

# Power Finance & Risk

Exclusive Insight on Power M&amp;A and Project Financing

By the publisher of GlobalCapital

## ● PEOPLE &amp; FIRMS

## ● MERGERS &amp; ACQUISITIONS

## ● INDUSTRY CURRENT

## Goldman Banker Switches to SolarCity

SolarCity has brought on board a former Goldman Sachs executive as it eyes newer capital structures.

Page 12

## Berkshire Hathaway Grabs Geronimo Portfolio

A Berkshire Hathaway affiliate is buying a portfolio of wind and community solar assets totaling more than 600 MW from Geronimo.

Page 5

## The Impact of Tesla Powerwall on Electric Power

**Benjamin L. Israel** of **Kaplan, Kirsch & Rockwell** offers a snapshot of what Tesla's Powerwall could mean for the generation mix. Page 7

## Q&A: Michael Allison, Macquarie Capital – Part II

Macquarie Capital, known for its strong capital markets capabilities among others, is increasingly working with shops that are eyeing yieldco IPOs. **Michael Allison**, senior managing director of the bank's renewables group talks to Managing Editor **Nischinta Amarnath** about his views on the potential for yieldcos com-

ing to market, intrinsic challenges involved in securing tax equity investments and the scramble, among developers and investors, to avail of the federal investment and production tax credits by the end of 2016.

**PFR: Investor appetite for yieldco paper remains largely unhar-**

**nessed, and market observers are saying more yieldco IPOs could come into the market over the next few years. What is your take on that?**

**Allison:** Yieldcos have been very successful for investors that have invested in the IPOs. Most have traded up signifi-

PAGE 10 »



Michael Allison

## NTE Eyes Debt For \$800M+ CCGT Projects

Olivia Feld

**NTE Energy** is in the bank market to finance two combined cycle gas-fired projects, each with an estimated cost of over \$400 million.

**BNP Paribas** and **Crédit Agricole** are joint book runners on a debt financing for the 525 MW Middletown CCGT project in Butler County, Ohio. **MUFG**, **Union Bank** and **ING** are joint book runners on the 475 MW Kings Mountain Energy Center CCGT project in Cleve-

land County, N.C.

**NTE Energy** will use senior secured debt and a portion of funds from its sale of equity stakes in the projects to meet the cost of constructing the projects, a deal watcher tells *PFR*. He adds that the deal backing Kings Mountain is expected to have a seven-year tenor while Middletown will have a five-year tenor.

**Capital Dynamics** and **Wattage Finance**, which is owned by a group of private investors and managed by an affiliate of **Guggenheim Partners**, took joint equity stakes in the projects (PI, 7/24), (PFR, 8/1).

The **City of Kings Mountain**, **City of Concord** and **City of Greenwood** have 20-year power purchase agreements with Kings Mountain.

PAGE 5 »

## SolarCity Scouts More Capital Through BAML-backed Investment Program

Nischinta Amarnath

**SolarCity** is partnering with **Bank of America Merrill Lynch** to raise more capital for its distributed solar business. The San Mateo, Calif.-based rollup is currently in talks with several regional banks for enrollment in a renewable energy tax equity investment program announced on May 28.

SolarCity has unveiled a \$200 million fund, which will be deployed for distributed solar installations in 2015 and 2016, **Lyndon Rive**, ceo and

PAGE 2 »



## ● IN THIS ISSUE

### PROJECT FINANCE

5 | EDP Clinches JPM Tax Equity Deal

### MERGERS & ACQUISITIONS

5 | Berkshire Hathaway Scores Wind, Solar From Geronimo

6 | Mississippi Power Ponders Alternatives To Offset Kemper Collapse

6 | Southern Power Snares Ga. Solar From Community Energy

### INDUSTRY CURRENT

7 | Tesla's Powerwall And Its Impact On Electric Power

### PEOPLE & FIRMS

12 | Goldman Exec Lands At SolarCity

### DEPARTMENTS

3 | Generation Auction & Sale Calendar

4 | Project Finance Deal Book

12 | Alternating Current

12 | PowerTweets

# SolarCity Scouts More Capital Through BAML-backed Investment Program

◀ FROM PAGE 1

co-founder of SolarCity tells *PFR*, adding that the goal is to scale the size of the fund to more than \$1 billion over the next two or three years.

The developer is looking at an investment of \$27.3 billion in solar assets totaling roughly 920 MW to 1,000 MW, cited as a guideline forecast as of May 5.

SolarCity has already raised more than \$1 billion in financing since January, more recently teeing up \$500 million in revolvers for distributed generation from BAML, **Credit Suisse** and **Deutsche Bank** (*PFR*, 5/8), (*PFR*, 5/8).

The renewable energy tax equity investment program allows investors to participate in tranches of \$20 million to \$25 million. The financing will cover the capital costs of solar installations and equipment. Against a backdrop where scores of regional banks are looking to deploy capital, the company sees about 50 investors lining up for the program over the next year or two.

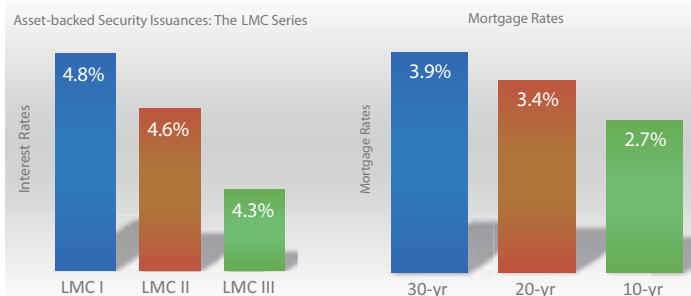


Lyndon Rive

The program is expected to lower the cost of capital and drive down market prices by expanding solar supply in excess of existing demand. Enlarging the investment pool and providing opportunities to entities that are scouting investment avenues will be key efforts in enhancing returns through reduced prices, Rive says. It will also eventually lower the rates that homeowners are paying for power from their local utilities.

The tax equity investment program is an offshoot of BAML's 10-year \$50 billion environmental business initiative aimed at reducing carbon emissions by facilitating loans, investments and capital for its clients. ■

## SolarCity - Compressing Spreads and Falling Costs of Capital



Source: Company Filings & Investor Presentations

## PFR Power Finance & Risk

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Do you have questions, comments or criticisms about a story that appeared in *PFR*? Should we be covering more or less of a given area? The staff of *PFR* is committed as ever to evolving with the markets and we welcome your feedback.

