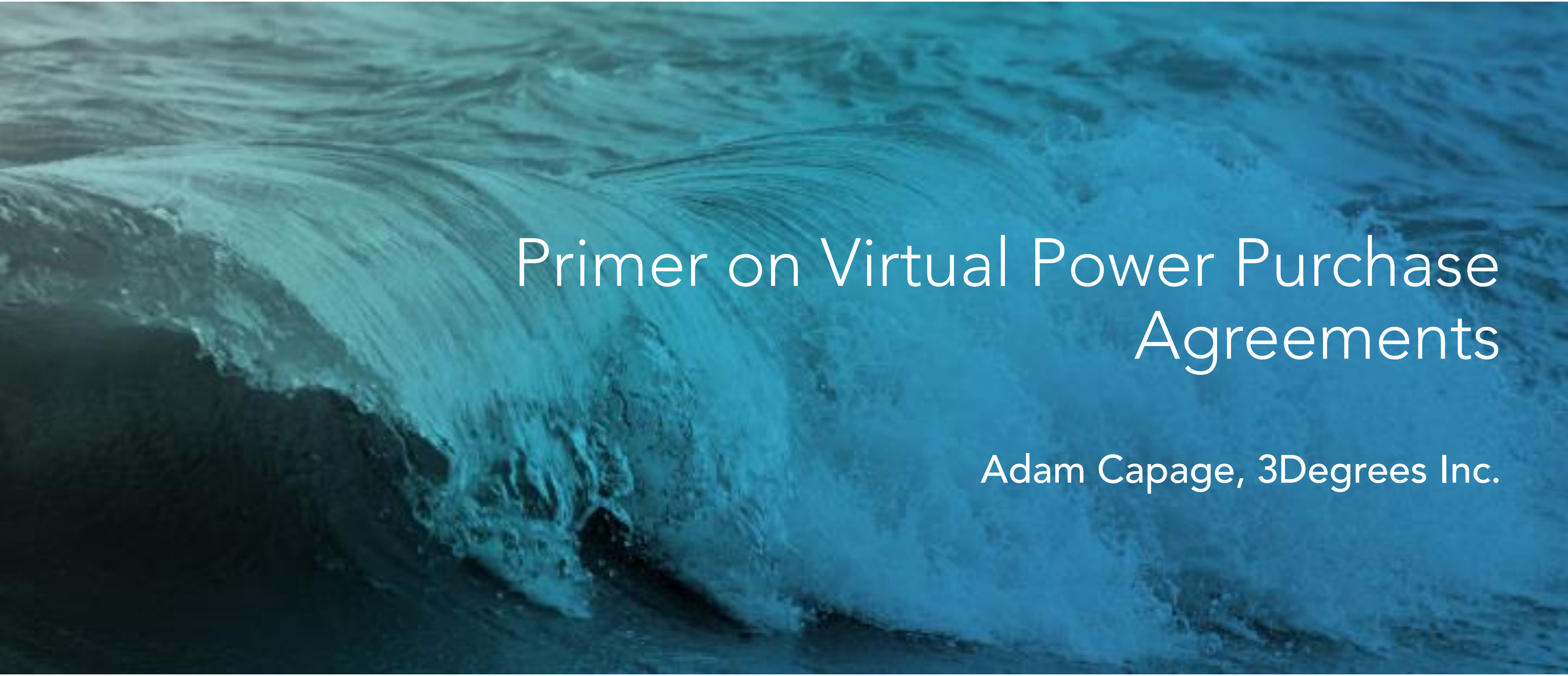

Primer on Virtual Power Purchase Agreements

Adam Capage, 3Degrees Inc.

Ocean Renewable Energy Conference XI
September 21-22, 2016

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3Degrees

Corporate Procurement Activity

- Tech companies are leading the way due to high load at their data centers and ability to locate in markets with competitive markets (typically physical PPAs)
- Many "non-tech" companies are moving into direct procurement including Kaiser Permanente to General Motors to Ikea (typically VPPAs)
- The larger the company, the more likely they are to try the direct procurement route

REBA

28 Developers Have Signed Deals

Sorted by Capacity (MW)

BUSINESS RENEWABLES CENTER

Developer	Capacity (MW)	# of Deals	# of Corporates	Developer	Capacity (MW)	# of Deals	# of Corporates
NextEra Energy Resources	691	8	5	Pattern Energy Group	150	1	1
EDF Renewable Energy	587	6	6	Enel Green Power	134	2	2
Invenergy	570	4	4	Pioneer Green Energy	116	1	1
MidAmerican Energy	545	2	2	SunPower	105	3	2
Apex Clean Energy	336	4	3	Alterra Power	100	1	1
RES Americas	310	2	2	Tradewind Energy	100	1	1
First Solar	295	3	2	Community Energy	80	1	1
Chermac Energy	239	1	1	Cypress Creek Renewables	61	1	1
Duke Energy Renewables	233	3	3	Spartan Renewable Energy	53	1	1
SunEdison	217	2	2	Constellation	42	1	1
EDP Renewables	215	4	4	Akuo Energy	40	1	1
Iberdrola Renewables	208	1	1	Enbridge	40	1	1
BNB Renewable Energy	200	1	1	New Jersey Resources	27	1	1
Bordas Wind Energy	200	1	1	NRG	20	1	1

www.REbuyers.org

For more information, please visit http://www.businessrenewables.org/ or contact BRC@RMI.org

