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Bonneville Power Administration, OR

Credit Update Following Rating Affirmation and Change in Outlook to Negative

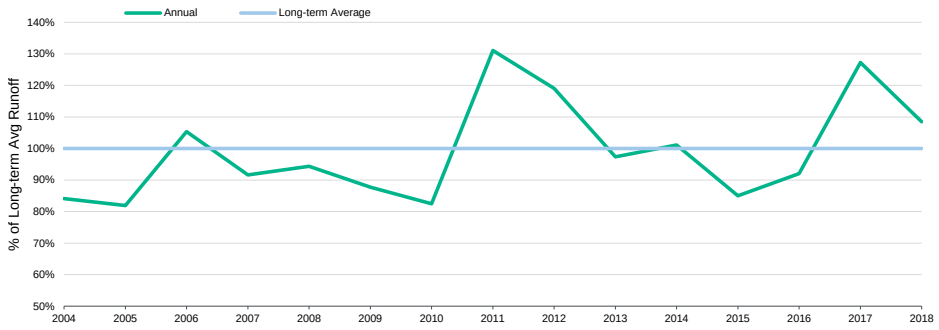
Summary

Bonneville Power Administration's (BPA) credit profile recognizes several credit supportive considerations including its strongly positioned and expansive network of hydro and transmission assets, access to competitive power, long-term power supply contracts with customers through 2028 and credit supportive attributes as being a line agency of the Government of the United States of America (Aaa stable). The Aa1 rating also acknowledges continuing credit challenges including hydrology and wholesale market price risk, a 'regulated utility' like ratemaking process, environmental burdens, and consolidated financial metrics that continue to range in the 'Ba' to 'Baa' rating category as outlined under the Moody's U.S. Public Power Electric Utilities with Generation Ownership Exposure methodology. Hydrology and wholesale market prices remain the greatest volatility drivers to BPA's financial performance and historically has contributed to significant declines to BPA's internal liquidity.

The credit quality of BPA supported obligations such as Energy Northwest's (ENW) CGS, Project 1, and Project 3 revenue bonds considers BPA's contractual obligation to pay including debt service under the applicable agreement, BPA's long history of meeting its contractual obligations, and BPA's credit quality.

The change in BPA 's rating outlook to negative from stable reflects the steady erosion of BPA's internal and external liquidity since 2015, which we expect will continue through the new FY2020-2021 rate period, and BPA's intent to further extend the Energy Northwest nuclear debt beyond the scope of the current "Regional Cooperation" program.

Exhibit 1
Columbia River Runoff at Dalles



Source: Moody's Investors Service, BPA

Credit strengths

» U.S. government support through US Treasury borrowing line and federal debt service deferral ability

» Regional importance as indirect power provider for 14 million people

» Access to 22 GW of low cost, federally owned hydro system

» Dominant electric transmission provider in the Pacific Northwest

» Competitive rates

» Long-term power sales contracts with creditworthy public power entities

Credit challenges

» Declining reserves for risk and availability under US Treasury Line

» 'Regulated utility' like ratemaking process

» Significant exposure to hydrology risk and wholesale power markets

» Weak financial metrics for the rating category

» Weakening of federal debt subordination via ENW debt extensions

» Significant fish and wildlife environmental costs

Rating outlook

The negative outlook on CGS, Project 1, and Project 3 reflects BPA's negative outlook. BPA's negative outlook considers the agency's declining liquidity profile and a continuation of Energy Northwest's debt extension incorporated in BPA's upcoming FY2020-2021 rate period.

Factors that could lead to an upgrade

» In light of the negative outlook at BPA, limited prospects exist for the rating to be upgraded.

» BPA's outlook could be revised to stable if the FY2020-2021 rates or other action is taken to allow for internal liquidity materially above 60 days cash on hand and US Treasury line availability materially above $1.5 billion (adjusted) and its long term strategic plans ensures sufficient subordination of federal debt).

» BPA's rating could improve over the long term if BPA is able to substantially mitigate hydrology and wholesale price risk and if BPA implements policies to ensure robust liquidity including at least 250 days cash on hand on a sustainable basis.

