



Creative US And International Debt And Equity Financing Mechanisms For Energy Storage Projects And Technology Companies

**Panel: Fireside Chat: Creative US And Int'l Debt And Equity Financing
Mechanisms**

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- *A Founder And Original General Counsel:*
 - *Renewable Fuel Association –1979-1984.*
 - *Clean Fuels Development Coalition – Since 1985.*
 - *Clean Fuels Foundation – Since 1990.*
 - *American Council On Renewable Energy/Biomass Coordinating Council – Since 2001.*
 - *Latin American Council On Renewable Energy – Since 2009.*
- *Assisted Clients In The Creation Of The Original Alternate Energy Tax Incentives In The 1978 And 1980 Tax Acts, And Their Expansions And Extensions Thereafter.*
- *Assisted Clients In The Renewable Fuels And Renewable Power Industries In The Development Of Provisions In The 1978 Public Utility Regulatory Policies Act, 1983 Caribbean Basin Economic Recovery Act, 1990 Clean Air Amendments (And Reformulated Gasoline Regulations Thereto), 1992 Energy Policy Act, 2005 Energy Policy Act, And The 2007 Energy Independence And Security Act, 2008 and 2014 Food, Conservation And Energy Acts, And 2009 American Recovery And Reinvestment Act.*
- *Named One Of The Top 100 Bioenergy Leaders Worldwide – BiofuelsDigest – 2011-2012 (#67), 2012-2013 (#50), 2013-2014 (#56) and 2014-2015 (#49).*
- *AV Preeminent Rating By Martindale-Hubbell For Last 18 Years.*
- *Named One Of Washington, DC & Baltimore's Top Rated Lawyers For Business & Commercial By Legal Leaders For 2012-2015.*
- *Vice Chairman For Project Finance, American Bar Association, Section For Energy & Natural Resources Since 2010.*
- *Kilpatrick Townsend Ranked #1 Worldwide For Infrastructure Construction – Chambers – 2011, 2012, 2013 And 2014.*
- *Graduated With JD – Georgetown University Law Center And BA – University of Michigan – Summa Cum Laude And Phi Beta Kappa.*

Policies That Drive Energy Storage

To Stimulate Economic Growth and Development of Economy, of Markets After 2008

- FTA Clean Fuels (DOT Grants for electric vehicle battery technologies).
- Energy Efficiency & Renewable Energy (DOE Grants for Solar Manufacturing, Energy Storage, Fuel Cells, and related technologies).
- California's 1.3 GW energy storage mandate introduced in 2013 through A.B. 2514.
- The Energy Storage and Deployment Act of 2015 (S. 1434)(Senator Martin Heinrich, D-NM), introduced in late May 2015, would require 1% by 2021 (or more than 8 GW) and 2% by 2025 (or approximately 18 GW) of peak demand from renewable energy storage.
- California's Self-Generation Incentive Program ("SGIP") reauthorized in 2014 to provide an additional \$415 million in incentives or \$83 million per year – through 2019 for behind the meter wind, fuel cells, and energy storage, including a 200 MW energy storage mandate during that period at approximately \$1.80 per Watt.
- Texas, with 450 MW of grid-scale energy storage, proposes to install 9 GW of energy storage battery capacity through RFPs issued by Oncor- a Texas transmission and distribution company.
- Similarly, New York's NYSERDA/Con Edison demand management incentive is \$2,100/kw (up from \$600/kw) for non-thermal battery storage and \$2,600/kw (up from \$600/kw) for thermal storage; providing 40% to 60% of the installed cost of the system. Demand-Response projects will receive \$800/kw (up from \$200/kw).
- New York also seeks to procure, through NYSERDA, \$160 million in renewable energy including from fuel cells based on 20 year agreements.
- Minnesota introduced HR 843 (Rep. Pat Garofalo) to create rebates for property owners who install energy storage systems.

Policies That Drive Energy Storage

To Stimulate Economic Growth and Development of Economy, of Markets After 2008 (continued)

- New Jersey in 2015, awarded \$3 million to 13 different projects under the FY 2015 Renewable Energy Storage Initiative for energy storage. On March 1, 2016, New Jersey opened a 2nd round with double the funding to \$6 million.
- Maryland has new legislation (HB787) modeled after California's storage mandate in AB 2514.
- Internationally, India's Solar Energy corporation recently issued an RFP seeking bids for procuring 100 MWs of energy storage capacity to support its massive 28 GW of installed solar over the next 5 years. As part of this effort, India's infrastructure finance company IL & FS in January 2016 announced it will develop 5,000 MW of solar storage at an energy park being constructed in the state of Rajasthan. Similarly, Australia's energy storage market should reach 250 MW by 2020. China, Japan and Germany each have strong and growing energy storage industries as recognized leaders behind the U.S.

Industry Highlights

– Projected Energy Storage Growth

- World Energy Council Report (November, 2014) projects \$48 trillion in capital (including \$8 trillion for energy efficiency) is required between 2014 and 2035 to construct the required energy infrastructure supply chain.
- GTM Research Report (March 2015) projects global energy storage to be more than a \$1 billion plus market for just battery-backed solar PV systems by 2018. Similarly, a Transparency Market Research Report (March 2014) predicts the global thermal energy storage market to increase from \$627.6 million in 2013 to \$1.82 billion, and from 2,038.3 MW in 2013 to 6,070.2 MW, by 2020. However, Japan's Institute of Energy Economics recently predicted that the overall global energy storage market would increase to a huge \$200 billion opportunity by 2020. It further predicted that Japanese companies seek to capture 50% of that growth by that date.
- Navigant Report (March 2015) predicts a growth in global energy storage from 538 MW/\$675 million in revenues in 2014 to 21 GW/\$15.6 billion in revenues in 2024. Recently, it also predicts a global growth in distributed energy storage ("DES") systems from 196 MW in 2015 to approximately 2.4 GW by 2018, and exceeding 12.7 GW by 2025, representing approximately \$8.5 billion in annual revenues. By 2026, global utility scale storage is expected to reach 12.8 GW at a similar \$8.5 billion in revenues.
- California's 1.3 GW mandate by 2020 (A.B. 2514), along with other potentially big state markets like Texas, Puerto Rico, Hawaii and New York, and PJM states will continue to drive energy storage and technologies to compete for RFPs. Today, this California mandate is being surpassed by transmission scale to distributed, behind – the meter solar and electric – vehicle linked system projects. California's 1.3 GW mandate further requires 875 MW to be distributed grid connected or customer-sited storage. Southern California Edison has announced more than 261 MW of new contracted energy storage capacity which is a 5-fold increase over its requirement. Texas and PJM have more than 620 MW and 480 MW, respectively, of energy storage under development at year's end 2015.

Industry Highlights

– Projected Energy Storage Growth (continued)

- Technology advancements will better energy storage. 24 M has developed a new lithium ion battery that has 5 times more storage capacity. Similarly, Wildcat Discovery Technologies has developed electrolyte additives to boost lithium-ion battery performance of cathodes, anodes and voltages.
- Advanced Energy Economy (AEE) reported in early March 2016 that U.S. energy storage revenues grew 12 times over 2014 such revenues (\$58 million) in 2015 at \$734 million. Further, world energy storage revenues grew to \$2.1 billion in 2015 versus \$462 million in 2014, or a 5-fold increase.
- AEE also reported in March 2014 that “battery prices have fallen 40% - 60% in the past 18 months.” Manufacturing innovations and product volume increases, AEE further notes, caused this price reduction. Along with balance of plant price reductions, the energy storage industry is expected to scale quickly. Solar Server’s January 2016 report predicts an additional 70% reduction in energy storage costs by 2030. As \$1.00 per-watt-peak is the goal for solar, similarly the target for storage is \$100 per KWH.
- Total corporate funding – VC, public markets, debt – suffered a significant decrease in Q1 2016 v. Q4 2015, or by an approximate 59% - \$2.8 billion in Q1 2016 v. \$6.9 billion in Q4 2015, according to a Mercom Capital Group report in April 2016.
- Solar City, in early April 2016, closed on \$338 million for commercial and residential solar and energy storage.
- New York’s Con Edison, according to March 2016 report, expects to work around an otherwise \$1 billion transmission and distribution infrastructure upgrade by investing \$200 million in distributed energy resources like energy storage. On March 16, 2016, it closed an RFQ for information from potential energy storage bidders.
- GE announced in October 2015 that it is developing a business division devoted to energy storage, efficiency and generation. It will fund this division with approximately \$1 billion.