Feel free to contact **Nischinta Amarnath**, Managing editor, at (212) 224-3293 or nischinta.amarnath@powerfinancerisk.com

## GENERATION AUCTION &amp; SALE CALENDAR ●

These are the current live generation asset sales and auctions, according to Power Finance and Risk's database.  
A full listing of completed sales for the last 10 years is available at <http://www.powerfinancerisk.com/AuctionSalesData.html>

## Generation Sale ■ DATABASE

Seller	Assets	Location	Advisor	Status/Comment
AES Corp.	Armenia Mountain (101 MW Wind)	Pennsylvania		Allete Clean Energy is buying the asset (PFR, 4/27).
Bankers Commercial Corp.	Rising Tree I & II (98 MW Wind)	Kern County, Calif.		BCC is selling its Class B shares in the projects to unidentified investors (PFR, 4/20).
Brookfield Infrastructure Partners	Cross Sound Cable (24-Mile Transmission)	Long Island, N.Y. to New Haven, Conn.		Argo Infrastructure Partners is the buyer. Deal is set to close later this year (PFR, 4/27).
Community Energy	Butler (103 MW Solar)	Taylor County, Ga.		Southern Power has bought the facility (see story, page 6).
Competitive Power Ventures	Portfolio (5000 MW Wind, Gas)	U.S.	JPMorgan	Global Infrastructure Partners II is acquiring a majority of the portfolio (PFR, 4/13).
EDP Renewables	Portfolio (394.5 MW Wind)	U.S.		A consortium led by Fiera Axiom is buying a 35.9% stake in the 1.1 GW portfolio (PFR, 4/27).
Fortis	Various (24 MW Hydro)	New York		Energy Ottawa is buying the contracted assets (PFR, 4/20).
GCL Solar, SolarReserve	Portfolio (140 MW Solar)	California		Con Ed has acquired the portfolio (PFR 5/18).
Geronimo Wind Energy	Grand Prairie (400 MW Wind)	Holt County, Neb.		Berkshire Hathaway Energy subsidiary BHE Renewables is acquiring the portfolio (see story, page 5).
	Walnut Ridge (225 MW Wind)	Bureau County, Ill.		
	Portfolio (Capacity unknown, Solar)	Minnesota		
	Black Oak Getty (78 MW Wind)	Stearns County, Minn.		Sempra US Gas & Power has bought the facility (PFR, 4/27).
	Courtenay (200 MW Wind)	Jamestown, N.D.		Xcel Energy is looking to buy the farm for an undisclosed price (PFR, 5/11).
Invenergy	Sandringham (13 MW Solar)	Kawartha Lakes, Ontario		TerraForm Power has agreed to buy both assets (PFR, 5/25).
	Woodville (12 MW Solar)			
Marubeni Power International	Sr. Charles Center (725 MW Gas)	Charles County, Md.		An affiliate of Osaka Gas is buying a 25% stake in the project (PFR, 5/11).
Northwestern Mutual	Oasis (60 MW Wind)	Kern County, Calif.		JPMCC and Hannon Armstrong affiliates are buying stakes in the projects (PFR, 4/13).
	The Camp Springs projects (250 MW Wind)	Scurry County, Texas		
	Sand Bluff (90 MW Wind)	Sterling & Glasscock Counties, Texas		
Ormat Technologies	Portfolio (106 MW Geothermal)	U.S.	UBS Investment Bank	Northleaf Capital Partners has acquired a 36.75% stake (PFR, 5/11).
Pattern Development	Amazon Farm (150 MW Wind)	Benton County, Ind.		Pattern Energy Group bought a 77% stake in the farm (PFR, 5/11).
Rockland Capital	Lakeswind (50 MW Wind)	Rollag, Minn.		Sale of the 71 MW portfolio launched on Tuesday (PFR, 4/20).
	Mass Solar (21 MW Solar)	Massachusetts		
RPM Access	Elk (42.5 MW Wind)	Iowa		BlackRock is acquiring a 90% stake in both wind farms (PFR, 4/27).
	Hawkeye (37.5 MW Wind)	Iowa		
Wind Capital Group	Post Rock (200 MW Wind)	Kansas		Pattern Energy Group bought a 60% stake. The deal has now closed (PFR, 5/25)
	Lost Creek (150 MW Wind)	Dekalb County, Mo.		Pattern Energy Group bought a 100% stake. The deal has now closed (PFR, 5/25)

## ● New or updated listing

The accuracy of the information, which is derived from many sources, is deemed reliable but cannot be guaranteed.  
To report updates or provide additional information on the status of financings, please call Managing Editor Nischinta Amarnath at (212) 224 3293 or e-mail [nischinta.amarnath@powerfinancerisk.com](mailto:nischinta.amarnath@powerfinancerisk.com)

## ● PROJECT FINANCE

Deal Book is a matrix of energy project finance deals that Power Finance & Risk is tracking in the energy sector.

A full listing of deals for the last several years is available at <http://www.powerfinancerisk.com/Data.html>

