# OFFTAKE STRATEGIES FOR RENEWABLE POWER PROJECTS

June 2017

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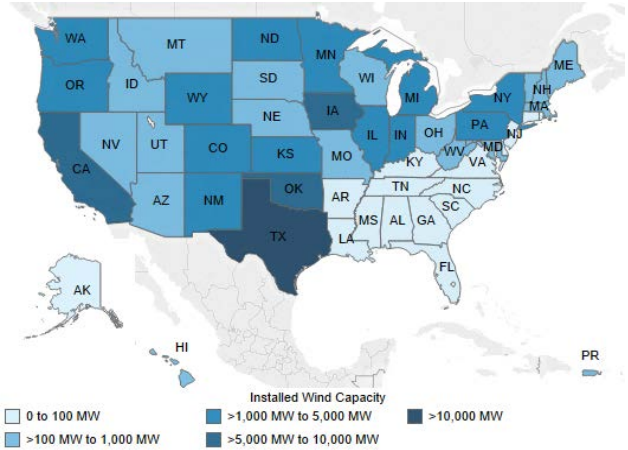
# TOPICS OF DISCUSSION

- Market Dynamics and Participants
- Key Considerations in Offtake Structures
- Offtake Structures

# TEXAS INSTALLED CAPACITY – WIND & SOLAR

- Wind
  - Far more installed wind capacity than any other state:
  - 1st: Texas: 17,911 MW
  - 2nd: Iowa: 6,365 MW
  - 3rd: California: 5,662 MW
- Solar
  - Ranked 9th for solar installed capacity at end of 2015
  - 4,612 MW of new solar capacity expected over the next 5 years




Source: *American Wind Energy Association*, www.awea.org

Source: *Solar Energy Industries Association*, www.seia.org



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# OFFTAKE STRATEGY IS CRITICAL FOR PROJECT FINANCING

- Project Finance
  - Financing based on the expected cash flow of the project, rather than the balance sheet of its sponsors
- Offtake agreement is THE revenue agreement for a project
  - Offtake agreement is the agreement to “sell” power from the project
  - Terms of the agreement affect its “financeability”
  - Identity and credit quality of the offtaker is a crucial consideration for potential lenders

# TRADITIONAL OFFTAKER: UTILITIES SERVING RETAIL LOAD

- Driver: Compliance
  - Satisfy applicable state renewable portfolio standards (RPS)
- In states without retail competition:
  - Integrated utilities
- In states with retail competition:
  - Integrated utilities (portions of state not open to competition)
  - Large retail electric providers

# OTHER COMMON OFFTAKER: POWER MARKETERS

- Driver: Profit
  - Make money from the purchase and sale of power
- Bank affiliated trading shops
  - Bank of America Merrill Lynch
  - Citigroup Energy
  - Morgan Stanley Commodities Group

# NEW MARKET ENTRANT: RISK SOLUTION PROVIDERS

- Driver: Profit
  - Profit from shifting of unique or complex risks
- Reinsurers and risk transfer intermediaries
  - Nephila Advisors
  - Allianz Risk Transfer
- Others may enter the market over time
  - Likely entities with significant experience in weather derivatives

