SOLAR ENERGY IN SOUTH GEORGIA: A BOOMING INDUSTRY PRESENTATION FOR CEPL

JANUARY 13, 2017

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Georgialnstitute of Technology

GA & NC DOMINATE UTILITY-SCALE SOLAR ENERGY IN SOUTH ATLANTIC



- Utility-scale PV in the US concentrated in AZ and CA
- South Atlantic region accounts for 11% of total capacity of 9,968 MW
- Georgia had little to no utility solar PV capacity before 2013, added 600 MW in 2016
- Georgia among top 5 states in the nation for added solar capacity
- No RPS in Georgia, but utility-scale solar taking off dramatically in Georgia

UTILITY INSTALLATIONS

Most of Georgia's current and planned utility-scale solar PV is be sold under long-term (20- to 30-year) contracts PPAs

BUTLER SOLAR FACILITY

South Carolina

• Location: Butler, GA

- Operation Since: 2016
- Capacity: 130 MW
- Area: 1,050 acres
- Partners: Southern Power, Georgia
 Power

BUTLER

SOLAR

Georgia

Butler Solar Farm 1023 West Fall Line Freeway

Southern Power

Butler Solar Plant First Solar. Butler, GA 31006



OUR MISSION

To Create Enduring Value by Enabling a World Powered by Clean, Affordable Solar Electricity

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SANDHILLS SOLAR FACILITY

- Location: Taylor County, GA
- Operational Since: December 2016
- Capacity: 146 MW
- Area: 911 acres
- Partners: Southern Power, Cobb EMC Solar

PAWPAW SOLAR FACILITY

- Location: Taylor County, GA
- Operational Since: March 2016
- Capacity: 30 MW
- Area: 416 acres
- Partners: Southern Power, DEPCOM Power

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Pawpaw Solar Facility 175 Industrial Road



Chairman, Taylor County Development Authority

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TAYLOR COUNT

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External Affairs Manager, Southern Power

Southern Power Acquires 103-Megawatt Butler Solar Project

Southern Company subsidsry Southern Power is demontrating its commitment to dealoping more renewable enrgy resources through the acmisition of the 103-megawatt Butler solar facility from Community Energy, Inc. in Georgia. A national leader in renewables. Southern Power as strategically acquired or is Instructing more than 1,100 negawatts of renewable energy merating capacity with 16 plar, wind, and biomass mojects, including four solar projects in Georgia.

"The Butler solar facility builds on Southern Company's innovative approach to diversifying our nation's energy mix," said Southern Company Chairman, President and CEO Thomas A. Fanning. "Our strategic development of solar in Georgia continues our company's expansion of renewable energy generation in the Southeast."

The project, which was initially developed by Community Energy, Inc., was selected by Southern Company subsidiary Georgia Power in a competitive process through the nationally recognized Georgia Power Advanced Solar Initiative.

The facility, which will be located on approximately 1,070 acres in Taylor County, is expected to enter commercial operation in the fourth quarter of 2016. Construction is slated to begin in September 2015, with First Solar, Inc. managing the building, operations and maintenance of the facility.

The Butler solar facility is ex-

Grand And Traverse Jurors pected to consist of more than one million of First Solar's thinfilm photovoltaic solar modules mounted on single-axis tracking tables.

The electricity and associated renewable energy credits (RECs) generated by the facility will be sold under a 30-year power purchase agreement with Georgia Power, which will have the option to keep or sell the RECs, for the benefit of its customers or renewable energy programs.

The Butler solar facility fits Southern Power's business strategy of growing its wholesale business through the acquisition and construction of generating assets substantially covered by long-term contracts.



Taylor County Will Soon Soak Up The Rays With Solar Power

Travel out Hwy. 137 East or through the Taylor County Industrial Park, and you will see the County's newest industry, solar power, getting ready to bustle.

Georgia has one of the largest solar portfolios in the nation and leads the nation in solar development during the past tew years. In addition, Georfin Power has the highest voluntary solar program in the country.

Recently, Georgia Power received certifications from the Public Service Commission for the 2015 and 2016 Advanced Solar Initiative (ASI) Prime Power Purchase Agreements (PPAs) and approval for the 2015 Advanced Solar Initiative Power Purchase Agreements. The PPAs will enable Georgia Power to procure over 500 meawatts of utility scale solar power.

Certifications were issued for six ASI Prime PPAs, with three located in Taylor County, and four ASI PPAs, with one located in Taylor County.

Local projects include:

• A 30 year ASI-Prime PPA with Butler Solar, LLC for a 100 megawatt facility, beginning Dec. 31, 2015 and ending Dec. 31, 2045;

• A 30 year ASI-Prime PPA with LS-Pawpaw, LLC for a 30 megawatt facility, beginning Dec. 31, 2015 and terminating Dec. 31, 2045;

• A 30 year ASI-Prime PPA with White Pine Solar, LLC for a 101.25 megawatt facility, beginning Dec. 31, 2016 and ending Dec. 31, 2046; and

• A 20 year ASI PPA with Butler Solar Farm, LLC for a 20 megawatt facility beginning Jan. 1, 2016 and terminating

City Of Butler Garbage Pickup For Christmas

Garbage pickup in the City of Butler for the Christmas holiday will be Saturday, Dec. 27th. Please have your cart at the road by 7 a.m. Dec. 31, 2035.

Bids were accepted from April 2 through April 30, 2014, and Georgia Power received 142 proposals from 56 different bidders in the state. The winning bids provided the best economic benefit to Georgia Power customers. All winning parties are required to interconnect with the Georgia Power distribution system or the Georgia Integrated Transmission System.

