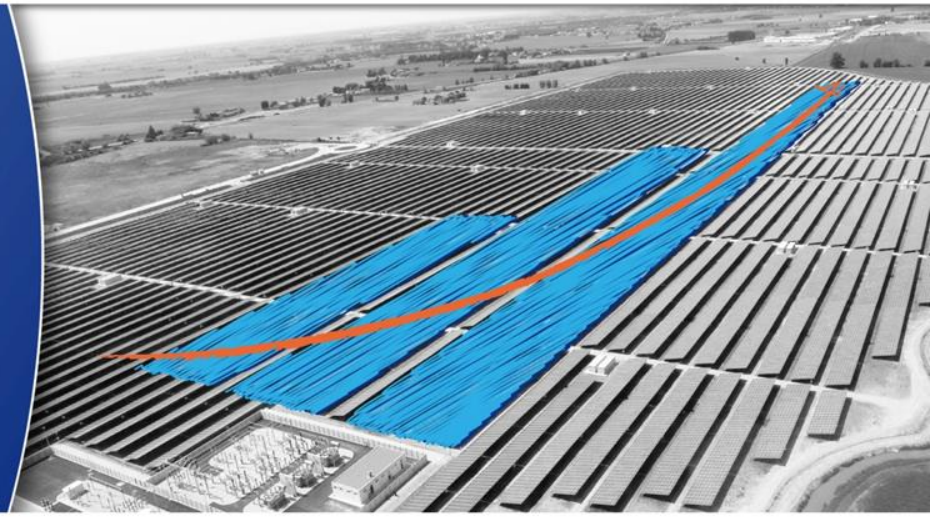
Innovative PPA structures in the UK solar market



David Pickup, Policy Manager, Solar Trade Association

18th October 2016

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646554

Introduction to the STA

Who are we?

- UK solar industry voice
- Established in 1978
- Wide range of member companies
  - Distributors
  - Manufacturers
  - Installers
  - Investors
  - Developers

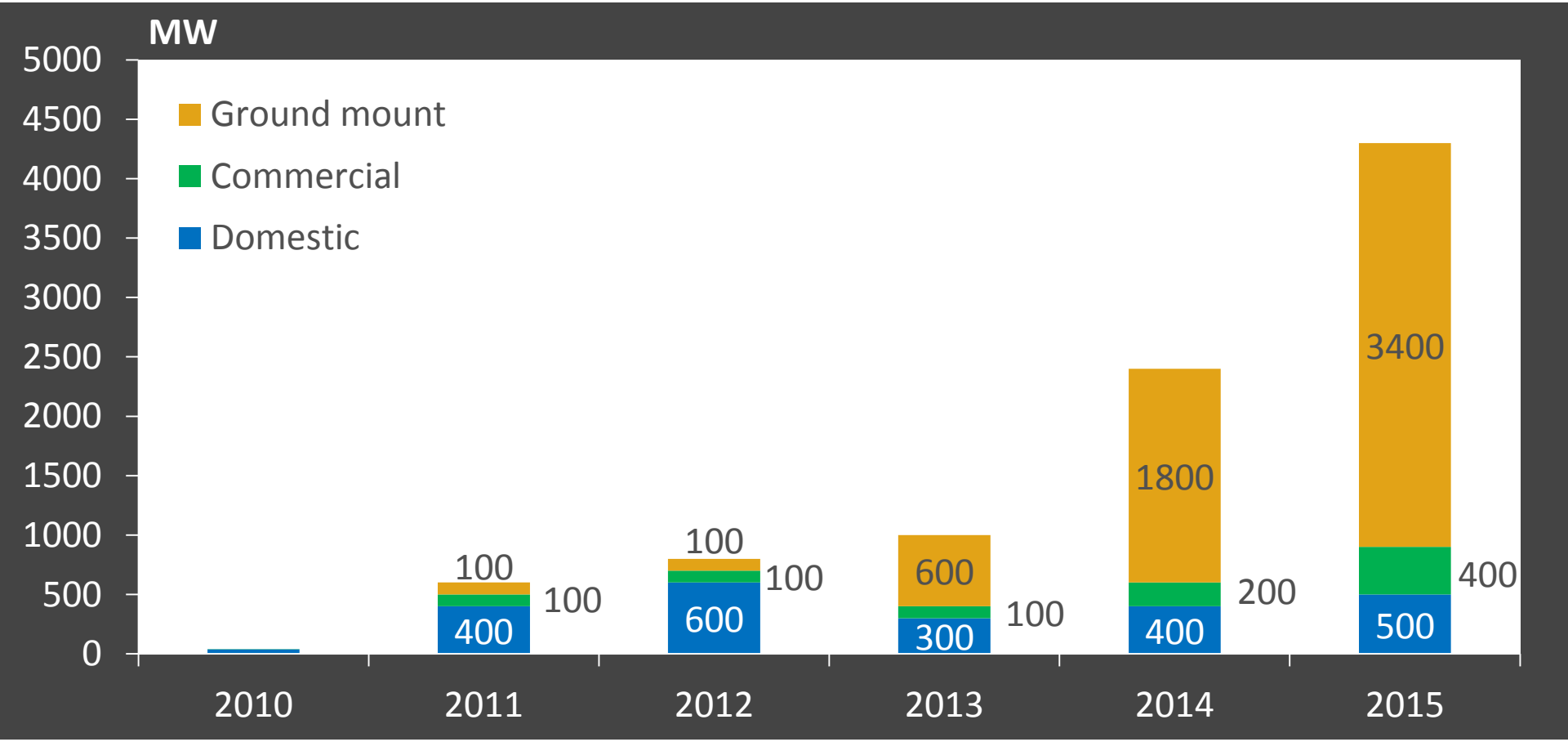
What do we do?

