Financial institutions
Energy
Infrastructure, mining and commodities
Transport
Technology and innovation
Life sciences and healthcare

NORTON ROSE FULBRIGHT

Hot Topics in Renewable Energy Tax, Engineering, and Finance

David Burton,
Partner, Norton Rose Fulbright

Ken Elser
Head of Dept., Project Finance and M&A, DNV GL

Vadim Ovchinnikov, CFA
Managing Director, Alfa Energy Advisros, LLC

Gintaras Sadauskas
Managing Director, Alfa Energy Advisros, LLC

Norton Rose Fulbright US LLP
April 23, 2019

Agenda

- Key Renewable Energy Industry Trends
- Solar Investment Tax Credit (“ITC”) Start of Construction Rules and Engineering Considerations
- Repowering – 80/20 Rule for Refreshed Tax Credits
- ITC Eligibility of Storage
- Offshore Wind – ITC v. Production Tax Credit (“PTC”)
- Accounting Considerations (HLBV)

Key Renewable Energy Industry Trends

- Revenue models are changing
  - Number of utility PPAs are declining, corporate PPA and hedges are becoming more common, especially for wind
  - PPA terms are getting shorter, increasing exposure to backend merchant risk
  - Downward pressure on PPA rates
  - Corporate PPAs shift more risks to project sponsors
  - Basis pricing risk (hub vs. node)
  - Curtailment remains a big issue in certain markets
  - Proxy Revenue Swaps, Proxy Generation PPAs, Solar “puts”
    - Structures may shift risk, but investors should consider uncertainties and possible bias

Key Renewable Energy Industry Trends

- Rapid pace of technology development and deployment
  - New class/scale of turbine technology being deployed onshore
    - Step changes in capacity, rotor diameter, and hub height
    - Inadequate track record to be considered "proven" technology
  - Bifacial solar modules and advanced tracker algorithms
    - Technical risks for analysis and operation
- Evolving economics
  - Equipment CAPEX for onshore wind and solar continue to decline
  - Longer-term, full-wrap O&M for wind; decreases based on economy of scale for solar O&M
  - Differing financing approaches for C&I and resi solar

Key Renewable Energy Industry Trends

- Debt financing terms remain attractive for sponsors
  - Debt spreads remain relatively low due to bank competition (70+ banks in the market)
  - Over-supply of bank debt leads to more aggressive financing terms
- Tax equity returns remain stable
  - Wind & Utility Solar: 6.5 to 8.5% after-tax flip rate
  - C&I Solar: 8 to 12%+ after-tax flip rate
  - Resi Solar: higher than C&I solar
- New tax equity investors and syndicators are entering the market

Key Renewable Energy Industry Trends

- Project M&A market is very active–both for development and operating assets
  - Utility scale solar selling at 6.5 - 7.5%, wind selling at 8 - 9.5% (unlevered, after tax)
  - More buyers are willing to take development and construction risk
  - Asian and European investors want to get a foothold in the US because they believe the risk-adjusted returns are attractive
  - Importance of valuing merchant tail
  - Extended life operation/assumptions
- Utilities are rate-basing wind as PTCs are not subject to “normalization”
- Many utilities are actively exploring ways to rate-base solar

Key Renewable Energy Industry Trends

- Rise of offshore wind on the US east coast
  - First major project (Vineyard) moving forward (offtake secured)
  - Additional active/pending auctions in MA, NY
  - 20+ GW of potential capacity in federal lease areas issued
  - Current/future costs uncertain (logistics, policy)
- Energy storage for solar is a growing trend
  - Huge potential market based on proposed state and federal policies, and further improvements in costs and technology
  - Despite many benefits, the revenue model is still evolving alongside policy
  - Many renewable power RFPs require storage to be included, but offtakers are still determining how to utilize and value storage
  - Behind-the-meter applications

Key Renewable Energy Industry Trends

- Fuel cell energy is an emerging technology
  - ITC eligible (same as solar)
  - Reliable power 24/7, NCF 90%
  - Small footprint (10 MW on 1 acre or 400x smaller than solar)
  - Modular applications: utility scale or C&I
  - Improving technology and decreasing capital costs make fuel cell energy a competitive alternative to other renewables
  - Several US banks have already financed fuel cells
  - Japan is home to the world's most successful fuel cell commercialization program in the world. For the 2020 Summer Olympics, Tokyo is set on becoming a world showcase for hydrogen technologies

14.9 MW Bridgeport, Ct (FuelCell Energy)

1.4 MW Central Connecticut State University

Solar and Wind Tax Credit Ramp-Down

- The § 48 ITC for solar ramps down in accordance with the following schedule for the start of construction.