Industry Highlights

– Projected Energy Storage Growth (continued)

- Energy storage initiatives through new grid resiliency and distributed energy incentive programs (including grants) have developed in New York, Connecticut, New Jersey and Massachusetts as a result of super storm Sandy driving potentially hundreds of millions of dollars to these storage technologies.
- The Oregon Energy Office is to issue a Storage Demonstration RFP and storage bills (HB2193) has been introduced into the Oregon Legislature with a series of energy storage incentives.
- Germany, India and Japan have launched significant incentive-based energy storage initiatives.
- Behind the meter, which is approximately 10% of the overall storage market, tripled in 2014, and is projected to be 45% by 2019.
- New York's Reforming the Energy Vision ("REV") Program, launched in April 24, 2014, provides significant incentives (including grants) for energy storage with several such projects expected to be announced in Summer 2015. Similar programs to incentivize energy storage and batteries have been established in Colorado (Clean Technology Products Program), Massachusetts (\$10 million) and New Jersey (\$6 million).
- New York – NYSERDA grants, NY Public Service Commission regulatory reforms and ConEd (52 MW)/PSEG (360 MW) RFPs for energy storage technologies.
- Connecticut – grants for 100 KW of energy storage.
- Massachusetts – Clean Energy Storage - \$150,000 grant for a demonstration project of utility controlled residential battery energy storage systems. The overall program totals \$10 million.
- Arizona – Utility (APS and TEA) RFPs for 20 MW of energy storage. Arizona requires 10% of peak generating procurements to come from storage.
- Hawaii – HECO energy storage RFPs result in 3 projects of 60 MW – 200 MW.
- Washington – 3 utilities awarded DOE EERE grants of \$15 MM for energy storage.
- Texas ERCOT – focus on energy storage and data centers with ONCOR with utility study for controlled distributive solar (including behind the meter). New Technology Implementation Grants (\$1 million program).
- Oregon – \$300,000 in energy storage demonstrations.

Growing The Energy Storage Industry – Challenges And Solutions

1. **Challenges** - What are the obstacles to growing energy storage?

- Lack of Funds at the Company and Project Levels.
 - Grants and Equity.
 - Debt.
- Lack of Certainty in Government Programs.
 - Government Funding Programs – Require Continuing Annual Appropriations for Existing and New Programs.
 - Tax Incentives – Require Extensions of Existing and Creation of New Incentives.
 - State Renewable Portfolio Standards (“RPS”) – Require Certainty. These state RPS laws have been under attack for the past two years.

2. **Solutions** - What are the energy and industrial policies needed to move forward?

- Creative Debt Financing and Equity Funding – Company, Project and Portfolio Levels.
- Insurance Protections.
- Tax Incentives Availability.
- RPS Certainty.

Grants And Equity Options

	Type of Funding	Corporate-Level Funding	Project-Level Funding	Dilutive ("D") or Non-Dilutive ("ND")
1.	Grants (State and Federal – DOE, USDA, DOT)	✓	✓	ND
2.	Angel Funding (including Crowdfunding (as modified in June 2015 by Regulation A-Plus), Foundations and Family Offices – Prime Coalition, CREO Syndicated, as part of Clean Energy Investment Initiative -- up to \$4 billion (Recent White House Initiative) Equity (Keiretsu – largest/2014 - \$24 billion in angel private placements with 6% to cleantech)	✓		D
3.	Venture Capital Equity (Zymergin raised \$44 million in series A round for its microbial programming to high value bioproducts from Data Collective, Draper Fisher, HVF, Innovation Endeavors, Obvious Ventures, True Venture and Two Sigma Ventrues)	✓	✓	D
4.	Private Equity (TIAA – CREF North American Sustainable Energy fund - \$1 billion; UK's Smart City Enterprise Investment Fund of \$150 MM for energy efficiency; Bill and Melinda Gates Foundation is committing \$2 billion over 5 years for clean technology)	✓	✓	D
5.	Strategic Equity (Bioeconomy companies raised approximately \$1.3 billion in the past 12 months or a 16% increase in deals and 17% drop in deal size per raise)	✓	✓	D
6.	Infrastructure Funds Equity (USDA's 3 new \$150 MM, \$100+ MM and \$25+ MM equity and debt funds – Rural Business Investment Corporations ("RBICs") – Made In Rural America, Meritus and Innova, respectively, KKR raised a 2 nd fund of \$3.1 billion, and Sovereign Wealth Funds)		✓	D
7.	State (California, Connecticut, Hawaii, Illinois, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New York, Washington) and Federal Green Funds, State Revolving Funds (tend to be grants, loans, loan guarantees and not equity as government entities shy away from investments)		✓	ND
8.	International Green Funds (Australia, Brazil, Canada, Caribbean Energy Security Initiative (\$20 million US fund), European Investment Bank (Euros 8 billion), India, Malaysia, UK) (tend to be grants, loans, loan guarantees and not equity as government entities shy away from investments)	✓	✓	ND
9.	Tax Equity – ITCs, PTCs, Bonus and MACRs Depreciation and NMTCS		✓	Initially D to later ND
10.	Sponsor Equity – Project Developers, Hedge Funds (use has grown in last 2 years) and YieldCos		✓	D
11.	Portfolio Equity - MLPs/ REITs/ YieldCos		✓	D

Grants

1. DOE

- Open grants for energy storage applications:
 - The DOE's Office of EERE issued a program entitled "Solar Energy Evolution and Diffusion Studies II – State Energy Strategies" for approximately \$20.9 million to cover two topics: 1 - increasing foundational understanding of technology evolution, soft costs, and barriers to solar deployment in the US. 2 - tackling soft costs and market barrier challenges at the state and regional level by maximizing the benefits of solar electricity through energy and economic strategic planning. Closing application date – May 2, 2016.
 - The DOE's Office of EERE, on behalf of the Buildings Technologies Office ("BTO"), announced an FOA for Buildings Energy Efficiency Frontiers and Innovation Technologies ("BENEFIT") 2016. This FOA combines early-stage topics (Innovations) with later-stage, roadmap-driven topics (frontiers) that complement the core funding provided by the program. Closing application date – April 19, 2016. Award ceiling of \$2MM.
 - ARPA-E's budget is to be tripled to \$1 billion by 2021. Recent technology fundings of 45 cleantech projects resulted in more than \$1.2 billion in follow-on private sector investments. On February 26, 2016, ARPA-E announced \$30 million for its new "Integration And Optimization of Novel Ion Conducting Solids ("IONICS") program for energy storage in the transportation sector, grid storage, hydrogen fuel cells and electrolyzers. Some recent energy storage awardees for 2015 – 2016 include: Primus Power (zinc-flow batteries), Fluidic (zinc air batteries), Envia Systems (lithiumion batteries for EV and hydridcors),SAFCell (fuel cells for distributed power) and Sun Catalytics (microgrid flow batteries).
 - The Fuel Cell Technologies Office ("FCTO"), part of the DOE's EERE portfolio, operates the "Hydrogen and Fuel Cell Technologies Research, Development, and Demonstrations" program. It is geared to support a technology-neutral approach towards research, development, and demonstration to address challenges for fuel cells and hydrogen fuels (including institutional barriers such as hydrogen codes and standards). Award ceiling: \$3MM.
 - DOE on June 16, 2015, announced to Clean Energy Impact Investment Center as part of the Administration's White House Clean Energy Investment Summit, where private industry pledged \$4 billion for investment.
 - DOE, on August 25, 2015, opened an \$18 million solicitation for advanced PV technology in its Sunshot Program.

Grants (cont'd)

2. USDA

- Section 9007 offers up to \$500,000 in grant funding for renewable energy projects, including energy storage. The Farm Act of 2014 provides \$50 million for grants, loans and loan guarantees for each of FY2014 – FY2018. This mandatory funding amount of \$50 million for FY2014 and FY2015 is broken into \$80 million for grants and \$20 million for loan guarantees which is subsidy-scored by the OMB at 10 to 1, providing \$200 million for loan guarantees.
- USDA issued a final rule for Section 9007 on December 29, 2014. There are two application deadlines for 2015 – April 30 and June 30 for FY2014 through FY2018 grant funds.
- On April 21, 2015, USDA announced a new \$150 million “Made In Rural America” fund to facilitate private equity investments in agriculture related businesses. Advantage Capital Partners will manage the fund. This fund is in addition to two earlier structured funds – Meritus (\$100 million) and Innova (\$25 million) in its Rural Business Investment Corporation program for equity investments and loans.

