INTRODUCTION
Despite policy challenges in the U.S. renewable energy sector during 2018, demand for renewable energy platforms and project assets remained strong, translating into another banner year for M&A. The implementation of tax reform provided the impetus for a strong tax equity market, and the broader renewables M&A market continued to be driven by the solar and onshore wind segments. Additionally, while offshore wind and energy storage continued as “sectors to watch,” overall deal volume in these segments remained muted given their relatively early stages of commercialization in North America.

Risk return profiles and strategic considerations continued to drive investor M&A activity, with lower risk investors focused on the more mature end of the project spectrum and those with higher return requirements seeking portfolios or projects earlier in the development cycle. Platforms were in high demand with institutional investors driving landmark transactions. For purchases, foreign players – including those from Canada, Europe and Asia – were aggressive acquirers of U.S. assets, motivated by competitive costs of capital and the prospect of higher returns than those available in their respective home markets. Additionally, there was continued consolidation in the yieldco arena, and oil & gas conglomerates demonstrated an active interest in the renewables sector.

Going into 2019, annual installations for both wind and solar are anticipated to increase as the impending PTC cliff drives a development rush for onshore wind through 2020 and the effects of tariffs taper off for solar. We expect the rapid pace of M&A to continue as investors seek out attractive solar and onshore wind opportunities. In the case of wind, acquirers will be looking to snap up PTC qualified assets. For solar, the focus is likely to be on operating projects, development portfolios with equipment supply at competitive prices or early stage.

US Renewables M&A: 2018 Review and Outlook for 2019

SUMMARY
Transactions in solar and wind made 2018 a banner year for renewable asset M&A.

There were a number of notable transactions with institutional and foreign players amongst active acquirers.

Strong M&A activity is expected to continue in 2019 driven by high levels of demand as well as policy and industry dynamics.

EXPERTS
R. Carter Atlamazoglou
Senior Director
+1 303 689 8811
carter.atlamazoglou@fticonsulting.com

Alexander van Tuyn
Director
+1 212 841 9381
alexander.vantuyn@fticonsulting.com

Chris Post
Managing Director
+1 303 689 8888
chris.post@fticonsulting.com

Aris Karcanias
Co-Leader, Clean Energy
+ 44 20 3727 1282
aris.karcanias@fticonsulting.com

Chris LeWand
Co-Leader, Clean Energy
+ 1 303 689 8839
chris.lewand@fticonsulting.com

@FTIConsulting
www.fticonsulting.com

*Source: FTI Intelligence
pipeline opportunities which are not subject to significant tariff constraints. As in 2018, we expect development platforms and teams with strong track records will be sought after. At the same time, we project that elevated levels of demand, coupled with the current rising interest rate environment, will lead to a further compression of returns in the sector. Conversely, renewables players looking to recycle capital or coming under liquidity pressure are likely to be active sellers in 2019, providing for some measure of supply/demand counterbalance.

2018 OVERVIEW — UTILITY SCALE SOLAR AND WIND DOMINATE

As in previous years, utility scale solar and onshore wind sectors represented the majority of renewable energy M&A activity, with 2018 topping 2017 both in terms of number of transactions and MWs trading hands. With the uncertainty surrounding tax reform dispelled and the tariffs associated with section 201 codified, significant hurdles were lifted early in the calendar year. Several blockbuster deals took place as institutional investors sought out the stable return prospects offered by the sector, making outright acquisitions or snapping up stakes in major multi-asset platforms and portfolios. Examples included Capital Dynamics’ purchase of NRG Yield (and the balance of NRG’s renewable energy business) and Caisse de Dépôt et Placement du Québec’s (“CDPQ”) increase of its stake in Invenergy. Policy considerations were likewise important drivers with the imminent PTC cliff driving project development as well as M&A in the wind sector, with acquirers seeking out PTC qualified projects and portfolios. At the same time, Section 201 drove demand for solar projects with locked-in equipment supply and experienced development

As in 2018, we expect development platforms and teams with strong track records will be sought after. At the same time, we project that elevated levels of demand, coupled with the current rising interest rate environment, will lead to a further compression of returns in the sector.