- Focus on policy, lobbying and media.
- Also work on events, marketing and PR.
- Recent work includes STA £1 Plan, business rates, VAT
- The go-to voice of solar for the media.

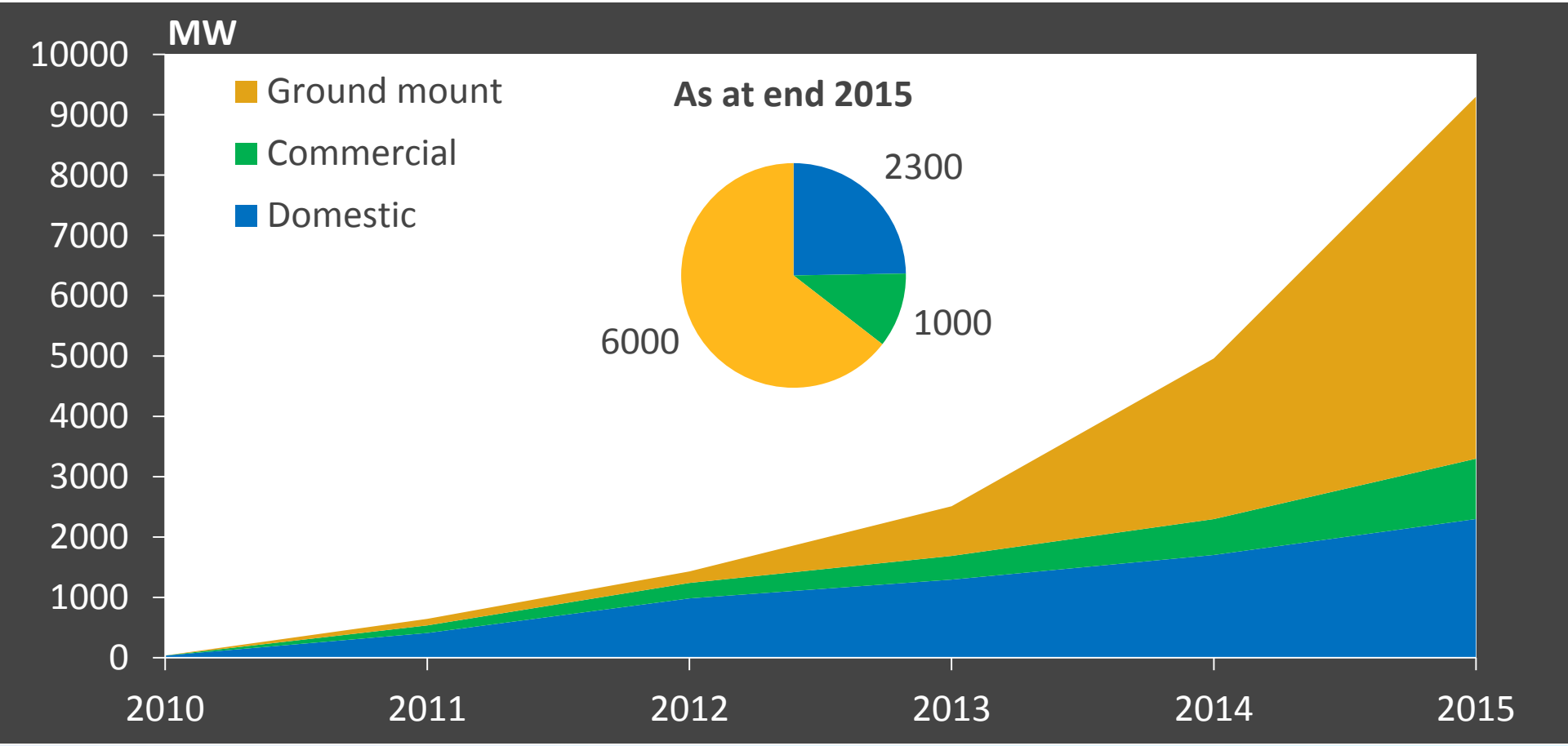
UK solar market - overview

- Growth since 2010, due to supportive policies (10GW in 5 years)
- In particular, significant growth in ground-mount solar farms (6GW since 2013)
- Mix of international players and home-grown UK businesses
- City of London lawyers, investors and other financial services engaged

Yearly UK Solar Deployment



Cumulative UK solar deployment



Current political and policy climate

Lack of clarity in energy policy

- New government ‘elected’
- New department – BEIS
- New ministers
- Brexit

Potentially reasons to be optimistic

- Blank page / review of policies
- Paris Agreement and associated carbon policy
- Growing consensus on solar integration costs
- Falling investment costs and subsidies for solar

