Creative US And International Debt And Equity Financing Mechanisms For Bioeconomy, Renewable Power And Energy Storage Projects And Technology Companies – Presentation Outline

Panel: Track 1 – “Improving Access to Capital”
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- A Founder And Original General Counsel:
  – Clean Fuels Foundation – Since 1990.
- AV Preeminent Rating By Martindale-Hubbell For Last 22 Years.
- Vice Chairman For Project Finance, American Bar Association, Section For Energy & Natural Resources Since 2010.
- Graduated With JD – Georgetown University Law Center And BA – University of Michigan – Summa Cum Laude And Phi Beta Kappa.
A. Growing The Renewable Power And Energy Storage Industry – Challenges and Solutions

1. **Challenges** – What are the obstacles to growing renewable power and energy storage?
   - Lack of Funds at the Company and Project Levels.
     - Grants and Equity.
     - Bank 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 for (i) biofuels, biochemical, bioproducts, small wind, biopower, hydropower and other expired incentives and (ii) energy storage not fully integrated into power units. Energy Storage Association (ESA) – written comments to Treasury; Senate Energy Bill would accomplish a similar expansion to non-fully integrated systems. Senate and House bills would prohibit wind incentives within 50 miles of military installations.
     - Federal Renewable Fuels Standard (RFS/RINs), State Low Carbon Fuel Standards (LCFS) and State Renewable Portfolio Standards (“RPS”) – Require Certainty. These federal RFS, state LCFS and state RPS laws have been under attack for many 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. The insurance industry is a nascent industry to creatively wrap technology risks.
   - Tax Incentives Availability as part of Tax Reform Legislation. The ESA has filed written comments to Treasury to expand the use of 30% ITCs for energy storage beyond the current applicability of energy storage equipment fully integrated into renewable power units. - i.e. non power unit integrated independent systems and those systems integrated into the grid for power stability and resilience.
   - RFS, LCFS and RPS Certainty. There was a Senate bill (Senator Udall (D-NM) – S.1264) in Congress for a Federal RPS in the last Congress.

3. **Good News** – Plenty of funding is available.
4. **Bad News** – These funds are difficult to access and structure.
## Equity And Equity Equivalent Funding

<table>
<thead>
<tr>
<th>Type of Funding</th>
<th>Corporate-Level Funding</th>
<th>Project-Level Funding</th>
<th>Dilutive (“D”) or Non-Dilutive (“ND”)</th>
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<tbody>
<tr>
<td><strong>1.</strong> Grants (State and Federal – DOE, USDA, DOT)</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td><strong>2.</strong> 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)</td>
<td>✔️</td>
<td></td>
<td>D</td>
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<td><strong>3.</strong> 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 Ventures.)</td>
<td>✔️</td>
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<td><strong>4.</strong> 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. Also, $1 billion Break through Energy Condition and $2 trillion Saudi Arabia Public Investment Fund.)</td>
<td>✔️</td>
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<td><strong>5.</strong> 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). Total acquired Saft for $1.1 billion. Tesla announced the proposed $2.6 billion acquisition of Solar City.</td>
<td>✔️</td>
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<td><strong>6.</strong> Infrastructure Funds Equity (USDA’s 4 new 2x $150 MM, $100+ MM and $25+ MM equity and debt funds – Advantage Capital Partners, Rural Business Investment Corporations (“RBICs”) – Made In Rural America, Meritus and Innova, respectively, KKR raised a 2nd fund of $3.1 billion, and Sovereign Wealth Funds)</td>
<td></td>
<td></td>
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<td><strong>7.</strong> 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)</td>
<td>✔️</td>
<td></td>
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<tr>
<td><strong>8.</strong> 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)</td>
<td>✔️</td>
<td>✔️</td>
<td>ND</td>
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<tr>
<td><strong>9.</strong> Tax Equity – ITCs, PTCs, Bonus and MACRs Depreciation and NMTCs</td>
<td>✔️</td>
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<td>Initially D to later ND</td>
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<tr>
<td><strong>10.</strong> Sponsor Equity – Project Developers, Hedge Funds (use has grown in last 2 years) and YieldCos</td>
<td>✔️</td>
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<tr>
<td><strong>11.</strong> Portfolio Equity - MLPs/ REITs/ YieldCos</td>
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B. Grants

1. DOE – Office of Energy & Efficiency programs of single to double digit $ millions in grants available and ARPA-E
   - In 2016, DOE biofuels grants - $90 million (potentially $210 million) Integrated Biorefinery, $8 million for algae-based biofuels, and $7 million for Integrated Biorefinery Optimization.
   - In 2017, grants for: Navy – one $55 million biojet fuel for 1st commercial production and DOE/USDA National Institute of Food & Agriculture (NIFA) at $22.7 million.
   - $30 MM program for energy storage grants.
   - Wind grants previously in EERE’s Electricity Office in 2016: $1.8 million for wind turbine blades and $10.7 million for offshore wind development.