Angel Funding and Crowdfunding Equity

1. Angel Funding

- Angel funding can be a great source of funding for companies looking to take their technology from the R&D level to a level that can attract VC funding. For example, Keiretsu Forum is the largest angel investor group and deploys the most such funding in the U.S. with chapters nationwide. The investments are often in a range of \$200,000 to \$3 million.

2. Crowdfunding

- Crowdfunding Under the 2012 Jump Start Over Business Start Ups (“JOBS”) Act
 - Allows “crowdfunding” or a private financing comprised of pooled investments of up to \$1 million within a 12-month period from many small investors subject to certain restrictions. Such funding must be handled by a broker or “funding portal” registered with the SEC.
 - The new “Regulation A-Plus” Crowdfunding rule (issued in July 2015) will allow companies to raise funds from a wider pool of investors with less red tape.
- On October 30, 2015, the U.S. Securities and Exchange Commission issued its final rules on crowdfunding under the 2012 JOBS Act and which are effective on May 16, 2016.
- Over \$34 billion was raised between 2009 and 2015 on over 450 crowdfunding platforms worldwide.
- In renewable energy, two top crowdfunding platforms, Mosaic (specializing in solar projects) and Abundance (specializing in renewable energy), raised \$8 million and \$10 million, respectively, since their debut in 2013 and 2011, respectively.
- The average ROI for the top crowdfunding platforms in renewable energy has been approximately 5 – 7.5%.

Angel Funding and Crowdfunding Equity (cont'd)

2. Crowdfunding (cont'd)

- The ROI for such crowdfunding platforms is too low for some VCs who are looking for double-digit returns, but it appeals to retail investors who are looking for steady income.

3. Family offices – may provide funds at this very early funding stage.

Venture Capital Equity

- In 2015, Cleantech venture capital and private equity funding was \$564 million in 2nd Quarter 2015, down 31% from 1st Quarter 2015 and 60% from 2nd Quarter 2014 as reported by Bloomberg New Energy Finance (“BNEF”). BNEF reported that clean energy investments worldwide were \$53 billion in 2nd Quarter 2015, down 28% from 2nd Quarter 2014. However, by year’s end 2015, global Cleantech VC investment rose significantly to \$10.8 billion globally, or up 11% over 2014’s \$9.7 billion.
- That said, renewable energy project financings increased significantly, as reported by BNEF. This increase occurred despite the precipitous drop in oil prices from nearly \$110/bbl in early 2014 to nearly \$40/bbl in late 2014/early 2015.
- Overall, for all industries, between 2013 and 2015, venture capital funding was up 41% generally reports the National Venture Capital Association. Many of the VC funds have refocused on sectors that scale rapidly, provide greater investor returns and enable earlier exits – such as social media and IT. Also, such funds had pivoted to new natural gas technologies until low oil and gas prices, renewable energy tax incentive extensions, COP21 proceedings and new EPA emissions reductions rules for carbon dioxide and landfill methane caused a refocus on cleantech industries.
- The top corporate Cleantech VC investors for 2015 were GE Ventures, Intel Capital, Samsung, EON, Air Liquide, Engie, Google Ventures and Tencent.

Venture Capital Equity (cont'd)

- Industry sector examples for 2015 include:
 - **Energy Storage -**
 - Raised almost 5.3% of overall \$10.8 billion in global clean tech VC investment for 2015, or \$572 million.
 - In fact, 2d Q 2015 VC storage investments doubled similar 1st Q 2015 investments by \$126 million (13 deals) from \$69 million (7 deals).
 - Two such 2015 VC success stories were Pimus Power (\$25 million Series D for zinc-flow batteries), and Ambri (\$35 million Series C for liquid metal batteries).
 - **SOLAR** – The solar sector raised the following VC funding in 2015 – 2016:
 - Solar VC funding came in at \$406 million in 22 US deals in Q1 2016, or an increase in the number of transactions and decrease in the associated costs over Q4 2015 which was \$460 million raised for 17 deals.
 - At the project level, Solar power overall grew approximately 36% worldwide in 2015 alone with approximately 55 GW of installation. In the U.S., solar grew by 7.3 GW in 2015, representing \$30.2 billion of investment.
 - The recent 5 year extension of the ITC could add 25 GW of new solar at approximately \$40 billion over that 5 year period.

Venture Capital Equity (cont'd)

- **WIND** – The wind sector raised the following VC funding in 2014 and 2015:
 - In 2015 VC wind funding was \$520 million in 14 deals (compared to \$311 million in 14 deals in 2014).
 - Wind power installation worldwide exceeded \$8.5 billion CAPEX in 2014. However, in 2015, global wind power installation was \$14.7 billion or 73% over 2014. Further, globally, 8.6 GW of wind power was installed in 2015, with 9.4 GW under construction in 2016.
- **Globally**, in Q1 2016, renewable power transactions amounted to \$7.1 billion in VC-backed financial closings.
- The 5 year retroactive ITC extension for wind thru December 31, 2019 will drive more project growth and VC funding.
- Traditionally, VCs are looking at double-digit returns in 7-10 years in high-risk companies with low capital requirements. Popular VCs, such as Kleiner Perkins and Khosla Ventures, have had trouble with investments in certain renewable technologies. Other VCs, such as Mohr Davidoff, have left the renewable energy and biochemicals spaces.
- One of the main challenges VCs face in the clean energy space is the very expensive need for infrastructure investments. Because of this infrastructure gap, VCs often avoid investing in an energy-generating technology itself.
- Average time from initial funding to IPO is 8.3 years for cleantech versus 9.4 years for other venture-backed technologies (National Venture Capital Association Report).

Private Equity

- Private equity, strategic equity and infrastructure funds often cross lines into each other's spaces.
- Pension funds, insurance companies, sovereign wealth funds, family offices and traditional private equity funds and companies invest equally as much in renewable energy (including energy storage), as in shale oil and gas.
- For the first time, 5 US-based private equity funds made it onto the Infrastructure Investor list of top 30 funds due to investments in shale gas and oil. Those 5 funds together raised \$21.2 billion in 2014 and substantially more in 2015 and 2016. They are: Energy Capital Partners, First Reserve, EnerVest, LS Power Group, and Energy Investors Funds.
- Top fund on the Infrastructure Investor list was Macquarie Infrastructure and Real Assets (based in Australia), which raised \$27.3 billion in the last five years for private equity and infrastructure, including investments into the energy sectors (including energy storage).
- In January 2016, the Abu Dhabi Bank committed to lend or invest \$10 billion in clean energy projects over the next 10 years.
- In April 2016, 8 banks and insurance companies (Bank of America, Massachusetts Mutual Life Insurance Company, Crédit Agricole CIB, the European Investment Bank, HSBC Group, International Finance Corporation, AllianceBernstein, Babson Capital Management, Natixis Group and Aligned Intermediary) pledged to invest \$8 billion in clean energy projects globally.

Private Equity (cont'd)

- Warburg Pincus recently raised a \$4 billion private equity fund for renewable energy projects and technologies. This fund is its 2nd energy fund – the first being a \$4 billion renewable energy fund run by First Green Partners.
- Goldman Sachs, among other investors, remains bullish on renewable energy and expressly states that it is committed to invest \$150 billion in renewable energy technologies and projects as a private equity investor over the next 10 years.
- KKR closed a \$2 billion private equity fund to invest in North American energy of all types (including energy storage).
- Blackstone Group LP closed its second fund for energy, a \$4.5 billion energy private equity fund. Over the past several years, Blackstone has invested approximately \$8 billion throughout the energy industries (including energy storage).
- Aligned Intermediary (using pension funds such as New Zealand Superannuation Fund, Alaska Permanent Fund, TIAA-CREF and family office-Tamarisk) to fund early stage clean energy projects with initial funding at \$1.5 billion (including energy storage).
- Climate Investor One – a \$1 billion funding facility for debt and/or equity to take emerging clean technology projects from an idea to reality (including energy storage).
- Vision Ridge Partners (sustainable Asset Fund and Capricorn) – a \$430 million fund for clean energy technology companies and late stage projects (including energy storage).

