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Valuation Considerations for Renewable Energy Assets for Purchase Price Allocations



Presenter Background



Billy Lee, CFA
Director

Summary of Experience

Billy Lee has experience providing valuation and financial advisory services to firms in a wide variety of industries. His diverse valuation experience include: valuation studies of businesses, intellectual property, intangible and tangible (financial) assets for a variety of purposes, including tax and financial reporting (ASC §805, §350, §360, and §718), mergers and acquisitions, estate and gift tax planning, litigation support and strategic planning across multiple industries.

Billy's experience includes but is not limited to:

- Valuations of hydroelectric, natural gas, combined cycle, solar farms, wind turbines, and waste to energy power generation plants for tax and financial reporting purposes.
- Valuation of favorable and unfavorable power purchase agreements and valuation of heat rate swaps;
- Valuation of financial hedge books for natural gas and electricity.
- Valuations of mineral rights and exploration interests for mining and oil and gas companies, including:

Professional Affiliations and Credentials

- CFA Institute
- CFA Society of Colorado

Education

- Masters of Science in Finance, University of Denver
- Bachelor of Science in Business Administration with emphases in Accounting and Finance University of Colorado at Boulder

Renewable Energy

- There are a number of technologies under renewable energy
- Broadly speaking - energy that is generated from a replenishing resource
- Renewable energy generating assets:
 - Hydroelectric – dam/diversion turbines
 - Solar – solar Photovoltaic (PV) or solar concentrators (boiler)
 - Wind – turbines onshore and offshore
 - Geothermal – heat transfer systems
 - Green Hydrogen / Fuel Cells
 - Biomass energy / Biofuels

Renewable Energy Trends Over Time

- U.S. Energy Information Administration – Annual Energy Outlook
 - High level assumptions/estimates to compare economics of costs to generate utility scale electricity by fuel source
 - Levelized cost of energy (LCOE) & levelized avoided cost of electricity (LACE)
 - Estimates future electricity generation over the life of the asset by fuel source, capacity factors, operating and maintenance expenses, and a present values estimated cash flows.
 - Divided by total electricity generation for respective life of asset
 - Generates high level / simplified measurement to compare

EIA's 2022 LCOE

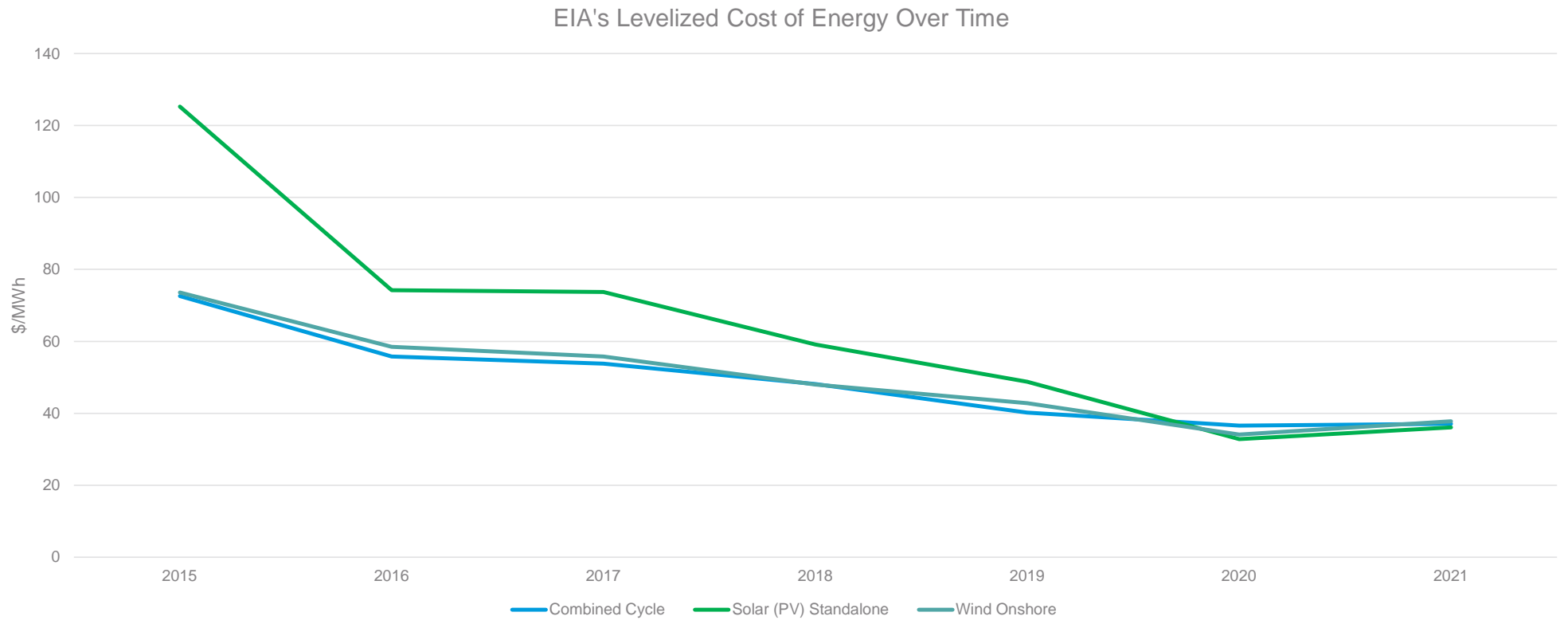
Table 1a. Estimated capacity-weighted^a levelized cost of electricity (LCOE) and levelized cost of storage (LCOS) for new resources entering service in 2027 (2021 dollars per megawatthour)