2018	2019	2020	2021	2022
30%	30%	26%	22%	10%

- Wind projects qualify for the § 45 PTC at rate of $24/MWH. PTC ramps-down based on when the project starts construction based on the following schedule:

2016	2017	2018	2019	2020
100%	80%	60%	40%	Expires

Solar ITC Start of Construction Background

- Must start construction by end of 2019 to qualify for full 30% of ITC
- In any event must be "placed in service" (i.e., operational) by end of 2023 to qualify for more than 10% of ITC under present law

Start of Construction Choices

I. Five percent safe harbor

- Pay for equipment or materials by end of 2019 and take delivery by later of 3 ½ months after payment and December 31, 2019 (i.e., best case is have until April 15, 2020 to take delivery)
- Alternatively, use vendor financing and take delivery in 2019. “Vendor financing” must be “debt for tax” so vendor is not the “tax owner”
- Importance of independent verification of delivery and traceability of safe harbour equipment to ultimate project

alfa Energy Advisors DNV·GL NORTON ROSE FULBRIGHT

Start of Construction Choices

II. Significant Physical Work

- Must start significant physical work by end of 2019
- Work must be per a "binding written contract" signed before work starts
- Owner's damages for termination/breach must be at least 5% of face amount of contract or uncapped
- Typically, work on a "custom step-up transformer" is used for this purpose
- Engineering, designing, planning and ordering materials does not count
- Investors may prefer on-site work, but must demonstrate it is actually part of the eventual project

What to Buy to Start Construction Under 5% Safe Harbor?

- Solar - Panels and inverters
  - How much loss of value if bought in 2019 and in service in 2023?
  - Potential erosion of warranty term
  - OEM technical guidance on long-term storage
  - For inverters, possible loss of flexibility in project design (i.e., storage integration)
- Turbines – typically subset of major components
  - Risks for mixed turbine/OEM projects
  - Storage and maintenance issues
  - Upgrades/retrofits
  - Mis-matched equipment – interface and certification risks

What About a “Custom” Step-up Transformer?

- The IRS start of construction notices refer to “custom step-up transformer”
  - What makes a transformer “custom”?
- If there will be a lag between start of construction in 2019 and deployment in 2023, how much of the transformer is it prudent to manufacture in months after start of construction?

Other Significant Physical Work – Inventory Rule

- Physical work must be performed on equipment not "typically held in inventory"
  - Standard appears generic and not OEM specific
  - Note, five percent safe harbor permits the purchase of inventory
- What solar component are not customarily held in inventory by OEMs?
- Are any large inverters not held in "inventory"?

Repowering – 80/20 Rule

- If a PTC/ITC eligible project is "repowered" such that 80% of its value is attributable to new investment, then it is again eligible for tax credit
  - Still subject to "start of construction" rules, e.g., if start re-powering of a wind project in 2019, then qualify for 40% of otherwise available tax credit (i.e., 40% of $24/MWH PTC or $9.60/MWH PTC)
- What are the considerations in measuring whether 80% of the value of the repowered project is from new investment?

Repowering Wind

- Full repowering straightforward
  - Capitalize on existing interconnection, leases, permitting, etc.
- Partial repowering
  - Reusing foundations, towers, and/or some nacelle or hub components
  - Upside primarily lies with larger rotor
  - Risk associated with assumed useful life reused foundations and structural components
  - Contractual interfaces and completion/handover procedures
  - Risk mitigation via design analysis, certification, contractual protections
- Potential and pitfalls with existing offtake arrangements
- PTC qualification and implications for curtailment

Storage and ITC

- Storage qualifies for ITC if charged by ITC eligible project (e.g., solar or offshore wind)
  - S.1142 for ITC for Stand-alone Storage (e.g., storage charged by the grid (or even a coal plant)) is pending in Congress
    - S. 1142 is silent on "normalization," but utilities are lobbying to modify the bill to be allowed to elect out of normalization for ITC with respect to stand-alone storage
    - Election would allow utilities to recognize ITC all in placed in service year (not over useful life as normalization requires)
  - Bill has senators in both parties as sponsors. Lead sponsors are Senators Heinrich (D-NM) and Gardner (R-CO)
  - Have observed inclusion of storage in offshore wind project bids (as well as transmission build-out/backbone)