Private Equity (cont'd)

- In February 2016, SUSI Partners of Switzerland announced the formation of a new fund (Euros 200 million) entirely dedicated to energy storage technologies and projects.
- Black Rock has a \$939 million BGF New Energy Fund with substantial investments into Johnson Controls, including its energy storage and battery business.
- Younicos received a January 2016 capital infusion of \$50 million for its energy storage business from First Solar, Grupo Ecos and an unidentified investor.
- Green Charge Networks in January 2016 received \$58 million from Ares Capital for a portfolio of behind-the-meter energy storage projects.
- RES Americas received funding and finance for utility scale storage projects at \$32 million in November 2015.
- STEM received \$100 million in late 2015 from B Asset Manager affiliates, RWE and Mitsui for behind-the-meter batteries.
- Viridity Energy is working on funding a railroad-based energy storage deal with the Southeastern Pennsylvania Transportation Authority and Constellation Energy. The project simultaneously will regulate frequency on the PJM Interconnection Grid.

Strategic Equity

- Increased role for strategic investors is required.
- Strategic Investors, such as integrators, utilities, offtakers of electricity, EPCs, O&Ms are taking equity positions in energy storage projects and technologies. Strategic Investors may include private equity and infrastructure funds, when they intend to invest beyond the initial project and take a portfolio approach.
- Strategic Investors are coming into projects and technology companies at earlier stages of development due to the pivot of traditional renewable energy VCs into social media, IT and natural gas. They are taking on greater roles too, as developers/technology providers plan a portfolio of projects beyond their first commercial projects.

Infrastructure Funds Equity

- Rural Infrastructure Opportunity Fund, announced on July 24, 2014, will provide pension funds and large investors the opportunity to invest in energy and infrastructure projects in rural US. The initial \$10 billion of the fund is committed by CoBank, a cooperative bank and member of the Farm Credit System.
- In the first half of 2014, infrastructure funds worldwide raised \$13.6 billion, compared to \$25 billion in the first half of 2013. The financial industry believes the decrease is due to pension funds and sovereign funds cutting costs and investing directly in infrastructure assets, rather than through infrastructure funds, as they had been doing previously.
- \$10.7 billion, \$4.4 billion and \$13.1 billion in total capital were raised by unlisted infrastructure funds during the first, second and third quarters of 2015, respectively.
- The Breakthrough Energy Coalition (BEC), formed by Bill Gates and a coalition of 27 major investors from 10 countries at the Paris COP21 meeting in November 2015, will commence with an initial investment of \$1 billion from Bill Gates personal funds. The BEC will invest clean electricity generation, storage, transportation, industrial use, agriculture and energy efficiency under a public private partnership (PPP) financing model.
- Generate Capital – raised more than \$150 million in 2015 for cleantech asset backed lending, project finance, asset warehouses and other short term and custom financing.

State and Federal Green Funds

State Green Bank Funds typically involve grants, loans and loan guarantees, as state and Federal governments historically have shied away from equity investments. State Green Banks typically leverage public sector funds with private sector money (as a traditional public-private partnership) to provide credit support, co-investment and warehouse facilities. Over time, such funds may become more aggressive in their approach to equity positions.

1. Connecticut Green Bank Fund – \$50 million plus in available funds.
2. New York Green Bank – \$1 billion plus of NY State government and private sector funds, with \$782 million in funding available at present.
 - In January 2016, New York launched a \$5 billion Clean Energy Fund to oversee the funding for the Green Bank, NYSERDA, Innovation Research Agency (\$717 million), NY Sun Fund (\$961 million) and other state clean energy initiatives, including the funding for those organizations.
 - On April 1, 2016, New York enacted a \$2,000 per applicant rebate programs for battery-only and other types of electric vehicles.
3. Hawaii Green Bank – To be funded up to \$150 million by green bonds and may become a model for other states. The new 100% RPS in Hawaii by 2045 will require this amount and more.
4. California Green Bank – \$13 billion plus in available funds, raised through State tax-exempt bonds.

State and Federal Green Funds (cont'd)

5. Michigan Green Bank

- A new funding source expected to leverage \$105 million into approximately \$3 billion in clean energy development projects.

6. Rhode Island Green Bank

- The new green bank would initially leverage approximately \$16 million in public funds.

7. Washington State Clean Energy Fund

- \$36 million in state funding, initially attracting \$60.5 million in private sector funds, for R&D grants for smart grid, energy storage, wind, solar and other renewable energy technology development.

9. State Revolving Funds

- Funds created from a \$3 billion DOE allocation under the 2009 Recovery Act in varying amounts, state-by-state. These funds typically are used for working capital, reserve accounts, credit enhancements and grants.

International Green Funds

Similar to State and Federal Green Funds, International Green Funds typically provide grants, loans, credit enhancements and not equity.

1. Australia

- Australian Renewable Energy Agency (“ARENA”) is offering \$3.2 billion in funding for pilot and demonstration projects for renewable energy – available until 2022.
- Clean Energy Finance Corporation (“CEFC”) is offering \$10 billion in funding for renewable energy and energy efficiency – commenced operations on July 1, 2013. In December 2015, CEFC committed \$100 million to bioenergy investments through funding its new Australian Bioenergy Fund. CEFC has provided more than \$1.4 billion in projects valued at more than \$3.5 billion since inception.
- Australia, on June 26, 2015, enacted a new \$11 billion renewable energy funding law. In February 2016, Australia launched the \$1.42 billion Powering Australia Renewables Fund. In late March 2016, Australia set up the \$1 billion Clean Energy Innovation Fund jointly owned by ARENA and CEFC. It will focus on loans and loan guarantees.

2. United Kingdom

- UK Green Investment Bank provides funding with an initial capitalization of approximately U.S. \$5 billion – opened on April 1, 2012.
- Climate Private Public Partnership (“CP3”) is initially a \$3 billion green energy fund for post first commercial projects in developing countries.

International Green Funds (cont'd)

3. Canada

- Sustainable Development Technology Canada (“SDTC”): SD Tech Fund originally (\$590 Million and recently appropriated \$330 million in new funds) (grants – pilots/demos for renewable energy technologies of all types including energy storage).

4. India

- The Government of India (GOI) plans to raise \$25 billion through 5 new funds to promote “green energy” – energy storage, advanced biofuels, biopower, solar power, wind power and hydro power – to create an “energy revolution” in India. In this effort, the GOI is launching a \$1 billion private equity fund for renewable energy in addition to a potential \$16 billion National Clean Energy Fund.

5. Brazil

- Brazil’s Development Bank (“BNDES”) launched the \$500 million plus Brazilian Climate Change Fund Program in 2009 to provide funding for projects that reduce GHG emissions in machinery and equipment that contribute to power efficiency (including energy storage).

6. Asia

- Asian Infrastructure Investment Bank (“AIIB”) expected to be funded at \$100 billion by approximately 57 founding countries by year end 2015.

7. Europe

- Santander, with Canada’s Ontario Teacher’s Pension Fund and Public Section Pension Investment Board, recently launched a \$2 billion renewable energy and water fund. European Investment Bank raised \$559 million for a renewable energy fund.

International Green Funds (cont'd)

8. Africa

- Green Wish Africa REN fund in July 2015 raised \$17 million of an approximate \$60 million solar power fund.

9. World Bank's Global Environmental Fund (GEF)

- GEF has created a \$100 million fund to finance low-carbon energy assets.

10. United Nation's Green Climate Fund (GCF)

- The GCF recently funded \$168 million for 8 international environmental projects (in Africa, South Asia and Latin America).

11. Climate Investor One Fund (CIOF)

- The CIOF was formed in November 2015 as a \$1 billion facility to fast track renewable energy investments with an initial focus on 10 renewable power projects in Africa, Asia and Latin America. However, it will provide funding throughout the developing world.

12. Saudi Arabia Public Investment Fund (PIF)

- The new Saudi PIF will provide approximately \$2 trillion for clean energy investments globally.

Tax Equity – ITCs, PTCs, Bonus Depreciations And NMTCs

1. Tax Equity generally includes funding for ITCs, PTCs, Bonus Depreciation and New Market Tax Credits (“NMTCs”). Such funds may be difficult to secure, where:
 - required funds are small (less than \$50 mm);
 - investments involve complicated and expensive structures;
 - transactions may require syndicators to secure multiple providers;
 - such incentives are subject to short term, politically-driven, legislative extensions; and
 - investors come from dissimilar industries with little knowledge of the intricacies of varying renewable energy industries.
2. Often the universe of such funders is not large, as these funders require certainty in the projects, but may give up some economic upside to achieve such certainty. They also are more apt to remain in their traditional funding “comfort zones.” J.P. Morgan notes that, in 2015, 20 wind and 28 solar tax equity investors were active.