Plant type	Capacity factor (percent)	Levelized capital cost	Levelized fixed O&M ^b	Levelized variable cost	Levelized transmission cost	Total system LCOE or LCOS	Levelized tax credit ^c	Total LCOE or LCOS including tax credit
Dispatchable technologies								
Ultra-supercritical coal	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Combined cycle	87%	\$8.56	\$1.68	\$25.80	\$1.01	\$37.05	<i>NA</i>	\$37.05
Advanced nuclear	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Geothermal	90%	\$21.80	\$15.20	\$1.21	\$1.40	\$39.61	-\$2.18	\$37.43
Biomass	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Resource-constrained technologies								
Wind, onshore	43%	\$27.45	\$7.44	\$0.00	\$2.91	\$37.80	<i>NA</i>	\$37.80
Wind, offshore	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Solar, standalone ^d	29%	\$26.35	\$6.34	\$0.00	\$3.41	\$36.09	-\$2.64	\$33.46
Solar, hybrid ^{d,e}	26%	\$39.12	\$15.00	\$0.00	\$4.51	\$58.62	-\$3.91	\$54.71
Hydroelectric ^e	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>	<i>NB</i>
Capacity resource technologies								
Combustion turbine	10%	\$55.55	\$8.37	\$49.93	\$10.00	\$123.84	<i>NA</i>	\$123.84
Battery storage	10%	\$64.74	\$29.64	\$18.92	\$11.54	\$124.84	\$0.00	\$124.84

Source: U.S. Energy Information Administration, *Annual Energy Outlook 2022*



EIA's LCOE Over Time (pre-subsidy)



