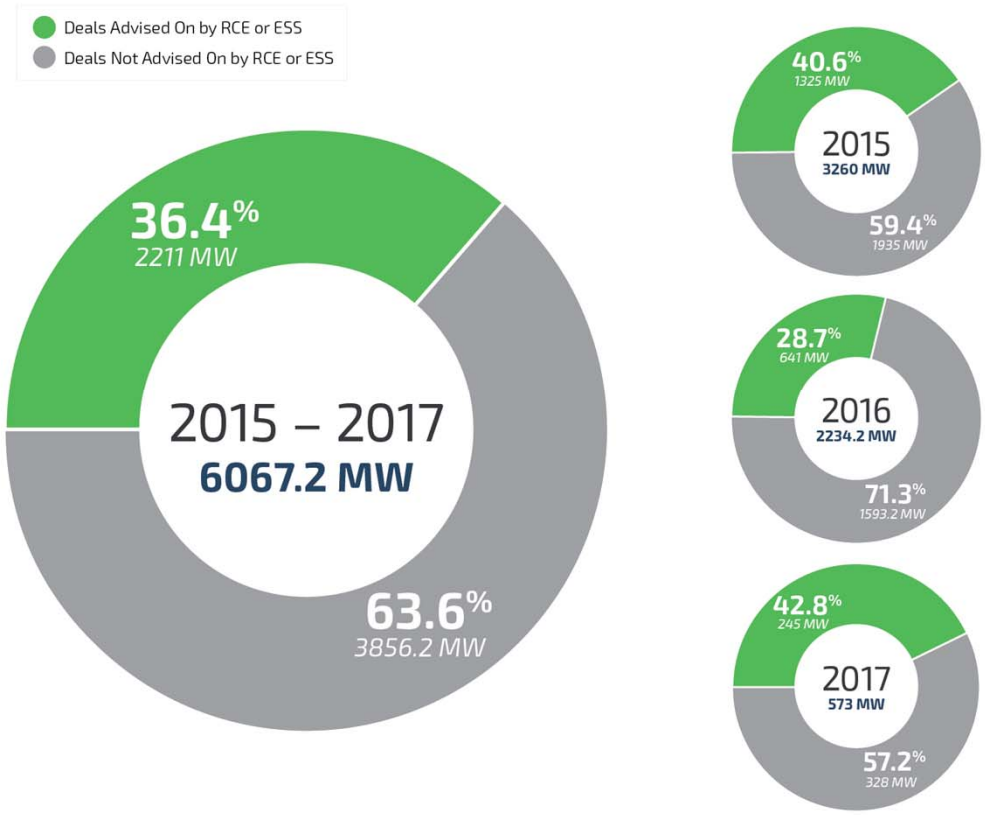
RENEWABLE CHOICE ENERGY – SCHNEIDER ELECTRIC ESS

Our mission is **to make it ever easier for all organizations to embrace clean, renewable energy.**

- Leading independent provider of renewable energy advisory services to global 500 organizations.
  - Renewable energy focus
  - No conflict-of-interest with developers
- Acquired by Schneider Electric in 2017.

AGGREGATE OFFSITE RENEWABLE DEALS IN THE C&I SECTOR ADVISED ON BY ESS AND RCE*

ALL DEALS



Our combined market share represents over 1/3 of the market.

renewable choice ENERGY is now Schneider Electric

THE IMPORTANCE OF C&I INTERNAL ENGAGEMENT

Case Study:

- Global 500 design & manufacturing company, headquartered in Europe, with operations in 160 countries and revenues of €17B.
- Social & environmental responsibility embraced as a core organizational value.
- Energy conservation is a key strategic priority for company's 2020 goals.

THE INITIAL ENGAGEMENT

- The company's U.S. branch decided to execute a long-term renewable energy strategy using an offsite virtual PPA, using Renewable Choice as an advisor.
- Solicited RFP resulted in consideration of more than 100 wind and solar projects across a variety of geographies.
- Feasibility and financial analysis returned a short-list of three viable projects that were under consideration by the client.

WHAT WENT WRONG

- Project was in final approval stages when key stakeholder (treasurer) put the brakes on.
- As a result, deal was never executed and developer and advisor both lost revenue after months of work.
- Sustainability champion has since left company, and sustainability/energy department has been reorganized.

LESSONS LEARNED

1. Know your audience.
2. Ensure project will address multiple goals (e.g. environmental AND economic).
3. Make sure key stakeholders are at the table from the beginning—and surface all reservations or personal agendas.
4. Develop clear, shared understanding of the goal.
5. Practice empathy to understand stakeholder reservations.
6. Facilitate frequent, discrete communication.


Life Is On
Schneider
Electric

scottish renewables

Q & A

Networking Break

Contractual Challenges

scottish renewables

Ronan Lambe

Pinsent Masons

Corporate PPAs – Contractual Challenges

Ronan Lambe

Senior Associate, Pinsent Masons LLP

Pinsent Masons

Key Challenges

- Pre-Contractual Challenges
  - Education, Buy-in and Resourcing
  - Matchmaking
  - Structuring
  - Economics

- Challenges during contractual negotiation
  - Regulatory issues
  - Practical issues
  - Bankability

Pre-Contractual Challenges – Education, Buy-In and Resourcing (1)

- Corporate PPAs remain something of a novelty (for Generators, Energy Users and Senior Lenders), despite a decade of use in the UK
- From Energy User's perspective, early engagement with internal stakeholders is critical. Identifying and educating final decision maker is key.
- Energy User will need to assess its ability to resource the PPA 'journey' from start to finish. External advice often required (and at an early stage)

Pre-Contractual Challenges – Education, Buy-in and Resourcing (2)

- Where Energy User is a first time Corporate PPA provider, Generator should be aware of potential for additional time and resource commitment (vs. entering into a Utility PPA)
- Securing co-operation from the Energy User's Licensed Supplier is important
  - Has the Licensed Supplier got the necessary experience?
  - Will the Licensed Supplier commit necessary resources?