## Live Deals: Americas

Sponsor	Project	Location	Lead(s)	Loan	Loan Amount	Tenor	Notes
8minutenergy Renewables, D.E. Shaw Renewable Investments	Springbok 2 (150 MW Solar)	Kern County, Calif.	TBA	TBA	\$420M	TBA	Both players are in the market for debt and equity (PFR, 3/23).
8minutenergy Renewables	Lotus (50 MW Solar)	Madera County, Calif.	TBA	TBA	\$100M	TBA	In the market for debt and equity (PFR, 3/23).
Abengoa, EIG	Norte III (924 MW Gas)	Ciudad Juárez, Mexico	TBA	TBA	\$542M	TBA	The deal is slated to close in the third quarter (PFR, 3/23).
Apex Clean Energy	Grant (150 MW Wind)	Grant County, Okla.	TBA	TBA	TBA	TBA	The project will be in the market for financing in the next few months (PFR, 3/30).
Deepwater Wind	Block Island (30 MW Wind)	Block Island, R.I.	Société Générale, KeyBank	TBA	\$290M	TBA	The project will be complete by the fourth quarter of 2016 (PFR, 3/9).
EDP Renewables North America	Rising Tree III (99 MW Wind)	Kern County, Calif.	JPMorgan	Tax Equity	TBA	TBA	The deal has closed (see story, page 5).
Freeport LNG	Quintana Island (LNG Export Facility)	Texas	A consortium that includes Bank of America, CIBC, BBVA, Credit Agricole, Credit Suisse, Deutsche Bank, Goldman Sachs, and HSBC.	Senior debt, Mezzanine financing	\$4.56B	7-yr	The deal has wrapped (PFR, 5/4).
Gasoducto Sur Peruano	Gasoducto Sur Peruano (700-Mile Gas Pipeline)	Pipeline	Various	TBA	\$4.1B	TBA	The deal is slated to close by the end of June (PFR, 4/6).
Genesis Power, Energy Investor Funds	Keys (735 MW Gas)	Brandywine, Md.	Natixis, MUFG Union Bank	TBA	TBA	TBA	Price talk is 325bp over LIBOR (PFR, 5/25)
Innergex, Ledcor Power Group	Boulder Creek (25.3 MW Hydro)	British Columbia	Manulife, Caisse de Dépôt et placement du Québec, the Canada Life Assurance Company.	Construction	\$191.6M	25-yr	The deal closed the week of March 16 (PFR, 3/30).
	Upper Lillooet River (25.3 MW Hydro)	British Columbia		Construction	\$250M	40-yr	
				Construction	\$50M	40-yr	
Invenergy	Buckeye (200 MW Wind)	Ellis County, Kan.	Morgan Stanley	Construction	TBA	TBA	The deal has closed (PFR, 5/25).
Invenergy	Lackawanna (1.3 GW Gas)	Lackawanna County, Pa.	TBA	TBA	TBA	TBA	Invenergy is in the market for debt (PFR, 5/18).
ISA	Interchile (590 Miles Transmission)	Chile	BBVA	International Capex tranche, VAT facility	\$800M	TBA	BBVA is leading the club deal, which is expected to wrap in the next few months (PFR, 4/6).
Northland Power	Nordsee One (332 MW Offshore Wind)	Germany	TBA	Term	\$847M	TBA	Developer is talking to lenders for financings (PFR, 3/16).
	Grand Bend (100 MW Wind)	Ontario	TBA	Term	\$212M	TBA	Developer is talking to lenders for financings (PFR, 3/16).
NTE Energy	Middletown (525 MW Gas)	Butler County, Ohio	BNP Paribas, Crédit Agricole	Debt	TBA	TBA	NTE Energy is in the market for debt. Each project is pegged at \$400M+ (see story, page 1).
	Kings Mountain (475 MW)	Cleveland County, N.C.	MUFG Union Bank, ING	Debt	TBA	TBA	
Panda Power Funds	Hummel (1 GW Gas)	Snyder County, Pa.	TBA	TBA	TBA	TBA	The developer is considering a term loan B or other structure (PFR, 5/25)
Power Evolution	One project (40 MW Solar)	Utah	TBA	Term loan B, RCF	Up to \$13M	10-yr	Deal expected to wrap in six months (PFR, 5/25)
	Three projects (30 MW Solar)	Louisiana, New Jersey, New York	TBA	TBA	TBA	TBA	
Quantum Utility Generation	Passadumkeag (40 MW Wind)	Penobscot County, Maine	Mizuho, Sumitomo Mitsui Banking Corp.	Construction /Term	\$95M	TBA	Construction of the project will be complete by year-end (PFR, 3/16).
RPM Access	Marshall Wind (74 MW Wind)	Marshall County, Iowa	TBA	Construction /Term, Tax Equity	TBA	TBA	RPM Access is currently in talks with commercial banks (PFR, 4/27).
Solar Star Funding	Solar Star Projects (579 MW Solar)	Rosamund, Calif.	Barclays, Citigroup, RBS	Series B Notes	\$325M	TBA	The issuance was upsized by \$10M (PFR, 3/9).
Western Energy Partners	Clean Path (750 MW Gas, Solar)	Waterflow, N.M.	TBA	TBA	TBA	TBA	The sponsor will seek debt once it secures a PPA for the project (PFR, 5/4).

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## PROJECT FINANCE ●

## EDP Lands JPM Tax Equity

**EDP Renewables North America** has sealed a tax equity investment from **JPMorgan** for the 99 MW Rising Tree III wind project in Kern County, Calif. EDPRNA and JPM may seek additional tax equity investors, according to a filing with the U.S. **Federal Energy Regulatory Commission**.

Houston-based EDPRNA sold Rising Tree III, originally named the Addison wind project, to **TerraGen Power**, only to buy it back within the last two years (PFR, 2/24). Construction is underway on the project, which is due to be complete in June, according to the FERC filing.

Rising Tree III is adjacent to EDPRNA's 79 MW Rising Tree I and the 19 MW Rising Tree II wind projects, in Kern County, Calif. **MUFG Union Bank** subsidiary **Bankers**

**Commercial Corp.** is selling its tax equity stakes in Rising Tree I and Rising Tree II to unidentified investors (PFR, 4/16). BCC invested in the projects in late 2014 (PFR, 11/24). Rising Tree I and II came online on Jan. 12.

All Rising Tree projects have a 20-year power purchase agreement with **Southern California Edison**.

In the last few months, JPM has made tax equity investments in roughly 500 MW of wind and solar projects, including a portfolio of 10 **sPower** solar projects totaling approximately 80 MW (PFR, 4/29), and a jointly owned **Northwestern Mutual** and EDP portfolio of 400 MW of wind projects (PFR, 4/6).

A spokesperson for JPM in New York declined to comment and EDPRNA in Houston did not respond to inquiries. ■

## NTE Eyes Debt For \$800M+ CCGT Projects

◀ FROM PAGE 1

Middle-town will supply power into the PJM market and have a hedge, which is likely to be a heat rate call option. The project may also have a partial contracted offtaker, according to the deal watcher. Both projects are due to be online in early to mid-2018.

**Whitehall & Co.** advised NTE on the equity transaction and is working with them again on the debt

financing.

NTE, Capital Dynamics and Wattage Finance are developing a third project in Texas. The 237 MW Pecan Creek Energy Center in Nolan County, Texas, is still in development and on track to be financed later this year. NTE has been looking to either finance all three projects at once or split them up into two deals, depending on permit approvals (PFR, 8/1).