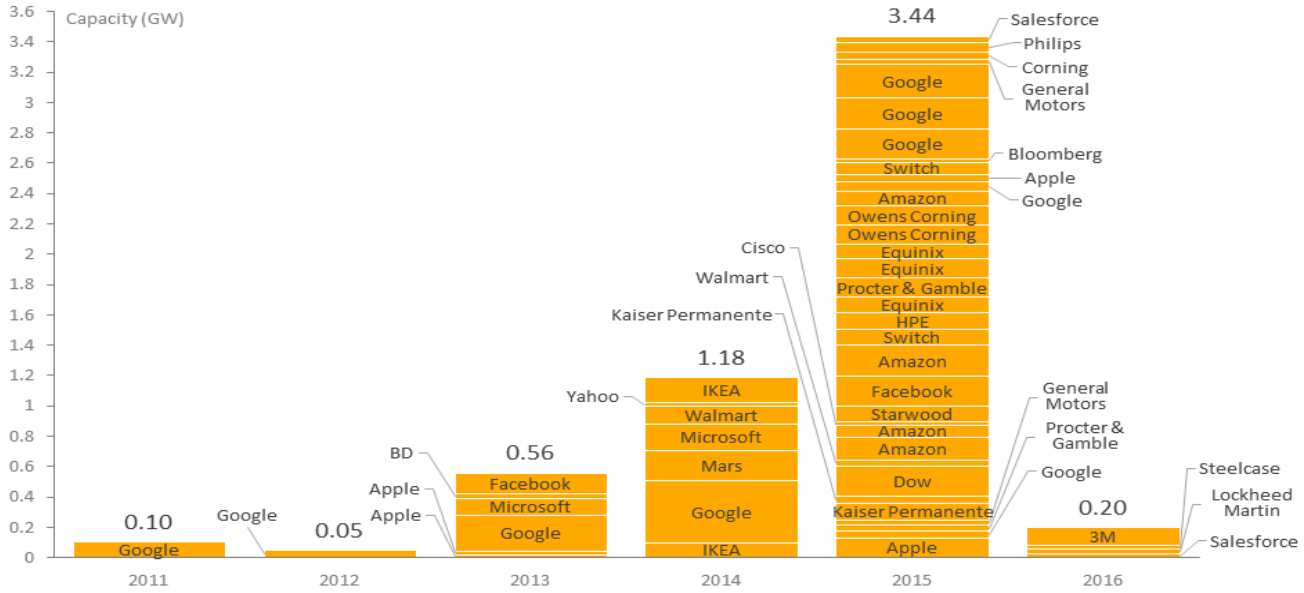

# NEW MARKET ENTRANT: CORPORATE PURCHASERS

- Driver: Sustainability
  - Demonstrate commitment to the environment
  - RE100: global initiative of influential businesses committed to go “100% renewable”
    - includes Microsoft, Google, Starbucks, Nike, Nestle, Goldman Sachs, Bloomberg, Credit Agricole, UBS
- Key Goals:
  - Power operations with renewable energy
    - FTC “Green Guides” govern marketing claims
  - Create “Additionality”

BUSINESS RENEWABLES CENTER

# Corporate Renewable Deals

## 2011 – 2016




Publicly announced contracted capacity of corporate Power Purchase Agreements, Green Power Purchases, Green Tariffs, and Outright Project Ownership in the United States and Mexico, 2011 – 2016. Excludes on-site generation such as rooftop solar PV. Last updated: February 11, 2016.



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



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# CORPORATE PURCHASERS IN TEXAS










EQUINIX





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# DIFFERENT MARKET PARTICIPANTS PREFER DIFFERENT OFFTAKE STRUCTURES

- Traditional Power Purchase Agreements
  - Utilities serving retail load
  - Corporates that can sell power at wholesale
- Synthetic Power Purchase Agreements
  - Corporate purchasers that are unable to make wholesale sales
- Other Hedge Structures
  - Power marketers (bank affiliated) – “Wind Hedges”
  - Risk solution providers – “Proxy Revenue Swaps”
- All reflect “wholesale” strategies
  - Retail end users generally can’t purchase power directly from a project

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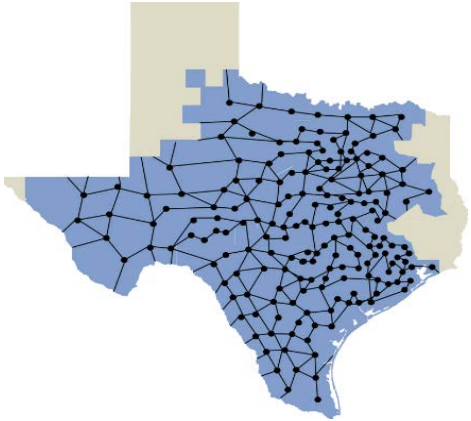
# KEY CONSIDERATIONS IN OFFTAKE STRUCTURES

- Delivery Point (Basis Risk)
- Volume (Volume Risk)
- Environmental Attributes
- Term
- Regulatory Implications

# DELIVERY POINT: LOCATION IMPACTS CASH FLOW

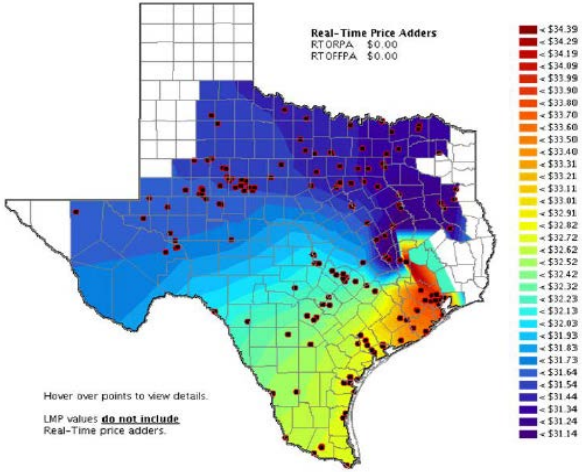
- Nodal market
  - Each power delivery/receipt location has an associated floating price
- Credited by the ISO for power delivered to the grid
  - Floating price at delivery point
- Charged by the ISO for power taken off the grid
  - Floating price at receipt point



Source: *Electric Reliability Council of Texas, Inc.*, www.ercot.com

# DELIVERY POINT: “BASIS RISK” ALWAYS EXISTS

- If the delivery point is the project’s node:
  - No basis risk for the project
  - Offtaker has basis risk
- If the delivery point is remote from the project’s node:
  - Offtaker basis risk likely reduced
  - Project has basis risk