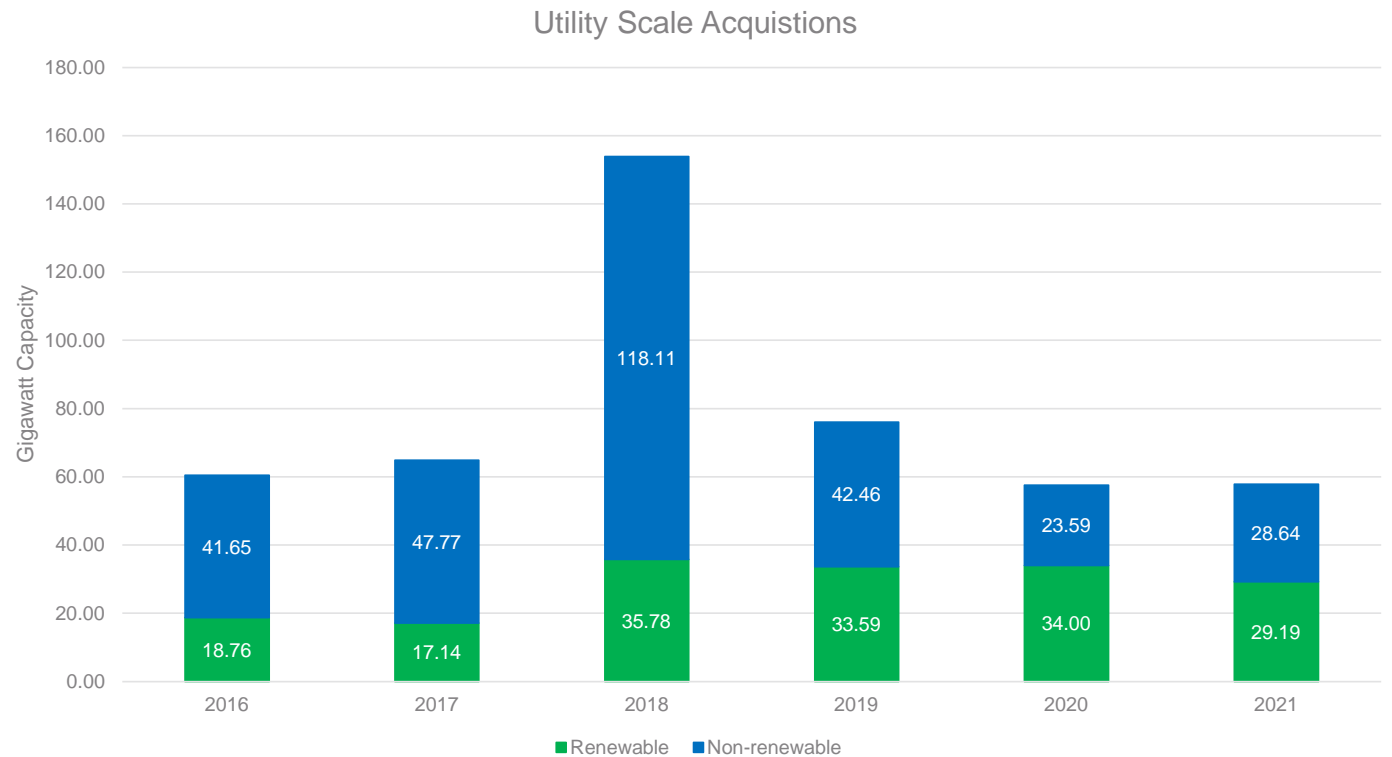
Source: EIA's annual energy outlook reports
https://www.eia.gov/outlooks/aeo/electricity_generation.php

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LCOE overtime

- LCOE over the last 7 years for solar PV and wind turbines LCOE declined substantially (70%+ Solar PV and 45% Wind)
 - Breakthroughs in R&D efforts for energy conversion technology
 - Scalable manufacturing cost reductions overtime