2. USDA – $500,000 grants in the Section 9007 Renewable Energy for America Program (“REAP”).

3. SBA – Small Business Innovative Research grants ("SBIRs").

4. DOT – grants for clean fuels, clean transportation and GHG emission reductions.

C. Early Stage Equity

1. Angel Funding – 200,000 – $3 MM – Kieretsu Forum is the largest angel funder – 5% to 7% ROIs.

2. Crowdfunding – $34 billion raised – 2009 - 2015 – average ROIs 5% - 7.5% – Mosaic and Abundance are top crowdfunders.

3. Family Offices – can be a type of strategic equity – often in for multiple private placement rounds and don’t neglect large Texas oil and gas families that need to place funds to use in times of depressed oil and gas prices. 7% plus ROIs expected.
D. **Venture Capital Equity** – Global Cleantech VC was $10.8 billion in 2015 – up 11% over 2014. In 2016, it was $14.76 billion. VCs seek double digit percentage returns in 7 - 10 years – Expensive money at early stage company level.

1. Energy Storage – raised 5.3% of this $10.8 billion in cleantech VC funding in 2015 or $572 MM. However, interestingly, it’s off 50% in 1st quarter 2016.

2. Energy Storage – 1st Q 2016 had 54 million in 10 VC deals, compared to $108 million in 6 deals in 4th Q 2015.

3. Energy Storage - In 2016, Sunverge Energy ($36 million), VionX Energy ($5 million), Skelton Technologies ($4.3 million) and Voltaiq ($1.6 million) raised VC funds for energy storage.

4. Energy Storage – it showed a 41.2 MW storage deployment for 2nd Q 2016, of which 27.19 MW was behind the meter. For 2016, GTM projected 287 MW of new energy storage deployment, while 300 MW actually was installed.

5. Solar – VC investment levels up in 2015 – due to the 5 year extension of the tax incentives – ITC, PTC, Bonus Depreciation. The ITC extension is expected to add 25 GW of new solar power over that 5 year period costing nearly $40 billion.

6. Wind – VC investment levels up in 2015 to $520 million – due to the 5 year extension of the tax incentives – ITC, PTC, Bonus Depreciation. The PTC extension is expected to add 19 GW of new wind power over that 5 year period. In 2016, North America added 4 GW of wind power of 9.4 GW under construction. AWEA says there is 82 GW of wind power up and running.

7. Advanced Fuel Production generated $28.9 billion in revenue in 2016. However, much of biofuels VC money has shifted to biochemicals and products in 2016: Zymergen ($130 million series B for microbial strain optimization), Ginko Bioworks ($100 million Series B for biological organisms used in energy medicine, food and other industrial biotechnologies) and Sapphire Energy ($92 million Series B for animal feed market from algae biomass).
E. **Company and Project Levels Private Equity** – later stage funding at company and project levels. Looking for double digit % returns. Private equity was up in 2016 and is cloudy with a high degree of uncertainty for 2017 with slow fundraising.

F. **Company and Project Levels Strategic Equity** – O&Ms, EPCs, Utilities, etc. – their participation has become very important and at earlier funding rounds as VCs have pivoted to IT and social media. Equity ROI and ownership percentages can be better for developers.

G. **Infrastructure Funds Equity** – primarily at project level.

1. Private Equity, Strategic Equity and Infrastructure Funds Equity often cross over into each other’s spaces.
Equity And Equity Equivalent Funding

H. **State and Federal Green Funds** – Generally Grants, Loans and Loan Guarantees, but not Equity.

1. Connecticut Green Bank Fund – $50 - $100 million available annually. To date, it has generated more than $1 billion in cleantech investments since 2012.

2. New York Green Bank/NYSERDA/REV – nearly $5 billion in these programs.

3. Hawaii Green Bank – new $150 million lending facility under GEMS for 4% loans according to my discussion with Commissioner Lorraine Akiba. Has not been significantly used as some Hawaiian commercial banks can provide even lower cost funding. Hawaii’s RPS, increasing to 100% by 2045, will spur investment.


