CYPRESS CREEK RENEWABLES

Solar Project Development and PURPA

May – 2016

Utility Scale Solar Development

- Missouri has begun to see development and construction of utility-scale solar projects
- What is the Public Service Commissions role in shaping the development of such facilities and how have other states approached this subject?

- Cypress Creek Renewables is actively developing such projects across the country in more than 14 different markets
- Based on our experience we have learned that PURPA implementation is a critical role the Public Service Commission can play in guiding solar development
- The comparison of policies between Missouri and North Carolina provides an excellent illustration of the power the public service commission has over the solar market.

1. (2016). Economic impact analysis of clean energy development in North Carolina-2016 update. Research Triangle Park, NC: RTI International.
2. 2016). Conservatives for Clean Energy 2016 Energy and Voters Poll http://www.cleanenergyconservatives.com/2016-poll/

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CYPRESS CREEK RENEWABLES OVERVIEW

CYPRESS CREEK RENEWABLES

High growth development and project financing platform, diversified across the U.S.

- More than 600 MWdc completed: 350 MWdc retained & operating, and 347 MWdc sold at NTP
- Projected for 12/31/16: 745 MWdc retained and operating and 421 MWdc sold at NTP
- 395 MWdc currently under construction
- 750 MWdc build plan for 2017; 3.6 GWdc additional 2017 and beyond pipeline

ABOUT	. Cypress Creek Renewables is a utility-scale solar developer and long-term owner and operator of solar projects. . Cypress manages an operating portfolio of 239 MW and has a pipeline in excess of 2 GW.
DEVELOPMENT STRATEGY	. Business model focuses on utility-scale ground mount projects primarily 2-80 MW in capacity in multiple U.S. states. . Multi-pronged development strategy: QF standard offer PPAs, bilateral PPAs, retail markets, & community solar.
FINANCING STRATEGY	. Invest in sponsor equity using proceeds from sales of projects, back-leverage, and operating assets cash flows. . Monetization of tax benefits, optimization of cash flows, and debt facilitate long-term ownership of assets.
EXPERIENCED TEAM	. Combined track record of developing or financing over 200 operational utility-scale projects throughout the U.S. . In-depth development experience, solar financing expertise, and relationships enable Cypress's multi-faceted model.
GROWTH TRAJECTORY	. Declining build costs, long-term extension of the ITC, and opening of new markets will all drive Cypress' growth. . Multiple site origination channels, standardized approach to development, and our own customer acquisition platform offer the opportunity to achieve scale at a pace exceeding that of the market.

AN INTEGRATED SOLAR PLATFORM

- 183 full-time employees, headquartered in Santa Monica with offices in San Francisco, North Carolina, New York, and Arizona. This does not include 50+ “land-men” working exclusively or part-time for the development team across our target markets.
- The growth engine is the development team that boasts a proven track record covering all the relevant disciplines: site control, engineering, resource assessment, interconnection, transmission, environmental, permitting, and legal.
- Project finance team includes former tax equity investors, capital syndicators, bankers, lawyers, and experienced project financiers.

DEVELOPMENT (80 FTE)

- Origination
- Project Management Resource Assessment
- Transmission
- Permitting and Environmental
- Solar Facility Layout and Design
- Legal
- M&A

EPC (48 FTE)

- Civil
- EPCM
- Project Management
- Field Response (AM)

PROJECT FINANCE (26 FTE)

- Closing Teams
- TE Sourcing
- Debt Sourcing
- Development Capital
- Corporate Finance
- Project Finance Legal

ASSET MANAGEMENT & ADMINISTRATION (29 FTE)

- Asset Management
- Operations & Maintenance
- Monitoring
- Accounting
- AR/AP
- Procurement
- Financial Reporting
- Human Resources
- Information Technologies
- Marketing