Spokespeople for NTE Energy in Jacksonville, Fla., Capital Dynamics in Zug, Switzerland, Guggenheim Partners, BNP Paribas, Crédit Agricole, MUFG and ING in New York either declined to comment or did not respond to inquiries. ■

### FAST FACT

▶ The deals backing Kings Mountain and Middletown are expected to have seven-year and five-year tenors, respectively.

## MERGERS &amp; ACQUISITIONS ●

## Berkshire Hathaway Takes Up Geronimo Portfolio

**BHE Renewables**, a subsidiary of **Berkshire Hathaway Energy**, is acquiring a portfolio of wind and solar projects from **Geronimo Energy**.

The portfolio includes the 400 MW Grande Prairie wind project in Holt County, Neb., the 225 MW Walnut Ridge wind farm in Bureau County, Ill., and a portfolio of community solar assets in Minnesota.

The solar projects are part of **Xcel Energy's** community solar garden program, which it launched in December. Xcel is awaiting approval from the **Minnesota Public Utilities Commission** for 646 MW of com-

munity solar projects, including those developed by Geronimo Energy, a spokesperson for the Minneapolis-based electric and natural gas utility tells *PFR*.

Xcel customers will be able to purchase or lease interests in the community solar projects located in the county they live in, or adjacent counties, from sponsors such as BHE, once the projects are online. The customers will in turn receive credits on their energy bill. Current participants in Xcel's program include **St. Paul Public Housing Agency**, **St. Olaf College** and **District Cooling St. Paul**.

**Omaha Public Power District** has an offtake agreement with

Grande Prairie, which is expected to be online in 2016. The U.S. **General Services Administration** has a power purchase agreement with Walnut Ridge, which will be built in 2016.

Des Moines, Iowa-based BHE owns several utility-scale solar projects including the 550 MW Topaz project in San Luis Obispo County, Calif., (PFR, 2/24/2012) and the 579 MW Solar Star projects, two installations currently under construction in the Kern and Los Angeles counties in California.

**Barclays**, **Citigroup** and **Royal Bank of Scotland** recently upsized an issuance of 20-year

senior secured series B notes for BHE. The proceeds are being used to fund a debt portion of the financing for the Solar Star projects (PFR, 3/6). BHE also owns a portfolio of wind assets, including the 300 MW Jumbo Road wind project near Hereford, Texas and the 132 MW Pinyon Pines II projects near Tehachapi, California.

Whether Geronimo or BHE used an advisor and the purchase price of the portfolio could not be established. Spokespeople for Berkshire Hathaway in New York and Geronimo in Edina, Minn., either did not respond to inquiries or declined to comment. ■



## ● MERGERS & ACQUISITIONS

# Mississippi Power Explores Alternatives After Kemper Deal Folds

Mississippi Power is evaluating alternatives to offset the impact of **South Mississippi Electric Power's** withdrawal from a planned investment in a 582 MW coal-fired facility in Kemper County, Miss.

**Fitch Ratings** says it is likely to downgrade Mississippi Power by at least one notch following the collapse of the deal.

Mississippi Power, a wholly owned subsidiary of Atlanta-based **Southern Company**, currently has an A- rating from Fitch, with a negative outlook **Moody's Investors Service** and **Standard & Poor's** have assigned Mississippi Power Baa1 and A ratings, respectively, both with negative outlooks.

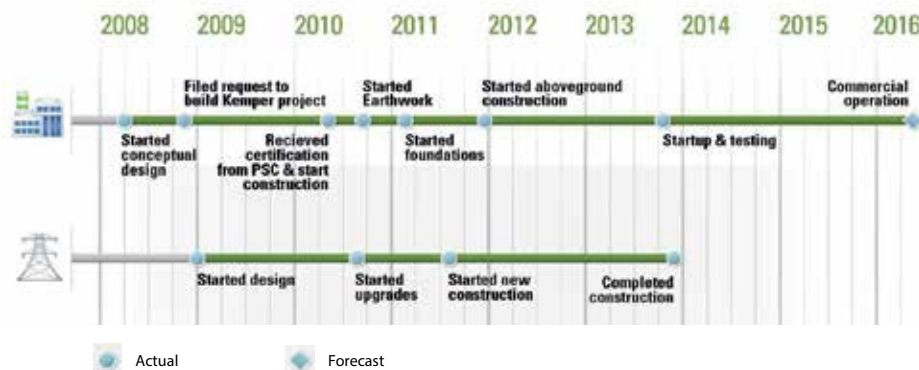
SMEP announced last Wednesday that it would no longer seek to buy an interest in the 582 MW coal facility. The company attributed its withdrawal, in part, to delays in project schedule and changes to its own supply needs.

The company will find it difficult to replace SMEP in view of low wholesale prices in addition to repeated project delays, according to analysts at Fitch.

Fitch is also assessing how the collapse of the acquisition will affect parent company Southern Co.'s stable A rating.

SMEP, a not-for-profit electricity co-operative, initially agreed to buy 17.5% of the lignite-fuelled project from Mississippi Power in 2010, but had already reduced the stake it was eyeing to 15% in response to the spiralling cost of developing the project.

### Kemper Project Timeline



Source: Mississippi Power

Mississippi Power is required to repay the \$275 million, which SMEP ponied up for the acquisition, plus interest, according to a filing by Mississippi Power with the U.S. **Securities and Exchange Commission**. The full purchase price of the 15% interest has been

estimated at \$600 million.

The facility was originally slated to go online last year. It is now scheduled for completion in the first half of 2016. The cost of building the project, initially pegged at \$1.8 billion in 2006 (PFR 12/15/06), has ballooned to

\$6.17 billion.

In February, the Mississippi Supreme Court invalidated rate increases approved by the state's **Public Service Commission** and ordered Mississippi Power to refund about \$281 million it had collected from ratepayers in 2013 and 2014 to fund the project (PFR 4/2). Mississippi Power and the PSC have filed applications for a rehearing on the ruling.

On May 15, Mississippi Power filed three proposals with the PSC to recover eligible costs for the facility. The company is considering issuing bonds when the plant is operational, and channelling proceeds towards some of the project costs. ■

## Southern Power Nets Ga. Solar From Community Energy

**Southern Company** affiliate **Southern Power** has purchased the 103 MW Butler solar facility in Taylor County, Ga., from **Community Energy**, in its latest bid to expand renewable generation in the state.