EXPERTS
R. Carter Atlamazoglou
Senior Director
+1 303 689 8811
carter.atlamazoglou@fticonsulting.com

Alexander van Tuyn
Director
+1 212 841 9381
alexander.vantuyn@fticonsulting.com

Chris Post
Managing Director
+1 303 689 8888
chris.post@fticonsulting.com

Aris Karcanias
Co-Leader, Clean Energy
+ 44 20 3727 1282
aris.karcanias@fticonsulting.com

Chris LeWand
Co-Leader, Clean Energy
+ 1 303 689 8839
chris.lewand@fticonsulting.com

*Source: FTI Intelligence – MWs include operational and development assets. “Wind” category represents onshore only, offshore wind included in “Other”.

About FTI Consulting
FTI Consulting is an independent global business advisory firm dedicated to helping organizations manage change, mitigate risk and resolve disputes: financial, legal, operational, political & regulatory, reputational and transactional. FTI Consulting professionals, located in all major business centers throughout the world, work closely with clients to anticipate, illuminate and overcome complex business challenges and opportunities. The views expressed herein are those of the author(s) and not necessarily the views of FTI Consulting, Inc., its management, its subsidiaries, its affiliates, or its other professionals. FTI Consulting, Inc., including its subsidiaries and affiliates, is a consulting firm and is not a certified public accounting firm or a law firm.
platforms able to navigate the tariff environment. Pension funds, insurance companies, private capital and strategic players were all active acquirers, while developers, owner operators and financial investors provided a steady pipeline of projects to the market by recycling capital and taking advantage of strong demand and valuation.

OFFSHORE WIND MARKET
Beyond the traditional solar and onshore wind markets, there were significant developments in U.S. offshore wind in 2018. While no new offshore projects were commissioned during the year, the offshore pipeline saw major advancement. Massachusetts, New York, New Jersey and Virginia each made major pushes as new offshore wind energy areas were formally designated. The U.S. offshore wind pipeline is now in excess of 25 GW, and major investment in the construction of these sites is expected in the near-term. Development in the sector has been driven by industry heavyweights, many of which are foreign. Orsted’s $510m acquisition of U.S. offshore wind platform Deepwater Wind further cemented its strong position in the market. Additionally, EDF Renewable Energy agreed to acquire a fully developed offshore wind project from Fisherman’s Energy, located off the coast of New Jersey. We also note German utility EnBW’s formation of a joint venture with Trident Winds to develop a floating offshore wind project near Morro Bay, CA.

STORAGE
As costs continue to fall, the energy storage sector has grown significantly, with strong increases expected going forward. Deployments have been primarily for stand-alone storage solutions or hybrid solar + storage projects. Li-ion remained the storage technology of choice, given continued technological superiority and being the recipient of the lion’s share of storage R&D expenditure. Primary market participants are utilities and IPPs for which storage complements core activities. Upstream interest in the storage market has also grown, as large players continue to make major investment in production capacity; however, investment to date has been primarily made organically, and the market has observed limited stand-alone storage M&A activity. As costs continue to come down and profitable use cases are demonstrated, debt capitalization will become more viable and M&A activity would be expected to increase.

INTERNATIONAL PARTICIPANTS
As previously noted, international players remained highly active in the U.S. market during 2018 and were involved in many of the sectors major transactions, driven by competitive costs of capital and attractive relative returns. Strategic acquirers, including Orsted, Innogy, Engie and KEPCO, were active, as were institutional investors such as Capital Dynamics, Quinbrook, EDF Renewable Energy, and Siemens. Future development in these areas will depend on continued cost reductions and improved policy frameworks.

As previously noted, international players remained highly active in the market during 2018 and were involved in many of the sectors major transactions driven by competitive costs of capital and attractive relative returns.