» The outlook on BPA and the BPA supported bonds including the CGS, Project 1, and Project 3 bonds could be revised to stable if BPA's outlook becomes to stable.

Factors that could lead to a downgrade

» BPA's ratings could be lowered if the US government's credit rating is downgraded, if we expect internal liquidity to fall below 60 days, if the availability under the US Treasury line declines below $1.5 billion (adjusted) on a sustained basis, or if BPA experiences regulatory delays in receiving full recovery of costs. Other factors that could lead to a downgrade include any sign of waning federal government support or a decline in the proportion of subordinated, deferrable debt owed to the US Treasury.

» The ratings on BPA supported bonds could be downgraded if BPA is downgraded or if the underlying contractual arrangement is violated.

Key indicators

Exhibit 2

	2012	2013	2014	2015	2016	2017	2018
Total Sales (MWh)	94,774,440	87,547,440	89,325,720	81,599,400	84,463,920	85,672,800	84,069,720
Debt Outstanding ($' 000)	14,534,245	15,013,366	15,571,590	16,089,851	15,641,400	15,300,400	15,032,000
US Treasury Line Borrowing Availability (adjusted for deferred borrowing) ($' 000)	4,210,000	3,657,000	3,340,960	2,897,000	2,702,000	2,198,300	1,831,400
Debt ratio (%)	96.6%	95.7%	95.7%	94.5%	90.5%	88.2%	86.0%
Total Days Cash on Hand (days)	132	117	136	152	103	92	89
Total Debt Service Coverage Ratio	1.11	1.05	1.19	1.17	0.62	0.82	1.30
Total Debt Service Coverage Ratio (adjusting for payments deferred)	1.11	1.05	1.19	1.17	0.75	1.12	1.04
Non Federal Debt Service Coverage Ratio	2.07	1.70	3.46	4.34	3.76	3.83	3.99

Source: Moody's Investors Service, BPA

Profile

BPA was created in 1937 by an act of the US Congress and is one of four regional power marketing agencies within the US Department of Energy. BPA is primarily responsible for federally owned generation and electric transmission assets in the Pacific Northwest spanning all or parts of eight states. The Army Corps of Engineers and the Bureau of Reclamation own and operate the hydro projects. Many of the statutory authorities of BPA are vested with the Secretary of Energy, who appoints and acts through the BPA administrator. BPA's obligations are not backed by the full faith and credit of the US government and its cash payments are limited to funds available in the Bonneville Fund.

Detailed credit considerations

Revenue Generating Base

Major Power and Transmission Provider to the Pacific Northwest

BPA derives its revenues from the sale of power and transmission services from its dominant hydroelectric generation and electric transmission assets in the Pacific Northwest. BPA has roughly 75% of the Pacific Northwest's bulk electric transmission consisting of 15,000 miles of high voltage transmission lines and 260 substations and other facilities located in BPA's service area. Additionally, BPA's power supply represents around 27% of the total regional power supply and consists of 22 GW of mostly federally owned hydro plants, the 1.2 GW Columbia Generating Station (CGS) nuclear plant, and market and contract purchases. The federal hydro projects also serve numerous purposes, including irrigation, navigation, recreation, municipal and industrial water supply, and fish and wildlife protection.

Power sales represent the largest portion at typically 75% of total revenue and the majority of these sales are made under long-term power sales contracts (Preference Contracts) maturing in 2028 with 133 municipally owned utilities, cooperatively owned utilities, and federal agencies. Sales to these customers totaled approximately $2.8 billion in FY2018 and represent BPA's largest revenue segment at nearly 76% of total revenues (see Exhibit 3 for major customers). Power rates charged by BPA are competitive on a national basis and BPA's average tier 1 rate for the FY2018-2019 period averages $35.6/MWh.