Tax Equity – ITCs, PTCs, Bonus Depreciations And NMTCs (cont'd)

3. New Market Tax Credits

- Community Development Enterprises (“CDEs”) obtain allocations from Treasury on an annual competitive basis. They “invest” from these allocations into projects employing residents in qualified economically depressed areas that are also below the national census average (“NMTC zones”). NMTC zones may be found state-by-state on the Treasury – provided maps located at www.treasury.gov.
- Allocations “invested” often may amount to up to 10% to 20% of the total project costs (depending on the project’s size) for qualifying projects ultimately on a non-dilutive funding basis, after the CDE realizes its entire tax incentives from the qualifying project after 7 years.
- In return for the “investment,” CDEs obtain 39% in tax credits from a qualifying project realized over a 7-year period.
- Congress extended the NMTC provisions through December 31, 2019 at \$3.5 billion per year in the 2016 Omnibus Appropriation Act signed into law on December 18, 2015.

Tax Equity – ITCs, PTCs, Bonus Depreciations And NMTCs (cont'd)

4. Tax Incentives Extension

- Congress provided a short tax incentives extenders package in early December 2014. The President enacted into law on December 19, 2014, The Tax Increase Prevention Act (HR5771), for one year retroactively (and not two years) through 12/31/14. Thus, the ITCs, NMTCs, Renewable Fuels Production Tax Incentives and Related Depreciation Provisions, all having expired by years end 2013, were extended for 2 weeks to year's end 2014 and retroactively to January 1, 2014.
- On December 18, 2015, the President enacted the Omnibus Appropriation Act of 2016 and Protecting American from Tax Hikes (PATH) Act of 2015, which extended many tax incentives for renewable energy projects as follows:

Production Tax Credits

Extension for Qualifying Wind Facilities through 2019.

The legislation revises the Section 45 ten (10)-year production tax credit (PTC) to provide that qualifying wind facilities for which construction commenced prior to January 1, 2017, will be eligible for the current PTC rate (2.3 cents per kilowatt, adjusted for inflation). Qualifying wind facilities for which construction commences on or after January 1, 2017 and prior to January 1, 2020, will be eligible for PTCs at a reduced rate, as set forth on the following schedule:

- 20% reduction of the current PTC rate, for projects for which construction begins in 2017;
- 40% reduction of the current PTC rate, for projects for which construction begins in 2018; and
- 60% reduction of the current PTC rate, for projects for which construction begins in 2019.

Tax Equity – ITCs, PTCs, Bonus Depreciations And NMTCs (cont'd)

4. Tax Incentives Extension (cont'd)

Qualifying wind facilities that commence construction after 2019 will not be eligible for the PTC. The 30% investment tax credit (ITC) election in lieu of the PTC is also preserved for qualifying wind facilities and phases down as follows:

- 24% for qualifying wind facilities for which construction begins in 2017;
- 18% for qualifying wind facilities for which construction begins in 2018; and
- 12% for qualifying wind facilities for which construction being in 2019.

Extension for Other Renewable Energy Facilities through 2016.

The legislation also extended the 10-year PTC at the current PTC rate for projects for which construction commences on or before December 31, 2016 for the following: closed loop biomass facilities, open loop biomass facilities, geothermal facilities, landfill gas facilities, trash facilities, qualified hydropower facilities and marine and hydrokinetic renewable energy facilities. The 30% investment tax credit election in lieu of the PTC is also preserved for these qualifying renewable energy facilities through 2016. Senators Sanders and Wyden are trying to further extend these particular incentives through 12/31/2022.

Extension of the Investment Tax Credit for Qualifying Solar Facilities.

The legislation also provides for an extension of the 30% ITC rate for qualifying solar facilities if *construction commences* prior to January 1, 2020. This change is a significant departure from prior law, which required that qualifying solar facilities be placed in service during the applicable credit year. Qualifying solar facilities for which construction commences on or after January 1, 2020, will be eligible for ITCs at a reduced rate, as set forth on the following schedule:

- 26% for projects for which construction begins in 2020;
- 22% for projects for which construction begins in 2021;
- 10% for projects for which construction begins after December 31, 2021.

Tax Equity – ITCs, PTCs, Bonus Depreciations And NMTCs (cont'd)

4. Tax Incentives Extension (cont'd)

The revised rules further provide, that unless the qualifying solar facility is placed in service prior to January 1, 2024, any project for which construction begins before January 1, 2022, will be entitled to a 10% ITC. The Section 25D credit for residential solar energy systems is also extended for systems placed in service prior to January 1, 2022, and is subject to the same reduced rates as the ITC.

Other Renewable Energy Provisions Affected by the Legislation

- *Section 168(k) Bonus Depreciation* was extended for qualified property acquired and placed in service during 2015 – 2019 (with an additional year for certain such property with a longer production period) phased down as follows:
 - January 1, 2015 – December 31, 2017 – 50%
 - January 1, 2018 – December 31, 2018 – 40%
 - January 1, 2019 – December 31, 2019 – 30%

Sponsor Equity – Project Developers, Hedge Funds and YieldCos

Sponsor Equity frequently includes equity from project developers, hedge funds and YieldCos, among others.

1. Project Developers

- Project Developer Equity generally comes from the developers of projects who often are start-ups using some of the funds from their company-level private placements for use in their projects.

2. Hedge Funds

- Hedge Funds frequently come in to displace Tax Equity or where Tax Equity is not readily available or available at all.
- This class of funding has grown in the renewable energy space in the last 1.5 years.
- Hedge Funds often are shorter term investments (with foreseeable exit events) and they require 20% plus IRRs.

3. YieldCos

- YieldCos, discussed in depth below in Portfolio Equity, also become a type of Sponsor Equity in a sellers' market or as take-out buyers, when projects ultimately are sold. With the use of low cost capital, they can pay more for such assets, particularly when competing to become the new owner.

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options

Department of Energy

– Section 1703 (commenced in 2005)

1. Renewable Energy and Energy Efficiency (“REEE”) – \$4.5 billion – 9 increased to 13 competitive rounds of applications
 - Distributed energy, including renewable power technology and energy storage projects, are qualified and encouraged. At present, DOE has received a couple of battery storage applications.
 - No funds are obligated as no term sheets are yet executed with Part 2 applicants. Several of the Part 2 applicants are now in due diligence.
2. Clean Fossil Energy (“CFE”) – \$8.5 billion – 11 increased to 15 competitive rounds of applications including distributed clean fossil energy and storage.
 - No funds are obligated, as no term sheets are yet executed with Part 2 applicants. Several of the Part 2 applicants are now in due diligence.
3. Last Part 1 is July 13, 2016 and Part 2 is October 19, 2016 for REEE and CFE due to October 21, 2015 amendments.
4. Nuclear - \$12 billion – 3 competitive rounds of applications. To date, DOE has received two nuclear applications for Rounds 1 or 2, Part 1. Final applications are due, unless extended, as follows: Part 1 – July 20, 2016 and Part 2 – November 23, 2016.
5. Advanced Technology Vehicle Manufacturing (“ATVM”) - \$16 billion – rolling application process.
6. Total – **\$41 billion for four programs** – battery technologies may fit into the ATVM program if for vehicle use as part of the vehicle engines. DOE also is considering the use of stationary energy storage systems as part of the infrastructure to provide charging for electric vehicles.
7. Uncapped Senior Debt Amounts. Facility Plan provides for multiple smaller projects

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options (continued)

Department of Energy

– Section 1703 (commenced in 2005) (continued)

8. Four “Gating” issues for loan guarantees: (a) “First commercial” means not three or more identical technologies running commercially in the U.S., (b) U.S. site, (c) GHG emissions reduction and (d) reasonable likelihood of repayment.
9. Federal Finance Bank funding at Treasury rate + 37.5 basis points + credit rating spread for 22 year average term.
10. Fees – application, facility, maintenance, underwriting costs and credit subsidy.
11. Can finance 100% of 80% of total project costs, but request 65% coverage and 35% equity (and equivalents – state grants, tax equity, etc.), along with co-lending. Further, DOE can provide up to a 30 year term, but averages a tenor of 22 years.