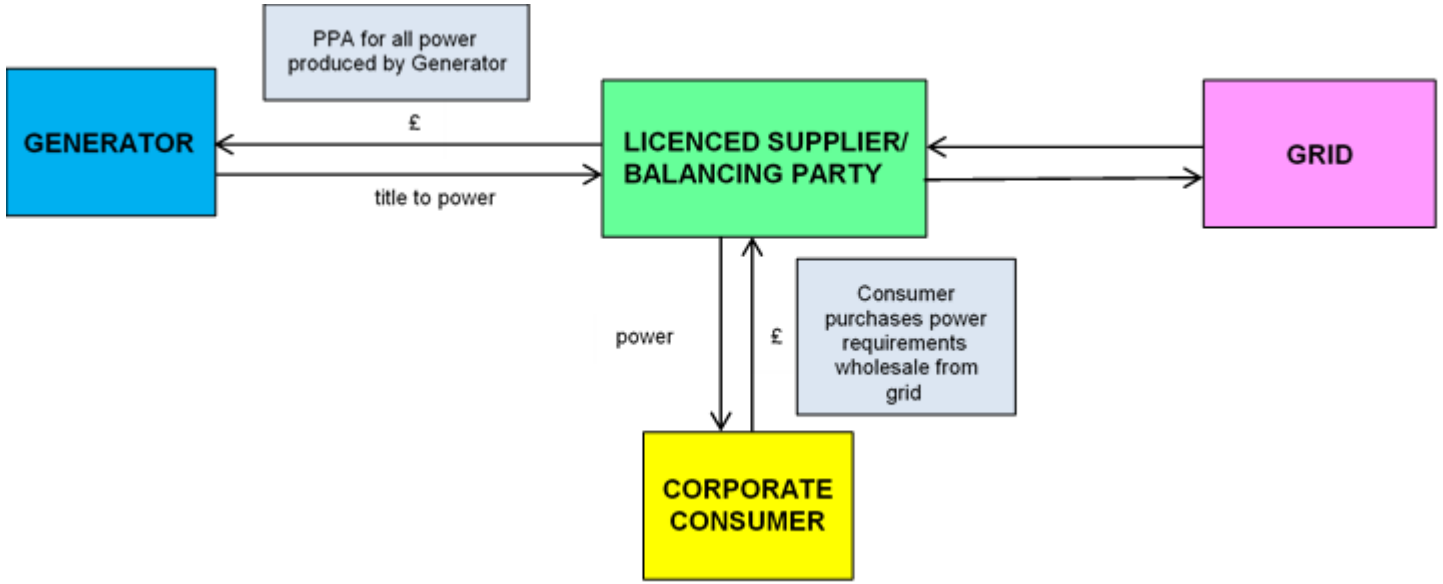
Existing PPA models

Wholesale PPA

Sleeved PPA

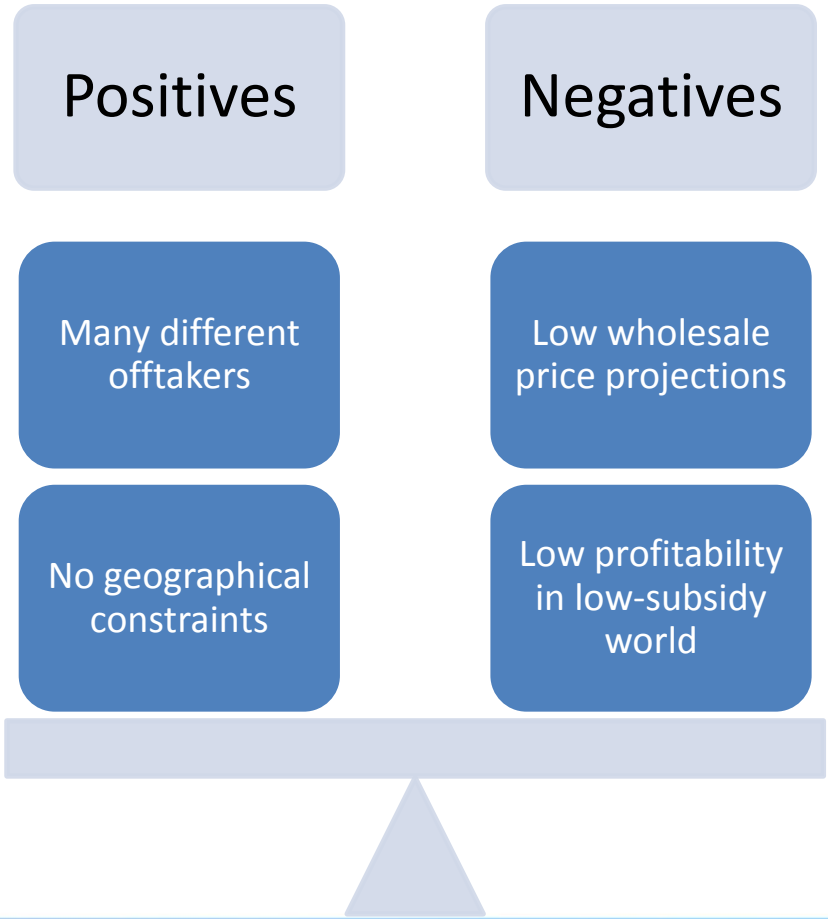
Onsite Private Wire

Wholesale PPA model

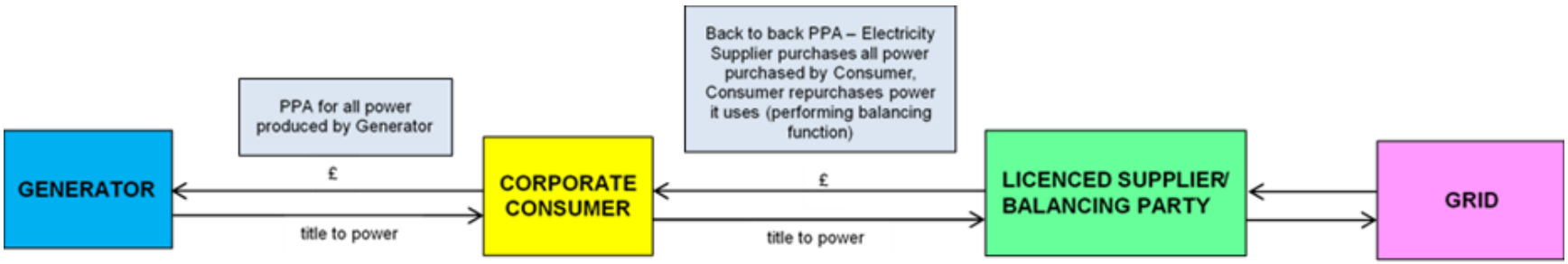


Wholesale PPA model

- Historically most successful model
- Full grid usage and associated costs
- No geographical constraint from colocation
- Understood and proven project setup
- Low barriers for entry
- (Relatively) low value of power so not profitable without subsidies