**First Solar** will build and operate the facility, which was initially developed by Community Energy. Construction will begin in September and the facility is scheduled to go online during the fourth quarter of 2016, in time to avail of the 30% federal investment tax credit before it plunges to 10% from Jan. 1, 2017, onward.

Southern Power acquired the Butler solar project through a selection process managed by its subsidiary, **Georgia Power**. The project is one of 10 winning bids chosen from roughly 140 responses to a request for proposals that Georgia Power issued last year as a part of its **Advanced Solar Initiative**, a spokesperson for Georgia Power says. Southern Power similarly acquired a pair of solar assets totaling 99 MW in Bainsbridge from **Tradewind Energy** in February (PFR, 2/25).

The Butler solar facility has a 30-year offtake contract with Georgia Power.

Southern Power has either acquired or initiated the process of constructing 16 solar, wind and biomass assets totaling more than 1.1 GW. This roster includes

four solar projects in Georgia. The developer clinched its purchase of the 314 MW Kay wind farm in Oklahoma from **Apex Clean Energy** earlier in January (PFR, 1/5).

Southern Power also scooped a 51% stake of the 150 MW Imperial Valley project in Imperial County, Calif., from First Solar last year, taking 99% of the tax incentives as a tax equity investor (PFR, 9/5). Parent Southern Co. has been eyeing more solar deals where it can assume the role of a co-owner (PFR, 31/10).

The purchase price of the Butler acquisition has not been disclosed. Whether Southern Power or Community Energy worked with one or more financial advisors could not be immediately learned. ■

## INDUSTRY CURRENT ●

# How Does Tesla's Powerwall Impact the Electric Power Sector?

This Industry Current is written by **Benjamin L. Israel**, a Washington, D.C.-based partner at **Kaplan, Kirsch & Rockwell**, a national infrastructure and land use law firm. Israel's practice focuses on the electric power industry, where he provides transactional and regulatory advice regarding the development, financing, management, purchase, and sale of renewable and fossil fuel powered generation and related infrastructure.



Benjamin L. Israel

otherwise from the electric grid when utility rates are lower during non-peak hours. The battery can be discharged for consumption as needed, including when utility rates are higher during peak hours or a power outage. Powerwall is intended to be integrated into an existing or new solar panel system, working with the system's electrical inverter which converts DC electricity from the solar panels or the battery into AC for consumption. The Powerwall unit includes a battery management system, a liquid thermal management system, and a smart DC-DC converter for controlling power flow.

## WHAT DOES IT MEAN FOR RETAIL ELECTRIC CUSTOMERS?

The Solar Energy Industries Association estimates that there are nearly 645,000 residences and businesses employing solar panels in the U.S. These customers and future customers now have another option to store energy captured by their solar panels during off-peak hours and consume that energy during peak hours, thereby saving on energy costs. But the immediate load-shifting opportunities are limited in price and scope, and market analysts suggest that the cost of the Powerwall outweighs potential energy

savings.

These customers also have a back-up option when their local utility provider's generation or distribution system is down. However, while a home battery would be attractive in lieu of a noisy back-up generator, the Tesla back-up plan is costly in its current configuration. Here are three reasons why:

The average daily electricity consumption for a U.S. residential energy customer is approximately 30 kW per day – almost three times the capacity of the larger Powerwall unit. This means that an average homeowner desiring full back-up capability in the event of a power outage on the grid would have to purchase as many as three units. Depending on the size of any particular business, a business-owner's costs could easily be much greater. Back-up generators, often accompanied by generous financing terms, are still much less expensive, albeit with the need for a back-up fuel supply.

The \$3,500 cost does not include the cost of the inverter. While inverter costs vary, **SolarCity**, an affiliated and leading solar installer offering Powerwall as part of its solar system sales and installation, has roughly doubled the cost of a single Powerwall unit, quoting a \$7,140 purchase price for a 10 kW Powerwall unit including the inverter, control systems, installation, and a maintenance contract. However, even at \$700/kW, analysts have indicated that the pricing remains very competitive – relative to other batteries.

Powerwall's investment tax credit benefit is more limited than for solar panels, and the value of the ITC for all qualifying equipment will drop dramatically in 2017. The U.S. **Internal Revenue Service** has ruled that batteries used to store solar energy qualify for the 30% credit. However, as "dual-use property" storing energy from both solar and non-solar resources (i.e. the utility grid), the ITC is prorated based on the amount of power stored from the qualifying solar panels. Furthermore, the ITC actually claimed is subject to a severe recapture rule if the amount of power stored from the solar panels in

PAGE 9 »

**"SolarCity has roughly doubled the cost of a single Powerwall unit, quoting \$7,140 for a 10kW unit. Even at \$700/kW, pricing remains competitive relative to other batteries."**

**WHAT IS POWERWALL?**  
Powerwall is a rechargeable lithium-ion battery designed to store on-site solar energy, or energy from the electric grid, for use in homes and small businesses. There are two models. The larger model is a 10 kW unit designed for weekly cycling, i.e. it recharges on a weekly basis, and is optimized for backup applications. The smaller model is a 7 kW unit designed for daily cycling, which reduces its efficiency and useful life. Powerwall has a round-trip efficiency rating between storage and discharge of 92%, although losses during the conversion of energy from DC to AC will likely reduce that figure to approximately 87%. Up to nine units can be combined for greater capacity at a cost of \$3,500 per unit for the 10 kW model. Powerwall comes with a 10-year warranty, the typical useful life of similar battery systems.

Powerwall is charged using electricity generated from solar panels when the solar generation exceeds the electric load, or

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## INDUSTRY CURRENT ●

## « FROM PAGE 7

any year dips below a prescribed 75% threshold. Finally, the 30% credit will be stepped-down to 10% for equipment placed in service after Dec. 31, 2016. Other state incentives supporting distributed generation tend to have similar shelf lives.

In sum, even with federal and state tax credits it appears that the Powerwall does not make immediate economic sense for most U.S. customers. Nonetheless, there is an early-adopter “wow” factor associated with the Powerwall, which offers an alternative – and cleaner – energy supply during blackouts, allowing more motivated, or more remotely-located, customers to be less dependent on the grid, if not get off it entirely.