REPRESENTATIVE COMPLETED PROJECTS

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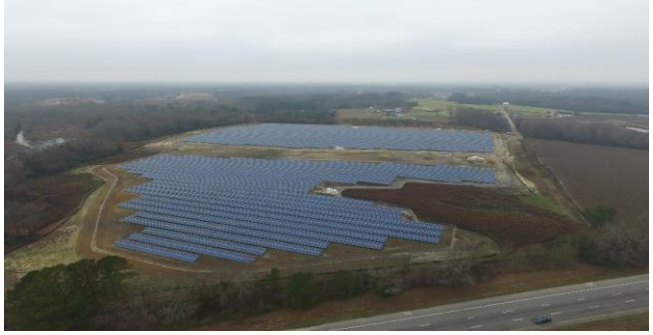
GREEN FARM

- Size: 7.0 MW DC
- Site Acreage: 38 Acres
- Offtaker: Dominon Resources (S&P: BBB+)
- COD: 12/30/15

HAPPY SOLAR



- Size: 5.3 MW DC
- Site Acreage: 44 Acres
- Offtaker: Duke Energy Progress (S&P: A-)
- COD: 1/6/16

OLD PAGELAND

- Size: 7.1 MW DC
- Site Acreage: 26 Acres
- Offtaker: Duke Energy Carolinas (S&P: A-)
- COD: 11/17/15

SUNFISH FARM

- Size: 7.0 MW DC
- Site Acreage: 27 Acres
- Offtaker: Duke Energy Progress (S&P: A-)
- COD: 10/30/15

DEVELOPMENT STRATEGIES

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Multi-pronged development strategies for utility-scale solar 2-80 MWac

STANDARD OFFER QF PPAs

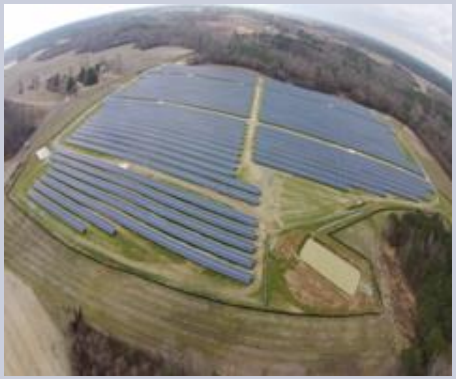
- Standardized 15 yr QF PPA at fixed avoided cost rates; typically capped project sized (<10MWac)
- Core markets: NC (5 MWac) and OR (3-10 MWac)
- Pipeline size: 750+ MWdc

BILATERAL QF PPAs

- Bilaterally negotiated QF PPAs of 10-20 years; requires good utility relationships
- Strong pipeline in NC (10 yr PPA), SC (15-20 yr PPA), and IN (10 yr PPA)
- Pipeline size: 1,600+ MWdc

RETAIL/COMMUNITY SOLAR

- Directly selling power to residential customers in various regulatory environments
- Cypress originates customers directly, opening de-regulated markets (primarily TX and NY)
- Pipeline size: 1,015+ MWdc



Basics of PURPA

Since its genesis in 1978 PURPA has served as an effective measure in promoting independent power producers and renewable energy

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PURPA, a deeply entrenched federal law, was instituted in 1978 with the goal of diversifying the country's electric power supply base by facilitating market access for small renewable energy generators and cogeneration facilities

Genesis and Purpose

- The Public Utilities Regulatory Policy Act (PURPA) was passed as part of the National Energy Act in 1978 in response to the 1973 oil crisis
- As such, PURPA primarily aimed to encourage reduced dependence on foreign oil imports through[1]:
  1. Diversification of electric power industry via development of alternative generation sources
     - Before PURPA, a number of barriers made independent, non-utility power generation extremely difficult
  2. Promotion of efficiency related to electric facilities and resources
  3. Conservation of electric energy
- PURPA sought to achieve these goals by requiring utilities to buy power from independent companies, "qualified facilities" (QFs), that could produce power for the same price that it would have cost the utility to generate the power, called the "avoided cost"

PURPA's Achievements

- Given its mission and structure, PURPA and its subsequent implementation resulted in[2]:
  1. Market access for independent power producers (IPPs
  2. Additional way to ensure equitable retail rates for electric consumers through a more diversified supply base and avoided cost structures
  3. Spurred technological innovation for non-traditional electric generation corresponding to the rise of renewable generation
     - By 1999, over 12,000 MW of non-hydro renewable generation capacity was on line due to PURPA, allowing renewable technologies to develop commercially and economically[3]