Solar and Storage

- Per IRS private letter rulings, a battery for 5 years must be at least be 75% charged by an ITC eligible generating project (i.e., not the grid)
  - To the extent less than 100% and more than 75% must pro rate ITC
- If percentage from ITC eligible generating source declines in years two to five from what was claimed in year one then there is pro rata recapture of the unvested portion of the ITC
- If renewables charging falls below 75% in years two to five, then suffer full recapture of the “unvested” portion

Solar-plus-storage and the ITC

- Metering requirements to support calculations and auditing
- Importance of data capture, storage, and back-up
- Interdependence of revenue mechanism, control strategy/implementation, technology, and maintenance/replacement costs
  - Use case significantly impacts battery degradation/lifetime
- DC-coupled (i.e., storage on solar array side of inverter)
  - May physically preclude grid-charging
  - Bi-directional inverters enable grid charging, but introduce complexity to controls
- AC-coupled (i.e., storage on grid side of inverter)
  - Easier for controls, but requires second inverter
  - Portion of charge from solar subject to inverter losses
  - Various strategies for ensuring percentage of charge
- Critical for tax equity investors to diligence ITC-capture approach, risks, and mitigations (e.g., technical review of controls)

Offshore Wind ITC vs. PTC

- Conventional wisdom is that electing ITC is preferable to the PTC for offshore wind due to offshore winds relatively high cost versus production levels
- ITC will require tax equity to take on more construction risk than accustomed to for onshore wind
- Offshore wind costs in US still uncertain
  - Experience in Europe doesn't directly transfer
  - Chicken-and-egg problem to achieve economies of scale
  - Potential cost inflection points based on harbors, local turbine and/or monopile manufacture, Jones Act-compliant vessels
- Hypothetically assuming a permanent extension of the 30% ITC and the 10 – year $24 MWH PTC for offshore wind, when would it be expected that the PTC would be more favourable than the ITC?
  - Project costs need to decline to ~$2,500/kW assuming net capacity factors of ~45%
- Storage does not benefit from the PTC because storage does not increase "production"
  - A material storage component in an offshore wind project would be another factor in favor of ITC, unless storage services are adequately valued in offtake contract

Partnership Flip Structure – Sharing Ratios

	Pre-Flip Period [1]		Post-Flip Period	
	Investor	Sponsor	Investor	Sponsor
Pre-Tax Cash	30%	70%	5%	95%
Tax Credits	99%	1%	5%	95%
Taxable Income/ Loss	99%	1%	5%	95%

(1) Flip typically occurs in Year 10 for wind or Year 6 for solar

- The ultimate objective is to allocate tax benefits to a party that can use them most efficiently
- There are many variations of the basic structure
- Wind Tax Equity – 50-60% of capital stack
- Solar Tax Equity – 30-40% of capital stack

HLBV Use for Renewable Investments

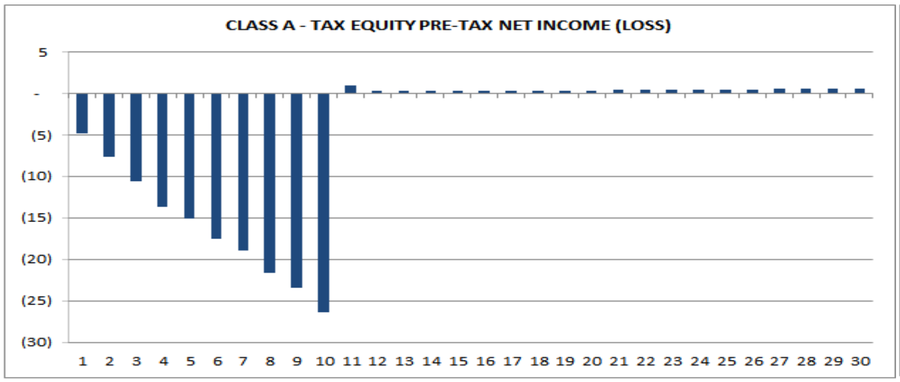
- There are 4 methods of accounting for an investment under US GAAP:

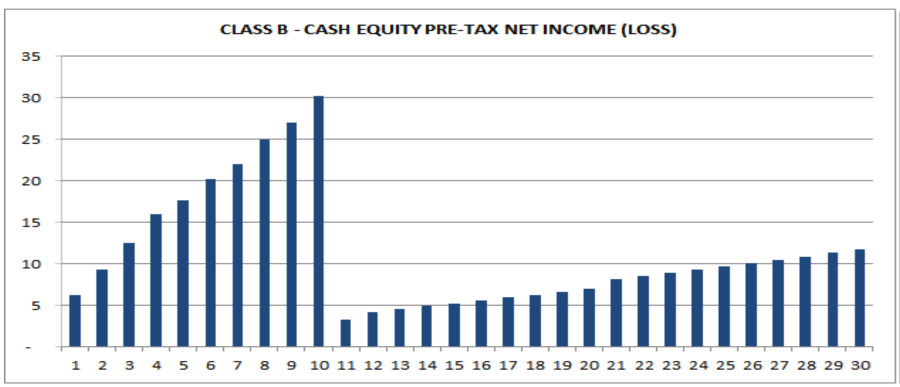
Method	General Criteria	HLBV Use
1. Consolidation	Variable interest model vs voting interest model (ASC 810-10, FIN46R, ARB 51)	Yes
2. Equity method	"Significant influence" over operating and financial policies (ASC 323-10, ASC 970-323, SOP 78-9). If consolidation is not appropriate, use this method.	Yes
3. Cost method	Rare in partnership flip structures. Used when the investor's investment amount is minor (< 3-5%)	No
4. Fair value	Changes in FV flow through earnings.	No

- Consolidation and equity methods are more prevalent in accounting for renewable energy projects
- Both accounting methods may require an application of HLBV income allocation techniques because the project's capital structure provides different rights and priorities to its owners or ownership percentages are not specified
- Conventional income allocation approaches (e.g., percentage ownership interest or effective yield) do not reflect tax equity project's economic reality. HLBV overcomes the challenges of these conventional approaches

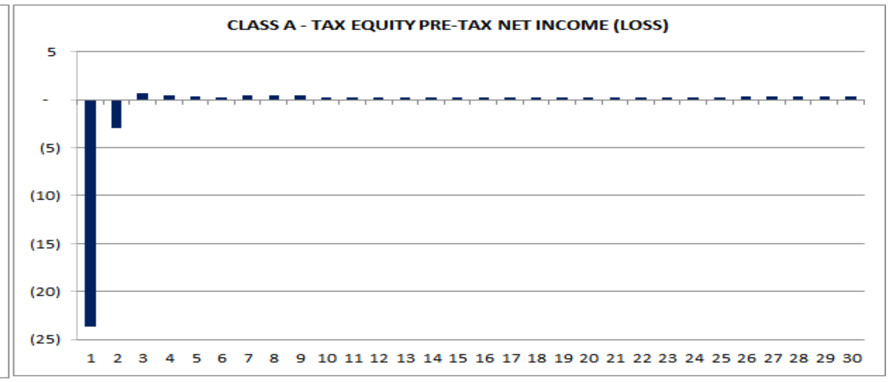
HLBV Pre-Tax Earning Profiles – Wind PTC vs Solar ITC

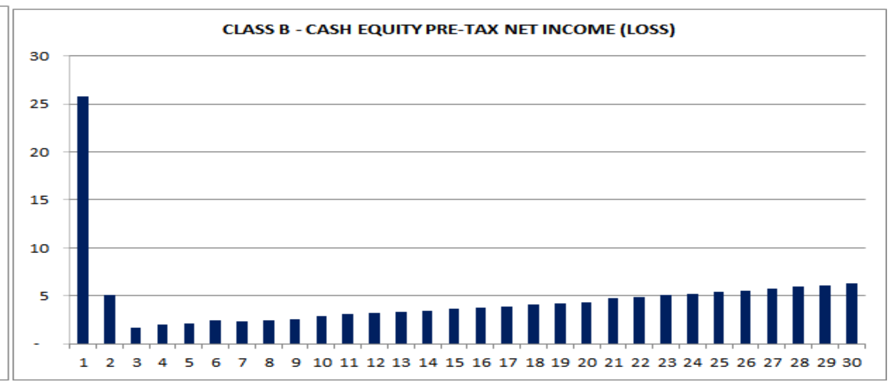
Wind PTC





Solar ITC





alfa Energy Advisors DNV·GL NORTON ROSE FULBRIGHT

Q&A

Profile Page

David Burton
Partner
Norton Rose Fulbright
david.burton@nortonrosefulbright.com
New York
Tel: 212-318-3311

- David advises clients on a wide range of US tax matters, with an emphasis on project finance and energy transactions. In addition, he advises clients on the tax aspects of the formation and structuring of private equity funds with particular expertise regarding Qualified Opportunity Zone funds. David has extensive experience structuring tax-efficient transactions, such as flip partnerships, sale-leasebacks, pass-through leases and other structures, for the acquisition and financing of renewable energy assets that qualify for tax credits and other incentives.