### WHAT DOES IT MEAN FOR UTILITY-SCALE GENERATION, TRANSMISSION AND DISTRIBUTION?

The information provided by **Tesla Energy** for its larger utility-scale systems is less specific, but the potential benefits are likely greater in the immediate future than for residential-scale systems. The utility-scale system is comprised of 100 kW battery blocks, and those blocks are grouped to scale from 500 kW to more than 10 MW. A spokesperson from Tesla Motors indicates that, unlike the Powerwall units, the larger battery blocks can be integrated into power systems without an inverter, meaning that, in addition to utility-scale photovoltaic projects, including community solar projects, they can be used with concentrated solar power projects, wind facilities, fossil-fueled generation, transmission and distribution. Tesla indicates that these systems are capable of two-hour or four-hour continuous net discharge using bi-directional inverters tied to the electric grid. Pricing information on these battery blocks has not been made publicly available.

### AMONG THE BENEFITS FROM THE UTILITY-SCALE BATTERY BLOCKS:

#### Firming-up intermittent generation:

The greatest challenge posed by most renewable energy resources is the inherently intermittent nature of the resource. While the availability of the energy source (e.g. sun and wind) may itself be generally predictable, it is not controllable as

with electric generation from a storable fuel source such as coal, natural gas, and even biomass. In the case of PV solar, the utility-scale battery blocks reconcile the intermittency of power from solar panels by storing excess capacity for dispatch when the panels are not able to harness the sun, thereby smoothing out their energy output to the grid over time. The same principle applies to balancing out intermittent generation from wind turbines.

**Increasing resource capacity:** In the same vein as addressing intermittency, the utility-scale battery blocks have the ability to function as on-demand generation resources, contributing to the grid’s overall generation capacity and stability. The battery blocks will also add to the dispatchability of any electric generation project, allowing for minimal response time peak-demand management by the electric utility purchasing the electric output.

**Ramp control:** As utilities purchasing generation projects demand higher levels of operational control, the Tesla battery blocks can be employed as a buffer while the output from a large generation source is ramping up or down, delivering power instantly to transition the output smoothly to the required level. Essentially, the battery blocks allow utility-scale solar projects to operate more like fossil-fueled power plants. This raises the question of whether electric utilities purchasing power from renewable energy proj-

ects with significant storage capacity should be given capacity and energy payments rather than energy-only payments which is currently the standard payment mechanism in the industry (PFR, 1/6/12), (PFR, 1/13/12), (PFR, 1/20/12).

**Increasing load stability:** The battery blocks would allow the associated generator to support the grid and prevent fluctuations from propagating to downstream loads. This benefit could translate to cost savings from delaying or otherwise obviating the need for transmission or distribution system upgrades.

What makes these factors attractive is that regional power markets across the U.S. attach specific values for each of these ancillary services. That means there is real, demonstrable value attached to these benefits. One of Tesla Energy’s distribution partners, Vermont-based **Green Mountain Power**, cites “participating in grid services” as one of the utility-scale benefits associated with the Tesla battery blocks.

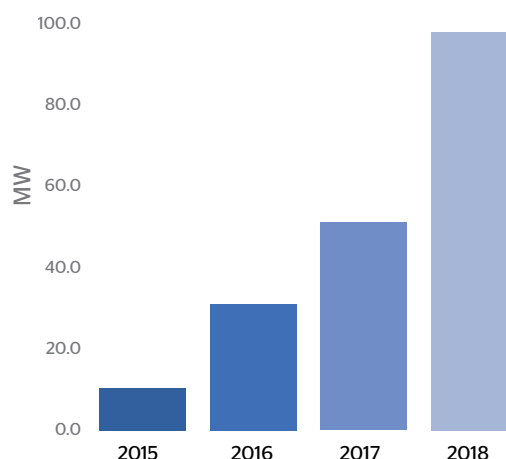
Notwithstanding the excitement associated with the Tesla Energy announcement, Tesla is far from being the first company to develop a battery system paired with residential or utility-scale solar. It has been estimated that Germany, which is the global leader in solar generation, has approximately 18,000 home battery systems paired with solar panels. Moreover, the utility-scale market, as is the case with residential solar, is getting more crowded with utility-scale battery applications.

Nevertheless, Tesla’s foray into the electric power sector does add further support to the notion that energy storage remains a “holy grail” in the industry and is seemingly more within reach. The global energy storage industry, valued at \$200 million in 2012, is expected to grow to \$19 billion by 2017.

### THE BOTTOM LINE:

Powerwall attempts to make energy storage hip, bringing renewed attention to a growing market sector that will help electric utilities and their consumers restructure the way they gain access to and pay for electric power. Energy storage pricing is expected to continue falling over time, and the Tesla offering is one more step toward making energy storage more economic. ■

### Estimated C&I Solar Storage Installations in the U.S.



Source: GTM Research

## ● Q&A MICHAEL ALLISON, MACQUARIE CAPITAL, PART II

# Michael Allison, Macquarie Capital, Part II

« FROM PAGE 1 cantly and have delivered or outperformed their growth targets – it's been a very successful investment. In today's low-interest rate environment, yield is important for a certain class of investors, and you can see that with the follow-on offerings of the public yieldcos. They have been very well received, typically four or five times oversubscribed for a follow-on offering, which is a very good sign. The initial wave of yieldco IPOs was for companies with strong parent companies and a significant development pipeline that could feed the growth in the dividends to shareholders that these companies promised at the time of listing. I believe the next group of companies that go public may be structured a little bit differently. For example, companies such as **8Point3 Energy Partners**, and **Lightbeam Electric** have slightly different business models than the companies that have gone before them. In my opinion, the market will still embrace these new business models that are coming to market in the next wave. In addition to 8point3 and Lightbeam, some other players are looking to file in the next six to 12 months. It's been successful so far, and I think it's going to continue to be successful. I think investors really like this product, the MLP market is analogous to the yieldco market and it's been around for 25 years and has been very successful. I think the demand for yieldcos will continue to grow. There is going to be a lot of competition for assets, going forward.

**PFR:** What is the sense you are getting from prospective issuers in terms of other companies that might consider a yieldco IPO?

**Allison:** There are a number of other companies that are considering listing their asset portfolios through a yieldco

IPO and it's going to come down to how big the IPO portfolio is, how many assets they have been able to acquire and how much you can grow over time. Yieldcos are a function of growth and yield and the more demonstrable growth you have, the more the market believes that growth will happen, and the lower the yield you will trade at. I think all the companies in the current market that are looking at potential yieldco IPOs have got good assets, a strong development pipeline, and will be looking to acquire new assets over time. SunEdison has been public that they are going to do an emerging-markets vehicle which would be the first of its kind. The listed yieldcos today are predominantly invested in OECD countries, mainly the U.S., U.K. and Canada, so that's going to be an interesting step for the market to assess projects and project risks in areas outside of the OECD countries. Are investors willing to take what many consider a low-risk product and introduce more potential risks for higher growth in areas such as China and India? I guess we will find out.