Exhibit 3
Top 10 Costumers

Power Customer Name	Type	Rating	% of Power Sales	Transmission Customer Name	Rating	% of Transmission Sales
Snohomish County P.U.D. 1, WA Electric Ent.	Preference	Aa3	9%	Puget Sound Energy, Inc.	Baa1	12%
Pacific Northwest Generating Coop	Preference	NR	7%	PacifiCorp	A3	10%
Seattle (City of) WA Electric Enterprise	Preference	Aa2	6%	Portland General Electric Company	A3	9%
Cowlitz County Public Utility District 1, WA	Preference	A1	6%	Powerex Corp.*	NR	7%
Tacoma Power, WA	Preference	Aa3	5%	Avangrid Renewables LLC	NR	5%
Clark County Public Utility District 1, WA	Preference	A1	4%	Snohomish County P.U.D. 1, WA Electric Ent.	Aa3	5%
Eugene Water & Electric Board, OR	Preference	Aa2	3%	Seattle (City of) WA Electric Enterprise	Aa2	5%
Benton County Public Utility District 1, WA	Preference	Aa3	2%	Pacific Northwest Generating Coop	NR	3%
Flathead Electric Cooperative, Inc.	Preference	NR	2%	Hermiston Power LLC	NR	2%
Central Lincoln Peoples Utility District, OR	Preference	NR	2%	Clark County Public Utility District 1, WA	A1	2%
Total			46%	Total		60%

*Subsidiary of British Columbia Hydro & Power Authority (Aaa)
Source: Moody's Investors Service, BPA

'Regulated Utility' Like Rate Making Process Could Delay Timely Recovery

Unlike a traditional public power utility, BPA's ratemaking procedure for power and transmission rates charged to its customers involves an extensive, two-year process that shares similarities with a rate regulated utility that often create complications and delays in timely and full recovery of BPA's costs. The Northwest Power Act contains specific ratemaking procedures for BPA, mandates justification and reasons in support of such rates, and requires a hearing. The BPA Administrator ultimately decides the power and transmission rates based on the hearing record including all information submitted. Rates established by BPA are subject to approval by FERC. In a stress situation, BPA could file an expedited rate with FERC and the whole process could take several months for an interim rate approval. We see BPA's rate setting process as materially weaker than peers such as Tennessee Valley Authority (Aaa stable) that have unfettered, self-regulated rate setting. In January 2019, BPA's proposed its rates for FY2020-2021 and they expect to finalize their decision around the end of July 2019 subject to further FERC approval and refund.

Notwithstanding the 'regulated utility' like ratemaking process that BPA operates under, we recognize that BPA has raised rates in difficult situations such as the power crisis of 2000-2001 when BPA raised rates by 46%. Additionally, within a rate period, BPA is able to charge up to an additional $300 million per year starting at the beginning of the fiscal year under the Cost Recovery Adjustment Clause (CRAC) if Power Service's accumulated net revenue is below a set level that is equivalent to reserves for risk at zero balance. A separate adjustment for certain environmental costs can raise the $300 million CRAC limit. While the CRAC mechanism adds some flexibility to BPA's two-year rate periods, the annual basis of the test and low trigger point limit the benefit of the CRAC mechanism.

A credit supportive rate setting tool is BPA's use of its treasury payment probability tool whereby BPA proposes rates at levels that it can meet its US Treasury payments at a 95% confidence level based on its cash flows and reserves. BPA's approach should ensure a high probability of near-term payments to the US Treasury and an extremely high probability of near-term timely payments on non-federal debt service, which is effectively senior to the debt owed to the US Treasury.

Regional Hydrology and Wholesale Price Risk Are BPA's Biggest Volatility Drivers

BPA's financial results can be materially impacted by hydrology in the Columbia River Basin and wholesale power prices since market based power sales can represent roughly 10-15% of total revenues. Since 2001, hydrology has been very volatile with high and low around 130% and 60%, respectively, of the long-term average. Similarly, power prices have generally remained low over the last ten years but current forward prices has indicated higher prices in the $30-40/MWh range. These factors, which are outside of BPA's control, have contributed heavily to periods of underperformance and represent BPA's biggest driver of cash flow volatility since power sales under long-term contracts and transmission sales are much more stable and predictable. The volatility of wholesale revenues emphasizes the importance of maintaining significant internal liquidity.