1. "Public Utility Regulatory Policy Act (PURPA)", Union of Concerned Scientists
2. "Powering The Past: A Look Back", National Museum of American History, 2002
3. "Increasing Renewables: Costs and Benefits", Union of Concerned Scientists, October 2002

Qualified Facilities and Avoided Costs are the two key components that enable PURPA's implementation

PURPA Operating Mechanism: PURPA involved a must-buy obligation on the part of utilities to purchase QF's output at rates equal to the avoided cost of that energy and capacity[1]

1. Qualifying Facilities

- Aligned with its mission to diversify the electric power industry and stimulate the development of smaller generation sources, Title II of PURPA requires an electric utility to offer to purchase all of the energy and capacity produced by an independent power producer (IPP), known as a "Qualifying Facility" (QF)[1]
- Under PURPA, QFs must certify their eligibility for QF status with FERC, after which they are qualified to receive special rate and regulatory treatment. QFs with a capacity of 1 MW or less are not required to file with FERC and automatically receive QF status.[2]
- FERC allows for utilities to be exempt from PURPA's must-buy obligation in the event that the utility can demonstrate that QFs have non-discriminatory access to competitive markets for energy and capacity. However, the exemption does not preclude utilities from their must-buy obligation to buy power from QFs with a capacity of less than 20 MW.[3]
- Generating facilities considered to be QFs fall into two categories:[4]
  1. Qualifying small power production facilities – generation capacity equal to or less than 80 MWac whose primary energy source is renewable
  2. Qualifying cogeneration facilities – no generation capacity limits but produce electricity and another form of useful thermal energy in a way that is more efficient than the separate production of both forms of energy
- QFs generally have the option to sell energy either as-available or as part of a legally enforceable obligation (LEO), known as a Power Purchase Agreement (PPA), for delivery of energy and/or capacity over a specified term[3]
- Based upon their decision to sell energy and/or capacity as-available or under a PPA, QFs receive different avoided cost rates:
  1. PPA sales are subject to standard offer contract rates or bilateral negotiation rates
  2. As-available sales are subject to variable avoided cost rates

1. "PURPA and the Rights of North Carolina Qualifying Facilities Upon the Termination of Power Purchase Agreement", Kilpatrick Townsend & Stockton LLP, 2015
2. "PURPA Title II Compliance Manual", Robert E Burns and Kenneth Rose, March 2014
3. "Remarks of Kenneth Rose, Ph.D. for the Federal Energy Regulatory Commission's Technical Conference on Implementation Issues Under the Public Utility Regulatory Policies Act of 1978", FERC, June 29 2016
4. "What is a Qualifying Facility", FERC

Avoided cost calculations differ extensively across states which has opened up opportunities for local solar in key markets

2. Avoided Cost

- Avoided cost is defined as "the incremental costs to an electric utility of electric energy or capacity or both, which but for the purchase from the qualifying facility or qualifying facilities, such utility would generate itself or purchase from another source." [1]
- Within the parameters of PURPA and FERC, states retain flexibility to choose the avoided cost calculation method, resulting in substantially different avoided cost rates across the country. Common avoided cost calculation methods include:
  1. Proxy unit methodology
  2. Peaker method – used in North Carolina
  3. Difference in revenue requirement (DRR)
  4. Market-based pricing
  5. Competitive bidding
- There are in effect three kinds of avoided cost rates that apply to transactions between QFs and utilities:
  1. Standard offer fixed rates – apply to QF sales made under a PPA agreement that satisfy the state determined standard offer capacity threshold. FERC requires states to establish standard offer rates for purchases from QFs with a design capacity of 100 kW or less, in order to facilitate very small QFs to sell to utilities and reduce associated transaction costs. However, states are at liberty to choose their threshold for standard rates, so long as it is above 100 kW.
  2. Bilateral or negotiated fixed rates – apply to QF sales under a PPA agreement for QFs that are ineligible for standard offer rates, i.e. with capacity of more than the state determined standard offer threshold. Under these contracts, QFs have the right to appeal to the presiding state commission if the bilateral rate does not provide proper compensation.
  3. Variable rates – apply to QF sales made on an as-available basis and FERC requires states to establish these rates in the same way standard offer rates are set
- As per FERC's 2010 ruling, certain states require utilities to offer a resource-specific avoided cost rate based upon the nature of the generating QF. A renewable avoided cost rate is based on the cost to satisfy the state's renewable portfolio standard. Under this scenario QFs can choose between the old generic rate and the renewable avoided cost rate with the provision that the renewable avoided cost rate grants the utility retention rights over Renewable Energy Certificates (RECs).[3] To date only Oregon has adopted the resource-specific avoided cost methodology.
- The declining cost of solar (over 70%) over the last 10 years[4] coupled with favorable regulation with the ITC, has enabled the proliferation of solar QF's and made solar competitive with avoided cost power[5]