According to Taylor County Director of Economic Development Lesley McNary, there will be between \$650 and \$770 million in private investment in the solar plants, once they are all up and running. At this point, two bonds have been validated, one for \$75 million for solar plants in the industrial park, and another for \$180 million for a plant located on the Hobbs' property, which includes 12 other property own-There are two more ers. projects to be validated. Also, a \$250 million solar project is in negotiations.

During the construction phase, it is estimated that there will be 1500-2000 extra people in the county, bringing additional business to the local economy.



HAZLEHURST II

- Location: Hazlehurst, GA
- Date Complete: October 2016
- Capacity: 52 MW
- Area: 450 acres
- Partners: Silicon Ranch, Greenpower EMC

Wildlife interactions with Solar PV facilities















HAZLEHURST I

- Location: Hazlehurst, GA
- Date Complete: Fall 2016
- Capacity: 20 MW
- Area: 270 acres

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Partners: Silicon Ranch, Greenpower EMC



Constructed on agriculturally unproductive land



MIND THE GAP: utility scale PV must avoid wetlands in construction and operation

for the standard -



KEY FINDINGS AND CONCLUSIONS

- Solar energy deployment is accelerating in Georgia in rapid advancements in solar PV technology is driving down costs
- Cost-competitive with natural gas and coal
- Over 700 MW installed in last 2 years in South GA, as much as a decent-sized coal-fired plant and approaching total installed hydropower capacity (844 MW)
- Solar energy does not bring as many permanent jobs to local communities, but substantial income for local landowners, and upwards of 20% tax base for local county commissions, which in turn use the money for schools, hospitals... etc, generating revenue for rural counties that have few other resources
- Solar energy facilities built in 2 years, compared to 4-10 years for coal plants
- Solar farms produce no GHG emissions and consume no water, (huge benefit for droughtprone states like Georgia)
- Solar farms can be located in lands that are not agriculturally productive

BACK-UP SLIDES

MILITARY INSTALLATIONS

FORT BENNING

- Location: near Columbus, GA
- Date Installed: June 2016
- Capacity: 30 MW
- Area: 240 acres
- Cost: \$75 million
- Partners: US Army, Georgia Power

FORT GORDON

Street.

- Location: near Augusta, GA
- Operational Since: November 2016

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- Capacity: 45 MW
- Area: 270 acres

• Partners: Georgia Power, US Army

FORT STEWART

- Location: Hinesville, GA
- Date Installed: December 2016
- Capacity: 30 MW
- Area: 250 Acre
- Cost: \$75 million
- Partners: US Army, Georgia Power

MARINE CORPS LOGISTICS BASE

- Location: Albany, GA
- Date Installed: early 2017
- Capacity: 44 MW
- Area: 150 acres
- Partners: Georgia Power, Navy, Marine Corps

NAVAL SUBMARINE BASE, KINGS BAY

- Location: St. Marys, GA
- Date Operational: September 2016
- Capacity: 30 MW
- Area: 254 acres
- Cost: \$75 million
- Partners: Georgia Power, US Navy

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ROOFTOP INSTALLATIONS

IKEA SAVANNAH SOLAR ROOFTOP

- Location: Savannah, GA
 - Date Operational: October 2012
- Capacity: 1,458.2 kW
- Area: 182,300 ft2
- Number of Panels: 6,076

IKEA ATLANTA

- Location: Atlanta, GA
 - Date Operational: July 2012

- Capacity: 1,038 kW
- Area: 129,800 ft2
- Number of Panels: 4,326

UTILITY/UNIVERSITY SOLAR ENERGY PARTNERSHIPS

UGA SOLAR TRACKING DEMONSTRATION PROJECT

SEORGIA



- Date Operational: December 2015
- Capacity: 1 MW
- Area: 10 acre
- Partners: UGA, Georgia Power

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AGRICULTURAL INSTALLATIONS

MASCOT PECAN SHELLING PLANT

- Location: Glenville, GA
- Date Operational: December 2016
- Capacity: 1.088 MW
- Partners: Mascot Pecan Shelling Company, Coastal Solar

BAXTER BROS POULTRY FARM

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- Location: Resaca, GA
- Date Operational: December 2016
- Capacity: 200 kW

• Partners: Renewvia Energy

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AMERICAN PEANUT GROWERS GROUP

- Location: Donalson, GA
- Date Operational: February 2016
- Capacity: 1 MW
- Partners: Renewvia Energy, Georgia Power, Tennessee Valley Authority Green Power Providers Program

SOLAR ENERGY IN GEORGIA BY THE NUMBERS

- Over **201 solar companies** in Georgia, employing **3,185 people**.
- In 2015, Georgia installed 248 MW of solar electric capacity, ranking it 6th nationally.
- Installed solar capacity in Georgia has grown by 445% over the last year.
- In 2015, **\$311 million** was invested on solar installations in Georgia. This represents a 293% increase over the previous year, and is expected to grow again this year.
- Over 495 MW of installed solar capacity -- ranked 12th nationally in installed solar capacity. Enough to power 54,000 homes.
- Over the next 5 years, Georgia is expected to install **2,132 MW** of solar electric capacity, ranking the state tenth over that time span. This amount is more than 6 times the amount of solar installed over the last five years.

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• Georgia Power 2016 IRP committed 1600 MW of renewables

Source: Solar Energy Industry Association