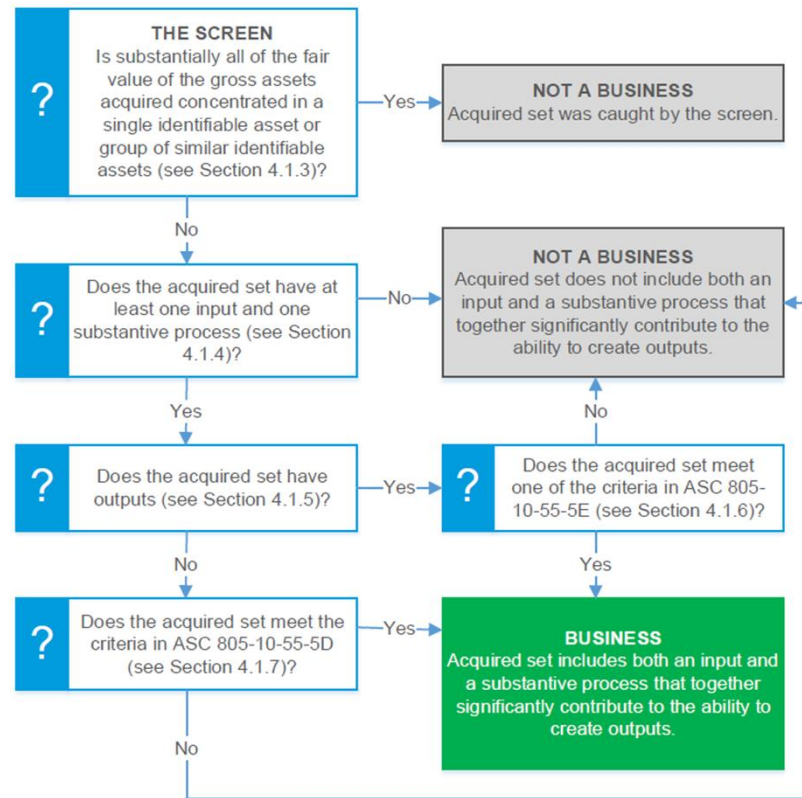


1. Transaction data gathered from S&P Capital IQ Pro – Energy Database

ASC 805 - Asset Acquisition versus Business Combination

- Important to establish if transaction constitutes a business early on in review process
 - Under ASC 805 2017-01, guidance is provided to determine whether a set of assets meets the definition of a business.
 - Public accounting company guides for determination of asset or business
 - Client / Management assessment is required

Classification Flow Chart



Allocation of Consideration Transferred

- Business Combination versus Asset Acquisition

Business Combination

- Acquisition costs
 - Expenses as incurred
- Initial measurement
 - Consideration transferred to acquire the business is allocated to identifiable assets and liabilities at their acquisition date fair value
- Goodwill
 - Excess consideration transferred over the fair value of the net assets acquired is recognized as goodwill

Asset Acquisition

- Acquisition costs
 - Capitalized as part of acquired asset
- Initial measurement
 - Consideration transferred is allocated to identifiable assets and liabilities based on their relative fair value allocated amongst asset group
- Goodwill
 - There is no goodwill. Any gain or loss would only be recognized in transactions involving noncash consideration when the carrying amount of the noncash consideration on the acquiring entity's books differs from fair value

Asset Acquisition - Example

Purchase Consideration	Fair Value	
Cash	\$	35,400
Assumed financial liabilities		15,254
Total purchase consideration	\$	50,654
Closing adjustments		436
Net total purchase consideration to be allocated	\$	51,091
	Indicated Value	Asset Acquisition Fair Value (6)
<u>Asset group</u>		
Fixed assets	38,404	38,770
Power Purchase Agreement	12,204	12,320
Total Allocated Consideration		\$ 51,091

Business Combination - Example

Purchase Consideration		Fair Value			Purchase Allocation
					Asset
					Fair
					Value
Total cash consideration		\$ 7,074	Net Tangible Assets		
Developer's fee		15,296	Net working capital (excl. debt)		\$ 16,002
Net cash proceeds	\$	22,369	Fixed assets (excl. land)		\$93,700
Rollover equity		14,852	Other long-term assets, net		-
Total equity consideration	\$	37,222	Net tangible asset subtotal		109,702
Due to affiliates/related parties (net)		13,616	Intangible Assets		
Assumed financial liabilities		59,085	Power purchase agreements - favorable / (unfavorable)		(\$1,087)
Total purchase consideration	\$	109,923	Implied goodwill		1,308
Less: Non-operating assets, net		na	Intangible asset subtotal		221
Net total purchase consideration to be allocated	\$	109,923	Total Purchase Consideration to be Allocated		\$ 109,923

Typical tangible assets and intangible assets acquired

- **Property, Plant & Equipment**
 - Methodology: Income Approach using plant/project specific production and market participant pricing assumptions
 - Replacement cost less depreciation won't be able to capture favorable local government subsidies and corresponding economic benefits, regulatory approval and expenses, and market pricing
 - Depending on tax structure - iterative tax depreciation calculations based on the fair value of the PP&E
- **Power Purchase Agreements (PPA)**
 - Methodology: Income approach using plant/project specific production and revenue from net contract pricing less revenue at market participant pricing
 - With and without approach to determine the value of the PPA in place