**PFR:** What types of roles is Macquarie Capital looking to take in transactions, going forward?

**Allison:** On the capital markets side, we're involved with a number of companies that are looking to go public on the yieldco side. We have a strong equity capital market franchise

and we're very deep in the sector in terms of our merchant banking model and the development capital we provide. In terms of the development capital business, we continue to evaluate opportunities. It's really about having the right development team and a strong risk management framework. We evaluate lots of deals and we've got to pick out opportunities that are right for the business, while maximizing the best possible outcomes for our clients.

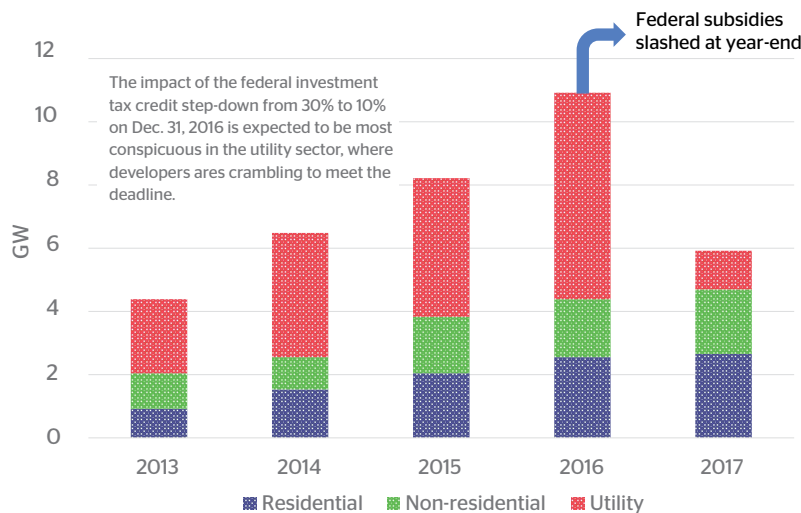
**PFR:** What other areas should we watch out for in 2015 in terms of growth?

**Allison:** 2016 is all about the end of the PTC and ITC. So, you've got a number of companies that have prequalified equipment and are looking to obtain hedges or offtake contracts for their projects. These companies are likely to be moving to market, and the market is going to be very busy on the financing side. The timeline to build projects is quickly shrinking. I think there is going to be a real rush for the door over the next few months as firms try to get their financing lined up. The big bottleneck is likely going to be tax equity as there is a finite amount of tax capacity in the market. What I hear from the tax equity investors is that they don't have enough resources to assess all the opportunities in front of them. So, the good sponsors will be able to utilize their relationships and get tax equity for their projects, the smaller players may get left out. The real growth over the next 18 months will be getting their projects done by the end '16.

**PFR:** What are the challenges involved in raising tax equity? Are there going to be alternatives to that, going forward?

**Allison:** That's a really great question. As we discussed, the bottleneck we see is lining up tax equity in order to secure construction financing to begin the construction phase of the project. Ironically, tax equity doesn't fund till after the commercial operations date but proj-

## New Installed Solar Capacity in the U.S.



Source: Bloomberg New Energy Finance

## Q&amp;A MICHAEL ALLISON, MACQUARIE CAPITAL, PART II ●

◀ FROM PAGE 10

ect developers or owners need to get the tax equity commitment well in advance of the project's COD, so that lenders who fund construction have a way for the debt to be repaid when the project begins operating. What we're seeing and hearing from developers and sponsors, is a potential need to bridge the tax equity takeout, allowing the tax equity more time to assess the project, rather than having to do it upfront. This side of the market is going to develop over the next six months as the timing to bring all the parts of the capital stack together gets more and more critical.

Obtaining debt financing for a construction-ready project is typically straight-forward, given the robust debt markets and lenders' appetite for doing well structured deals, but before a firm can draw on that debt, they need to have the tax equity signed off, and that can typically be a long process, in some cases up to 6 months from start to finish. In this situation, developers may have to delay the start of construction so they can secure the tax equity. There is talk in the market that certain investors could bridge the tax equity so that construction can commence and this would extend the timeline to bring a tax equity investor into the deal. I think there are a lot of sponsors and developers in the market thinking about how they can arrange the timelines of the different financiers in a more efficient way for all market participants.

**PFR:** A lot of renewables investors, especially in the solar space are rushing to buy or invest in projects mainly because the 30% ITC will decline to 10% at the start of 2017. Do you see investors who don't do that, or sponsors who can't raise financing or investments on time, explore other alternatives from 2017 onward?

**Allison:** There are still going to be projects developed in 2017. If you are a developer and have developed the project based on a 30% ITC and it goes to 10%, you will be leaving significant money on the table or the project will not be able to be developed. If you have projects today that can be done in 2015 or 2016, then these developers will try to get them completed as quickly as possible. On the flip side, if you've got projects where there is support for a 2017 COD date,

developers will tend to move on that timeline. The PTC going away or the ITC going away is not the stop point. Wind is, in some parts of the country, the cheapest source of energy. So, many developers are going to continue with business as usual. If there's an extension, great. It's a windfall gain for them. If not, they're still looking to develop their projects without the PTC or a smaller ITC.

**PFR:** In the context of merchant wind, which zone do you think is most encouraging for wind projects? I am talking about markets like PJM or CAISO.

**Allison:** While we have spent significant time analyzing the merchant wind market, especially in Texas, we see two main areas of concern for us to provide development capital for these projects: One issue we face is that the hedge being provided really only protects the tax equity investor and does not typically protect the cash equity investor that much. Our clients are generally yieldcos or infrastructure funds or direct pension investors who are not really looking for that kind of exposure.

The other issue we've identified is that the hedge provider needs the developer to post a significant amount of collateral required to execute the hedge. This can add up to tens of millions of dollars. So, it is a significant amount of exposure and is often much greater than the collateral needed to be posted for the PPA security or the interconnection deposit. Sometimes, the hedge collateral needs to be posted before the start of construction and this really adds a huge amount of risk. Funding this security is not cheap

which drags on returns.