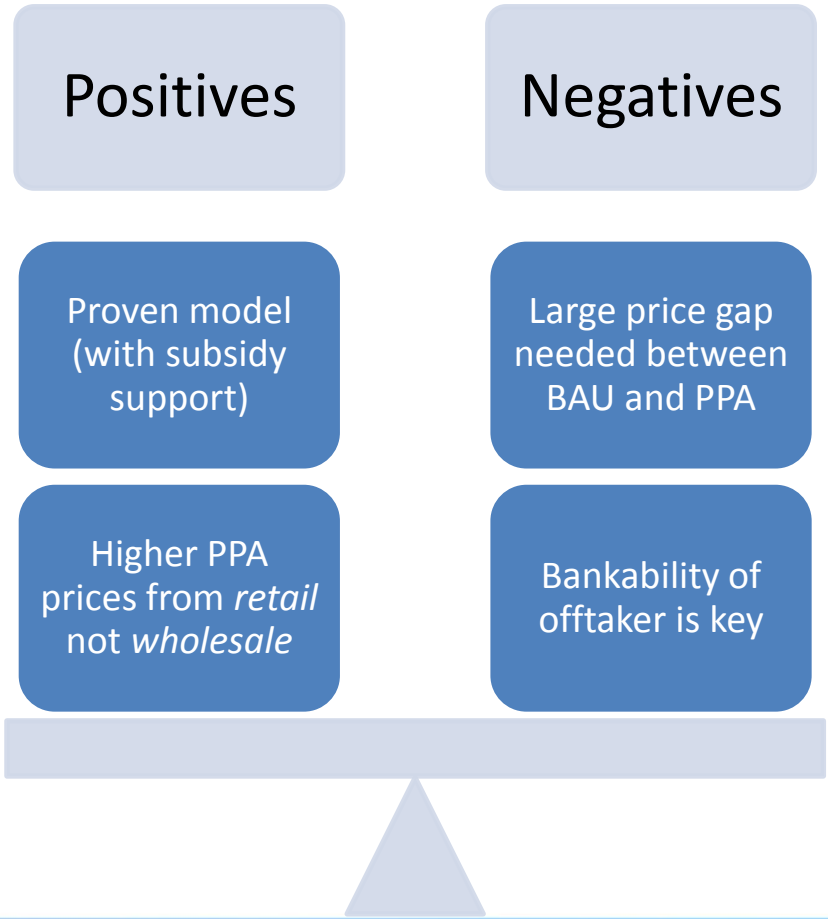


Sleeved PPA model

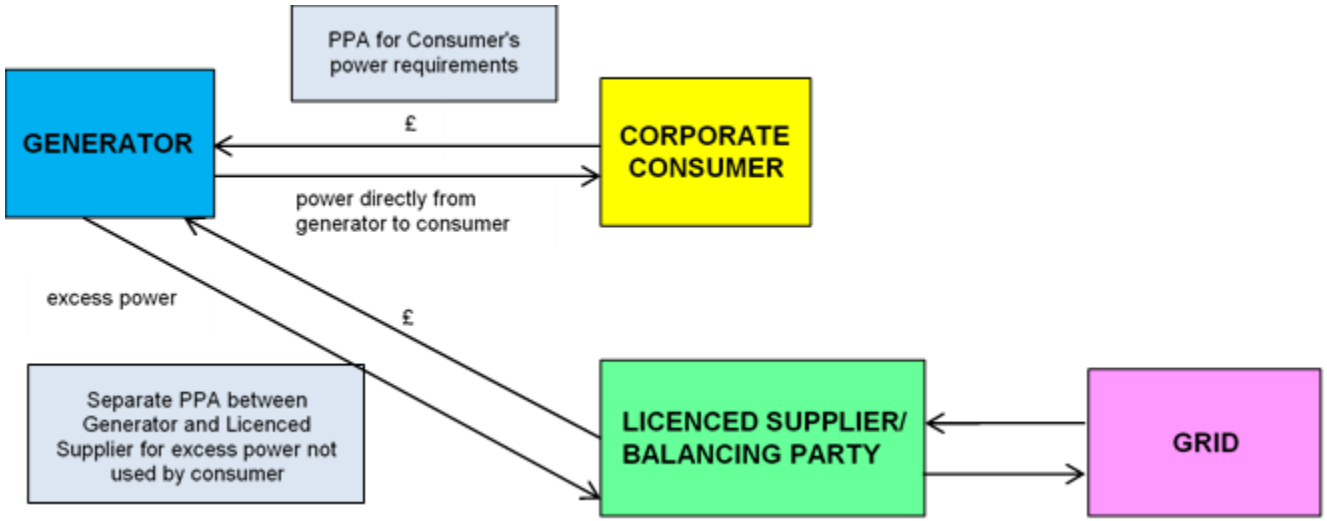


Sleeved PPA model

- Proven in the market
- Enables competition with *retail* not *wholesale* prices
- Full grid usage and associated costs
- No geographical constraint from colocation
- Main issues are bankability and project setup

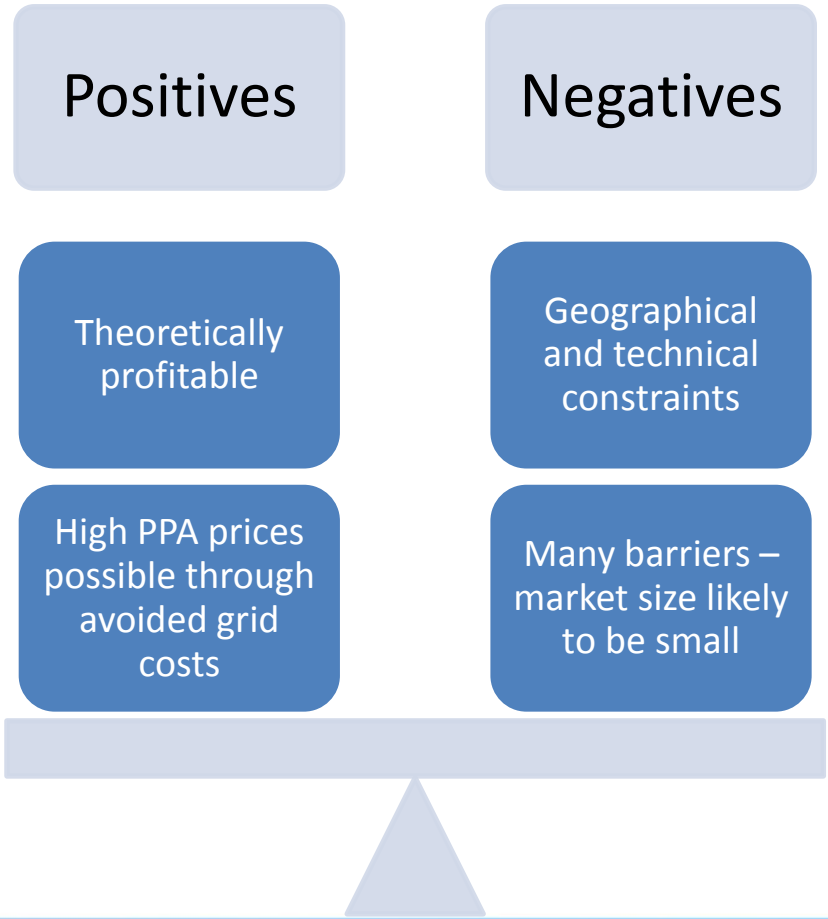


Onsite “private wire” PPA model



Onsite “private wire” PPA model

- Colocation of generation and demand (geographical constraint)
- Avoided grid costs through not using network
- Higher PPA prices possible through *retail* not *wholesale* + grid cost avoidance
- Many barriers:
  - Technical
  - Commercial (bankability)
- Market scale likely to be small