Intangible assets typically excluded

- Customer relationships
 - Due to the commodity nature of the energy industry, typically there is rarely customer relationship value associated with the business
- Goodwill
 - Typically, there is rarely goodwill to be allocated and most projects would be categorized as an asset acquisition for renewable energy assets
 - Most renewable energy generation projects have limited lives (20-30 years) and minimal capital expenditures over the life of the project
 - Implications for impairment of goodwill on Day 2 due to limited life of business

Determining Market Participant Pricing Curve

- Most renewable energy projects won't be financed without a power purchase agreement in place prior to the construction phase of the projects
- Local state governments offer a variety of subsidies/incentives for qualifying renewable energy projects
 - Massachusetts – net metering credit (i.e retail price of electricity)
 - Renewable energy credits
 - Subsidy/incentive plans can vary substantially by local government and Public Utility Commission (PUC) / ISO programs / local utility markets
- Most PPAs will consider these incentives/benefits when setting contractual prices
- Market participant pricing curve
 - Requires hypothetical conditions as there are no widely traded contracts that would match the exact terms of an acquired PPA
 - Discussions with Management of most likely alternatives for PPA pricing that are unique to the asset (state/local government incentives, REC pricing) if a new PPA for the asset were set today

Market Participant Pricing Curves (cont)

- Example – Massachusetts assets with PPA price determined at a discount to Net Metering Credits
 - PPA contract price was established 4 years ago (2016), discount to Net Meter Credit, no entitlement to REC sales
 - Market participant should be based on current observations / market trends for discounts for new PPAs within that local market

Merchant Pricing

	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024
Net Meter Credit Price (\$/kWh)	\$ 0.174	\$ 0.178	\$ 0.181	\$ 0.185	\$ 0.189
Developer's Discount	30.0%	30.0%	30.0%	30.0%	30.0%
Estimated Merchant Pricing	\$ 0.122	\$ 0.124	\$ 0.127	\$ 0.129	\$ 0.132
REC Pricing	\$ 0.039	\$ 0.039	\$ 0.039	\$ 0.039	\$ 0.039
Total Merchant Pricing	\$ 0.161	\$ 0.164	\$ 0.166	\$ 0.169	\$ 0.171

Site 1 - PPA

	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024
Net Meter Credit Price (\$/kWh)	\$ 0.174	\$ 0.178	\$ 0.181	\$ 0.185	\$ 0.189
Developer's Discount	25%	25%	25%	25%	25%
PPA Pricing	\$ 0.131	\$ 0.133	\$ 0.136	\$ 0.139	\$ 0.141

Site 2- PPA

	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024
Net Meter Credit Price (\$/kWh)	\$ 0.129	\$ 0.129	\$ 0.129	\$ 0.129	\$ 0.129

PP&E – Fixed Assets

- A merchant pricing curve is utilized and applied to the production of the fixed assets
- Utilize remaining tax depreciation basis.
 - Particularly relevant/important with tax equity flip structures, where tax depreciation write-offs may be unavailable on a go-forward basis in a stock transaction