Operational and Financial Performance

Environmental Costs Are Material

BPA faces conflicting uses of the Columbia River and environmental regulations, such as the Endangered Species Act (ESA), that contributes significantly to BPA's costs and weighs heavily on BPA's cash flows. Biological opinions prepared by National Oceanic and Atmospheric Administration Fisheries Service and the US Fish and Wildlife Service mandate actions to protect fish species resulting in direct costs such as hatcheries and indirect loss of revenue from hydro dam operational changes. For FY2018, BPA estimates total direct fish and wildlife costs at approximately $454 million and recently BPA has been able to stem the long term trend of increasing costs. Looking forward, BPA is likely to face increasing costs which BPA will have to manage in their broader strategic goal of keeping cost growth within inflation.

While BPA's fish and wildlife mitigation costs are considerable, BPA's federally and non-federally owned generation are emissions free since they consist of hydro and nuclear generation. As such, BPA remains insulated from new federal regulations including those for greenhouse gases and BPA could benefit if new emissions regulations increase the market price of power.

Financial Metrics Are Low for the Rating

On a fully consolidated basis including federal debt, BPA's historical financial metrics range from the B to Baa category scoring under our Methodology. Total DSCR has averaged below 1.0x over the last three years, which is commensurate with a 'B' scoring, while BPA's debt ratio is high at an average of 88%, which is commensurate with a 'Baa' scoring. While BPA generally sets rates to achieve around 1.0x DSCR, a major driver of the below 1.0x DSCR in FY2017 and FY2016 is the Regional Cooperation Debt program that deferred $717 million of payments owed to Energy Northwest for CGS, Project 1, and Project 3. After adjusting for the deferral, BPA's DSCR would average around 1.1x over the last three years. Separately, non-federal DSCR have risen to almost 4.0x since principal payments for CGS, Project 1, and Project 3 have been pushed out to the future resulting in mostly an interest only coverage ratio for non-federal DSCR.

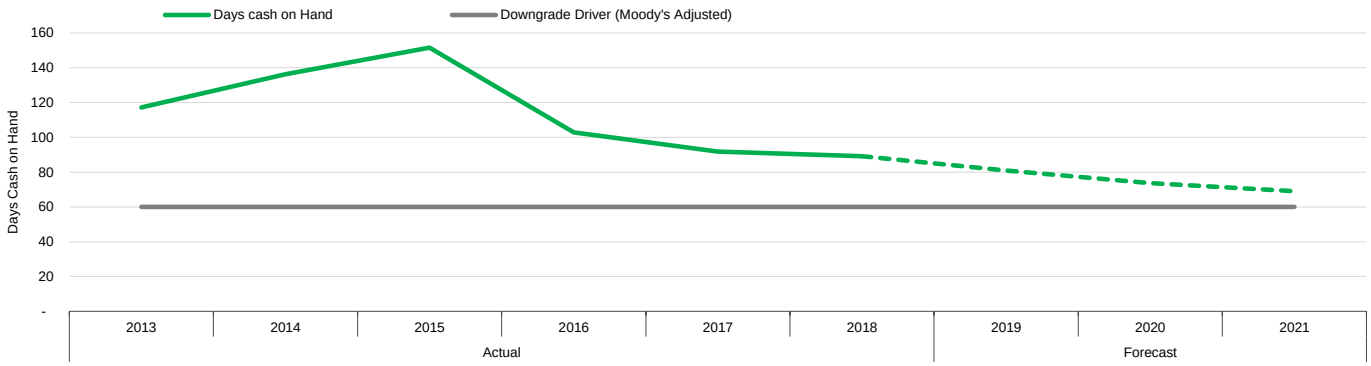
Looking forward, BPA's rates are generally set at around 1.0x DSCR on a forecasted basis. However, actual performance can deviate especially if hydrology and market prices are different from expectations.