- Earlier in his career, David was the managing director and senior tax counsel at GE Energy Financial Services (GE EFS), one of the world's leading investors in energy projects. At GE EFS, David oversaw all of the tax aspects for more than US$21 billion in global energy projects from structuring transactions to accounting for taxes to formulating tax policy initiatives. During his tenure at GE EFS, the division's investments in wind, solar, hydro, biomass and geothermal power grew to US$6 billion, making GE EFS the largest tax-advantaged energy investor in the US. Before joining GE EFS, David was a tax lawyer at GE Capital and primarily focused on aircraft and equipment leasing and financing and asset acquisitions.

Profile Page

Vadim Ovchinnikov, CFA, CPA
Managing Director
Alfa Energy Advisors
Direct: +1 703.589.5111
vadim@alfaBA.com

- Mr. Ovchinnikov is a Managing Director at Alfa Energy Advisors. Vadim has nearly 20 years of professional experience in project finance, tax equity structuring, capital raise, and mergers & acquisitions. He has assisted numerous clients in the power sector (solar, wind, fuel cells, gas, geothermal and hydro) and actively works with project developers, investors, and corporate clients. Vadim has deep expertise in renewable energy financing, has been quoted by leading industry publications and is a frequent speaker at industry conferences.
- Prior to Alfa Energy Advisors, Vadim was a Managing Director at Chicago Advisory Group providing financial advisory services to clients in the energy and banking sectors. His prior experience includes working for PricewaterhouseCoopers in the Mergers & Acquisitions Group in Europe and PwC's Investment and Capital Markets Group in Chicago focusing on serving clients in the banking industry. Vadim started his career at the Financial Accounting Standards Board (FASB) where he was a member of the Derivatives Implementation Team and the Financial Instruments Team.
- Vadim is a CFA charterholder, a licensed CPA and a member of the CFA Institute and the AICPA.

Profile Page

Gintaras Sadauskas
Managing Director
Alfa Energy Advisors
Direct: +1 571.309.0463
gintaras@alfaBA.com

- Mr. Sadauskas is a Managing Director at Alfa Energy Advisors. Gintaras provides financial and commercial advice relating to development, financing, purchase and sale of power generation assets (solar, wind, fuel cells, gas, hydro, geothermal and coal). During the past 15 years, he has been involved in numerous portfolio transactions and project financings, including tax equity structuring of wind and solar projects.
- Prior to joining Alfa Energy Advisors, Gintaras worked in the project finance and M&A groups at the AES Corporation headquarters. He participated in multiple acquisitions and structured project financings in the US and internationally. Prior to AES, Gintaras worked in the Financial Advisory Services Group at KPMG in Europe.
- Mr. Sadauskas received an MBA degree from the Darden School of Business, University of Virginia and M.Sc. in International Management from the University of Lausanne in Switzerland.

alfa Energy Advisors DNV·GL NORTON ROSE FULBRIGHT

Profile Page

Ken Elser
Head of Department, Project Finance and M&A
DNV GL
Direct: +1 503-222-5590
Ken.Elser@dnvgl.com

- Mr. Elser leads the Project Finance and M&A department within DNV GL, comprised of project managers and engineers focused on delivering independent engineering services to support transactions involving wind, solar, and storage projects. The department's mandate includes delivering due diligence services to a broad range of customers and innovating products to strengthen value proposition for financing and buy/sell transactions. Mr. Elser is a central point of contact for developers, tax equity and equity investors, utility and corporate offtakers, and suppliers, helping to facilitate technically sound project investments.
- Mr. Elser earned a BS in Mechanical and Aerospace Engineering from Cornell University and MS in Energy Systems Engineering from the University of Michigan.

NORTON ROSE FULBRIGHT

Disclaimer

NORTON ROSE FULBRIGHT