	Consolidated PP&E													
	FYE 12/31/2020	FYE 12/31/2021	FYE 12/31/2022	FYE 12/31/2023	FYE 12/31/2024	FYE 12/31/2025	FYE 12/31/2026	FYE 12/31/2027	FYE 12/31/2028	FYE 12/31/2029	FYE 12/31/2030	FYE 12/31/2031	FYE 12/31/2032	FYE 12/31/2033
Total Production	43,836	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000
Merchant Pricing	\$ 0.161	\$ 0.164	\$ 0.166	\$ 0.169	\$ 0.171	\$ 0.174	\$ 0.177	\$ 0.179	\$ 0.182	\$ 0.185	\$ 0.188	\$ 0.191	\$ 0.194	\$ 0.197
Total Merchant Revenue	7,066	8,509	8,639	8,771	8,905	9,043	9,183	9,326	9,471	9,620	9,772	9,926	10,084	10,245
Operating Expense	1,174	1,411	1,423	1,518	1,521	1,524	1,527	1,539	1,634	1,638	1,641	1,645	1,657	1,752
EBITDA	5,893	7,098	7,216	7,253	7,385	7,519	7,656	7,787	7,837	7,982	8,130	8,282	8,427	8,493
Less: Tax Depreciation	17,679	10,589	10,589	5,340	-	-	-	-	-	-	-	-	-	-
EBITA	(11,786)	(3,491)	(3,373)	1,913	7,385	7,519	7,656	7,787	7,837	7,982	8,130	8,282	8,427	8,493
Less: Estimated income taxes @ 26.0%	(3,064)	(908)	(877)	497	1,920	1,955	1,990	2,025	2,038	2,075	2,114	2,153	2,191	2,208
Net operating profit after-tax (NOPAT)	(8,722)	(2,583)	(2,496)	1,415	5,465	5,564	5,665	5,762	5,799	5,907	6,017	6,128	6,236	6,285
Plus: Tax Depreciation	17,679	10,589	10,589	5,340	-	-	-	-	-	-	-	-	-	-
Debt-free, net cash flow	8,957	8,006	8,093	6,756	5,465	5,564	5,665	5,762	5,799	5,907	6,017	6,128	6,236	6,285
Discount period	0.400	1.300	2.300	3.300	4.300	5.300	6.300	7.300	8.300	9.300	10.300	11.300	12.300	13.300
Discount rate	5.7%	0.930	0.880	0.833	0.788	0.745	0.705	0.667	0.631	0.597	0.565	0.535	0.506	0.478
Present value of cash flows	\$8,761	\$7,449	\$7,124	\$5,626	\$4,306	\$4,147	\$3,995	\$3,844	\$3,661	\$3,527	\$3,399	\$3,276	\$3,154	\$3,007
Total present value of cash flows	\$93,700													



Power Purchase Agreements - Example

Fair Value Calculation

- Determine production for remaining contract period
- Determine merchant pricing for respective period
- Determine PPA contractual pricing
- Subtract merchant revenue from agreement revenue and adjust for taxes
- Discount the cash flow using determined weighted average cost of capital

	Wind PPA											
	FYE 12/31/2020	FYE 12/31/2021	FYE 12/31/2022	FYE 12/31/2023	FYE 12/31/2024	FYE 12/31/2025	FYE 12/31/2026	FYE 12/31/2027	FYE 12/31/2028	FYE 12/31/2029	FYE 12/31/2030	FYE 12/31/2031
Production	7,002	8,388	8,388	8,388	8,388	8,388	8,388	8,388	8,388	8,388	8,388	8,388
Merchant Pricing	\$0.161	\$0.164	\$0.166	\$0.169	\$0.171	\$0.174	\$0.177	\$0.179	\$0.182	\$0.185	\$0.188	\$0.191
Merchant Revenue	\$1,129	\$1,373	\$1,394	\$1,415	\$1,437	\$1,459	\$1,481	\$1,504	\$1,528	\$1,552	\$1,576	\$1,601
NMCA Revenue	1,277	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530	1,530
Difference in revenues	\$148	\$157	\$136	\$115	\$93	\$71	\$49	\$26	\$2	(\$22)	(\$46)	(\$71)
Taxes	\$39	\$41	\$35	\$30	\$24	\$19	\$13	\$7	\$1	(\$6)	(\$12)	(\$19)
After tax difference	\$110	\$116	\$101	\$85	\$69	\$53	\$36	\$19	\$2	(\$16)	(\$34)	(\$53)
Discount period	0.400	1.300	2.300	3.300	4.300	5.300	6.300	7.300	8.300	9.300	10.300	11.300
Discount Factor @ 5.7%	0.978	0.930	0.880	0.833	0.788	0.745	0.705	0.667	0.631	0.597	0.565	0.535
Present value of cash flows	\$107	\$108	\$89	\$71	\$54	\$39	\$25	\$13	\$1	(\$10)	(\$19)	(\$28)
PPA Value	\$69											