LIQUIDITY

For FY 2018, BPA had reserves for risk, a measure of internal liquidity, totaling $551 million (89 days cash on hand), which is commensurate with a 'Baa' category. Under the proposed FY2020-2021 rates, BPA's incorporates reserve surcharges if reserves for risk drops below $300 million for power and $94 million for transmission ($394 million total). The reserve trigger thresholds were set to the equivalent of 60 days cash on hand for each line of business which is in the middle of the 'Baa' category and the minimum objective is less than half the 2013 to 2015 average of 135 days cash on hand. The surcharge amount is capped at $30 million per year for power and $15 million per year for transmission and can be set only at the start of a rate period. Looking forward, we expect continued deterioration of this metric trending towards BPA's minimum objective of 60 days cash on hand although the extent and timing of the decline will likely be affected by wholesale market prices and hydrology conditions (see exhibit 4).

Exhibit 4

Adjusted Days Cash On Hand Is Declining

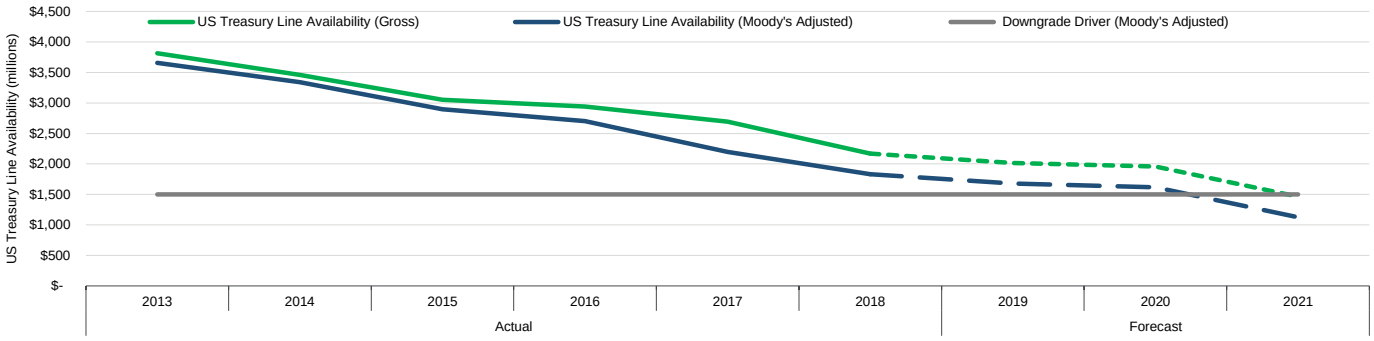


Source: Moody's Investors Service, BPA

Supplementing BPA's internal liquidity is availability under the US Treasury line. As of September 30, 2018, Moody's adjusted availability was $1.83 billion of which $750 million was available to fund operating expenses. The $750 million sub-limit is renewed on an ongoing basis and any draw needs to be repaid within one year. Availability under the US Treasury line has steadily declined over time including over $1 billion since 2015 on an adjusted net basis (netting out deferred borrowing). On a look forward basis, BPA's FY2020-2021 proposed rates incorporate further availability declines possibly below the $1.5 billion quantitative threshold previously outlined in past research for consideration of a downward rating action (see exhibit 5). We currently do not assume any increase to the gross $7.7 billion US Treasury line since it requires a change in law. The last US Treasury line increase occurred in February 2009 as part of the American Recovery and Reinvestment Act.

Exhibit 5

US Treasury Line Availability is Also Declining



Source: Moody's Investors Service, BPA

DEBT STRUCTURE

BPA's $15 billion in total debt consists of $7.7 billion of non-federal debt created via operating contracts like the net billing agreements and $7.3 billion of federal debt, which is debt owed by BPA to the federal government. BPA is not allowed to issue direct, external debt and BPA's non-federal debt are debt like contractual obligations such as leases, power prepay, and the net billing agreements with Energy Northwest's CGS, Project 1, and Project 3. Since these obligations are treated as an operating expense of BPA, they have a priority over BPA's direct debt obligation to the US Treasury and BPA can defer payments to US Treasury, if necessary. This deferral ability provides BPA a major source of financial flexibility under extreme situations although BPA has not deferred such payments since 1983 and any deferral is likely to have significant negative political ramifications. The significantly higher non-federal DSCR previously described above also highlights the substantial benefits of the federal debt's effective subordination to non-federal debt which provide support for the Aa1 rating on CGS, Project 1, and Project 3.