#GoCleanRE

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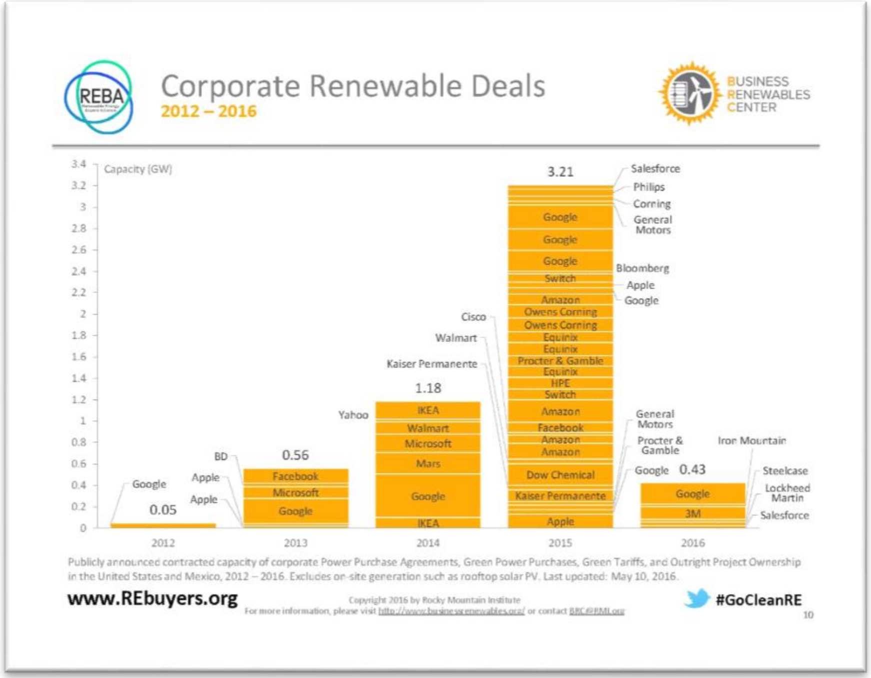
C&I Renewable Energy Market is Growing

Key Drivers

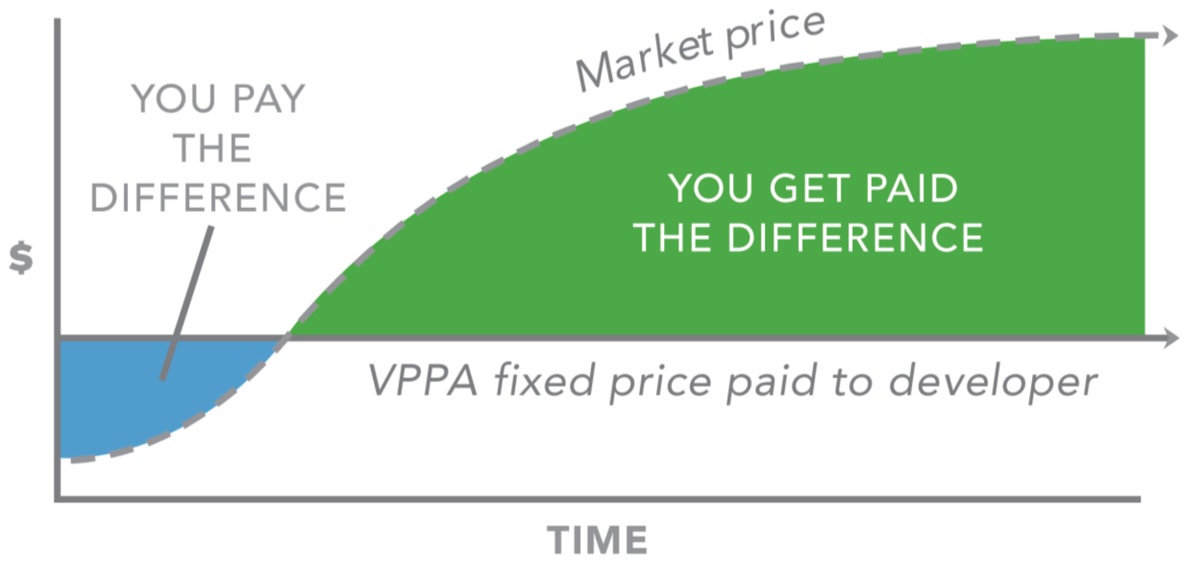
- Competitive, investor, and shareholder pressure to reduce env/carbon footprint
- Corporate mandate to address climate/GHG
- Save money
- Hedge against volatile and uncertain electricity prices
- Brand strength
- Sustainable supply chain
- Regulatory uncertainty (e.g. price on carbon)
- Tax incentives (if tax investor/owner)



Virtual PPA (VPPA): How It Works

1. Customers continues to receive/pay for existing electricity service from utility or current retail energy provider
2. Customer enters a VPPA with developer to purchase power and RECs generated by a renewable energy project (does not take title to power)
3. Developer delivers and sells energy generated by the project into the market
4. Developer delivers RECs generated by the project to customer so they receive environmental recognition.
5. If market price for energy is *lower* than VPPA, the customer pays the developer the difference between the VPPA price and the energy market; if the market price for energy is *higher* than the VPPA, the developer pays the customer the difference.

VPPA: Financial Settlement



VPPA: Key Considerations for C&I Segment

- *Contract Structuring*: seeking shorter term contracts ~12-15 years at longest
- *Location*: VPPAs will only work in organized markets (e.g. ISOs) where the ISO takes the power at liquid point/price.
- *Price*: contract price needs to approximate forward price curve (e.g. $20/mwh in ERCOT); all about getting the RECs along with the energy hedge at minimum of break even
- *Additionality*: Most corporates want to be responsible for new projects coming onto the market but many are not willing to take market risk