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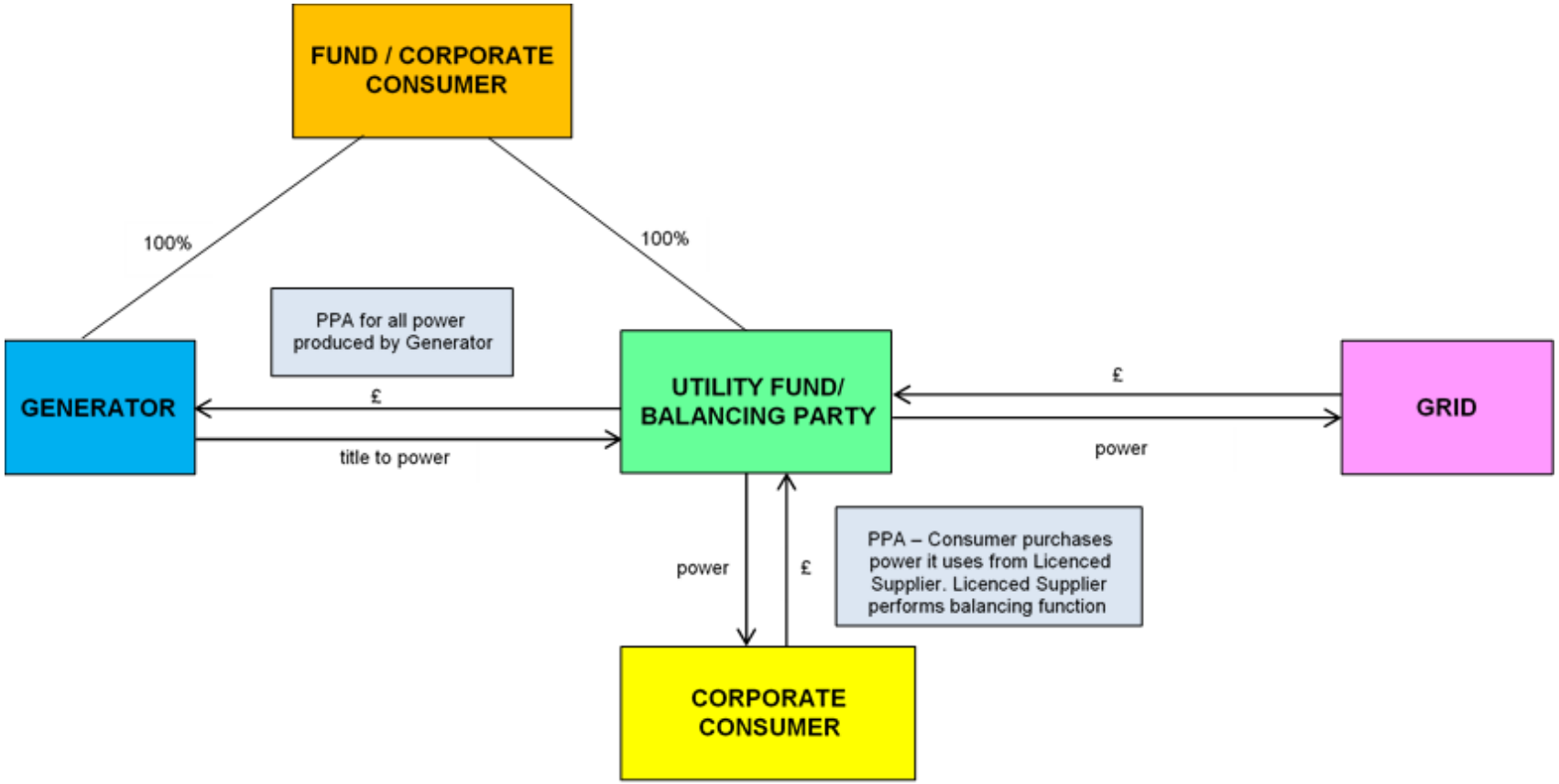
More exotic models