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options (continued)

US Department of Agriculture

– Section 9003 of Farm Bill - Integrated Biorefineries (commenced in 2008)

1. Farm Act of 2014 expanded program from advanced biofuels to include renewable chemicals and biobased products, along with electricity with a new Interim Final Rule, dated June 24, 2015, and a new Notice of Solicitation, dated July 6, 2015, with Phase 1 application due dates as of October 1, 2015 and April 1, 2016, in a 2 phase program.
2. Approximate \$1 billion for current rounds.
3. Competitive and project sites can be located in non “rural” areas.
4. First Commercial = First Commercial. – Not like DOE’s definition – for Biorefineries including renewable power and energy storage. However, Biobased Product Manufacturing Facilities may have up to 3 commercial projects over a 5-year period.
5. \$250 M senior debt cap, with 60% - 80% loan guarantee coverage at 20% in non-Federal funds and up to 90% similar coverage with at least 40% in non-Federal funds. Borrowers must commit significant cash equity determined by USDA on a case-by-case basis.
6. Term – 20 years. Interest rates are fixed, variable or a combination of both.
7. Fees – nothing like DOE, 1% - 2% of senior debt at closing and 0.5% - 1.0% annual renewal fee with 80% senior debt coverage, depending on size of project. 3% of senior debt at closing and 1% annual renewal fee with 90% senior debt coverage.
10. Parent Guarantees may be negotiated downward or eliminated under the new Interim Final Rule through a new non-recourse “project financing” structure.

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options (continued)

US Department of Agriculture

– Section 9007 of Farm Bill (commenced in 2008)

1. \$200 MM in loan guarantees combining F14 and FY15 funding levels, with loan guarantees only subsidy-scored by OMB at 10 to 1 (\$20MM x 10 = \$200 MM) – expect to see FY16 subsidiary scoring at 16 to 1 and FY17 – FY18 potentially at 20 to 1 for the \$50 MM available per year under the new Farm Act of 2014. On August 7, 2015, USDA announced the award of \$64 million in loan guarantees and grants for 264 renewable energy, energy storage and energy efficiency projects. REAP currently is accepting applications for loan guarantees and grants for FY2016.
2. Competitive and required project sites in a “rural” area of less than 50,000 person census tracts.
3. Commercial – means at least one year of operations – can be a tough standard to meet!
4. \$25 MM senior debt cap, or up to 75% of total project costs (whichever is less), at 60% to up to 85% loan guarantee coverage. Interest rates are fixed or variable.
5. Equity – 25% of total project costs.
6. Term – 15 years or useful life of equipment for energy projects (7 years for working capital and 30 years for real estate).
7. Fees – nothing like DOE, approx. 1% of senior debt at closing and 0.25% annual renewal fee.
8. Final rule issued in December 2014.
9. Commercial Advanced Biofuels And Renewable Power (including energy storage) technologies are qualified financeable projects for 9007 loan guarantees.
10. Two separate legal entities with identical shareholding can obtain \$25 MM in senior debt coverage each for each of the 9007 and B&I loan guarantee programs for a single project. Today, one legal entity can obtain \$25 MM in aggregate funds from the B&I and 9007 loan guarantee programs. Once USDA issues the B&I final rule, then one legal entity can obtain up to \$25 MM of senior debt coverage for each of the B&I and 9007 loan guarantee programs for the same project, or \$50 MM in senior debt.

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options (continued)

US Department of Agriculture

– Business & Industry (“B&I”) Program (commenced in 1972)

1. \$1 billion approximately available in loan guarantee funds annually.
2. Non-competitive and project sites must be located in “rural” areas of less than 50,000 person census tracts.
3. Commercial – more flexible than 9007 Program – not necessarily one year of commercial operations.
4. \$25 MM Senior Debt Cap, unless a rural cooperative applicant where the Senior Debt Cap is \$40 MM. Interest rates are fixed or variable.
5. Equity – 25% – 40% tangible balance sheet equity for energy projects. Changing equity requirements to 25% – 40% of total project cost under new proposed final rule (expected in May 2016 and effective 60 days thereafter).
6. Term – 15 years or useful life of equipment for energy projects (7 years for working capital and 30 years for real estate). Loan guarantee coverage is 60% to 80% of senior debt.
7. Fees – Closing – 3%/Annual Renewal – 0.5%. The new B&I rule expects to change to 1% closing and 0.5% annual fees.
8. Expect final rule in May 2016.
9. Commercial Renewable Power, Energy Storage, Advanced Biofuels, Renewable Chemicals, Biobased Products and Renewable Power projects are qualified financeable projects.
10. Parent Guarantees can be negotiated downward and eliminated.
11. Two separate legal entities with identical shareholding can obtain \$25 MM senior debt coverage each for each of the 9007 and B&I loan guarantee programs for a single project. Today, one legal entity can obtain \$25 MM in aggregate senior debt coverage from the B&I and 9007 loan guarantee programs. Once the USDA issues the B&I final rule, then one legal entity can obtain up to \$25 MM of senior debt coverage for each of the B&I and 9007 loan guarantee programs for the same project.
12. Eliminating Restriction of 51% minimum US project equity in proposed new final rule.

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options (continued)

US Department of Agriculture

– Rural Utility Service (“RUS”) Program For Electricity (commenced in 1935)

1. No Appropriations cap as borrowing is from Treasury.
2. Non-competitive and project sites can be located in non-rural areas, but power must be sold to cooperatives, municipalities or qualified utilities who resell the electricity in “rural” areas of less than 20,000 person census tracts.
3. Uncapped corporate financing - 100% recourse loan financing at Treasury rate + 12.5 basis points fixed for term of the shorter of 35 years or PPA term from Treasury’s Federal Finance Bank.
4. Uncapped project financing - 75% non-recourse loan financing at same terms as item #3 and 25% equity, each percentage applied against total project costs.
5. Fee – Annual fee is 0.125% of unpaid principal balance.
6. Energy Storage combined with renewable or conventional power will qualify.

Debt – Government Loan Programs

Loan Guarantees Offer Low Cost – Long Term Financing Options (continued)

US Department of Agriculture

– Energy Efficiency and Conservation Loan Guarantee Program

1. Uncapped loan guarantees with up to a 90% senior debt coverage to finance energy efficiency (including energy storage projects otherwise not eligible for RUS funding) and conservation projects sited in rural areas of less than 20,000 person census tracts.
2. Interest Rate – Fixed or variable as negotiated between lender and borrower and as approved by USDA.
3. Projects will:
 - Improve energy efficiency and/or reduce peak demand on consumer side of meter including energy storage.
 - Modify electric load to reduce electric demand.
 - Stimulate a more efficient use of electric facilities.
4. Fees – One time guarantee fee – 1% of loan amount times the percentage of the guarantee which is between 60% and 90%.
5. Term – Up to 40 years or the useful life of the facility.

– US Small Business Administration (SBA)

1. The SBA Section 7(a) Loan Guarantee Program's authorization recently was increased to \$23.5 billion.
2. Energy Storage projects can qualify for this funding if the borrower is a qualified small business.

Debt – Other Financing Mechanisms

Other Project Financing Mechanisms

- **Taking non-investment grade project company debt to investment grade financing**
 - Use AAA rated govt. loan guarantees to credit enhance non-investment grade project debt on a low-cost/long term basis.
 - Covered bonds. Credit enhanced project bonds historically with pools of mortgages, but attempts to shift to higher credit enhancements like AAA-rated Treasury Strips.
 - Holdco Loans – back-leveraged debt secured by cash flow allocated to sponsor equity shares and not secured by project assets.
 - WHEEL – Warehouse for Energy Efficient Loans – a first of a kind debt mechanism created by Citigroup and Renew Financial, where they issued asset-backed securities (ABS issues) to secure a \$12.58 million pool of otherwise unsecured residential energy efficiency loans.
 - TELPs – Tax Exempt Lease Purchases used as installment sales of a project to a municipality. A TELP is structured to appear that the project sponsor is leasing the project to the municipality. However, the municipality has an option to purchase the project for a nominal sum at the conclusion of the lease term. Lease payments may be treated as tax-free interest on installment debt.
- **Potential Clean Power Plan Allowance Funding**
 - Currently, Kilpatrick Townsend is developing a new and innovative 100% project funding program under EPA's new Clean Power Plan (CPP) for the sale of GHG allowances to coal-fired power plants to finance renewable power and energy storage.

Debt – Other Financing Mechanisms

Other Project Financing Mechanisms

– Green Bonds

- Green bonds are intended to enable developers raise capital for projects with environmental benefits. Banks, Insurance Companies, Corporations, Municipalities, States and Universities have issued green bonds for clean energy projects.
- It is anticipated that green bonds will provide financing for renewable power, energy efficiency, energy storage, sustainable waste management, advanced biofuels, renewable chemicals, biobased products, sustainable land use, biodiversity conservation, clean transportation, and clean water projects. Some financial institutions predict a \$1 trillion to \$2 trillion market for green bonds, which will be used to scale up clean energy projects. Experts originally believed the green bond market would grow to \$158 billion by 12/31/2016. It currently is approximately \$53.2 billion according to the UK's Climate Bond Initiative.