Source: *Electric Reliability Council of Texas, Inc.*, www.ercot.com



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# VOLUME: INHERENT RISK OF INTERMITTENT GENERATION

- Wind and solar are both intermittent resources
  - Generation profile influenced by environmental conditions
  - Volume risk exists when generation does not equal delivery obligation
- If required delivery volume follows generation:
  - No volume risk for the project
  - Variable volume may or may not fit in the offtaker's portfolio
  - If required delivery volume is fixed:
  - Project has volume risk
  - Fixed volume may or may not match offtaker's requirements

# DELIVERY POINT & VOLUME: OVERLAY OF PREFERENCES

- Project prefers:
  - Delivery point at the project
  - “as-produced” (i.e., not fixed) volume
- Offtaker prefers:
  - Delivery point away from project at a location where price matches its load or other delivery obligations
  - Fixed or variable volume, depending on type of offtaker

# ENVIRONMENTAL ATTRIBUTES: MARKET SPECIFIC

- Environmental attributes:
  - Benefits associated with the generation of green energy (e.g., RECs)
- Offtake agreement considerations:
  - Are they included?
  - Do they have to be from the project?
  - Do they have to meet requirements of a particular program?

# TERM: BALANCING NEEDS OF OFFTAKER AND PROJECT

- Financing parties (debt and equity) will require a minimum term
  - Ensure that debt can be repaid and equity returns met
  - Tax equity investors generally require minimum term of 12-13 years
  - Traditional offtake agreement is 20 years
- Offtakers are concerned about long-term requirements
  - Lack of certainty regarding long term load obligations and power prices
  - Long term offtake agreements difficult for purchasers that are not able to pass costs through to customers

# REGULATORY: FERC AND CFTC REQUIREMENTS

- Physically settled transactions:
  - FERC: Market based rate authority
  - State Public Utility Commissions
  - CFTC (possibly)
- Financially settled transactions:
  - CFTC: Compliance with requirements applicable to “swap” transactions



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# OFFTAKE STRUCTURES

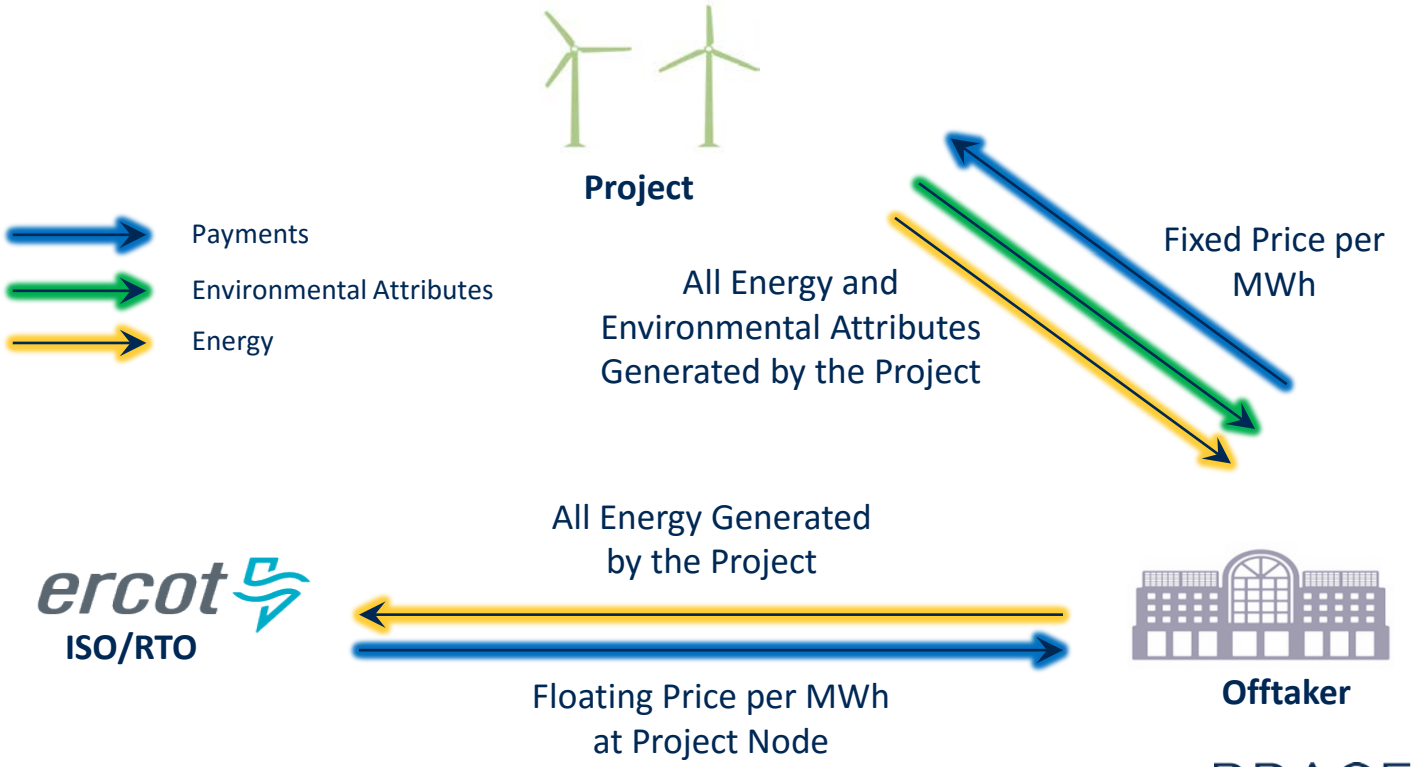
- Traditional Power Purchase Agreement
- Synthetic Power Purchase Agreement
- Hedge (Physical and Financial)
- Other Structures and Trends