Mini-Utility

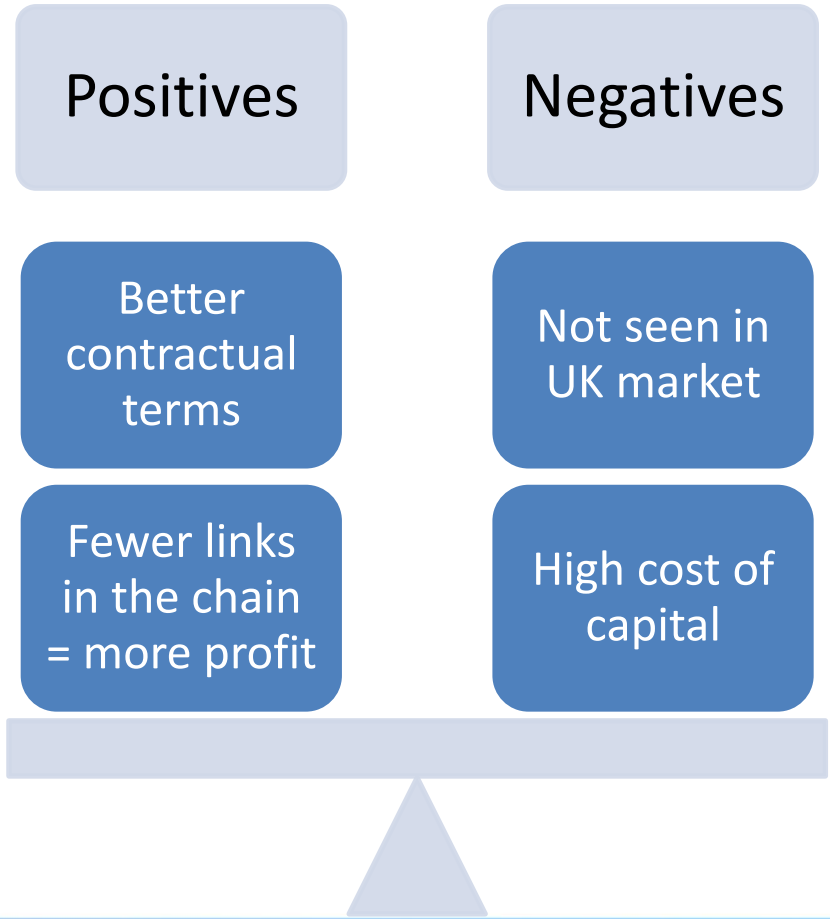
Synthetic PPA

Mini-utility model

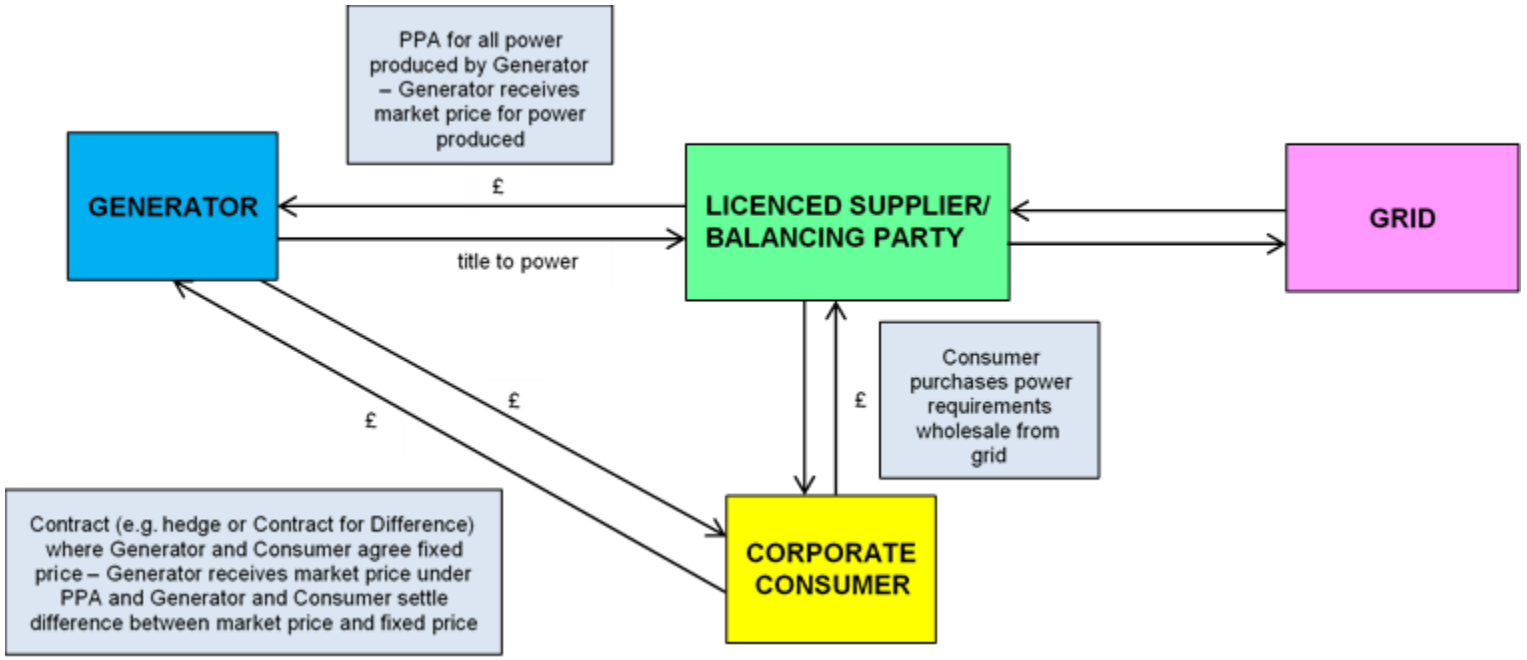


Mini-Utility PPA model

- Consumer or generator sets up own supplier
- Can set up desired long-term contracts
- Fewer links in the chain – in theory more profitable
- Cost of capital may be a concern as a new structure
- Not used yet in the UK