Debt – Other Financing Mechanisms

– **New insurance policies:**

- wrap technology risk with investment grade (A to AA rated) credit.
- credit enhance senior debt.
- protect revenue streams.
- protect tax equity with respect to Investment Tax Credits (ITCs) and New Market Tax Credits (NMTCs).
- provide price collars for feedstock and fuel supply agreements and price floors for offtake agreements.
- provide investment grade credit (A to AA rated) to counter: (i) inability to obtain long-term feedstock contracts and (ii) perceived risks of inadequate feedstock supply.

– **PACE – Property Assessed Clean Energy Program:**

- Tax assessment on commercial buildings to pay back bank loans for energy efficiency. PACE legislation has been passed in 31 states and has financed approximately \$1 billion in projects. On August 24, 2015, President Obama announced new guidelines with the Federal Housing Administration (FHA) to remove existing PACE barriers and accelerate the use of PACE funding. One restriction removed is allowing PACE liens in states to be subordinate to FHA single family first mortgage financing.

– **Capital stacks for projects:**

- In addition to the financing mechanisms already discussed, some other mechanisms can include:
 - On the equity side of the capital stack – NMTCs, ITCs and MACRs for tax equity (generally dilutive equity until the tax incentives are realized by the funder); EB-5 funding (structured as equity); state revolving funds (funding from DOE for grants, working capital); and state grants through state economic development agencies.
 - On the debt/collateral side of the capital stack – EB-5 funding (structured as debt) tax exempt bonds and other tax exempt financing, state revolving funds (reserve accounts as collateral for debt, credit enhancements); and state loans and loan guarantees.

Debt – Other Financing Mechanisms (cont'd)

– **International Debt**

- The US Export Import Bank (Ex-Im), Overseas Private Investment Corporation, International Finance Corporation (IFC), each have loaned \$1 billion in each of the last several years for clean energy projects. Ex-Im received additional Congressional authorization enacted into law on December 4, 2015, to continue as a lender through September 30, 2019. One change is that loans exceeding \$10 million must be approved by the Ex-Im's board.
- The IFC is to increase its climate investments from \$2.4 billion to \$3.5 billion annually by 2020.
- Additional Export Credit Agencies and Multilateral Development Banks are lending billions of dollars to clean energy projects. The International Bank of Reconstruction and Development intends to leverage \$13 billion of private capital per year by 2020.
- The European Investment Bank recently has approved more than Euros 8 billion in project financing for energy storage, energy efficiency, advanced biofuels, renewable chemicals, biobased products, renewable power and energy infrastructure projects throughout Europe.

Portfolio Equity – MLPs, REITs and YieldCos

Project And Portfolio Equity – Capital Markets Funding Mechanisms – M&A/IPO Low Cost Capital Raising Mechanisms

1. MLPs

- Approximately 149 energy-related MLPs constitute 82% of all existing publicly-traded MLPs representing a market capitalization exceeding \$650 billion as of 12/31/15 with average dividends returns at approximately 7.3% (which had increased above 25% before the reduction in shale gas and oil prices). MLPs have been decreasing to low oil and gas prices, distribution cuts and leverage issues as a result of a downturn in the U.S. economy.
- MLPs must derive 90% of their income, at present, from depletable natural reserves such as oil, gas and coal, but are not under an annual percentage income distribution requirement as are REITs. MLPs may own qualifying assets outside of the US. Assets are assigned tax free into this vehicle.
- Would require a statutory amendment to include renewable power generation, energy storage, renewable fuels and chemicals and certain infrastructures and such bills were already introduced in Congress. I co-authored the MLP Parity Act moving through Congress with bipartisan support for the past 3 years plus. On June 24, 2015, Senators Coons (D-DE) and Moran (R-KS) and Congressmen Poe (R-TX) and Thompson (D-CA) re-introduced the respective measures into the current Congressional session. The American Petroleum Institute fully supports these measures. Currently applicable passive loss and at risk depreciation rules require renewable power assets to be assigned into the entity after the 5-year clawback period on monetized ARRA Section 1603 Cash Grants and ITCs and after the longer use of PTCs.

Portfolio Equity – MLPs, REITs and YieldCos (cont'd)

1. MLPs (cont'd)

- MLPs are tax efficient as they are subject to one level of taxation as pass through entities (LLCs or Partnerships) and raise low cost capital through IPOs.
- Sol-Wind, in late December 2014, filed an S-1 to raise approximately \$100 million on the public market as an MLP IPO with an aggregation of 184 MW of mostly solar, but some wind, power assets located in the US, Canada and Puerto Rico. This hybrid MLP structure involves a partnership MLP that owns a “blocker” corporation (a limited liability company organized in Delaware that makes an election to be taxed as a corporation and not a partnership) which in turn owns the renewable power assets in another corporation (“MLP Hybrid”). This structure allows the tax incentives to be monetized within a corporation – like a YieldCo – and not like an MLP where the incentives could not be realized. It further permits MLP treatment of raising low cost public money in a tax efficient one-tier tax vehicle notwithstanding that Congress has not passed the MLP Parity Act. In fact, Sol-Wind’s MLP structure is like “an upside-down YieldCo.” A YieldCo is a public entity that owns a partnership; whereas Sol-Wind’s structure is a partnership that owns a corporation with a blocker company between them.
- Advanced biofuels, renewable chemicals, biobased products, renewable power, and energy storage units/projects are assets that are not yet, without legislative qualification, qualified for standalone MLP treatment. However, they may be assigned tax-free into a similar MLP Hybrid structure below the actual MLP to drive down the low cost public market funding generated by an MLP into the corporation holding the assets. Further, the Hybrid MLP, unlike a traditional MLP, will permit the energy storage assets to monetize any of their tax incentives.

Portfolio Equity – MLPs, REITs and YieldCos (cont'd)

2. REITs

- As of 2/1/16, publicly-traded and private placement-initiated REITs represented \$900 billion equity market capitalization with average dividends yields for overall REITs (including mortgage) of approximately 4.03-4.83% since 2009.
- At least 95 percent of a REIT's annual gross income must be derived from real property.
- At least 75 percent of the value of a REIT's total assets must be comprised of "real estate" assets.
- Taxed at personal, ordinary income level as a pass-through entity (so one, not two, levels of taxation). 90% of REIT income must be distributed annually – construct new projects. MLPs do not have this requirement.
- May require a statutory amendment to include renewable power generation or a Treasury guidance to accomplish the same (we have been working with DOE, Treasury and White House on this approach).
- REITs raise low cost funds through IPOs or private placements with one level of taxation as a pass through entity.
- Current definition of "real property" inherently requires no moving parts which is problematic for most renewable energy applications. The transmission industry received a private letter ruling; while certain solar and energy efficiency technologies have obtained a similar private letter ruling through the Hannon Armstrong Private Letter Ruling.

Portfolio Equity – MLPs, REITs and YieldCos (cont'd)

2. REITs (cont'd)

- After receipt of a closely-held private letter ruling from the IRS in October 2012, Hannon Armstrong filed an S-1 and raised more than \$250 million for a new REIT on the capital markets initially to hold mortgages of buildings that have attached renewable energy systems (such as solar, energy efficiency, etc.).
- Hannon Armstrong recently purchased a wind portfolio from JP Morgan through its REIT by structuring the acquisition below the REIT in a corporation with a “blocker company” LLC in between the REIT and the corporation (“Hybrid REIT”) to comply with this definition of “real property.” In this regard, in October 2014, Hannon Armstrong, a REIT, invested \$144 million in a portfolio of 10 wind farms, following a \$107 million acquisition of a solar and wind portfolio in May 2014. These transactions are the first of their kind in wind acquisitions by a REIT. Advanced biofuels, renewable chemicals, biobased products, and renewable power are projects that could qualify under a Hybrid REIT structure, but not under a plain REIT structure without additional Congressional legislation.
- Energy storage units/projects are assets that may, without legislative qualification, be qualified for standalone REIT treatment or into a similar REIT Hybrid structure below the actual REIT to drive down the low cost public market funding generated by an REIT into the corporation holding the assets. Further, the Hybrid REIT, unlike a traditional REIT, will permit the energy storage assets to monetize any of their tax incentives.