Pre-Contractual Challenges - Matchmaking

- One of the key challenges for Energy User and Generator alike is finding each other
- Given the relatively undeveloped Corporate PPA market in the UK, organised marketplaces or exchanges don't yet exist
- Many Corporate PPAs arise as a result of competitive tender processes, which come at a cost to the Energy User and time and cost risk to Generators
- Bilateral discussions and direct approaches have also resulted in Corporate PPAs being entered into
- Opportunity exists to create a marketplace in the UK where Energy Users and Project Developers interested in Corporate PPAs could be matched

Pre-Contractual Challenges – Structuring

- While the first Corporate PPAs in the UK market utilised the virtual or synthetic PPA structure, most recent Corporate PPAs have used the sleeving model
- Each model has its advantages and disadvantages
- Key points of negotiation with Licensed Supplier may include:
  - Licensed Supplier charges associated with facilitating sleeving;
  - Consequences of changes to forecasted availability of generating asset / lower than expected generation volumes; and
  - Flexibility to add / remove PPAs during term of Supply Contract

Pre-Contractual Challenges - Economics

- Long term, fixed price, index-linked products have been prevalent in the UK market
- Given current low power prices, overcoming risk of Energy User being ‘out of the money’ early in PPA term is a significant hurdle
- Ability of Energy User to build in contractual protections such as caps and collars will depend on negotiating strength
- Bankability requirements to be considered early (creditworthiness of Energy User, requirement / availability of credit support etc.)

Contractual Challenges – Regulatory issues and Accounting treatment

- Where a Virtual PPA is used, the Price Guarantee Agreement is likely to be an over-the-counter (OTC) derivative
- European Market Infrastructure Regulation (EMIR) imposes certain obligations on Parties to OTC derivatives, including reporting obligations
- Impact of MiFID II will also need to be considered
- IFRS16 has broadened the definition of 'lease', such that long term Power Purchase Agreements may no longer attract off balance sheet treatment
- Key is whether the Corporate PPA conveys to the Energy User a right to 'control' use of the generating asset. Legal and accounting advice should be taken on the impact of IFRS16 and appropriate language to include in the PPA to avoid Energy User being deemed to control the generating asset.

Contractual Challenges – Practical Issues (1)

- Large Energy Users often have Corporate Policies which their suppliers are required to comply with. Some will be unsuitable for the sale and purchase of electricity and associated benefits
- Given long term nature of the PPA, agreement will be required on how updates to Energy User's corporate policies during the PPA term will be addressed
- Energy User may impose change of control restrictions on the Generator and/or require ownership of the generating Facility to be stapled to shares in Generator
- Corporate Policies may be accompanied by audit rights

Contractual Challenges – Practical Issues (2)

- Energy User will need to ensure that:
  - Generator PPA carefully mirrors key obligations the Energy User assumes in favour of its Licensed Supplier under the Back to Back PPA
  - Time periods for compliance by the Energy User with Back to Back PPA obligations need to build in time for Generator to comply with equivalent obligations in the Generator PPA
- Generator will insist on the Energy User having a contract in place with a Licensed Supplier for the term of the Generator PPA. Energy User will want flexibility to terminate its Supply Contract and replace its Licensed Supplier from time to time.

Contractual Challenges – Practical Issues (3)

- Energy User may not be willing to purchase certain renewable benefits, in which case the Generator may require a separate contract with a third party. Interaction between PPA and benefit purchase agreement will need to be considered
- Energy User may insist on its standard payment terms applying. These are often longer than Utility PPA payment terms
- Concerns regarding Energy User engineering a breach where the Generator PPA is ‘out of the money’ may lead to Generator pushing for uncapped liability on termination

Contractual Challenges – Practical Issues (4)

- Energy Users have been more insistent than Utilities on inclusion of a guaranteed minimum generation level (as opposed to minimum availability requirements) - even for intermittent technologies
- Energy User may seek co-operation from Generator in publicising entry into Generator PPA and require ability to use generating Facility in advertising campaigns. Energy User may seek to restrict the Generator using its intellectual property rights, branding and trademarks etc.
- Energy User may insist on Generator being required to provide notices to Licensed Supplier and Energy User under Generator PPA to lessen administrative burden on Energy User. Generator may argue that it should only owe obligations to its contractual counterparty