EXPERTS
R. Carter Atlamazoglou
Senior Director
+1 303 689 8811
carter.atlamazoglou@fticonsulting.com

Alexander van Tuyn
Director
+1 212 841 9381
alexander.vantuyn@fticonsulting.com

Chris Post
Managing Director
+1 303 689 8888
chris.post@fticonsulting.com

Aris Karcanias
Co-Leader, Clean Energy
+ 44 20 3727 1282
aris.karcanias@fticonsulting.com

Chris LeWand
Co-Leader, Clean Energy
+ 1 303 689 8839
chris.lewand@fticonsulting.com

*Source: FTI Intelligence
Ontario Teachers and CDPQ – reflecting the breadth of buyer demand. On the sell-side, international owners with established US platforms went to market to raise or recycle capital, with examples including the sale of large U.S. renewable portfolios by both EDF Renewables and EDPR Renewables.

**YIELDCOS**

The consolidation of U.S. renewable energy yieldcos continued early in 2018 with Capital Dynamic’s acquisition of 8point3 from SunPower and First Solar. This transaction was closely followed by the purchase of NRG Yield, as well as the remainder of NRG’s renewables business, by Global Infrastructure Partners. In addition, Algonquin Power acquired 41.5% of Atlantica Yield during 2018 (the majority of Atlantica’s assets are outside the U.S.). These transactions followed on the heels of Brookfield’s majority acquisition of Terraform Power and outright acquisition of Terraform Global in 2017. NextEra Energy Partners

### 2018 Notable Deals

<table>
<thead>
<tr>
<th>Notable Deals</th>
<th>Capacity (MW)</th>
<th>Value (SMM)</th>
<th>Buyer</th>
<th>Seller</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8point3 Energy</td>
<td>946</td>
<td>$1,658</td>
<td>Capital Dynamics</td>
<td>First Solar/SunPower</td>
<td>Capital Dynamics acquired 8point3, a publicly traded yieldco, sponsored by First Solar and SunPower with a solar portfolio of 946 MW.</td>
</tr>
<tr>
<td>Deepwater Wind</td>
<td>3,300</td>
<td>$510</td>
<td>Orsted</td>
<td>D.E. Shaw</td>
<td>Orsted acquired US offshore wind farm developer Deepwater Wind from D.E. Shaw, further cementing Orsted’s position in the U.S. wind market.</td>
</tr>
<tr>
<td>Infinity Renewables</td>
<td>8,000</td>
<td>N/A</td>
<td>ENGIE</td>
<td>Infinity Renewables</td>
<td>Engie NA acquired Infinity Renewables, a developer of utility scale wind power projects in the U.S. The acquisition includes more than 8,000 MW in various stages of development.</td>
</tr>
<tr>
<td>Invenery Renewables</td>
<td>14,000</td>
<td>N/A</td>
<td>Caisse de Dépôt et Placement du Québec (CDPQ)</td>
<td>Invenery</td>
<td>La Caisse de Dépôt et Placement du Québec (CDPQ) increased its interest in Invenery Renewables to 52.4%. Invenery will continue to be the managing member of the company.</td>
</tr>
<tr>
<td>Leeward Renewable Energy</td>
<td>1,700</td>
<td>N/A</td>
<td>Ontario Municipal Employees Retirement System (OMERS)</td>
<td>Arclight Capital</td>
<td>OMERS acquired Leeward Renewable Energy from Arclight Capital. Leeward is a developer, owner and operator of wind projects with an operational portfolio of approximately 1,700 MW in nine states.</td>
</tr>
<tr>
<td>Noble Environmental Wind Portfolio</td>
<td>726</td>
<td>N/A</td>
<td>Zephyr Wind Energy/Geronimo Renewable Infrastructure Partners (GRIP)</td>
<td>Noble Environmental Power</td>
<td>Noble Environmental Power sold off its operational portfolio in two separate transactions, including the sale of its operating 612 MW wind portfolio in New York to Zephyr Wind (a Carlyle affiliate) and the sale of a 114 MW wind farm in Texas to GRIP.</td>
</tr>
<tr>
<td>NRG Yield &amp; NRG Renewable Platform</td>
<td>5,730</td>
<td>$1,375</td>
<td>Global Infrastructure Partners (GIP)</td>
<td>NRG Energy</td>
<td>GIP acquired NRG Energy’s full ownership in NRG Yield as well as NRG renewables development and operations platform. The acquisition includes a portfolio of wind, solar and natural gas assets.</td>
</tr>
<tr>
<td>Sempra Renewable Assets</td>
<td>980</td>
<td>$1,540</td>
<td>Consolidated Edison</td>
<td>Sempra Energy</td>
<td>Sempra sold its non-utility operating renewable assets including solar, battery storage and one wind facility to Consolidated Edison.</td>
</tr>
<tr>
<td>Southern Power Solar Portfolio</td>
<td>1,700</td>
<td>$1,175</td>
<td>Global Atlantic Financial Group</td>
<td>Southern Power</td>
<td>Southern Power’s sale of a 33% minority interest in its 1.7 GW solar portfolio to Global Atlantic Financial Group.</td>
</tr>
<tr>
<td>SunPower Solar Development Pipeline</td>
<td>4,700</td>
<td>$1,348</td>
<td>Clearway Energy Group</td>
<td>SunPower</td>
<td>Clearway acquired a development pipeline of approximately 4.7 GW of utility scale solar development projects from SunPower.</td>
</tr>
</tbody>
</table>