1. "PURPA and the Rights of North Carolina Qualifying Facilities Upon the Termination of Power Purchase Agreement", Kilpatrick Townsend & Stockton LLP, 2015
2. "Schedule 19-FP: Power Purchases from Cogeneration and Small Power Production Qualifying Facilities", VEPCO, February 26 2016
3. "Separate Avoided Cost for Renewable Qualifying Facilities in Oregon", Lovinger Kaufmann LLP
4. "Solar Industry Growing at Record Pace", SEIA, 2016
5. "How PURPA is driving utility scale solar in North Carolina", QF Solutions, April 2015

Despite its origins in the White House, PURPA is largely interpreted and executed at the state level

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Federal

1 Congress

- Passed PURPA into effect in 1978

2 FERC

- Prescribes broad parameters for interpretation of PURPA
  - Definitions and guidelines
  - Capacity floor for standard rates
  - Considerations for avoided cost calculations
- Certifies and decertifies QFs
- Determines utility exemptions from PURPA's must-buy obligation
- Conducts oversight of QF - Utility dealings
- Delegates avoided costs calculations to state commissions and non-regulated utilities
- Holds discretionary power to enforce PURPA rules against state commissions and non-regulated utilities

State

1 State Public Utility Commissions

- Determines avoided cost calculations to be used by utilities in the state
  - Components to be included in the calculation (e.g. capacity payments or environmental externalities, etc.)
  - Calculation method to be employed (e.g. peaker, competitive bidding, etc.)
  - Administrative proceedings to be followed (e.g. biennial avoided cost hearings)
- Sets PPA terms to be offered by utilities to QFs
- Sets capacity ceiling on standard offer rates for the state
- Establishes ownership rules for RECs, i.e. REC ownership transfer with PPA or ability for QF's to maintain REC ownership
- Non-regulated utilities assume these roles in markets which are not regulated

Utility

1 Regulated Utility

- Operates within guidelines set by the public utility commission
  - Use chosen calculation methodology
  - Adhere to standard offer rate limits
  - Participate in required proceedings
- Chooses the assumptions that provide inputs in avoided cost calculations
- Presents and defends avoided cost assumptions and rates at scheduled proceedings with the state utility commission
- Contracts with QFs to buy power at avoided cost rate
  - Provides PPA rate (on and off peak) and PPA terms
  - Works with QF on interconnection to the grid

1. "Reviving PURPA's Purpose", Carolyn Elefant, 2011
2. "PURPA Title II Compliance Manual", Robert E Burns and Kenneth Rose, March 2014
3. "Remarks of Kenneth Rose, Ph.D. for the Federal Energy Regulatory Commission's Technical Conference on Implementation Issues Under the Public Utility Regulatory Policies Act of 1978", FERC, June 29 2016

Missouri vs North Carolina

Different approaches to PURPA Implementation

- Missouri and North Carolina illustrate the wide latitude states have in implementing PURPA. These differences are instrumental in shaping each states energy portfolio.