Contractual Challenges - Bankability

- Many Senior Lenders active in the UK renewables market have now banked Corporate PPAs
- Key concerns remain:
  - Pricing (including fixed / floor price availability);
  - Term;
  - Change in Law protection;
  - Payment terms;
  - Liability cap;
  - Identity and creditworthiness of the Energy User;
  - Step-in rights / Direct Agreement availability;
  - Transferability

scottish
renewables

Richard Kelly

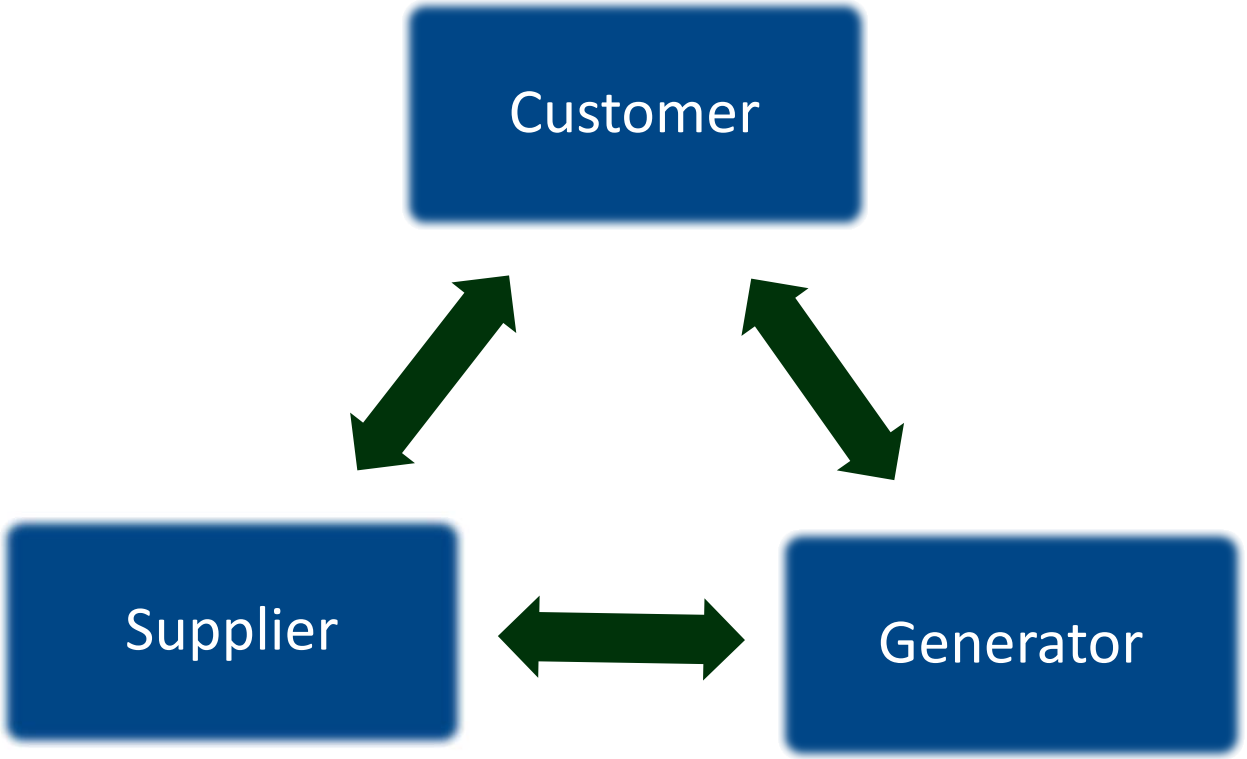
SSE

Corporate PPAs
The Sleeving Challenge

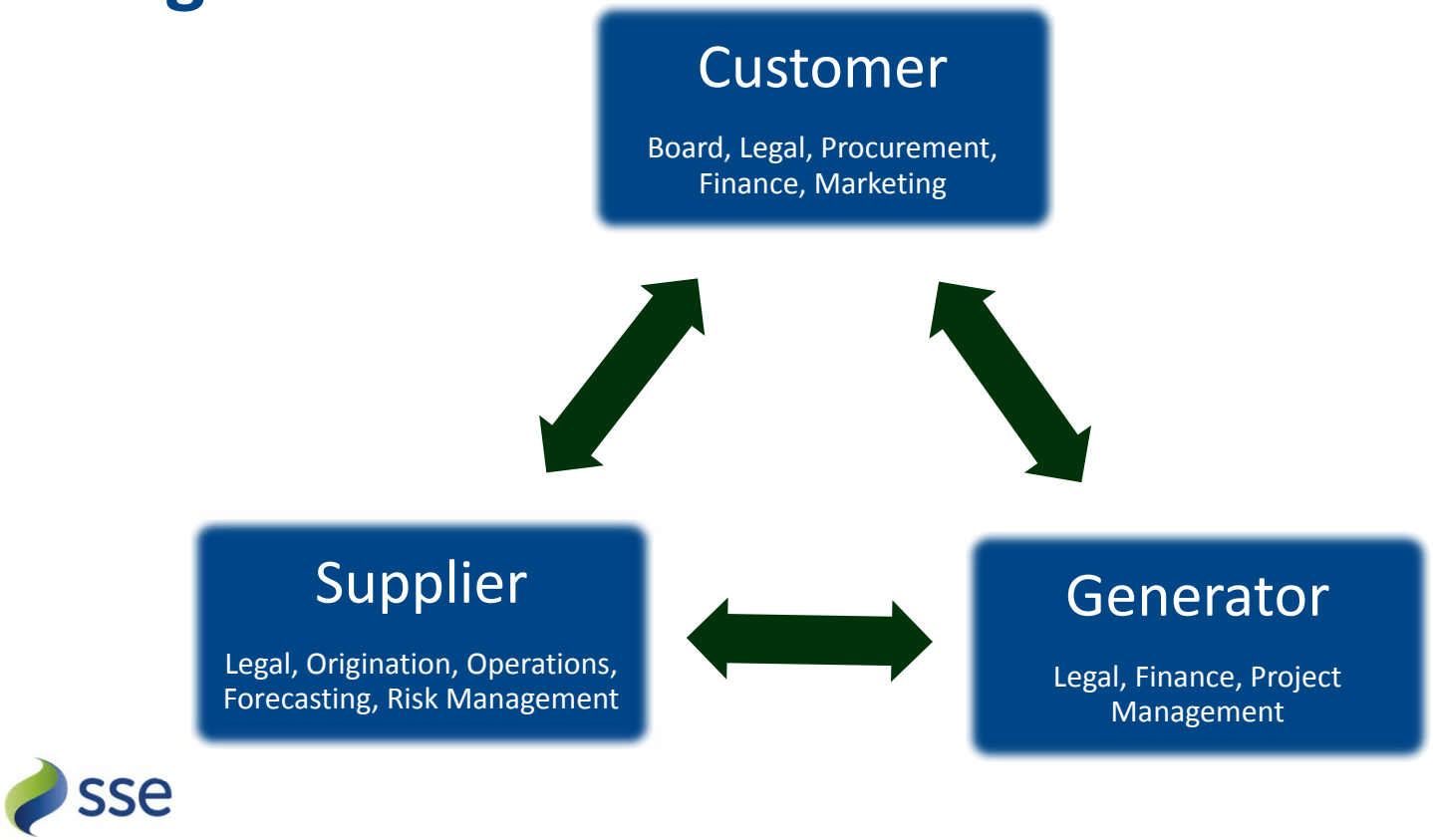
Richard Kelly

EPM Retail Services Manager

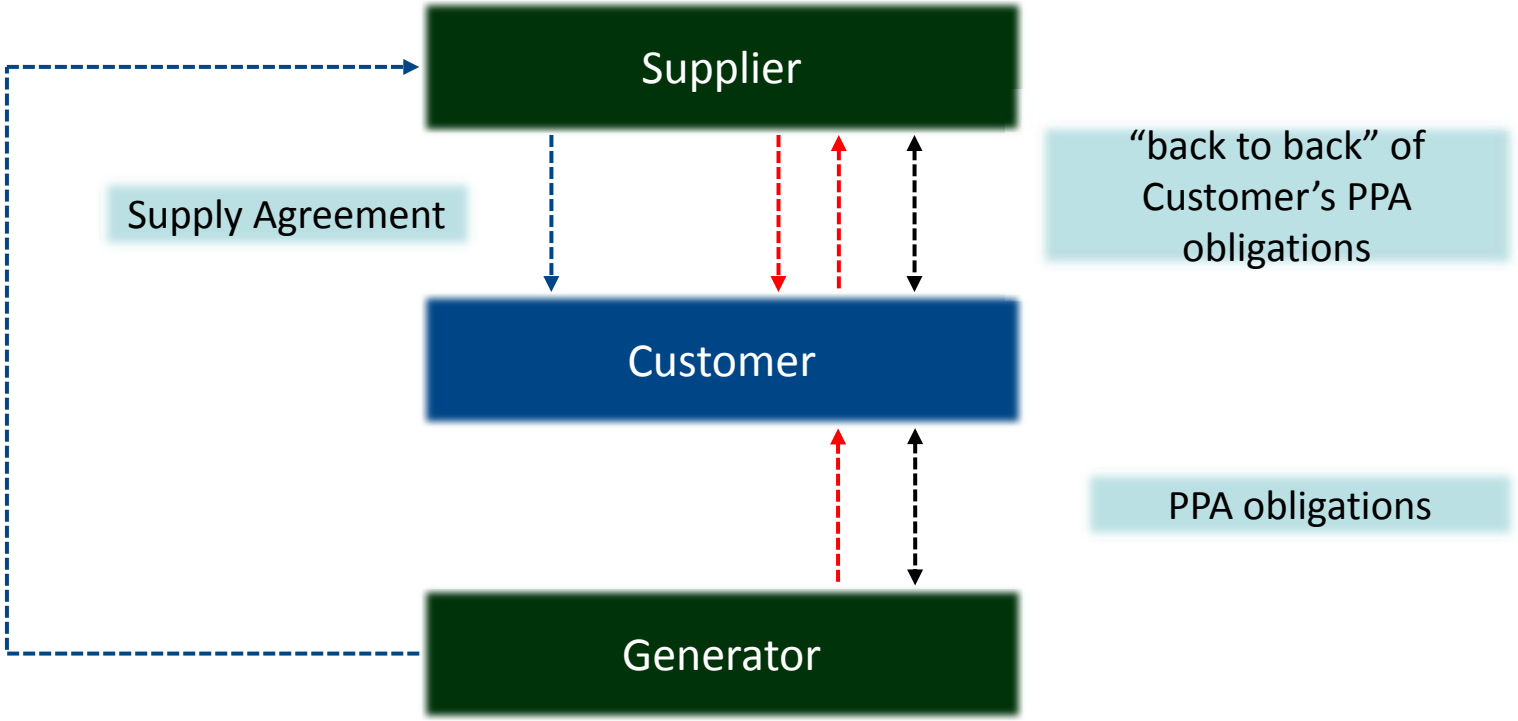
The Contracting Parties..