8. State Revolving Funds - $3 billion in funds allocated to states by DOE under 2009 Recovery Act. Funds still available – use for working capital, reserve accounts, credit enhancements, grants, etc.
I. **International Green Funds** – Generally used for Grants, Loans and Loan Guarantees, but not equity.

1. Australia – many new funds – with nearly $15 billion available for grants, loans and loan guarantees, including energy storage.

2. United Kingdom

3. Canada

4. India

5. Brazil

6. Asia

7. Europe

8. Africa

9. World Bank’s Global Environmental Fund (“GEF”)

10. United Nation’s Green Climate Fund (“GCF”)

11. Climate Investor One Fund (“CIOF”)

12. Saudi Arabia Public Investment Fund (“PIF”) – new $2 trillion from Sovereign Wealth Funds and other funding sources.
**Equity And Equity Equivalent Funding**

### J. **Tax Equity**

1. **ITCs** – 30% for 5 years for solar (scales down from after 2019 – 2022 and then is 10% in perpetuity) and wind (scales down during 2017 – 2019 and then phases out); biopower and others have 30% ITCs through December 31, 2016. Biofuels and biochemicals have no federal ITCs, although some states have them: Iowa, Minnesota and Nebraska.

2. **PTCs** – 2.3 cents/kwh for wind/1.1 cents/kwh – 2.3 cents/kwh for biopower – the wind power PTC scales down for wind during 2017 until phased out on December 31, 2019 – while the PTC phased out for biopower, biofuels and others on December 31, 2016. Some states have PTCs for biofuels and/or biochemicals: Iowa, Minnesota and Nebraska.

3. **Bonus Depreciation** – 50% scales down through 2019.

4. **Sell under complex structures** – sale-leaseback, partnership flips, inverted leases – for cash up front to use in projects – small number of tax equity providers – approximately 25 - 30.

5. **NMTCs** – can provide 10% - 20% of total project costs to a project financing depending on project size. Must locate in qualified economically distressed areas and use locals in the project job force.

6. **Tax Incentives Extension Legislation**.

7. **EB-5 funding** – visas for funds – can be significant to a project (structured as debt or equity).

8. **New “In Construction” Rulings from IRS** that further clarifies the use of the PTC and ITC.

### K. **Sponsor Equity**

1. **Project Developers**.

2. **Hedge Funds** – new to cleantech in last 3 years. Require double digit returns and quick exits (2 – 3 years).

3. **YieldCos** – when buying and operating assets.
L. **Portfolio Equity**

1. MLPs – $650 billion – low cost capital raising mechanisms with energy storage being assigned into corporation below the MLP (“Hybrid MLP”). Requires new legislation to include renewable energy and chemicals and energy storage – I co-wrote Senator Coons MLP Parity Act proposed legislation several years back.

2. REITs – $960 billion – low cost capital raising mechanisms with energy storage being assigned into corporation below the REIT (“Hybrid REIT”). Energy storage may work in the REIT itself. Requires new legislation to include renewable energy, green chemicals and bio-based products, by modifying the current definition of “real property” which entails “no moving parts.”

3. YieldCos – low cost capital raising mechanisms with renewable power and energy storage being assigned into Yieldcos. These vehicles are available without new legislation for renewable fuels, green chemicals and bio-based products. Coming back (Abengoa and SunEdison Yieldcos are solvent despite parent bankruptcies).

4. MLPs and REITs – 1 level of taxation at higher ordinary income tax rates versus Yieldcos at 2 levels of taxation at lower capital gains tax rates.

5. MLPs/REITs – can’t monetize tax incentives due to at risk depreciation and passive loss rules.

6. Yieldcos – can monetize tax credits within the vehicle.

7. Hybrid MLPs/REITs – can monetize tax credits in the corporation below the partnership – an upside-down Yieldco structure. These vehicles today can hold renewable energy, green chemicals, bio-based products and energy storage.
M. Debt – Government Loan Programs

1. DOE

Section 1703 (commenced in 2005)

a. Uncapped Federal Finance Bank/Treasury Department (“FFB”) loans credit enhanced by DOE loan guarantees.

b. New Facility Plan for multiple (10, 20, 30, projects) smaller projects – like a credit line to draw approximately 3.5%/30 year funding for approximately 70% of total project costs. We have a behind meter client filing in Part 2 and an in front of the meter client filing a Part 1 Application. Wind and solar can participate with energy storage or alone with demonstrable new technologies and/or energy efficiencies/savings. Biofuels, clean fossil fuels, green and clean fossil chemicals are products also are eligible.