*Source: FTI Intelligence – MWs represent total portfolio not adjusted for percent acquisition.
and Pattern Energy now remain the key Yelldco players, with the former sponsored by industry heavyweight NextEra Energy, Inc. During the year, Pattern divested select assets outside the US while also actively deploying capital into new projects. The company is expected to continue recycling capital during 2019.

INTEREST FROM OIL AND GAS MAJORS
As renewables have become increasingly competitive with conventional generation, and as clean technologies continue to play a larger role in the energy mix, oil and gas conglomerates have turned a sharper eye towards the sector as they seek to diversify and maintain a foothold in it. With BP having acquired a significant interest in Lightsource at the end of 2017, Lightsource BP expanded in the US with the acquisition of a 135MW solar development portfolio from Orion Renewable Energy in 2018. BP also sold three operating wind farms in Texas; however, proceeds were redeployed to fund technology upgrades across the balance of its U.S. wind portfolio. Shell was also active in the solar sector via its acquisition of a stake in U.S. solar developer Silicon Ranch and in offshore wind through the establishment of a JV with EDPR for the development of a project off the coast of Massachusetts. Additionally, ExxonMobil demonstrated interest through issuing a solar and wind RFp last August. As the LCOE for renewables continues to decrease and corporate social responsibility comes to the forefront, the drive towards diversification for oil & gas conglomerates is expected to continue.

2019 OUTLOOK
Free from the negative policy overhangs of the prior year, renewable M&A is poised for a strong year in 2019. Activity in the sector will continue to be dominated by solar and wind transactions, covering both additions of new capacity and the acquisition/divestment of existing projects. As of this publication, a number of notable transactions are already in-market.

In the solar segment, with the second year of Section 201 upon us, the focus will largely center on the build-out of existing pipelines that have been able to obtain panels at favorable prices. In addition, there will be a rush towards commencing construction by year-end in order to meet the deadline for the full 30% ITC. We expect to see high demand for projects that meet these criteria, and we also expect continued demand for project platforms, as well as seasoned development teams that can optimize returns in a post-tariff environment. Companies that came under pressure in 2018 will be looking to shore up their balance sheets in 2019, potentially through asset sales.