# TRADITIONAL PPA: OVERVIEW

- Agreement to purchase physical power from the project

| Key Consideration: | Traditional PPA |
|---|---|
| Offtakers: | Utilities Serving Retail Load |
| Delivery Point: | Project Node |
| Volume: | Actual Quantity Generated |
| Environmental Attributes: | Included, Compliance |
| Term: | 20 years |
| Regulatory: | FERC/PUC |

# TRADITIONAL PPA: PAYMENT AND ENERGY FLOW



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# SYNTHETIC PPA: OVERVIEW

- Financially settled contract that replicates the economics of a traditional PPA

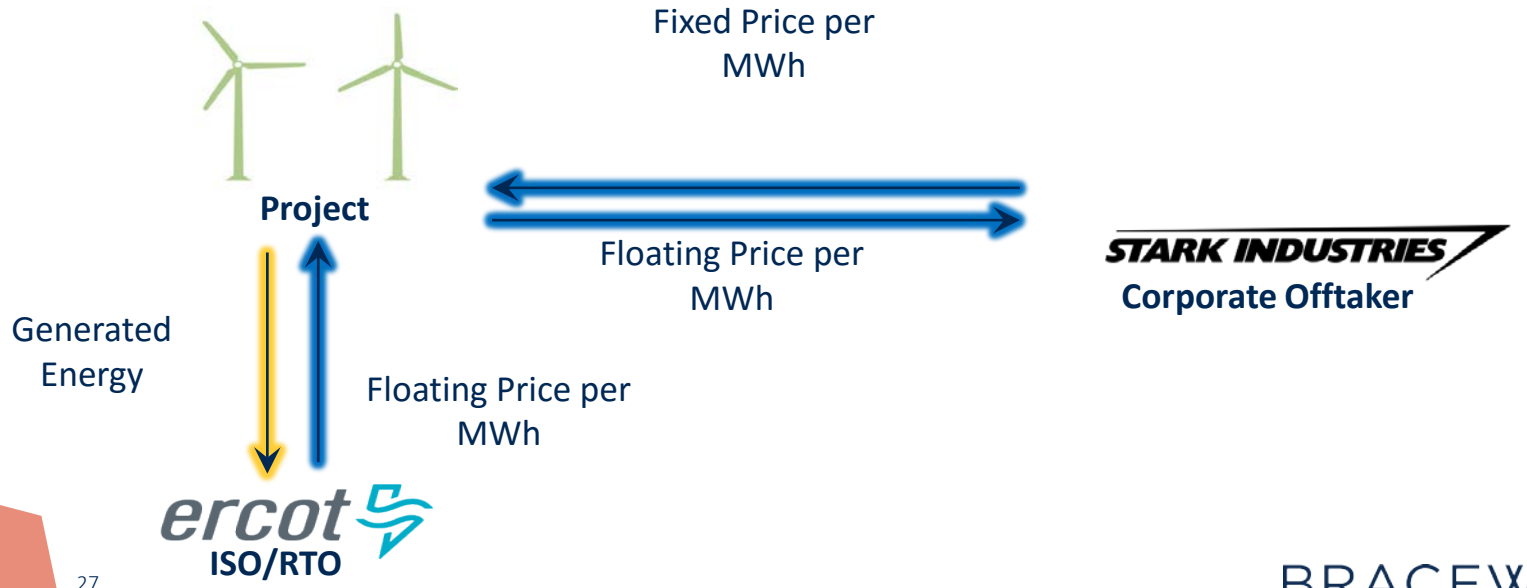
| Key Consideration: | Synthetic PPA |
|---|---|
| Offtaker: | Large Non-Energy Companies |
| Delivery Point: | Project Node or Liquid Trading Hub |
| Volume: | Actual Quantity Generated |
| Environmental Attributes: | Included, Voluntary (Green-e) |
| Term: | 12 - 13 years |
| Regulatory: | CFTC |