c. Need commonality to make multiple projects appear to be one – like one offtaker or a couple similarly investment grade or near investment grade credit-rated offtakers.

d. Senior debt amounts of $4.5 billion available in Renewable Energy (REEE) and $8.5 billion (recently $2 billion obligated to reduce the amount to $6.5 billion) available in Advanced Fossil Energy (AFE) Program – DOE extended the rounds through November 30, 2019.

e. To date, more than $65 billion senior debt applications have been filed in REEE, AFE, Nuclear and ATVM with $41 billion available.
2. USDA

a. Section 9003 of Farm Bill - Integrated Biorefineries (commenced in 2008) – $250 million of senior debt per projects. $1 billion available – can integrate storage into biopower unit further integrated into a biorefinery. This financing is available for advanced biofuels, green chemicals and biobased products.

b. Section 9007 of Farm Bill (commenced in 2008) – $25 million of Senior Debt – can stack 9007 and B&I together. $200 MM plus available. This financing is available for renewable power, biofuels and biochemicals/bio-based products if the majority of the output is for clean energy.

c. Business & Industry (“B&I”) Program (commenced in 1972) – $25 million of Senior Debt – can stack B&I and 9007 together. New rule for 1st time permits Loan Guarantee over (1) Subordinated Debt and (2) Leveraged Loan in a NMTC transaction. This program is agnostic on the type of industry.

d. “Rural” (<50,000 person) site requirement for 9007 and B&I, but not for 9003.

e. Rural Utility Service (“RUS”) Program For Electricity (commenced in 1935) – direct uncapped FFB loans with unlimited available funding at 12.5 basis points over Treasuries (2.18% on 20 year Treasuries on June 11, 2016) for shorter of PPA term or 35 years with two models: 100% corporate finance v. 75% project finance. Electricity sale only program with sales into rural areas of 20,000 or less persons by cooperatives, municipalities and qualified utilities. No rural site requirements.

f. Energy Efficiency and Conservation Loan Guarantee Program (commenced in 2014) – uncapped 15 year direct FFB loans with unlimited available funding for energy storage and energy efficiency projects at Treasury interest rates for projects in less than 20,000 person areas.

g. Rural Business Investment Companies (“RBIC”) – allows companies to access companies in the USDA’s Farm Credit Agency for loans/equity into funds for loans and investments. Current RBICs are $25 million, $100 million and two at $150 million in 3 funds to date – use for one’s projects. 75% of these investments and loans are made into “Rural Business Concerns,” or enterprises whose principal office is in areas of less than 50,000 persons.
Debt

M. Debt – Government Loan Programs (continued)

3. SBA
   a. Small Business Loans.
   c. Small Business Investment Corporations (SBICs) – Preferred Equity.

N. Other Project Financing Mechanisms

1. Credit Enhanced Project Company Bonds – taking non-investment grade project company debt to investment grade with loan guarantee/insurance wraps. 150 – 200 basis points over approximately 2.80% (for 20 year) and 2.60% (for 10 year) Treasury rates (as of February 2017) plus a small percentage spread) for the credit enhanced portion of senior debt – sell the corporate debt/project company bonds to institutional market. Low cost/long term financing that we invented and obtained our 1st financial closing 6 years ago.

2. Clean Power Plan Allowance Funding – GHG emissions allowances sold to utilities to finance up to 100% of clean energy projects through mass-based state CPP plans once the Supreme Court stay is lifted and current lawsuit is resolved in favor of EPA, if the Trump Administration does not fully rescind these rules but instead modifies them.


4. Insurance Policies – to wrap technology risk, protect revenue streams, provide floors on offtake agreements; new Allianz Risk Transfer has a 10 year wind revenue hedge with an annual fixed payment to provide revenue certainty. May be provided beyond wind projects.

5. Project Capital Stacks – structured to reduce sponsor equity.

**O. Tax Incentives**

1. Renewable Energy Tax Incentives.

2. Required Government Action – extend the PTC and/or ITC for biofuels small wind, biopower, hydropower and expand 30% ITC for energy storage as part of any Tax Reform Legislation. Establish a federal ITC for biofuels, biochemicals and bio-based products.


**P. ITC For Integrated Solar Storage**

**Q. RFS, LCFS and RPS Certainty**

**R. Conclusion**