In the wind segment, the markets are preparing for a rush of activity ahead of the PTC phase-out. Given safe harbor provisions, the wind segment is expected to see record levels of annual installations in 2019 and 2020, with a meaningful taper expected thereafter. As a follow-on effect, we forecast elevated levels of transaction activity as purchasers look to lock in projects with known economics prior to the PTC phase-out. Repowering will continue to provide an opportunity for investors to optimize returns; however, these projects are subject to the same deadlines for “begin construction” and “in-service” and thus would be subject to the same time constraints for implementation.

Offshore wind and energy storage are also expected to attract increased interest from strategic buyers and capital providers. For offshore wind, there are currently a limited number of sites in the US dominated by a handful of major players – many of these are large European offshore wind players or US-European partnerships. As development projects mature and come close to construction ready, we are likely to see increased M&A activity and consolidation. In addition, there will be continued investment in energy storage with utilities and IPPs driving the bulk of such activity organically. For a more active M&A market in energy storage, further demonstrated monetization of use cases and performance track records will be critical in order to generate attractive returns and bankability, as well as to enable derivative financial products necessary to support broader deployment of underlying technology. While these are both sectors to closely watch, we expect material M&A activity to remain comparatively modest for another 1-2 years.

We anticipate continued market interest from international buyers as the US continues to offer an abundant supply of renewable energy assets and Free from the negative policy overhangs of the prior year, renewable M&A is poised for a strong year in 2019. Activity in the sector will continue to be dominated by solar and wind transactions, covering both additions of new capacity and the acquisition/divestment of existing projects.
platforms with relatively attractive return profiles. As previously noted, a variety of foreign players already have a significant presence in the U.S. market and will continue to be active on both the buy and sell-side, even as new foreign entrants begin allocating capital to the U.S. Economic fundamentals including continued declines in levelized costs, diversification and corporate sustainability will continue to drive interest from the oil and gas sector.

From a cost of capital perspective, debt financing continues to be favorable; however, the potential impact on financing costs from a rising rate environment, coupled with strong demand for high quality production assets, will likely lead to a compression of returns. Current unlevered after-tax returns are in the 6-7% range for solar and 7-8% range for wind. We expect that all-in levered project returns could decline by 75-100 basis over 2019. An increase in the cost of financing could also lead to increased pressure to groom portfolios amongst the more highly levered players.

As we consider stress in the sector, we also note the recent bankruptcy filing of PG&E, California’s largest power company and one of the most active buyers of renewable power in the U.S. While the bankruptcy proceeding (which could take considerable time to complete) remains in early days, there is uncertainty over what it will mean for existing PPA counterparties as well as the broader PPA environment in California. Adding to the uncertainty, the Federal Energy Regulatory Commission ("FERC") issued an order only days before PG&E’s bankruptcy filing which stated that FERC believes it shares concurrent jurisdiction with the bankruptcy courts over wholesale power agreements. The impacts of the FERC order will be a key storyline to follow during the bankruptcy. Key PPA counterparties include Berkshire Hathaway, Consolidated Edison, NextEra and Clearway Energy, among others.

As we consider stress in the sector, we also note the recent bankruptcy filing of PG&E, California’s largest power company and one of the most active buyers of renewable power in the U.S. While the bankruptcy proceeding (which could take considerable time to complete) remains in early days, there is uncertainty over what it will mean for existing PPA counterparties as well as the broader PPA environment in California.

EXPERTS
R. Carter Atlamazoglou
Senior Director
+1 303 689 8811
carter.atlamazoglou@fticonsulting.com

Alexander van Tuyn
Director
+1 212 841 9381
alexander.vantuyn@fticonsulting.com

Chris Post
Managing Director
+1 303 689 8888
chris.post@fticonsulting.com

Aris Karcanias
Co-Leader, Clean Energy
+ 44 20 3727 1282
aris.karcanias@fticonsulting.com

Chris LeWand
Co-Leader, Clean Energy
+ 1 303 689 8839
chris.lewand@fticonsulting.com

@FTIConsulting
www.fticonsulting.com