# SYNTHETIC PPA: ENVIRONMENTAL ATTRIBUTES

- Sale is the same as under a traditional PPA
  - Environmental attributes generated are purchased by the offtaker
- Corporate offtakers less interested in “compliance RECs”
  - Compliance obligations apply to load serving entities, not the end-user
  - Offtakers want RECs that can be used to support corporate green goals
  - Green-e is the most common voluntary program
- Project may have REC arbitrage opportunities
  - Sell high-value compliance RECs and deliver substitute RECs to the offtaker
  - Care must be taken with marketing claims

# SYNTHETIC PPA: FINANCIALLY REPLICATES THE PHYSICAL SALE OF ENERGY

- Financially settled "fixed for floating" swap based on volume of energy generated by the project (a "contract for differences")



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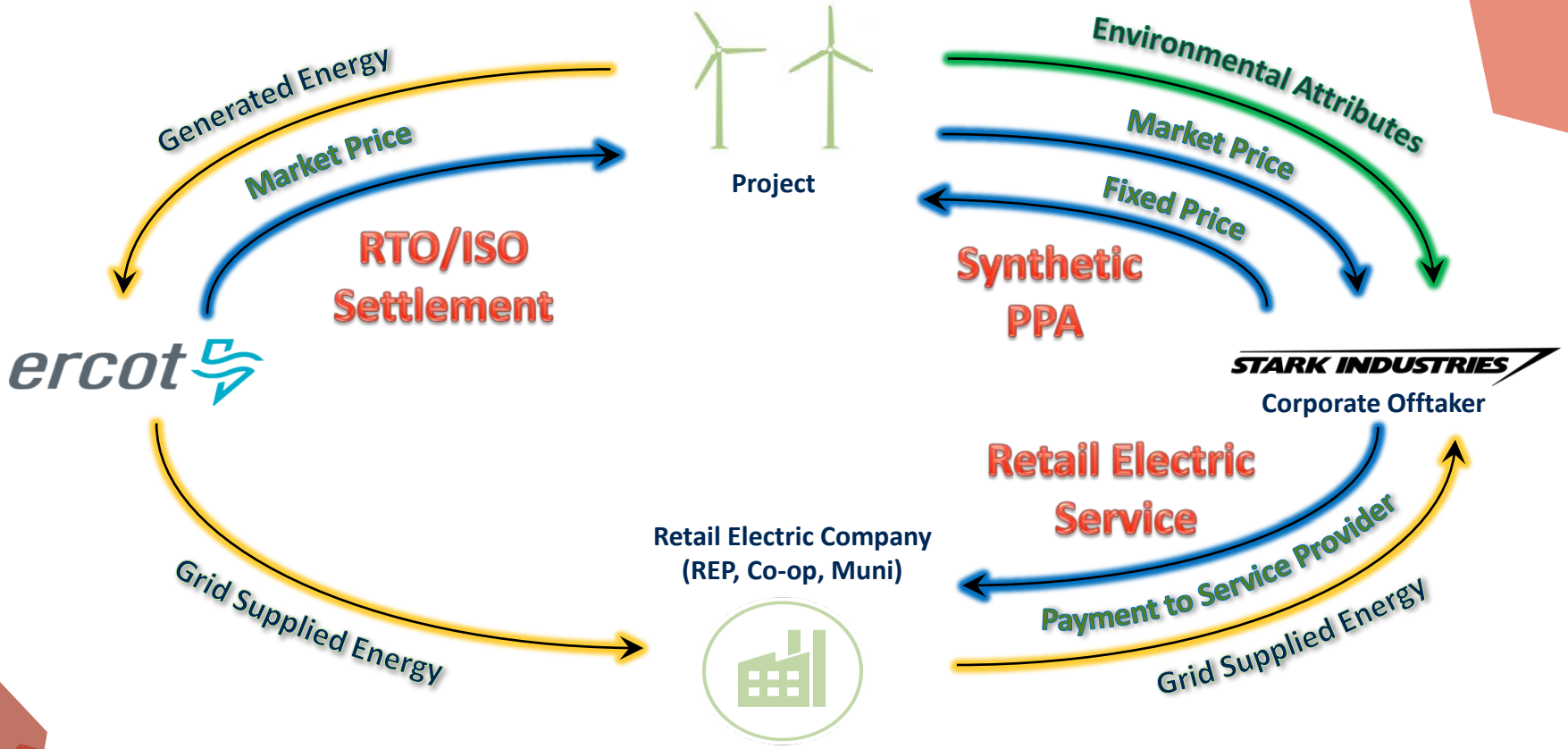
Generated Energy
Market Price
RTO/ISO
Settlement
ercot
Project
Environmental Attributes
Market Price
Fixed Price
Synthetic
PPA
STARK INDUSTRIES
Corporate Offtaker
Retail Electric
Service
Payment to Service Provider
Grid Supplied Energy
Grid Supplied Energy
Retail Electric Company
(REP, Co-op, Muni)