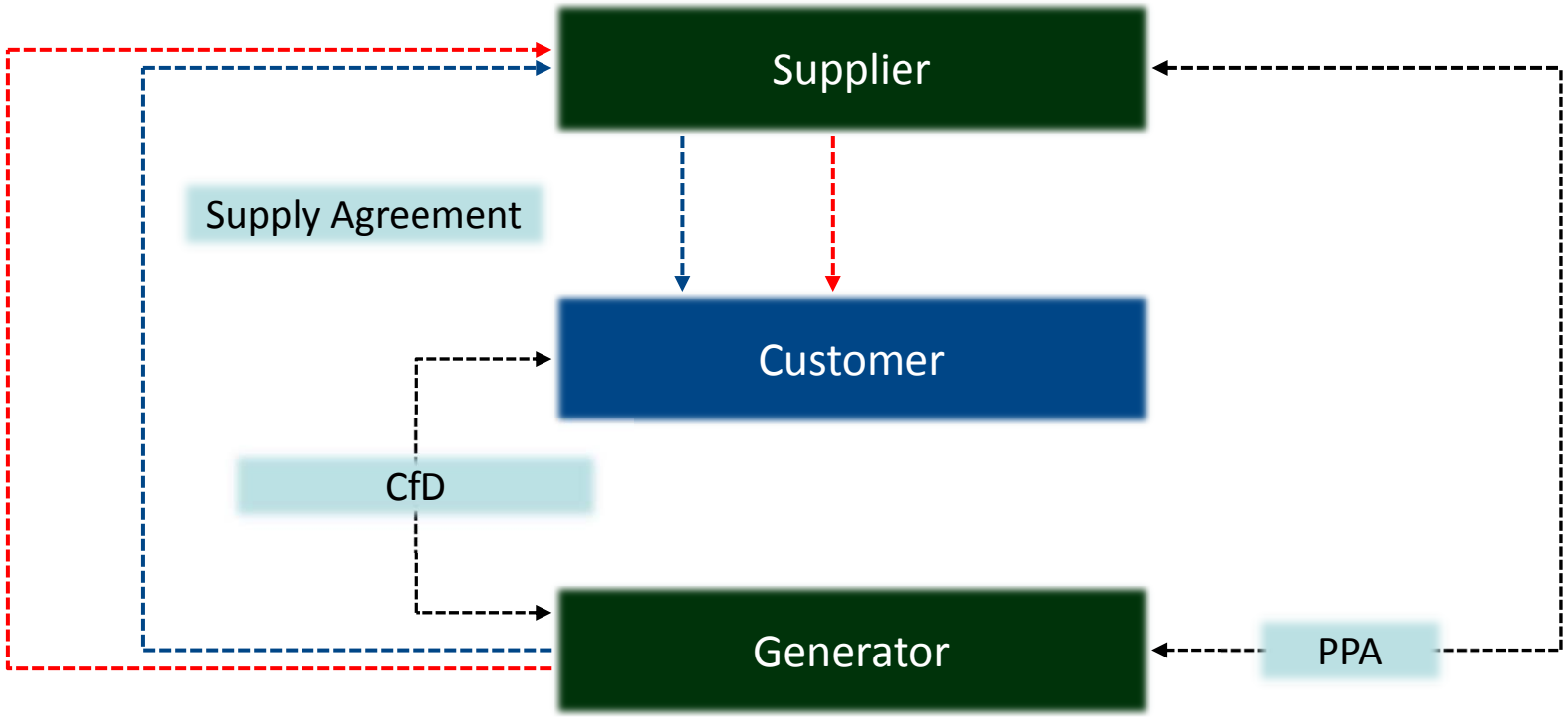
..and attendant stakeholders, decision makers and legal teams..



“Sleeved”/ “Back to Back” PPA Structure



Contract for Difference (CfD) PPA Structure



sse

Contractual route of Generator's electricity output

Supply route of Generator's electricity output

PPA obligations

Key Considerations – Portability

- **Energy supply agreement 2 – 5 years**
- **PPA agreement up to 15 years**

Therefore..

- **Engage with energy supplier prior to PPA project discussion**
- **Ensure flexible supply contract PPA sleeve enabled**
- **Ensure PPA sleeving a mandatory requirement in ITTs**

sse

Key Considerations – Pricing Structure

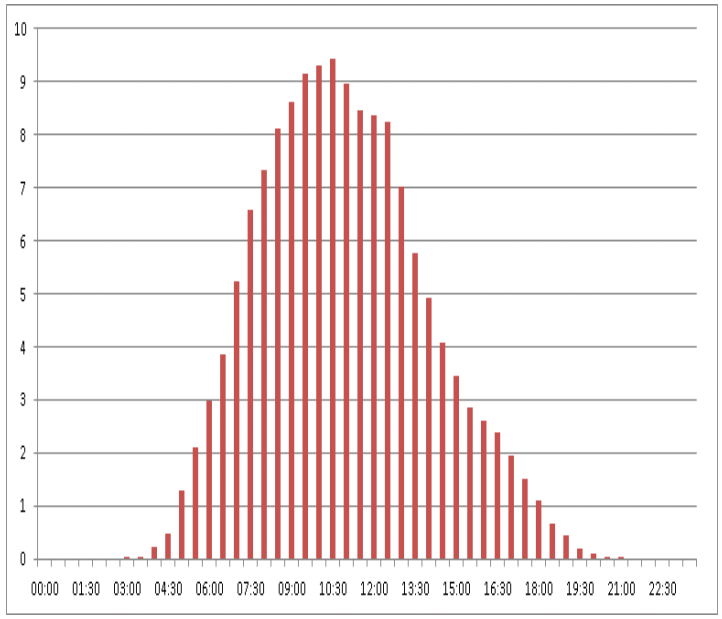
- Long term fixed price contract?
  - Agreed £/MWh with no cost escalation (i.e. decrease over time)
  - Agreed £/MWh linked to annual RPI adjustment
  - Agreed £/MWh with stepped increases during term