Variable interest entities (VIE) considerations

- Renewable energy projects can have an equity flip structure
- Accounting guidance will dictate if fair value of non-controlling interest is required
 - Number of assessments need to be made for determining if the transaction constitutes a business combination or asset acquisition (previously mentioned), identification of primary beneficiary, as well as controlling interest assessments
 - As mentioned before Client/Management assessment for technical accounting is required. Numerous public accounting guides for considerations needed
- Fair value of non-controlling interest (NCI)
 - Generally, gross up of ownership percentages if no unique distribution order
 - Special considerations around equity distribution flip structures
- As an example:
 - Buyer previously held interests in project, paid an additional \$2.3 million to change equity distribution
 - Gross up of cash consideration is not as meaningful due to distribution flip considerations

Pre-Transaction	2020 - 2024	2025 and Beyond
Seller Equity Distributions	53.0%	94.0%
Buyer Equity Distributions	47.0%	6.0%

Post-Transaction	2020 - 2024	2025 and Beyond
Seller Equity Distributions	10.0%	20.0%
Buyer Equity Distributions	90.0%	80.0%

Non-controlling interest

- Discrete cash flow projections and backing into implied IRR of transaction

	FYE	FYE	FYE	FYE	Projected (1)		FYE	FYE	FYE	FYE
	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24	12/31/25	12/31/26	12/31/27	12/31/28	
Total PV of equity free cash flows	\$ 3,561									
Pre transaction Seller cash flows	\$ 102	\$ 98	\$ 95	\$ 95	\$ 173	\$ 173	\$ 174	\$ 172	\$ 175	
% of free cash flows to equity	50.0%	50.0%	50.0%	50.0%	91.0%	91.0%	91.0%	91.0%	91.0%	
Pre transaction Buyer cash flows	\$ 102	\$ 98	\$ 95	\$ 95	\$ 17	\$ 17	\$ 17	\$ 17	\$ 17	
% of free cash flows to equity	50.0%	50.0%	50.0%	50.0%	9.0%	9.0%	9.0%	9.0%	9.0%	
Cost of equity	0.967	0.896	0.824	0.758	0.697	0.641	0.589	0.542	0.498	
Present value of Seller cash flows - pre transaction	\$ 99	\$ 88	\$ 78	\$ 72	\$ 120	\$ 111	\$ 102	\$ 93	\$ 87	
Present value of Buyer cash flows - pre transaction	\$ 99	\$ 88	\$ 78	\$ 72	\$ 12	\$ 11	\$ 10	\$ 9	\$ 9	
Total present value of Seller cash flows - pre transaction	\$ 2,964									
Total present value of Buyer cash flows - pre transaction	\$ 597									
Post transaction Seller cash flows	\$ 20	\$ 20	\$ 19	\$ 19	\$ 38	\$ 38	\$ 38	\$ 38	\$ 38	
% of free cash flows to equity	10.0%	10.0%	10.0%	10.0%	20.0%	20.0%	20.0%	20.0%	20.0%	
Post transaction Buyer cash flows	\$ 184	\$ 176	\$ 171	\$ 171	\$ 152	\$ 152	\$ 153	\$ 151	\$ 154	
% of free cash flows to equity	90.0%	90.0%	90.0%	90.0%	80.0%	80.0%	80.0%	80.0%	80.0%	
Cost of equity	0.967	0.896	0.824	0.758	0.697	0.641	0.589	0.542	0.498	
Present value of Seller cash flows - post transaction	\$ 20	\$ 18	\$ 16	\$ 14	\$ 26	\$ 24	\$ 22	\$ 21	\$ 19	
Present value of Buyer cash flows - post transaction	\$ 178	\$ 158	\$ 141	\$ 129	\$ 106	\$ 97	\$ 90	\$ 82	\$ 76	
Total present value of Seller cash flows - post transaction	\$ 645									
Total present value of Buyer cash flows - post transaction	\$ 2,916									
Total present value of Seller cash flows - post transaction	\$ 645									
Total present value of Buyer cash flows - post transaction	\$ 2,916									
Change in Buyer cash flows	\$ 2,319									
Buyer consideration exchanged	\$ 2,345									
Total Equity	\$ 3,561									
Less: Net consideration exchanged	\$ 2,345									
Rollover equity	\$ 1,215									



QUESTIONS AND ANSWERS

THANK YOU FOR
YOUR TIME AND
ATTENTION

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