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# HEDGE: OVERVIEW

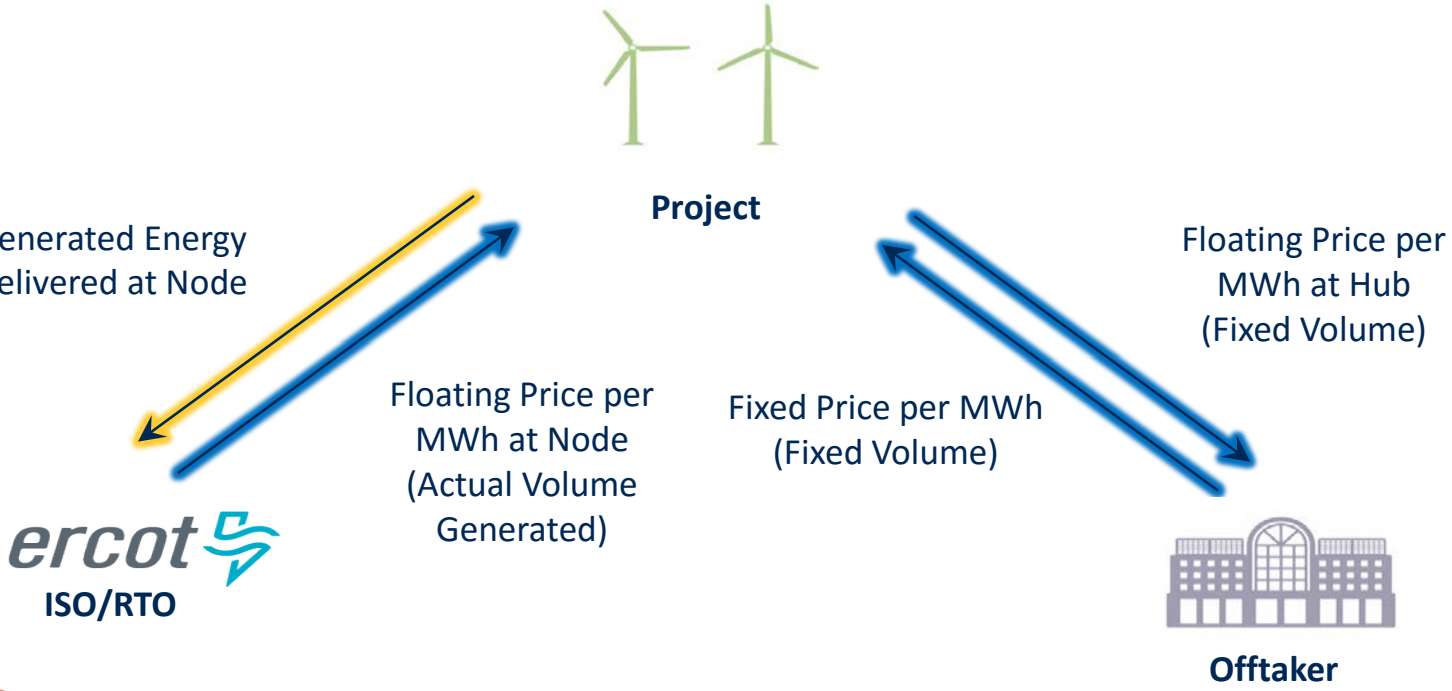
- Financial: Energy "sold" through a "fixed for floating" swap based on fixed volume of energy
- Physical: Physical sale of a fixed volume of energy

| Key Consideration: | Financial Hedge: | Physical Hedge: |
|---|---|---|
| Offtakers: | Power Marketer | Power Marketer |
| Delivery Point: | Liquid Trading Point | Liquid Trading Point |
| Volume: | Fixed Volume (P99) | Fixed Volume (P99) |
| Environmental Attributes: | Often Not Included | Often Not Included |
| Term: | 12-13 years | 12-13 years |
| Regulatory: | CFTC | FERC/PUC |

# HEDGE: PROJECT HAS BASIS RISK AND VOLUME RISK

- Basis Risk
  - Floating price at the project node may not be equal to the floating price at the trading hub
- Volume Risk
  - Volume of energy generated by the project may not be equal to the volume that the project is required to deliver at the trading hub