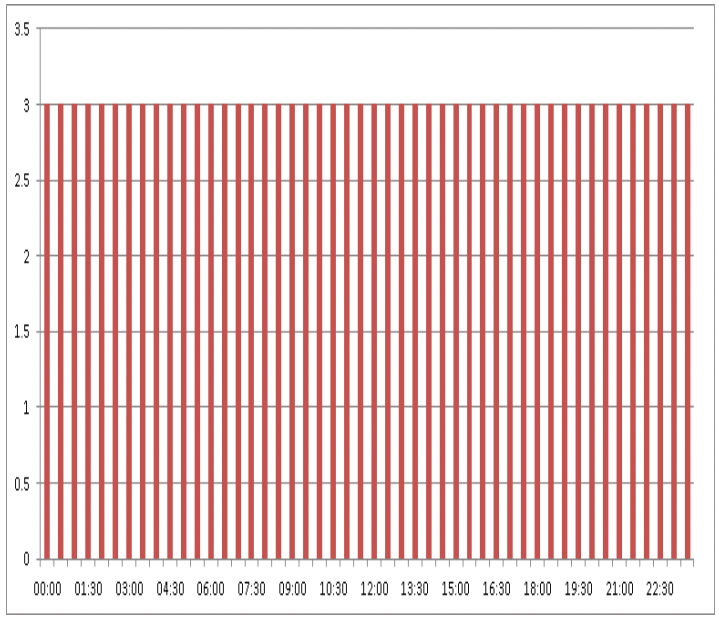
- Variable priced contract?
  - £/MWh linked to agreed published index
  - A floor £/MWh – minimum price payable to generator
  - A cap £/MWh – maximum price payable to generator