Missouri

- Standard Contract:
  - 100kWac cap
  - 4 CSR 240-20.060 (4)(C)2 provides for the creation of standard rates for systems above 100kWac
  - No fixed term
  - 4 CSR 240-20.060 (4)(D)2 provides for the option to contract for a specified term at the avoided cost rate at the time the obligation is incurred
  - Energy only rates
  - No standard form contract
- Avoided Cost Updates
  - Biennial filing on odd numbered years
  - Statutory filing, no commission approval required
  - Utilities must report 10 year projections for capacity additions and retirements including anticipated costs for energy and capacity from such facilities

North Carolina

- Standard Contract:
  - 5MWac cap
  - 15 year term
  - Energy + capacity rates
  - Form contract approved by the PSC
- Avoided Cost Updates
  - Biennial filing
  - Commission approval required for rates to go into effect
  - Multiple stakeholders involved in proceedings

Different Outcomes for Deployment of Solar

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Missouri

- 136MWdc installed (approx. 86% residential/commercial)
- 70% of utility scale installations connected in Municipal utility service territories
- 125 solar companies
- 20MWdc installed in 2015
- Solar installations peaked in 2014
- 325MWdc anticipated over the next 5 years

North Carolina

- 2,294MWdc installed (approx. 94% utility-scale)
- Vast majority of utility-scale connected with investor owned utilities
- 213 solar companies
- 1,140MWdc installed in 2015
- Solar installations on track to increase in 2016
- 3,479MWdc anticipated over the next 5 years

1. SEIA Missouri Market Report: http://www.seia.org/sites/default/files/MO%20State%20Factsheet_6.15.2016.pdf#overlay-context=state-solar-policy/missouri
2. SEIA North Carolina Market Report: http://www.seia.org/sites/default/files/NC%20State%20Factsheet_6.15.2016.pdf#overlay-context=state-solar-policy/north-carolina

Benefits of a Vibrant QF Market

Economic Impact of Solar Development in NC

High growth development and project financing platform, diversified across the U.S.

Direct Investment	. $4.428 billion invested between 2007 and 2015
Direct Jobs	. 26,000 full time equivalents
Indirect Jobs	. 25,000 full time equivalents
Savings for Rate Payers	. Up to $651 million in cumulative savings between 2008-2029 vs existing conventional generation portfolio
Energy Produced	. 2,961 million megawatt hours with zero emissions

1. (2016). Economic impact analysis of clean energy development in North Carolina-2016 update. Research Triangle Park, NC: RTI International.
2. (2015). Economic and rate impact analysis of clean energy development in North Carolina-2015 update. Research Triangle Park, NC: RTI International.

Local Impact of Solar Development in NC

QF solar development is an economic engine for rural communities throughout North Carolina

Average Tax Revenue	. The average North Carolina utility-scale project pays about $25,000 per year in local tax revenue
Total Local Tax Revenue	. Approximately $12,887,640 annually statewide
Benefits Across the State	. 68 counties have investments of more than $1 million. Nearly 70% of counties in the state
Helping Distressed Communities	. A 2015 study showed that 48% of projects examined were located in the state's most economically distressed counties
Community Impact	. Utility-scale solar installations require virtually zero local services (water, sewage, etc). . Significantly less traffic impact vs. commercial or residential development . These facilities also create no emissions or environmental hazards for local residents

1. (2016). Economic impact analysis of clean energy development in North Carolina-2016 update. Research Triangle Park, NC: RTI International.
2. (2015). Analyzing the impact of utility-scale solar installations on local government revenue in counties across North Carolina, Dr. Andrew George, UNC.

NC Residents Support Utility-Scale Solar Development

- 33 of 50 NC Senate districts have had investments in solar of more than $5 million.
- 5 districts have had investments of over $300 million
- A 2016 poll by Conservatives for Clean Energy found that 93% of Democrats and 78% of Republicans supported lawmakers that encourage renewable energy options such as wind and solar power.
- 74.8% of North Carolina voters are in favor of increasing the state utility's usage of renewable energy sources.

1. (2016). Economic impact analysis of clean energy development in North Carolina-2016 update. Research Triangle Park, NC: RTI International.
2. 2016). Conservatives for Clean Energy 2016 Energy and Voters Poll http://www.cleanenergyconservatives.com/2016-poll/

Questions?