# HEDGE: PAYMENT AND ENERGY FLOW (FINANCIAL)



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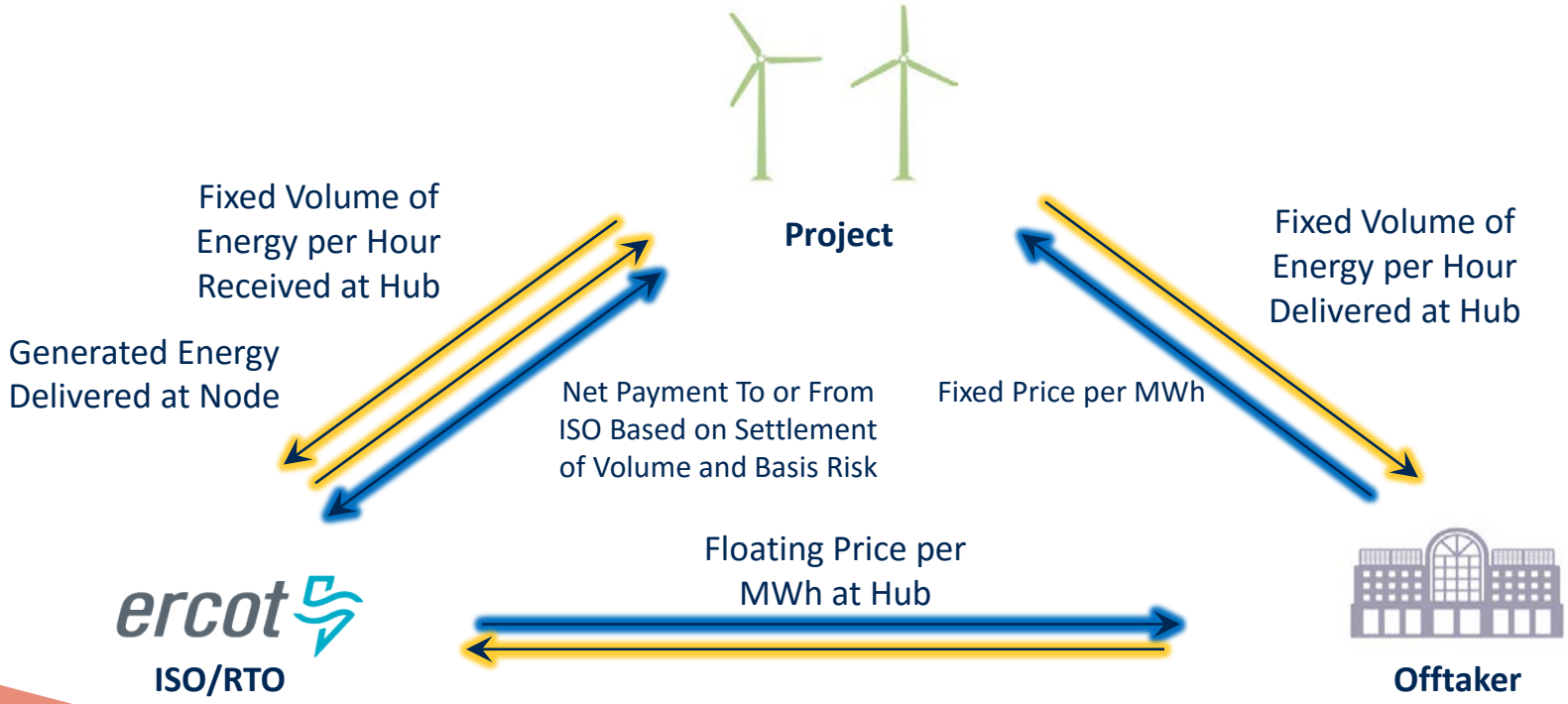
# HEDGE: PAYMENT AND ENERGY FLOW (PHYSICAL)



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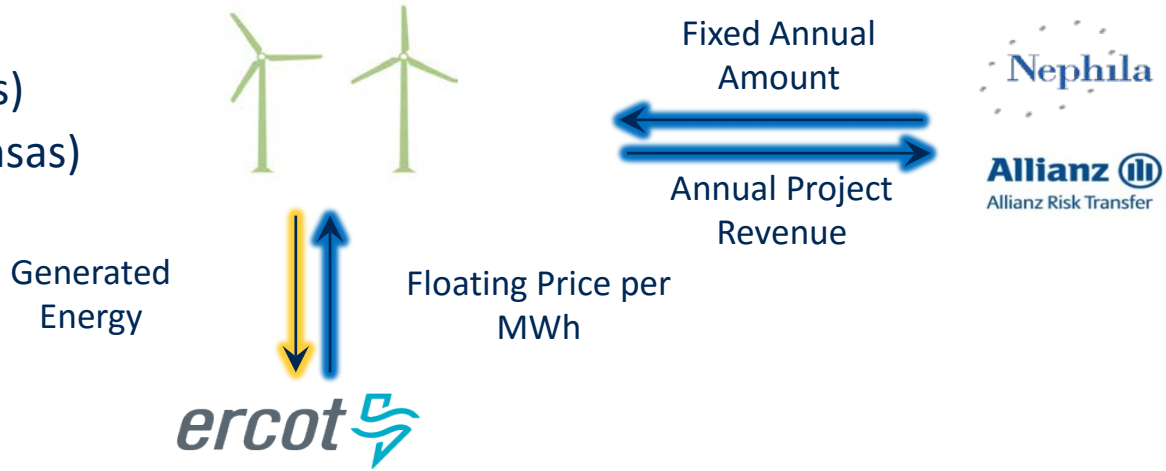
# HEDGE: "TRACKING ACCOUNT" MITIGATES RISK