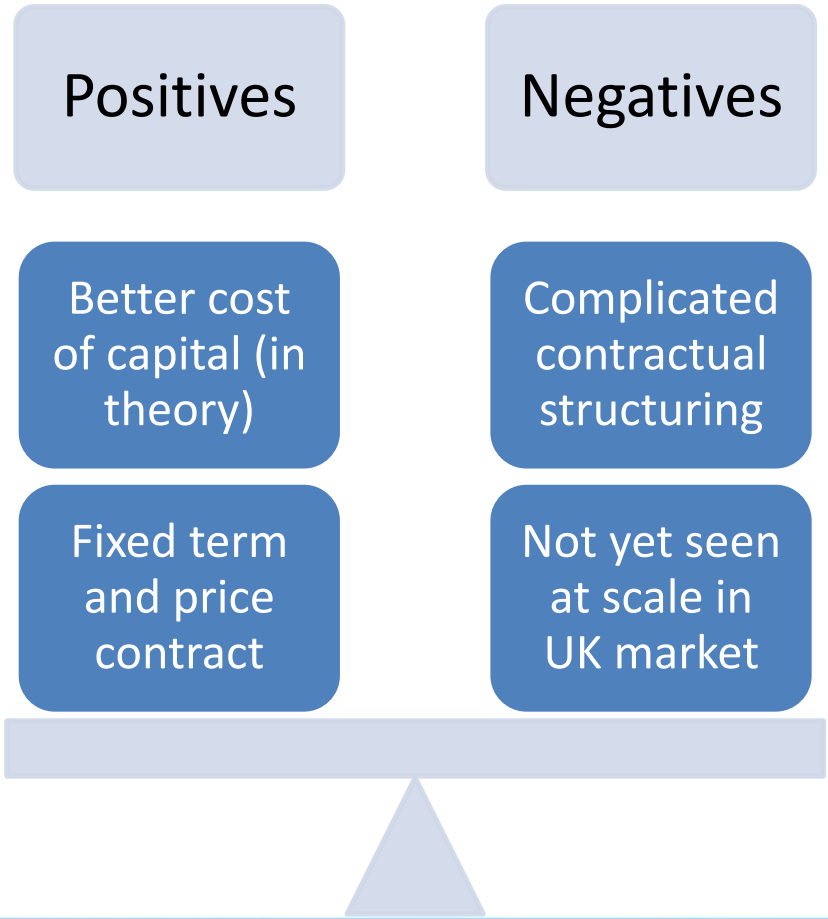


Synthetic PPA



Synthetic PPA model

- Common in USA (e.g. Google)
- Similar to Wholesale PPA, with additional contractual relationship between generator and consumer - long term fixed price contract
- Fixed price for power attractive to generator (similar to a private CfD)
- Not used yet at scale in the UK