We see BPA's regional cooperation debt program as undermining the benefits of the federal debt's subordination, since the program results in a substantial extension of non-federal debt in exchange for the accelerated repayment of federal appropriations debt totaling a net $2.5 billion since FY2013. While we recognize the cost savings benefits for this strategy, the benefits primarily accrue to BPA's customers at the expense of the non-federal creditors. Energy Northwest's debt funding of interest and O&M expenses to accelerate repayment of federal appropriations debt further undermines the subordination and is credit negative. On the look forward basis, we expect BPA will continue to extend the ENW debt as part of a broader plan to prevent an even greater depletion of the US Treasury line availability than currently expected.

DEBT-RELATED DERIVATIVES

BPA indirectly has interest rate derivative like exposure mostly tied to its lease financed transmission assets. We understand there are no collateral posting requirements under any conditions for these derivatives.

PENSIONS AND OPEB

BPA employees are part of the US government's post-retirement benefit programs for all federal civil employees. The post-retirement benefits are overseen by the United States Office of Personnel Management (OPM), an independent agency that manages the civil

service of the federal government. As such, BPA does not record any accumulated plan assets or liabilities related to the administration of a retirement plan.

Management and Governance

US Government Support is a Major Strength

While BPA's obligations do not benefit from the full faith and credit of the United States Government, BPA benefits from significant explicit and implicit support elements from the US Government. The key support elements consist of BPA's borrowing line ($2.17 billion gross available / $1.83 billion net available as of September 30, 2018) with the US Treasury and ability to defer payments to the US Treasury. That said, BPA forecasts the US Treasury line availability shrinking over time which we see as weakening a key support element and a consideration in our negative outlook.

A strong qualitative consideration for implicit support include BPA's role as a line agency of the US Department of Energy. As a line agency of the US DOE, the BPA Administrator reports to the US Secretary of Energy and BPA has numerous linkages with other federal agencies. For example, the US Army Corp of Engineers and the US Bureau of Reclamation own and operate the federal dams while BPA markets the power output and pays for all of the associated operating and capital costs. Furthermore, tort claims for property damage, personal injury or death are claims against the United States and successful claims are paid out from the federal Judgement Fund.

Importance to the US Northwest region is another key qualitative factor. BPA is responsible for certain treaty responsibilities with Canada regarding the federally owned dams, significant regional environmental protection programs, and the coordination of river operations. Northwest US representation on key US House and Senate committees that deal with energy legislation is a credit strength.

Overall, we see these explicit and implicit US support as providing a multi-notch lift to BPA's standalone credit quality and represent key considerations for BPA's Aa1 rating. In a major stress scenario, Moody's expects any US Government support to BPA is likely to be provided through the established US Treasury credit line or deferral of payments to the US Treasury.

BPA's Strategic Plan Only Lessens Credit Deterioration

In 2018, BPA published a new strategic plan that represent a positive step towards creating objectives for leverage and US treasury line availability that did not exist before. The current plan seeks a debt ratio in the 75% to 85% range through 2028, maintaining $1.5 billion of US treasury line availability, and incorporates BPA's reserve targets ranging from 60 to 120 days. However, the implementation of the new strategic goals in the FY2020-2021 rate proposal mostly lessens the decline of BPA's credit quality and generally does not reverse the trend of BPA's weakening financial strength that has occurred since 2015. Additionally, not all aspects of BPA's strategic plan are credit supportive such as the continued extension of ENW's nuclear debt.