sse

Key Considerations – Imbalance

- **Who takes on the imbalance risk?**

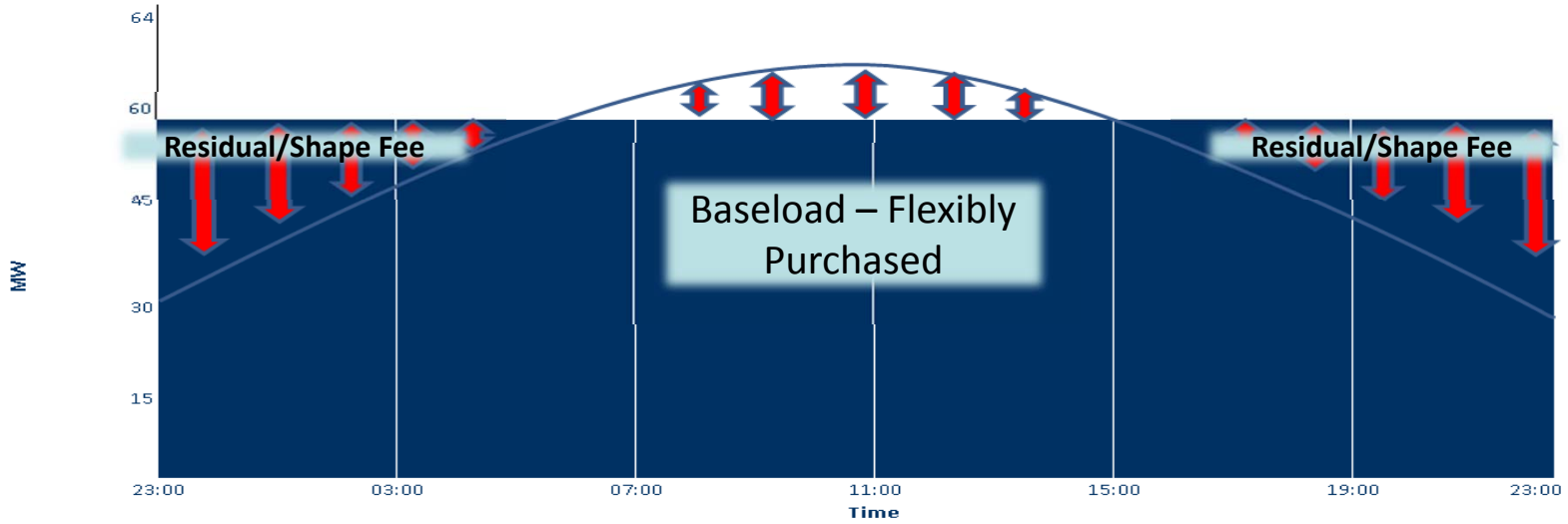




sse

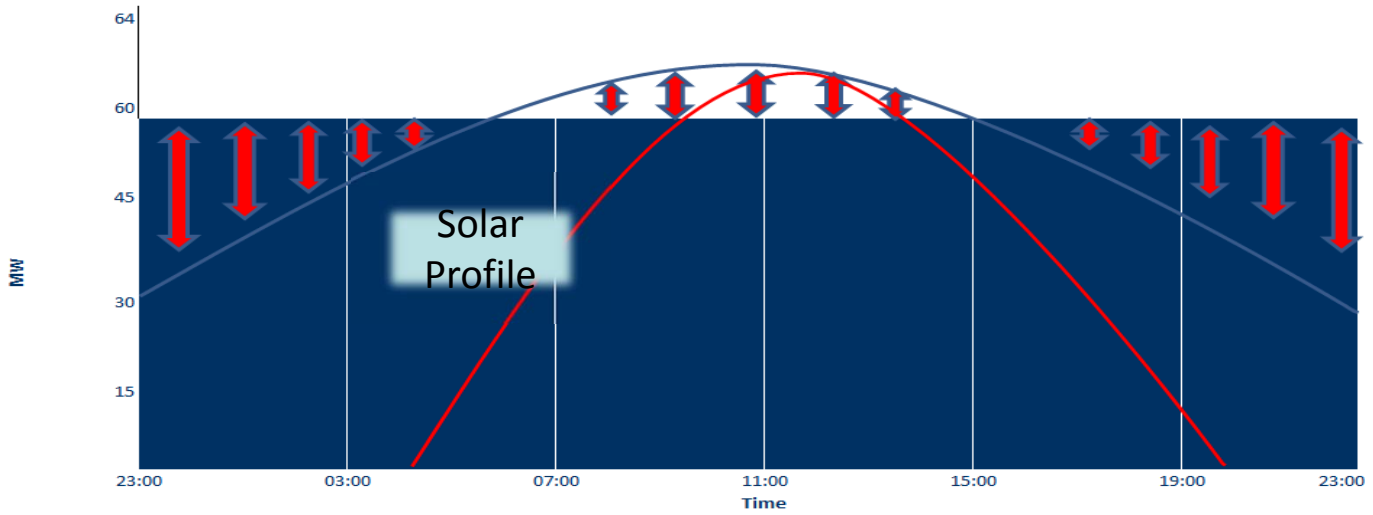
Key Considerations – Project v Profile

- **Does the PPA output complement my demand profile <u>and</u> my supply contract product?**



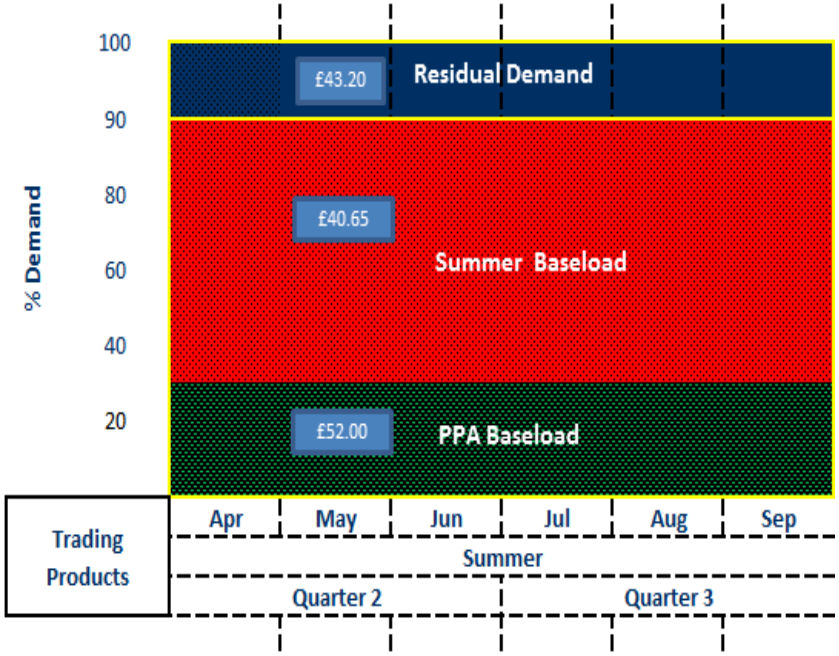
Key Considerations – Project v Profile

- What are the options for matching PPA output with demand?
  - Direct netting
  - Assigning a baseload equivalent clip



sse

Guaranteed Baseload Clip



- PPA output converted into Baseload equivalent clip
- Complements flexible purchasing strategy
- Full supply price transparency