Portfolio Equity – MLPs, REITs and YieldCos (cont'd)

3. YieldCos

- Bulge Bracket Banks (such as Citi Group, Bank of America, Barclays and JP Morgan) and other banks (such as Key Bank), were pursuing this structure with clients, as it requires no new legislation to qualify asset sources such as renewable and conventional energy. Renewable energy assets are packaged into a “Yield Co. Inc.” structure and listed in an IPO on the stock exchange. It represents a combined M&A and IPO. PTCs, ITCs and MACRs depreciation are available for use – all taken at a Schedule “C” Company level – as at risk and passive loss rules do not apply and restrict as in MLPs and REITs. This structure may be available for renewable power, energy storage, advanced biofuels, renewable chemical and biobased projects with long-term contracts and strong cash flows.
- Greentech Capital Advisors at the Bloomberg New Energy Finance Conference in April 2015, predicted that the YieldCo market of approximately \$27 billion would grow to more than \$100 billion in the near term. Typical investor returns in a YieldCo typically are 5-6% per year. The mechanism also has a much lower cost of capital than private equity or project bonds. These yields have reduced significantly in the past year due to low oil and gas prices, expiration of renewable power tax incentives, etc.
- The YieldCo serves as an umbrella acquiring assets tax-free and then lists in an IPO, which unlocks additional equity to allow the YieldCo to develop further and provides investors with high-yield, low-risk, and steady long-term returns. The objective is for YieldCo to be a tax-preferred vehicle, similar to the MLPs and REITs.
- YieldCos, although taxed at 2 levels unlike MLPs and REITs that are taxed at 1 level, are taxed at a lower percentage rate capital gains level of approximately 20% versus MLPs and REITs which are taxed at higher percentage ordinary income tax level of 35%+.

Portfolios Equity – MLPs, REITs and YieldCos (cont'd)

3. YieldCos (cont'd)

- Several companies, during the current Yieldco downturn, instead are placing assets into greenfield and brownfield, “warehouse” entities until the yields return. Warehouses are structures that use 3rd party debt and equity to fund asset construction (greenfield warehouses) and/or acquisitions (brownfield warehouses) before a drop-down into a YieldCo. At a restoration of the yields, these companies should begin assigning these warehoused assets into their YieldCos.
- Some companies that have employed a YieldCo in the energy space:
 - NRG Energy, Pattern Energy, SunEdison's TerraForm YieldCo (TERP) and second YieldCo IPO, SunEdison Global (GLBL) focused on generating clean power. SunEdison also has added solar storage assets into its Terra Form Power YieldCo. Recently, SunEdison twin YieldCos (TERP and GLBL) have suffered from their parent, SunEdison's over-leveraged balance sheet. As such, TERP's and GLBL's respective stock prices plunged.
 - Terra Form recently has sued its SunEdison parent company. Also, on April 21, 2016, SunEdison filed for chapter 11 bankruptcy protection in the New York federal district court. The two SunEdison Yieldcos, however, are not part of the bankruptcy proceedings.
 - NextEra Energy Partners YieldCo, TransAlta and Abengoa YieldCo also acquired clean energy assets.
 - In early 2015, Abengoa closed a \$2 billion warehouse facility for its assets as priced dropped in Abengoa Yield. Recently Abengoa Yield changed its name to Atlantica Yield and sought new sponsors following its parent Abengoa S.A.'s filing for insolvency in Spain. Atlantic Yield, to date, has remained outside of the Abengoa bankruptcy.

Portfolio Equity – MLPs, REITs and YieldCos (cont'd)

3. YieldCos (cont'd)

- Some companies that have employed a YieldCo in the energy space (cont'd):
 - First Solar and Sun Power, vertically integrated solar developers and competitors, raised \$420 million in the first joint-owned YieldCo in 2nd Quarter 2015, called 8point3 Energy Partners. It initially holds 432 MW of solar assets. Also, a new phenomenon has oil giant, Total, investing \$1.4 billion into SunPower. To date the 8point3 YieldCo has fared very well and expects to assign assets into it in 2016. In this regard, and despite the market's concerns with/affects on YieldCos generally, 8point3 Energy assigned of solar projects into its YieldCo in early April 2016.
 - As discussed, 2014- and 2015-era YieldCos are largely off their IPO prices. SunEdison's TERP fell 57% in 2015 and GLBL fell 63% from its July 31 IPO price of 15. 8point3 fell 23% in 2015 from its June IPO price of 21. NRG Yield fell 41% in 2015.

Tax Incentives

Renewable Energy Tax Incentives

- Section 48 of the IRS Code (“IRC”) Investment Tax Credit (“ITC”).
- Section 45 of the IRC Production Tax Credit (“PTC”).
- All such incentives (55 for energy) which had expired (except generally for solar) by January 1, 2015, were extended as discussed above and tax certainty is largely in place for the foreseeable future.

Required Government Action

- Congress Should Consider New Tax Incentives Such As ITCs specifically for Energy Storage
- House and Senate bills (Energy Storage Act 2015) were introduced in last three Congressional Sessions to provide various ITCs for energy storage equipment.

ITC for Integrated Solar Storage

- An Investment Tax Credit (“ITC”) is available for 30% of the cost basis of qualifying solar energy property under Section 48(a) of the Internal Revenue Code
 - equipment which uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat, excepting property used to generate energy for the purposes of heating a swimming pool, are eligible for a 30% ITC until December 31, 2016, when the rate decreases to 10% in perpetuity.
- Storage may enjoy the 30% ITC and MACRs Depreciation when integrated into solar energy property under specific conditions.
 - The equipment and materials that use solar energy to generate electricity, and includes storage devices, power conditioning equipment, transfer equipment, and parts related to the functioning of those items.
 - In general, this process involves the transformation of sunlight into electricity through the use of such devices as solar cells or other collectors. However, solar energy property integrated into the power facility and used to generate electricity includes only equipment up to (but not including) the stage that transmits or uses electricity.
 - Example:
 - *Main function storage device is to make the best use of solar electricity and correct for deficiencies in the photovoltaic system.*
 - *Storage is not transmission equipment.*
 - The Internal Revenue Service (“IRS”) confirmed this applicability of the ITC to such energy storage equipment in a Private Letter Ruling (“PLR”) issued on May 5, 2014 (release date October 31, 2014) (PLR 201444025).

ITC for Integrated Solar Storage

- The IRS, in Notice 2015-70, requested comments under IRC Section 48 on whether the 30% ITC should be limited to property generating electricity or be available for equipment with dual uses such as storing and providing electricity like energy storage equipment. The Energy Storage Association, Solar Energy Industries Association, American Council On Renewable Energy, among others, filed comments supporting this expansion on or before February 16, 2016.
- The need for clarification for energy storage with respect to its ability to qualify for the solar ITC is that , in hybrid systems, how much of energy storage equipment qualifies is unclear. In this regard, the ITC applies to costs associated with that portion of the storage system that manages renewable electricity. Generally to qualify the storage system, it and the electricity generating unit must be simultaneously installed. Furthermore, 75% of the electricity used to charge the storage system must come from the solar unit. If not, the amount of the available ITC will decrease as the percentage of that co-system electricity charge falls below 75%. Storage devices that are independent of the solar generator or are connected to the grid do not qualify for this ITC. A change in this treatment to allow the full use of the ITC in all situations will spur the U.S. financing and growth of the industry.

RPS Certainty

- State RPS laws must be continued and expanded at the State level, as they drive renewable power demand and thus, the use of energy storage technologies.
- Today, 38 states and the District of Columbia have an RPS or a voluntary equivalent, 27 states have energy efficiency standards, 44 states, plus the District of Columbia, have net-metering policies. Many states (California, New York, Hawaii, Oregon) have increased their RPS percentages.
- Senate Bill S.1264 (S. Tom Udall (D-NM)) would create a National renewable electricity standard (“RES”) requiring utilities to generate 8% of renewable power by 2016 and 30% renewable power by 2030.
- New EPA Climate Rules/Clean Power Plan will drive additional renewable power, energy storage and efficiency projects.
- FERC Order 745, providing for equal compensation to demand-response providers as is remitted to whole-sale energy producers, will further incentivize the use of energy storage.

Conclusion

We live in a difficult period of sputtering economies, constrained cash flows, increasing risk aversion and other negative influences, as we attempt to expand and vary the world's energy assets.

As such, the continued creation of new, and refinement of existing, highly sophisticated debt financing and equity funding mechanisms are critical to the development and construction of new energy projects of all types.