- Tracking account functions like a credit facility provided by the offtaker to the project
  - Offtaker makes a tracking account payment to the project in the amount of any "mismatch" caused by the basis and volume risk (in addition to the required "fixed" payment)
  - Must be repaid by the project
- Tracking account smooths monthly cash flows
  - Tracking account payment offsets the effect of the basis and volume risk on the project's cash flow during each month

# OTHER STRUCTURES & TRENDS: PROXY REVENUE SWAP

- Enables project to hedge price and volume risk
  - Hedge provider swaps a fixed annual amount for revenues that would be received at proxy location
  - Fixed amount is based on expectations of price and annual generation
- Examples:
  - Old Settler Wind (Texas)
  - Bloom Wind Farm (Kansas)



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# OTHER STRUCTURES & TRENDS: RETAIL INTERMEDIATION

- Project and corporate purchaser rely on a retail provider to bridge the regulatory gap between wholesale and retail
  - Corporate purchaser arranges for physical offtake of project energy by the retail provider
  - Retail provider supplies corporate purchaser's retail power requirements with pass-through of project offtake economics and RECs
  - Ability to implement the structure depends on state specific considerations
- Texas examples:
  - City of Houston, Reliant, Hecate Energy
  - Fort Hood, MP2 Energy, Apex Clean Energy

# COMPARE AND CONTRAST

| | Traditional PPA | Synthetic PPA | Hedge |
|---|---|---|---|
| Offtakers: | Utilities Serving Retail Load | Large non-energy companies | Power Marketers |
| Delivery Point: | Project Node | Project Node or Liquid Trading Hub | Liquid Trading Hub |
| Volume: | Actual Quantity Generated | Actual Quantity Generated | Fixed Quantity Per Hour (1 year P99) |
| Environmental Attributes: | Included, Compliance | Included, Voluntary (Green-e) | Often Not Included |
| Term: | 20 years | 12-13 years | 12-13 years |
| Regulatory | FERC/PUC | CFTC | FERC/PUC (Physical)<br>CFTC (Financial) |

# QUESTIONS?

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## PARTNER

Jessica Adkins is a partner at Bracewell with over 15 years of experience advising clients in the electric power and renewable energy sectors on complex commodity and hedging matters in markets across the U.S. and Mexico. She also regularly counsels clients on developing, financing and investing in power projects and businesses. She has advised on some of the most innovative commodity structures in the market, including the long-term wind hedge arrangement named "2016 Commodity Deal of the Year" by Energy Risk Magazine. In May of 2016, she was named to a list of "Energy and Environmental Trailblazers" by the National Law Journal for her work. Jessica holds a B.S. in Chemical Engineering from Rice University and a J.D. from the University of Texas at Austin. She was also Fulbright Scholar in Spain.

# SELECT REPRESENTATIVE MATTERS

- First Reserve in a 20 year hedge arrangement with Morgan Stanley to enable the acquisition and financing of the 298 MW Kingfisher Wind Project located in Oklahoma; named “Deal of the Year” at the 2016 Energy Risk Awards; "Commodities Deal of Year" at the 2015 Commodity Business Awards and "2015 Financial Deal of the Year" at the Platts Global Energy Awards, and noted by Platts as standing out for the "innovative nature of its contract and financing structure"
- Large Investor-Owned Utility in a long-term power purchase agreement with a subsidiary of a global chemical manufacturing company to sell power and environmental attributes from a 150 MW wind farm
- NRG Energy in an agreement with Unilever, a leading consumer goods company, for NRG to sell 80% of the production from NRG's 150 MW Langford Wind Farm, in order to support Unilever's pledge to move to 100% clean power use by 2020
- First Solar in a 20-year power purchase agreement with Austin Energy to sell power and environmental attributes from a 119 MW solar farm to be constructed in Texas
- Capital Dynamics in project secured hedges to enable the debt and tax equity financing of the Green Pastures I, Green Pastures II, and Briscoe wind farms located in ERCOT, with an aggregate generation capacity of 450 MWs
- Recurrent Energy in secured hedges for multiple utility scale solar facilities located in California
- Pattern Energy in project secured hedges that enabled the debt and equity financing of 800 MWs of wind production

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