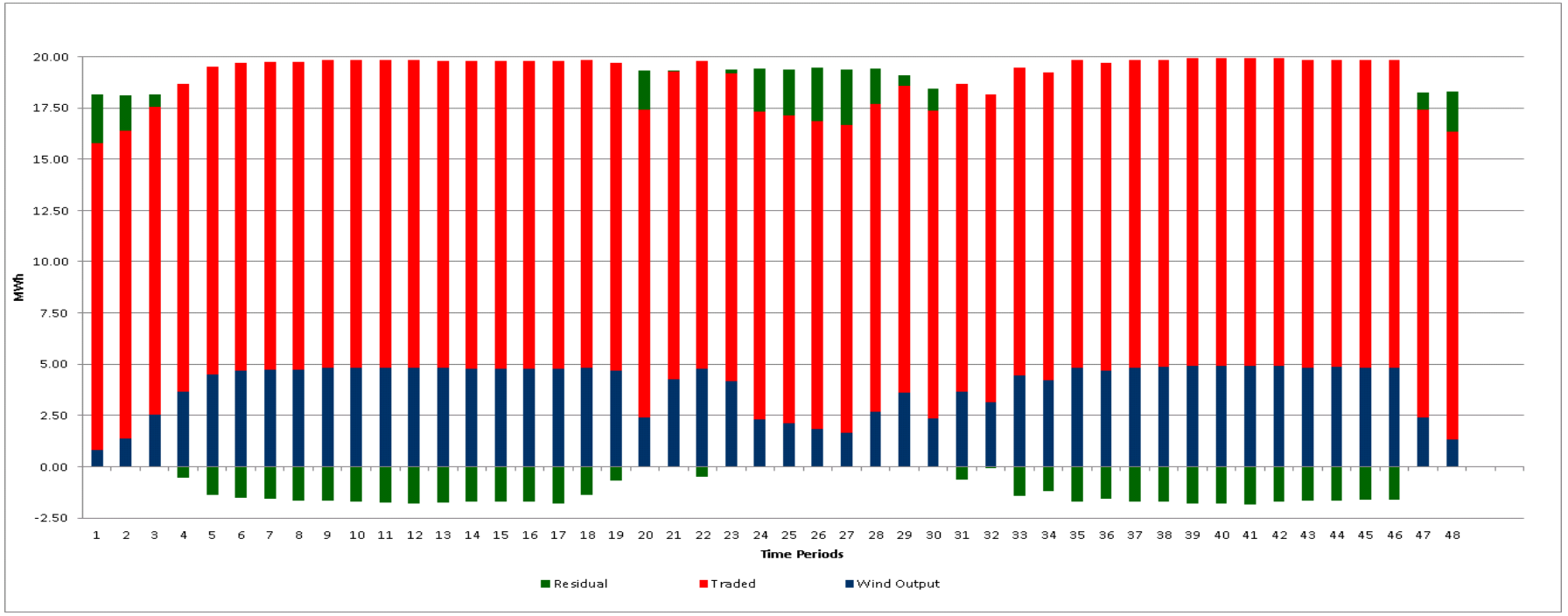
sse

Directly Netted Output

Month	MW Baseload	Tradeable		PPA Sleeve		Residual	
		MW Tradeable	% of Demand Tradeable	MW Wind Forecast Baseload	% of Demand Wind Forecast Baseload	MW Residual	% of Demand Residual
Feb15	37	30	82%	5.4	15%	1.4	4%
Mar15	36	30	83%	5.3	15%	0.7	2%
Apr15	36	30	82%	4.8	13%	1.7	5%
May15	37	31	83%	4.1	11%	2.1	6%
Jun15	37	31	83%	4.0	11%	2.4	6%
Jul15	38	31	82%	4.0	11%	2.9	8%
Aug15	38	31	81%	4.1	11%	3.0	8%
Sep15	38	31	81%	4.7	12%	2.6	7%
Oct15	39	32	82%	5.4	14%	1.7	4%
Nov15	40	33	82%	5.7	14%	1.5	4%
Dec15	41	33	81%	5.6	14%	2.2	5%
Jan16	41	33	81%	6.0	15%	1.9	5%

sse

Half Hourly Netting of Sleeved Output



Supply Price Build Up

Flexible Contract Summary								
	Total Volume MWh	Weighted Overall Wholesale Price £/MWh	Baseload Trade Volume MWh	Baseload Traded Price £/MWh	Wind Output MWh	Wind Price £/MWh	Residual (N2EX) Volume MWh	Residual N2EX Traded Price £/MWh
Feb-15 12mth	335,128	45.97	274,584	46.78	43,746	41.83	16,798	43.58
	Percentage of Loadshape		81.93%		13.05%		5.01%	
	Total Volume MWh	Weighted Overall Wholesale Price £/MWh	Baseload Trade Volume MWh	Baseload Traded Price £/MWh	Wind Output MWh	Wind Price £/MWh	Residual (N2EX) Volume MWh	Residual N2EX Traded Price £/MWh
Feb-2015	24,731	46.48	20,160	46.49	4,149	46.01	421	50.45
	Percentage of Loadshape		81.52%		16.78%		1.70%	
	Total Volume MWh	Weighted Overall Wholesale Price £/MWh	Baseload Trade Volume MWh	Baseload Traded Price £/MWh	Wind Output MWh	Wind Price £/MWh	Residual (N2EX) Volume MWh	Residual N2EX Traded Price £/MWh
Mar-2015	26,794	45.00	22,320	44.83	3,212	44.95	1,263	48.16
	Percentage of Loadshape		83.30%		11.99%		4.71%	
	Total Volume MWh	Weighted Overall Wholesale Price £/MWh	Baseload Trade Volume MWh	Baseload Traded Price £/MWh	Wind Output MWh	Wind Price £/MWh	Residual (N2EX) Volume MWh	Residual N2EX Traded Price £/MWh
Apr-2015	26,254	44.61	21,600	44.88	2,859	42.87	1,795	44.14
	Percentage of Loadshape		82.27%		10.89%		6.84%	
	Total Volume MWh	Weighted Overall Wholesale Price £/MWh	Baseload Trade Volume MWh	Baseload Traded Price £/MWh	Wind Output MWh	Wind Price £/MWh	Residual (N2EX) Volume MWh	Residual N2EX Traded Price £/MWh
May-2015	27,639	42.27	23,064	42.80	3,993	38.78	582	45.28
	Percentage of Loadshape		83.45%		14.45%		2.11%	

scottish renewables

Q & A

Panel Discussion

Anna Kynaston, Scottish Government
James Hinchcliffe, Brookfield Asset Management
Ronan Lambe, Pinsent Masons
Richard Kelly, SSE

scottish renewables

Q & A

Networking Lunch

SR Corporate PPA CPD Seminar

In association with

Pinsent Masons

CPD CERTIFIED
The CPD Certification Service
Collective Mark