**PFR:** Where do you see the debt market heading in the renewables space in 2015?

**Allison:** I think the debt markets continue to be robust. We're seeing a lot of activity. If you have a well-developed deal, it doesn't seem to be difficult at the moment to get debt. Macquarie recently closed financing for the Freeport LNG project. We've seen success in our other projects as well, specifically development projects where there has been a need for holdco leverage. There's a good amount of appetite to do deals that are well structured.

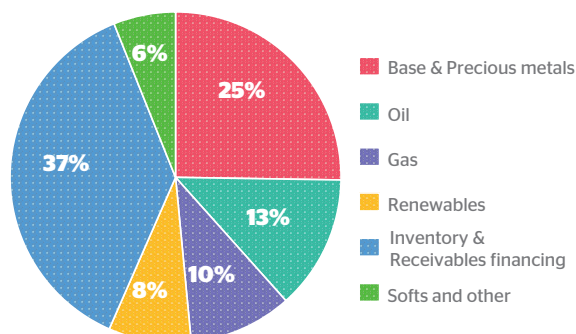
**PFR:** Do you see that changing structurally in any way over the next two years, or do you anticipate that it will remain the same?

**Allison:** I think it's dependent on interest rates to a certain degree. Banks need to borrow. So, there is the cost of capital that they're borrowing at versus where they are lending at. Banks are going to continue to try to make those margins. Senior lending in the project finance space to renewables companies and projects has been successful for the banks. So, I would imagine that it would be business as usual unless there's a big market hiccup, which I don't foresee.

**PFR:** Do you plan make any additions to your team in the year ahead? If so, what types of roles do you see opening up in your group?

**Allison:** We've got a very well-staffed group at the moment. My team in New York predominantly focuses on the financing side of transactions: capital markets, advisory and principal investing. The team in Austin, Texas leads our efforts in diligence and our in-house project development. The Austin team also supports our merchant banking efforts in the power sector and across renewables in Latin America and they have been very active. We may look to grow the development team as I see our development business as an area of differentiation. As we continue to grow, we will evaluate strategies to build out the team. ■

Macquarie's Loan Portfolio



Source: Macquarie's Investor Presentation—May 2015

## ● PEOPLE &amp; FIRMS

## Goldman Banker Moves To SolarCity

**SolarCity** has appointed former **Goldman Sachs** executive **Radford Small** as senior v.p. of business development and investor relations. Small, who began his role in the company's San Mateo, Calif. office on May 26, will report to CFO **Brad Buss**.

Small will play a key role in boosting SolarCity's burgeoning solar securitization efforts and other financial innovations, working closely with the structured finance team to optimize the company's sources and cost of capital. SolarCity hopes to leverage Small's vast network of relationships with capital markets entities.

Small was previously managing director and coo of the clean technology and renewables group at Goldman Sachs, which he joined

17 years ago. At Goldman, he raised more than \$20 billion in financing and brokered M&A deals valued collectively at \$25 billion. During his time at the bank, he led SolarCity's initial public offering, and oversaw a tax equity investment and various capital markets transactions for the solar rollup. His body of clientele has spanned over regulated utilities, independent power producers and renewables developers.

SolarCity, which pioneered asset-backed solar securitizations, is considering multiple issuances this year, according to **Marco Krapels**, senior v.p. of structured finance and strategy (PFR, 5/14). It is estimated to have raised more than \$1 billion since January (PFR, 5/8), and recently partnered with Tesla to offer the Tesla Powerwall, a rechargeable on-site solar storage battery, to its customers.

Whether Goldman Sachs has any plans to replace Small could not be learned. ■

## ● ALTERNATING CURRENT

## Disney World Goes Solar



**W**alt Disney World Resort is gearing up to install its own solar facility, which will assume the form of the Walt Disney Co.'s legendary mascot.

**Duke Energy Florida** will build, own and operate the uniquely designed 5 MW solar facility at Walt Disney World in Orlando, Fla. The project will carry 48,000 panels, which will be laid out in the iconic shape of Mickey Mouse.

The Mickey Mouse plant is the largest solar facility to be built on Disney World's premises and is an equivalent of about 1,000 residential solar rooftop systems. The Magic Kingdom, Disney's Animal Kingdom and Epcot all have smaller sized solar projects in backstage areas.

The **Reedy Creek Improvement District**, which supplies power to Disney World, has signed a 15-year power purchase agreement with Duke Energy Florida for the project, which will occupy approximately 20 acres. Construction on the site near Epcot is expected to start this summer and is slated to be online by the end of the year.

Duke Energy Florida, which produces roughly 3% of this generation from renewable assets, is expanding its solar portfolio and recently announced plans to be build up to 500 MW of solar assets by 2024. The expansion will double solar capacity in the state of Florida. Details of Duke's plans for solar projects in Florida have not yet been announced. ■

## PFR #PowerTweets

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Partner @monaEDajani and Michael Reed on #MississippiPower \$281M refund order @PowerFinRisk article <http://bit.ly/1yOYmAI>

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When considering a #YieldCo, developer @Ge-stampRen examines exit strategy options in our #RenewableEnergy brief <http://www.cohnreznick.com/insights/newsletters/north-america-renewable-energy-brief-spring-2015?>

@akin\_gump

Akin Gump advises Natural Gas Partners in sale of Eagle Rock Energy Partners <http://bit.ly/1PL77Zv>

@JaimeArrieta

@elonmusk #ElonMusk invested \$100 million into #SpaceX, \$70 million into #Tesla, and \$10 million into #SolarCity.



@FairQuestions

Should Alberta phase out coal-fired electricity? Here's a report well worth reading from @FriendsOfScience: [http://www.friendsofscience.org/assets/documents/FoS-BurningQuestions\\_Health\\_Coal\\_Wildfires\\_Jan2015.pdf](http://www.friendsofscience.org/assets/documents/FoS-BurningQuestions_Health_Coal_Wildfires_Jan2015.pdf) ... #abpoli

@AWEA

#Wind energy will have largest role in cost-effectively meeting Clean Power Plan says @EIAgov <http://ow.ly/Ny58R>

@SunPower

#Kern schools commit to largest #solar project by U.S. district: 22MW, saving \$80 million! @KHSD\_Official <http://bit.ly/1HOAwh6>

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