Methodology

Moody's evaluates BPA's issuer rating under the US Public Power Electric Utilities with Generation Ownership Exposure methodology,and the scorecard indicated outcome is Aa3, which is lower than its Aa1 assigned rating. BPA's close linkages with the federal government as a federal agency are supportive considerations to a higher rating than the scorecard indicated outcome.

Moody's also evaluates CGS, Project 1, and Project 3 under the US Municipal Joint Action Agencies methodology. The Aa1 rating assigned to all three projects reflects BPA's contractual obligation to pay including debt service under the project's net billing agreement, BPA's long history of meeting its contractual obligations, and BPA's Aa1 issuer rating.

The grid is a reference tool that can be used to approximate credit profiles in the US public power industry in most cases. However, the grid is a summary that does not include every rating consideration. Please see U.S. Public Power Electric Utilities with Generation Ownership Exposure and US Municipal Joint Action Agencies for more information about the limitations inherent to grids.

Exhibit 6

BPA Methodology Scorecard

Factor	Subfactor	Score	Metric
1. Cost Recovery Framework Within Service Territory		Aa	
2. Wilingness and Ability to Recover Costs with Sound Financial Metrics		A	
3. Generation and Power Procurement Risk Exposure		Aa	
4. Competitiveness	Rate Competitiveness	Aa	
5. Financial Strength and Liquidity	a) Adjusted days liquidity on hand (3-year avg) (days)	A	95
	b) Debt ratio (3-year avg) (%)	Baa	88%
	c) Adjusted Debt Service Coverage or Fixed Obligation Charge Coverage (3-year avg) (x)	Ba	1.0x
Preliminary Grid Indicated Outcome from Grid factors 1-5		**A2**	
		Notch	
6. Operational Considerations		1.0	
7. Debt Structure and Reserves		1.0	
8. Revenue Stability and Diversity		0.0	
Grid Indicated Outcome:		**Aa3**	

Source: Moody's Investors Service

Exhibit 7

ENW CGS Methodology Scorecard

Factor	Subfactor/Description	Score	Metric
1. Participant Credit Quality and Cost Recovery Framework	a) Participant credit quality. Cost recovery structure and governance	Aa1	
2. Asset Quality	a) Asset diversity, complexity and history	Baa	
3. Competitiveness	a) Cost competitiveness relative to market	Baa	
4. Financial Strength and Liquidity	a) Adjusted days liquidity on hand (3-year avg) (days)	Baa	33
	b) Debt ratio (3-year avg) (%)	Baa	126%
	c) Fixed obligation charge coverage ratio (3-year avg) (x)	Baa	1.3x
Material Asset Event Risk	Does agency have event risk?	No	
Notching Factors		**Notch**	
	1 - Contractual Structure and Legal Environment	0	
	2- Participant Diversity and Concentration	0	
	3 - Construction Risk	0	
	4 - Debt Service Reserve, Debt Structure and Financial Engineering	0	
	5 - Unmitigated Exposure to Wholesale Power Markets	0	
Scorecard Indicated Outcome:		**Aa1**	

Source: Moody's Investors Service

Exhibit 8

ENW Project's 1 and 3 Methodology Scorecard

Factor	Subfactor/Description	Score
1. Participant Credit Quality and Cost Recovery Framework	a) Participant credit quality. Cost recovery structure and governance	Aa1
2. Asset Quality	a) Asset diversity, complexity and history	B
3. Competitiveness	a) Cost competitiveness relative to market	B
4. Financial Strength and Liquidity	a) Adjusted days liquidity on hand (3-year avg) (days)	Baa
	b) Debt ratio (3-year avg) (%)	B
	c) Fixed obligation charge coverage ratio (3-year avg) (x)	B
Material Asset Event Risk	Does agency have event risk?	No
Notching Factors		**Notch**
	1 - Contractual Structure and Legal Environment	0
	2- Participant Diversity and Concentration	0
	3 - Construction Risk	0
	4 - Debt Service Reserve, Debt Structure and Financial Engineering	0
	5 - Unmitigated Exposure to Wholesale Power Markets	0
Scorecard Indicated Outcome:		**Baa1**

Source: Moody's Investors Service

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