Key factors + how to improve them

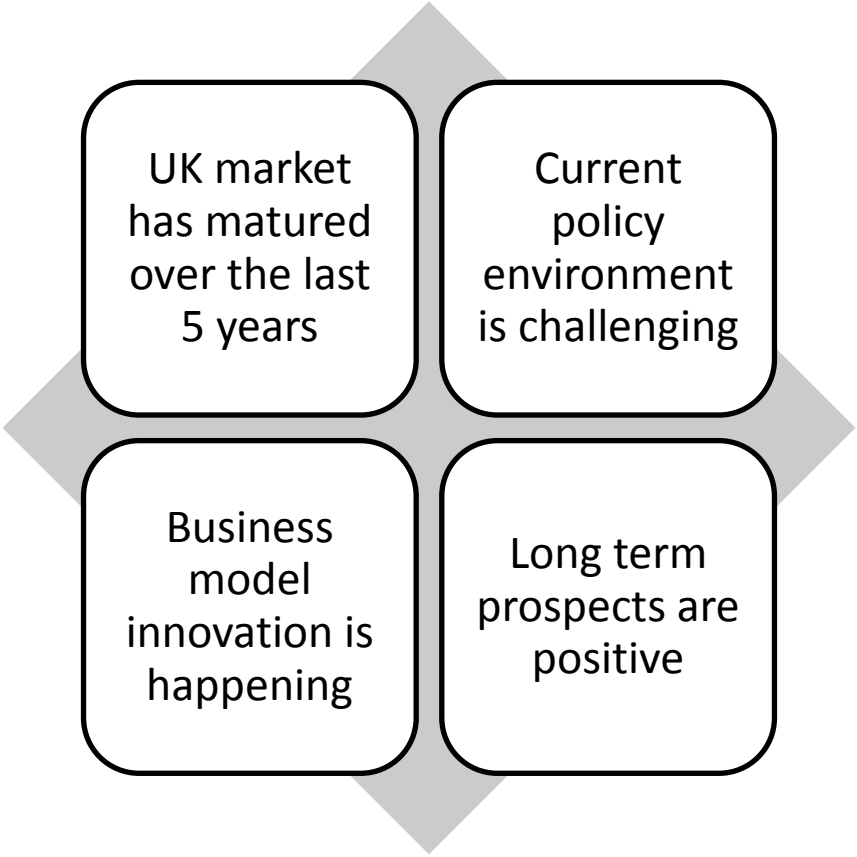
Initial research

- Projects are difficult at the moment without subsidy
- Policy uncertainty a key risk

Positive factors

Reducing cost of capital	Reducing costs	Increasing revenue
• Alternative funding sources (e.g. crowdfunding) • Local authority or other public funding	• Minimum Import Price • Cost reduction through scale • O+M and asset management best practice	• Additional grid services from solar • PPAs higher value through linking with consumers directly (retail vs wholesale price)

Summary


UK market has matured over the last 5 years
Current policy environment is challenging
Business model innovation is happening
Long term prospects are positive

Appendix – information slides

- For extra information and context purposes
- Not used in presentation

New policy environment – 2015/16

Policy	Date	Domestic	Commercial	Large scale
Renewables Obligation (>5MW)	March 2015		No further solar projects eligible	No further solar projects eligible
Green Deal loan scheme	July 2015	"pay as you save" financing removed		
Zero carbon homes policy	July 2015	2016 carbon target for new build scrapped		
Levy Exemption Certificates	August 2015		LECs removed for existing + new plants	LECs removed for existing + new plants
Feed in Tariff cuts (<5MW)	January 2016	~60% cut in tariff	~70% cut in tariff	~70% cut in tariff
Renewables Obligation (<5MW)	March 2016		No further solar projects eligible	No further solar projects eligible
Contracts for Difference	2016			No further CfD rounds likely

Timeline of UK solar policy

	2010	2011	2012	2013	2014	2015	2016
Feed in Tariff	Policy introduced		March tariffs cut by ~50%				January tariffs cut by ~60%
Renewables Obligation	(Introduced in 2001)		Banding review, solar level for 2013-2017 reduced			March Eligibility removed for solar >5MW	March Eligibility removed for solar <5MW
Contracts for Difference				Policy developed, yearly auctions proposed	October First auction round	February Auction results, 5 winning solar projects	Uncertainty over future auction rounds for solar

Policy Advisory paper

- Taking the insights from our implementation guidelines

- Clear policy recommendations for government to foster a successful low-subsidy environment for solar

- Likely to focus on:
  - Policy certainty
  - Breaking down barriers
  - Grid access and charging
  - Synergies with other technologies e.g. storage

- Timeline – end of the year

Upcoming Events

- Renewables and Storage Masterclass: Large Scale, 31st Oct
- Raising Standards In Solar PV Operations & Maintenance, 6th Dec

Contact details:

David Pickup
Policy Manager
Solar Trade Association
0203 637 2948
dpickup@solar-trade.org.uk